Abstract Book

Society of Surgical Oncology
SSO 2026 Annual Meeting

Phoenix, AZ
March 5-7, 2026

Electronic supplement to
Annals of Surgical Oncology
The Leading Resource in Surgical Oncology

SSO2026
ANNUAL MEETING

Annals of Surgical Oncology
The Leading Resource in Surgical Oncology
The Official Journal of the Society of Surgical Oncology

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ABSTRACTS

2026 BEST PAPERS

SSO 2026 ANNUAL MEETING

Society of Surgical Oncology

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BP1

Neoadjuvant Pembrolizumab in Stage IIB/C Melanoma: Updated Clinical Outcomes and Translational Data from Phase 2 Trial NCT03757689

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INTRODUCTION: Clinical stage IIB/C melanoma is a high-risk subset with outcomes comparable to stage IIIA/B disease. Herein we report updated clinical outcomes from NCT03757689, the first trial to assess neoadjuvant pembrolizumab (pembro) in clinical stage IIB/C melanoma. Additionally, we report preliminary translational data leveraging biospecimens from trial patients (pts). **METHODS:** In this investigator-initiated phase 2 multicenter single-arm trial, pts with clinical stage IIB/C melanoma (n=63) received a single dose of neoadjuvant pembro 3 weeks (wks) prior to wide excision (WE) and sentinel lymph node (SLN) biopsy, followed by adjuvant pembro every 3 wks for up to 1 year (y). Recurrence-free (RFS) and overall survival (OS) were estimated using the Kaplan-Meier method. Multivariable Cox proportional hazards analysis was used to identify factors associated with recurrence. The NanoString platform was used to analyze bulk gene expression from SLNs of trial pts (n=39). Peripheral blood was immunophenotyped using spectral flow cytometry (n=10). **RESULTS:** Of 63 evaluable pts, 11 (17%) experienced a recurrence at the latest follow-up (median follow-up time: 27 months). Estimated 3-y RFS was 79% overall (IIB: 86%, IIC: 73%), with a median time-to-recurrence of 10.7 months. 3-y OS was 85% overall (IIB: 88%, IIC: 84%). In pts with residual primary tumor at the time of WE (n=28), 3-y RFS was 66% vs 91% for those without residual tumor (n=35; log-rank p=0.015). On multivariable analysis, presence of residual tumor was significantly associated with recurrence (adjusted hazard ratio: 6.39, p=0.032). On flow cytometric analysis of peripheral blood, proliferation of exhausted CD8 T cell populations significantly increased 3-wks after a single dose of neoadjuvant pembro ($PD1^+CD39^+Ki67^+$: 10.8% pre vs 22.0% post, p< 0.001). Additionally, melanoma-specific CD8 T cells targeting MART-1 and gp100 were identified using combinatorial tetramers. Gene expression analysis of the SLN showed significant relative increases in genes associated with immune activation (GZMA, CXCL9) and exhaustion (LAG3, TIGIT) in SLN- pts (n=25) vs stage I controls (n=9; p< 0.05). In SLN+ pts (n=14), genes associated with immune activation (CXCL9), immunoregulation (IL2RA), exhaustion (LAG3, TIGIT), and melanoma (DCT, TYR, MLANA) demonstrated increased expression (p< 0.05). **CONCLUSIONS:** In this updated analysis of NCT03757689, clinical stage IIB/C melanoma pts receiving neoadjuvant pembro exhibited favorable RFS/OS, along with significant immunologic changes in the systemic circulation and SLN.

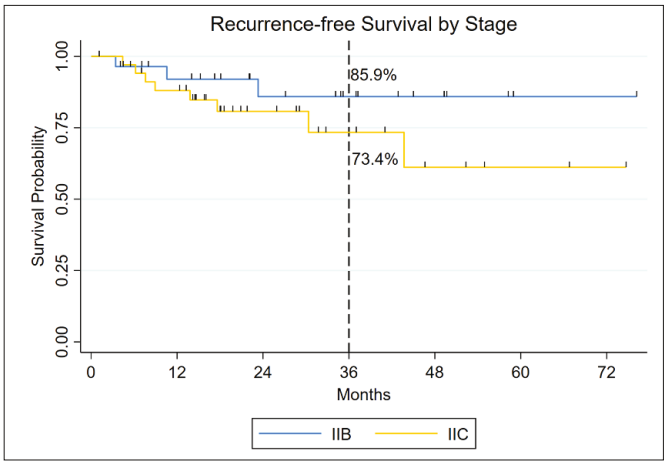

Figure. Recurrence Free Survival Stratified by Stage (IIB: n = 29, IIC: n = 34, at time of wide excision).

BP2

Adjuvant anti-PD-1 therapy in elderly patients with melanoma: An analysis of the Sentinel Lymph Node Working Group cohort

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INTRODUCTION: Older age at melanoma diagnosis is associated with worse melanoma-specific survival (MSS) and more aggressive tumor biology, yet elderly patients are less likely to receive adjuvant immunotherapy. Subgroup analyses from randomized trials of anti-PD-1 monotherapy have yielded mixed results regarding recurrence-free survival (RFS) benefit in the elderly. We evaluated real-world RFS among elderly patients with sentinel lymph node (SLN)-positive melanoma, hypothesizing that anti-PD-1 therapy would have similar RFS benefit in older as in younger patients. **METHODS:** The Sentinel Lymph Node Working Group database was queried to identify adults with SLN-positive melanoma between January 2017 and December 2023. Data from 13 institutions were included. Patients received adjuvant anti-PD-1 monotherapy or no immunotherapy. Those with clinically detected nodal metastasis, distant metastasis, incomplete staging, or neoadjuvant immunotherapy were excluded. The cohort was dichotomized into younger (< 75 years) and older (≥ 75 years) subgroups. Cox proportional hazards (PH) models assessed RFS and MSS. **RESULTS:** Of 960 eligible patients, 752 (78.3%) were < 75 years, and 208 (21.7%) were ≥ 75 years. Median age was 63 years (IQR 51-73 years). 465 younger patients (61.8%) and 92 older patients (44.2%) received adjuvant anti-PD-1 therapy (p< 0.001). Over a median follow-up of 32.2 months (IQR 14.4-52.5 months), 25.0% of younger patients and 34.6% of older patients experienced recurrence. In Cox PH analysis of the entire cohort, lymphovascular invasion and increasing T and N stage were associated with worse RFS, while receipt of anti-PD-1 monotherapy predicted improved RFS (p< 0.001). After stratification by age, receipt of anti-PD-1 monotherapy conferred a significant RFS benefit in patients < 75 years (HR 0.70; 95% CI 0.49-0.99), but in patients ≥ 75 years, adjuvant therapy was not associated with RFS improvement (HR

0.94; 95% CI 0.54-1.63). Adjuvant therapy showed no impact on MSS in either age group. **CONCLUSIONS:** In this multi-institutional, real-world experience with adjuvant anti-PD-1 therapy for melanoma, treatment improved RFS for younger patients but not in older patients. No MSS benefit was observed for either group.

Table. Recurrence-Free Survival in Sentinel Lymph Node-Positive Melanoma

Variable	n (%)	Patients Aged <75 Hazard Ratio	95% Confidence Interval	n (%)	Patients Aged >75 Hazard Ratio	95% Confidence Interval
Sex						
Male	436 (58.0%)	Ref.		146 (70.2%)	Ref.	
Female	316 (42.0%)	1.0	0.7 – 1.3	62 (29.8%)	0.7	0.4 – 1.3
Race and Ethnicity						
Non-Hispanic White	601 (79.9%)	Ref.		153 (73.6%)	Ref.	
Other	21 (2.8%)	1.2	0.6 – 2.5	10 (4.8%)	1.4	0.5 – 4.3
Unknown	130 (17.3%)	1.2	0.6 – 2.6	45 (21.6%)	0.5	0.1 – 2.8
Tumor Location						
Head and Neck	113 (15.0%)	Ref.		40 (19.2%)	Ref.	
Trunk	321 (42.7%)	**1.6**	**1.0 – 2.5**	70 (33.7%)	0.7	0.4 – 1.4
Lower Extremities	187 (24.9%)	1.1	0.6 – 1.8	39 (18.8%)	0.9	0.4 – 1.8
Upper Extremities	131 (17.4%)	0.7	0.4 – 1.3	59 (28.4%)	0.7	0.3 – 1.3
Lymphovascular Invasion						
Absent	634 (84.3%)	Ref.		162 (77.9%)	Ref.	
Present	74 (9.8%)	1.5	1.0 – 2.4	27 (13.0%)	**2.3**	**1.2 – 4.6**
Unknown	44 (5.9%)	0.6	0.3 – 1.3	19 (9.1%)	0.7	0.3 – 1.7
Mitotic Rate						
<1/mm²	52 (6.9%)	Ref.		7 (3.4%)	Ref.	
≥1/mm²	574 (76.3%)	0.9	0.4 – 2.0	154 (74.0%)	0.5	0.1 – 2.5
Unknown	126 (16.8%)	1.3	0.4 – 3.8	47 (22.6%)	2.4	0.3 – 23.0
T Stage						
T1	67 (8.9%)	Ref.		7 (3.4%)	Ref.	
T2	246 (32.7%)	2.5	0.7 – 8.3	55 (26.4%)	2.8	0.3 – 30.3
T3	240 (31.9%)	**6.4**	**1.9 – 21.2**	70 (33.7%)	3.2	0.3 – 35.1
T4	199 (26.5%)	**11.2**	**3.4 – 37.3**	76 (36.5%)	3.4	0.3 – 36.0
N Stage						
N1	523 (69.5%)	Ref.		136 (65.4%)	Ref.	
N2	193 (25.7%)	1.3	1.0 – 1.9	55 (26.4%)	2.0	**1.1 – 3.4**
N3	36 (4.8%)	**1.9**	**1.1 – 3.3**	17 (8.2%)	5.5	**2.4 – 12.8**
Adjuvant Immunotherapy						
No Therapy	287 (38.2%)	Ref.		116 (55.8%)	Ref.	
Anti-PD-1 Monotherapy	465 (61.8%)	**0.7**	**0.5 – 0.9**	92 (44.2%)	0.9	0.5 – 1.6

Patients in the Sentinel Lymph Node Working Group Database

BP3

Loss of cDC1s Highlights Role of Virus-Specific CD8⁺ T Cells in T-VEC + αPD1 Response

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INTRODUCTION: We have previously shown that T-VEC reverses resistance to αPD1 therapy in a murine melanoma model. Flow cytometry and single cell RNA sequencing revealed an enhanced cytotoxic CD8⁺ response within the tumor microenvironment underlying this effect. Conventional type 1 dendritic cells (cDC1s) are essential for cross presentation to prime antiviral and antitumor CD8⁺ T cells. Dissecting how cDC1s contribute to this response is critical to refining oncolytic virus- checkpoint inhibitor strategies. Here, we investigate the role of cDC1s in coordinating this anti-tumor response. **METHODS:** Utilizing the genetic model XCR1-DTR*venus* mice, which allows for in vivo ablation of cDC1 cells with diphtheria toxin (DT), we established B16-OVA subcutaneous tumors. After tumors reached a palpable size, mice were treated with αPD1. αPD1 sensitive tumors were removed, while tumors growing on αPD1 were then randomized to continue αPD1 alone or combination T-VEC + αPD1, with or without DT mediated cDC1 depletion. Boiled DT (bDT) served as control. Tumor growth and survival were monitored, and immune composition of tumors and tumor-draining lymph nodes (TdLNs) was analyzed by flow cytometry. **RESULTS:** DT administration robustly ablated XCR1⁺ dendritic cells in both tumors and TdLNs. Results demonstrated cDC1 loss impaired tumor growth control and reduced survival compared with T-VEC + αPD1, though outcomes remained superior to αPD1 monotherapy. Flow cytometry demonstrated a reduction in total CD8⁺ effector T cells in both tumors and TdLNs following cDC1 depletion. Specifically, HSV-1 polarized CD8⁺ effector T cells were diminished whereas tumor antigen specific (OVA⁺) CD8⁺ populations were preserved. Despite diminished CD8⁺ frequencies, expression of activation markers including granzyme B and Ly6C remained unchanged, indicating that cDC1s regulate effector magnitude rather than phenotype. Changes in CD4⁺ conventional and regulatory T-cell populations secondary to T-VEC were stable in both compartments with and without cDC1 depletion. Together, these findings suggest that cDC1s link viral antigen presentation to the amplification of antitumor effector immunity in T-VEC treated tumors. **CONCLUSIONS:** Loss of cDC1s reduces HSV-1 specific CD8⁺ abundance and partially impairs tumor control, implicating antiviral CD8⁺ responses as a beneficial component of the T-VEC- αPD1 synergistic mechanism. cDC1s emerge as indispensable integrators of antiviral and antitumor immunity and as potential targets to further enhance the efficacy of oncolytic virus checkpoint combinations.

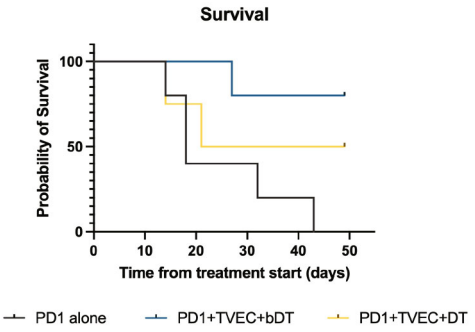

Figure 1: Kaplan Meier Survival
Time zero is defined as the time T-VEC treatment start. DT or bDT were given during duration of T-VEC treatment. Survival endpoints included death or sacrifice for tumors greater than 100mm². Median survival was 18 days, 35 days, and not reached for αPD1 alone, and αPD1+TVEC+DT, and αPD1+TVEC+bDT respectively.

BP4

Dasatinib reverses myeloid derived suppressor cell (MDSC) inhibition of T-cell proliferation in a triple negative breast cancer model

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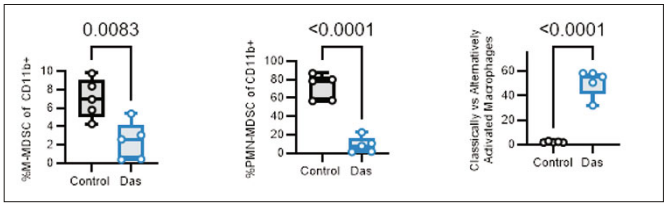
INTRODUCTION: MDSC are expanded in cancer patients and inhibit immunity via the release of nitric oxide (NO) and reactive oxygen species. MDSC levels are associated with failure of immune checkpoint blockade. We investigated if dasatinib, an FDA-approved small-molecule tyrosine kinase inhibitor could disrupt MDSC NO production and reinvigorate immune responses. METHODS**:** Expression of genes related to nitric oxide production, inflammation, immunosuppression (*Nos2*, *Cox2*, and *IL-6)* were measured by PCR in myeloid cell lines (RAW macrophages and MSC2) and in splenic MDSC from tumor-bearing mice or in melanoma patient peripheral blood. MDSC NO output was measured with the Greiss reagent. Dasatinib's ability to reverse MDSC suppression of T cell proliferation was measured via flow cytometry of activated, fluorescent-labeled T cells. The murine triple negative breast cancer cell (TNBC) line 4T1 was injected into the mammary glands of BALB/c mice and dasatinib (20 mg/kg/day via oral gavage) was given for 8 days. Levels of tumor-infiltrating lymphocytes and myeloid cells were measured by spectral flow cytometry. **RESULTS:** Dasatinib treatment significantly reduced mRNA expression of Nos2, Cox2, and IL-6 expression by RAW macrophages (P=0.0014, P=0.001, P< 0.001) and the MDSC-like cell line MSC2. Similar trends were seen in MDSC from the blood of patients with stage IV melanoma. Dasatinib significantly reduced MDSC NO output. Murine CD8+ T cell proliferation was significantly inhibited in the presence of MDSC in a co-culture experiment. But 24 hr pre-treatment of MDSC with 100 nM dasatinib reversed this inhibition compared to DMSO controls (44.43% vs 21.43%, P=0.0141). This effect was significant in CD8+ T cells but not in CD4+ T cells. Compared to controls, expression of Nos2, Cox2, and IL-6 was significantly reduced in splenic MDSC from dasatinib-treated 4T1 tumor bearing mice (P=0.020, P=0.044, P=0.035, respectively). Dasatinib reduced 4T1 tumor growth. Flow cytometric analysis of intra-tumoral immune cells revealed significantly fewer monocytic-like MDSC (P=0.0083), PMN-like MDSC (P< 0.001), and pro-tumor CD206+ M2 macrophages relative to anti-tumor CD206- M1 macrophages (P< 0.001) as compared to vehicle control. Levels of CD8+ T cells were unaffected by dasatinib. **CONCLUSIONS:**

Dasatinib modulates MDSC function and reduces their presence in the tumor microenvironment. This strategy could reverse immune suppression in the



setting of TNBC checkpoint inhibitor therapy.

Figure. Intratumoral monocytic-MDSC, PMN-MDSC, and classically activated (CD206 neg) between vehicle control and dasatinib-treated (Das) mice.

BP5

Borderline epithelial lesions of the breast and low-grade DCIS show similar rates of subsequent ipsilateral DCIS and invasive disease: A 10-year follow-up report

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INTRODUCTION: Atypical ductal hyperplasia (ADH) and ductal carcinoma in-situ (DCIS) lie along a spectrum of ductal neoplasia. Histologic distinction between these entities can be challenging, with some ADH lesions described as bordering on DCIS, otherwise known as 'borderline' lesions (BLs). Risk of developing subsequent ipsilateral breast events (IBEs) after surgical excision of BLs remains unclear. This report provides long-term follow-up on IBEs for patients with BLs. **METHODS:** We queried a prospectively maintained database for patients undergoing breast-conserving surgery (+/- adjuvant endocrine or radiation therapy) for BL or DCIS between 1997 and 2016. We defined IBE as a subsequent diagnosis of DCIS or invasive cancer in the ipsilateral breast. **RESULTS:** 155 patients with BLs and 3544 patients with DCIS were identified with a median follow-up of 8.9 years. Compared to the DCIS cohort, the BL cohort was younger ($p < 0.001$), more often premenopausal ($p < 0.001$), less likely to undergo endocrine therapy (19% vs 28%, $p = 0.012$), and less likely to undergo radiation therapy (2% vs 60%, $p < 0.001$) (Table). 10-year IBE rates were 9.2% (95% CI 4.1-14.1%) for BL and 13.4% (95% CI 12.0-14.8%) for DCIS ($p = 0.1$). 10-year invasive-IBE rates were 6.0% (95% CI 2.8-11%) and 6.2% (95% CI 5.3-7.3%), respectively ($p = 0.6$). Additional analyses were completed for patients with BL (n = 124), any-grade DCIS (n = 1073), and low-grade DCIS (n = 299), who did not receive adjuvant endocrine or radiation therapy. 10-year IBE rates were 10.7% for BL (95% CI 4.5-16.5%); 19.3% for any-grade DCIS (95% CI 16.4-22.1%) (BL vs. any-grade DCIS, $p = 0.024$); and 15.0% for low-grade DCIS (95% CI 10.0-19.8%) (BL vs. low-grade DCIS, $p = 0.46$). 10-year invasive-IBE rates were 6.6% for BL (95% CI 2.9-12%); 8.5% for any-grade DCIS (95% CI 6.6-11%) ($p = 0.4$); and 7.0% for low-grade DCIS (95% CI 4.0-11.0%) ($p > 0.9$). **CONCLUSIONS:** Compared to all DCIS, BLs had similar 10-year rates of IBEs and invasive IBEs. Without adjuvant therapies, any-grade DCIS patients were more likely to experience any IBE at 10 years but had similar 10-year invasive IBE rates. Without adjuvant therapies, BLs and low-grade DCIS had similar 10-year rates of any IBE and invasive IBE, suggesting that omission of adjuvant therapies should be considered for low-grade DCIS.

Table. Clinicopathologic characteristics and IBEs for patients with borderline lesions and DCIS, for the entire population and those receiving no adjuvant therapy

	Entire population (n = 3699)			No adjuvant therapy cohort (n = 1197)				
Characteristics	**Borderline lesions (n = 155)**	**All DCIS (n = 3544)**	**p value**	**Borderline lesions (n = 124)**	**All DCIS (n = 1073)**	**p value**		
Age, years, median (range)	52 (46, 60)	58 (49, 67)	< 0.001	52 (46,62)	62 (52, 72)	< 0.001		
Family History			0.5			0.9		
No	90 (58.1%)	1973 (55.7%)		70 (56.4%)	615 (57.3%)			
Yes	63 (40.6%)	1530 (43.1%)		52 (41.9%)	445 (41.5%)			
Unknown	2 (1.3%)	41 (1.2%)		2 (1.6%)	13 (1.2%)			
Menopausal Status			< 0.001			< 0.001		
Pre	79 (51.0%)	1133 (32.0%)		63 (50.8%)	270 (25.2%)			
Post	76 (49.0%)	2410 (68.0%)		61 (49.2%)	803 (74.8%)			
Unknown	0 (0.0%)	1 (0.0%)		0 (0.0%)	0 (0.0%)			
Presentation			0.9			0.8		
Clinical	12 (7.7%)	286 (8.1%)		10 (8.1%)	93 (8.7%)			
Radiological	143 (92.3%)	3256 (91.9%)		114 (91.9%)	980 (91.3%)			
Unknown	0 (0.0%)	2 (0.1%)		0 (0.0%)	0 (0.0%)			
Margin Status			0.004			0.060		
Negative	144 (92.9%)	3002 (84.7%)		117 (94.4%)	935 (87.1%)			
Close	7 (4.5%)	447 (12.6%)		5 (4.0%)	110 (10.3%)			
Positive	4 (2.6%)	90 (2.5%)		2 (1.6%)	26 (2.4%)			
Unknown	0 (0.0%)	5 (0.1%)		0 (0.0%)	2 (0.2%)			
Grade	NA			NA				
Low		583 (16.5%)			299 (27.9%)			
Intermediate		1755 (49.5%)			557 (51.9%)			
High		1161 (32.8%)			194 (18.1%)			
Unknown		45 (1.3%)			23 (2.1%)			
Adjuvant Radiation			< 0.001					
Yes	3 (1.9%)	2138 (60.3%)		0 (0.0%)	0 (0.0%)			
No	152 (98.1%)	1374 (38.0%)		124 (100%)	1073 (100%)			
Unknown	0 (0.0%)	32 (0.9%%)		0 (0.0%)	0 (0.0%)			
Endocrine therapy			0.012					
Yes	29 (18.7%)	979 (27.6%)		0 (0.0%)	0 (0.0%)			
No	126 (81.3%)	2520 (71.1%)		124 (100%)	1073 (100%)			
Unknown	0 (0.0%)	45 (1.3%)		0 (0.0%)	0 (0.0%)			
IBE			> 0.9			0.2		
Yes	20 (12.9%)	455 (12.8%)		17 (13.7%)	191 (17.8%)			
No	135 (87.1%)	3084 (87.0%)		107 (86.3%)	879 (81.9%)			
Unknown	0 (0.0%)	5 (0.1%)		0 (0.0%)	3 (0.3%)			
IBE Type			0.2			0.3		
DCIS	7 (35%)	234 (51.4%)		7 (41.2%)	105 (55.0%)			
Invasive	13 (65%)	221 (48.6%)		10 (58.8%)	86 (45.0%)			
Unknown	0 (0.0%)	0 (0.0%)		0 (0.0%)	0 (0.0%)			
Outcomes	**Entire population**			**No adjuvant therapy**				
10-year IBE rates	**Borderline lesions**	**All DCIS**	**P**	**Borderline lesions**	**Low-grade DCIS**	**P**	**All DCIS**	**P**
Any IBE	9.2%	13.4%	0.099	10.7%	15.0%	0.46	19.3%	0.024
Invasive IBE	6.0%	6.2%	0.6	6.6%	7.0%	> 0.9	8.5%	0.4

Abbreviations: DCIS, ductal carcinoma in situ; NA, not available; IBE, ipsilateral breast event

BP6

Metastatic progression of pheochromocytoma and paraganglioma occurs via parallel evolution

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INTRODUCTION: Pheochromocytoma (PCC) and paraganglioma (PGL) are neuroendocrine tumors derived from chromaffin cells of the adrenal medulla and ganglia of the autonomic nervous system. Metastatic disease develops in up to 25% of patients with PCC/PGL; however, tumor evolution in metastatic PCC/PGL has not been well delineated. **METHODS:** We performed whole-exome sequencing of paired specimens from 27 patients with metastatic PCC/PGL to better understand cancer progression. In total, we sequenced 48 tumors from 27 patients, including 20 PCC (3 primary tumors; 17 metastases) and 28 PGL (8 primary tumors; 20 metastases). We applied MutationTimeR to estimate the relative timing and clonality of the somatic and copy number variants in our samples. We subsequently inferred the seeding pattern of individual metastases by calculating the Jaccard similarity index for primary-metastatic tumor pairs, and we estimated the time from the emergence of the metastatic founder population to the diagnosis of the primary tumor using a Gompertzian growth model that accounts for the number of shared and private mutations in the primary and metastatic tumors. **RESULTS:** We observed a low fraction of recurrent somatic variants in primary-metastasis pairs (median

5.1%). Metastases demonstrated a higher proportion of clonal pathogenic variants than primary tumors (71.5% versus 28.5%, $p < 0.001$, two-proportions z-test). Across all pathogenic variants, 43.0% were classified as subclonal (n = 462), and only 6.0% were classified as early, clonal variants (n = 54). Copy number changes were estimated to occur early in molecular time in almost all samples. In all patients, the Jaccard similarity index was < 0.30, suggesting a monoclonal seeding pattern of metastases. Using published patient-level data on the doubling time and size at diagnosis of PCC/PGL, metastatic lineages of PCC/PGL were estimated to originate at a median of 15.9 years prior to the diagnosis of the primary tumor (IQR: 8.7 – 21.1), and metastases were estimated to seed approximately 10.2 years before the diagnosis of the primary tumor (IQR: 4.8 – 14.5). **CONCLUSIONS:** Molecular clock analysis suggests that PCC/PGL metastases develop via monoclonal seeding with metastatic founder populations developing early in tumor progression. Parallel progression of metastases and primary tumors leads to significant inter-tumoral genomic heterogeneity with few shared driver alterations. These data suggest that targeted therapies may need to address multiple genomic drivers to simultaneously treat oligometastatic disease.

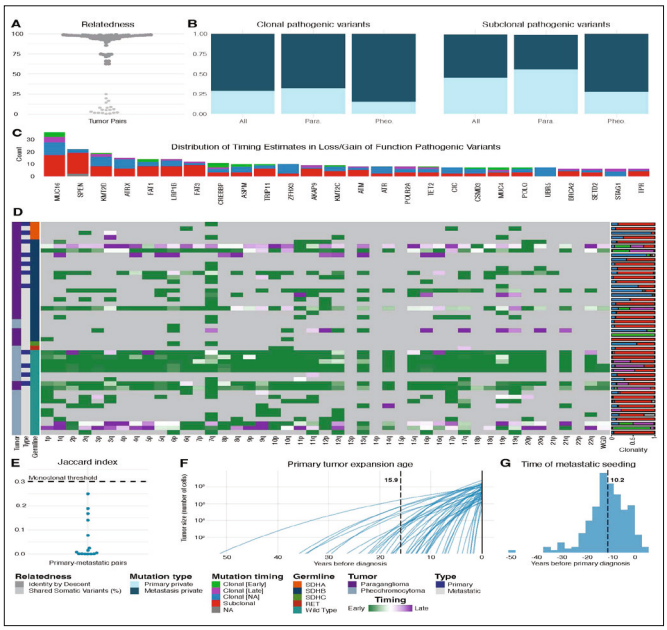

Figure. Timing and clonality of somatic mutations and copy number events in metastatic pheochromocytomas and paragangliomas, with chronology of primary tumor development and metastatic seeding patterns

BP7

Expression of Neuronal Axon Guidance Proteins may be Uniquely Associated with Metastasis in Pheochromocytoma and Paraganglioma

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INTRODUCTION: Pheochromocytomas and paragangliomas (PPGL) are rare tumors derived from the chromaffin cells of the adrenal medulla and sympathetic ganglia. These tumors exhibit unusual behavior, as some will be indolent and generally considered benign in nature, while other tumors will disseminate and exhibit aggressive malignant behavior. To date, distinguishing benign from malignant PPGL is impossible on a pathologic and molecular level, though some tumor and germline mutations (such as SDH-B) are associated with an increased risk of malignant behaving tumors. In our study, we aimed to query an existing tumor genetic database for genetic and protein alternations uniquely associated with metastasis in PPGL. **METHODS:** The largest PPGL tumor genetic database was downloaded from github. Tumors were stratified by phenotype (benign/malignant) and evaluated using Enrichr. Significant findings were validated using new tissue. Specifically, an IRB approved local tumor registry was developed using Hyperion™ and relevant tumor and patient characteristics were retrospectively collected, comprising 150 patients, 11 of which had metastases. From these, FFPE embedded tissue from 20 propensity matched PPGL patients with and without metastasis were obtained and submitted for RNA sequencing. Additional slides were stained using DAB by standard protocols. **RESULTS:** Analyzing the transcriptome of the largest PPGL database, comprised of globally sourced fresh frozen PPGL tissue, we verified the presence of similar genetic alterations as previously published. We then stratified tumors by the presence or absence of metastasis, and these data demonstrated an increase in the expression of neuronal axon guidance proteins, such as PAX6 and SLIT1 in PPGL with metastases (Figure 1A, average 6 log fold change). This was confirmed in a COX model (Figure 1B). In our local tumor registry, like prior studies, an increased serum norepinephrine to metanephrine ratio was associated with metastasis. Survival was also similar to prior studies in patients with metastases, approximately 50% at ten years. RNA sequencing our FFPE tissue demonstrated consistent tumorigenesis pathways including HIF1a and WNT5a. **CONCLUSIONS:** Neuronal axon guidance proteins SLIT1 and PAX6 are significantly upregulated in PPGL metastases. These proteins may be downstream transcriptional targets of HIF1 and WNT5A, and may aid the process of tumor dissemination and metastasis. Further studies will be performed to determine the role of SLIT1 and PAX6 in the development of metastasis in PPGL.

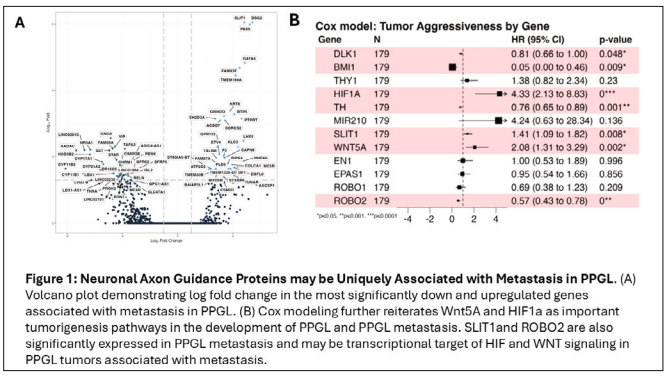

Figure 1: Neuronal Axon Guidance Proteins may be Uniquely Associated with Metastasis in PPGL. (A) Volcano plot demonstrating log fold change in the most significantly down and upregulated genes associated with metastasis in PPGL. (B) Cox modeling further reiterates Wnt5A and HIF1a as important tumorigenesis pathways in the development of PPGL and PPGL metastasis. SLIT1and ROBO2 are also significantly expressed in PPGL metastasis and may be transcriptional target of HIF and WNT signaling in PPGL tumors associated with metastasis.

BP8

Single-cell RNA sequencing reveals that imatinib alters tumor-associated macrophages in GIST

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INTRODUCTION: We have previously shown that tumor-associated macrophages (TAMs) are antitumoral in untreated gastrointestinal stromal tumors (GISTs), contrary to most cancers. To detail how imatinib therapy alters TAMs in GIST, as well as identify new therapeutic targets, we performed single-cell RNA sequencing of TAMs isolated from murine GISTs. **METHODS:** Mice with a knock-in *Kit* (V558D) mutation develop intestinal GIST with 100% penetrance, with tumors remarkably similar to human GISTs in terms of morphology, cellular signaling, and immune infiltrate. These mice were treated with imatinib or vehicle for 1 week (n=3/group), and their GISTs were digested into single-cell suspensions. We isolated 44,057 TAMs by flow sorting and then interrogated treatment-induced changes with single-cell RNA sequencing (10x Genomics). **RESULTS:** Globally, pathway analysis revealed that imatinib decreased IFN-a and IFN-g signaling and increased NF-kB activation via TNF signaling, indicating a shift in the inflammatory profile of TAMs (all $p < 0.001$). Collectively, treated TAMs had altered cytokine/chemokine expression, producing more *Cxcl2* and *Ccl8* mRNA (log-FC >0.75, $p < 0.001$ for both). Treated TAMs were functionally enriched for hypoxic signaling ($p=0.0019$), a possible cause for both the shifts in inflammatory signaling and cytokine/chemokine expression profile. On a population level, we identified several functionally diverse TAM subsets, including Lipid-associated, Proliferating, Iron-associated, Inflammatory, and Interferon-primed (Figure). One notable population to significantly change in abundance after just 1 week of imatinib

treatment was Interferon-primed TAMs, which decreased by 18.5% (p=0.01). This population was strongly and uniquely enriched for IFN-a and IFN-g signaling on pathway analysis (p< 0.001), with nearly all top defining genes related to interferon response. Interferon-primed TAMs were also enriched for the expression of the cytotoxic T-cell recruiting chemokines *Cxcl9*, *Cxcl10*, *Il15*, and other antitumoral effectors such as *Stat1* and *Tnfsf10* (log-FC >1, p< 0.001 for all), indicating a unique inflammatory profile compared to other subsets. **CONCLUSIONS:** Imatinib treatment alters TAM subsets and their inflammatory gene expression in GIST. Interferon-primed TAMs resemble TAM subsets in other cancers in which they have correlated with T cell infiltration and response to immune checkpoint inhibition. Therefore, this TAM subset may represent a promising immune target in GIST, particularly in the context of imatinib treatment.

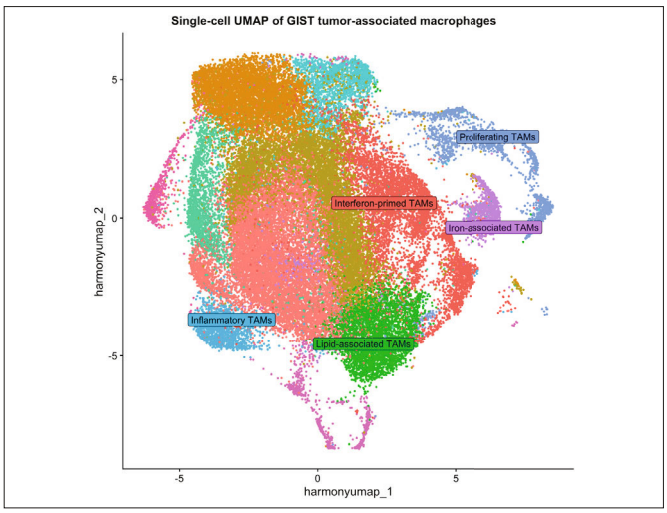

Figure. Dimensional reduction (UMAP) of tumor-associated macrophage populations in murine GIST, selected populations labeled

BP9

Non-Genetic Mechanisms of Fractional Resistance to Abemaciclib in Dedifferentiated Liposarcoma

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INTRODUCTION: Well/dedifferentiated liposarcomas overexpress CDK4 but clinical trials of CDK4/6 inhibitors (CDK4/6i) have had mixed results. We hypothesized that fractional resistance arises from phenotypic plasticity that enables continued cell division in a fraction of cells under CDK4/6i. Our objective was to use cell lines and primary tumor cells to characterize aberrant cell cycle regulation representing alternative paths to cell division despite CDK4/6i. **METHODS:** Iterative indirect immunofluorescence imaging (4i, Fig A) was performed on liposarcoma cell line 246 and primary patient-derived de-differentiated liposarcoma cells treated with the CDK4/6i abemaciclib (0, 50, 250 nM), profiling 17 regulators of cell cycle proliferation in individual cells. Cycling cells were computationally isolated by stratifying for high pRb/Rb and cycling cells off treatment compared to cycling cells on treatment to determine unique features of fractional resistance. **RESULTS:** Proliferating cells were identified by high pRb/Rb ratio (Fig B). The fraction of cells proliferating reduced with abemaciclib treatment in a dose dependent fashion from 92.3% control to 81.5% 50 nM to 5.1% 250 nM, p< 0.001, demonstrating on target arrest inducing effects, and a discrete pRb/Rb high subset that persisted on treatment (fractional resistance). Within fractionally resistant cells (Red), CDK2 expression increased from median z-normalized signal intensity 0.38 in control treated cycling cells to -0.26 (abemaciclib 50 nM) and 1.60 (abemaciclib 250 nM), p< 0.001. The G2/M phase regulating cycB1 had a significant induction of expression with 250 nM abemaciclib treatment (median z-normalized signal intensity -0.27 control to 2.67 250 nM) p< 0.0001. Neither CDK2 nor cycB1 changed expression in arrested cells with abemaciclib treatment. Representative IF images demonstrate co-localization of persistent pRb high cells with abemaciclib treatment and high expression of CDK2 and cycB1. Fractionally resistant primary tumor cells showed similar increase in cycB1 (-0.37 control vs -0.19 250 nM abemaciclib, p< 00.1) and CDK2 (-0.25 control vs 0.46 250 nM abemacilib, p< 0.001). **CONCLUSIONS:** Dedifferentiated liposarcoma cells that escape abemaciclib induced arrest have increased expression of CycB1 and CDK2 supporting an abemaciclib resistant cell cycle path driven by non-canonical activation of CDK2 by CycB1. Future studies will focus on CycB1 and CDK2 as biomarkers of patients with dedifferentiated liposarcoma least likely to respond to CDK4/6 inhibitors and on co-treatment strategies targeting CDK2.

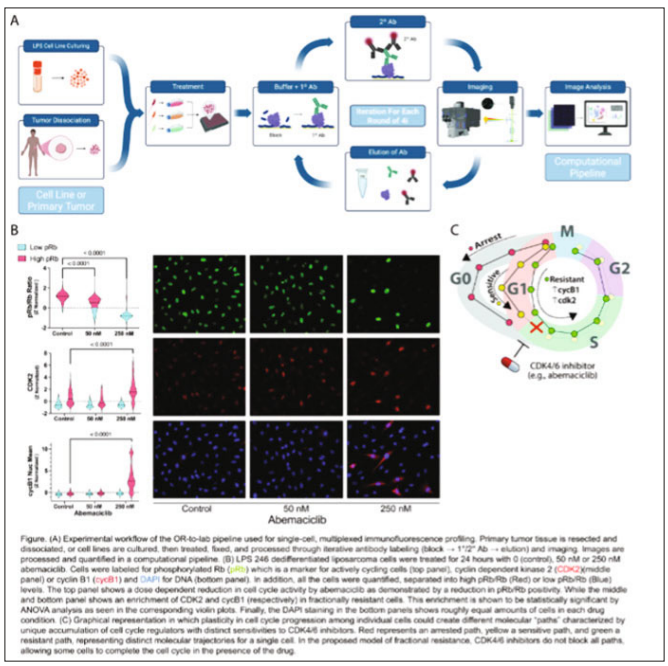

Figure. Experimental design, results of experiments, and proposed pathways of resistance.

BP10

Single cell and Spatial Transcriptomic Profiling of Uterine Leiomyosarcomas Reveals Molecular Programs with Distinct Therapeutic Vulnerabilities

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INTRODUCTION: Uterine leiomyosarcomas (ULMS) are rare, aggressive tumors with profound genomic heterogeneity, which has precluded the identification of effective targeted therapies. The overall purpose of this

study was to investigate the transcriptomic and spatial landscape of ULMS to identify new therapeutic avenues. **METHODS:** We performed single-cell RNA sequencing (scRNA-seq) on freshly collected ULMS tumors using the 10X Genomics platform and spatial transcriptomics on FFPE sections using the Singular G4X platform. Resulting cells were integrated with scVI or resolVI and annotated using canonical markers. Tumor signatures were correlated with patient outcomes using bulk RNA sequencing data and novel drugs predictions for each tumor cell subtype were computed using the scIDUC algorithm. **RESULTS:** ScRNA-seq was performed on 15 recurrent, metastatic ULMS tumors from 13 patients at the time of debulking surgery, which yielded 204,250 high quality cells. Spatial transcriptomics was performed on 29 sections from 10 patients, which yielded 2.3 million spatially resolved cells. Both assays revealed heterogenous tumor microenvironments comprised of several types of cells, including myeloid cells, lymphoid cells, endothelial cells, and tumor cells. Among the tumor cells, eight subtypes with distinct signatures were identified, including 1) hormone receptor-positive stem-like cells scattered throughout the tumor, 2) metabolically adaptive Glycolytic cells with an inflammatory phenotype, 3) invasive Mesenchyme-like cells growing in fingerlike projections and surrounding blood vessels, and 4) MYC signaling cells that correlated with an ischemic tumor subtype surrounding areas of necrosis. Each tumor subset demonstrated unique associations with patient outcomes, with enrichment of MYC signaling cells correlating with the poorest survival. Current first-line therapies were predicted to be ineffective across most tumor subtypes; however, several alternative drug candidates uniquely targeting each tumor subtype were identified, including the broadly sensitive HDAC inhibitor tacedinaline. **CONCLUSIONS:** We present a comprehensive transcriptomic and spatial atlas of ULMS, identifying several transcriptomic subtypes that correlate with patient outcomes and unique therapeutic sensitivities. Findings from this study will facilitate patient prognostication and the derivation of novel targeted therapeutic avenues.

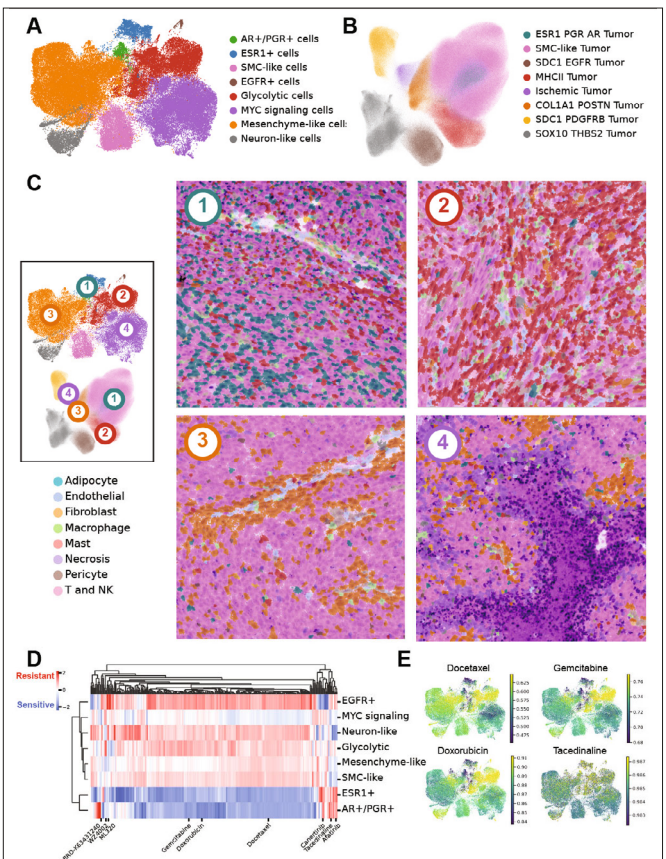

Figure Legend: (A) UMAP of all tumor cells identified on scRNA-seq, annotated by tumor cell subtype. **(B)** UMAP of all spatially resolved tumor cells, annotated by tumor cell subtype. **(C)** Representative spatial regions highlighting tumor subtypes identified. (Left) UMAPs presented as legends indicating the tumor cell subtypes displayed in the highlighted regions on the right. (Right) Fluorescent H&E's with annotations overlaid for the predominant tumor cell subtypes: 1) ESR1/PGR/AR stem-like cells scattered throughout the tumor, 2) metabolically adaptive Glycolytic cells, 3) Mesenchyme-like cells surrounding blood vessels, and 4) MYC signaling cells in peri-necrotic penumbra. **(D)** Heatmap depicting sensitivity of each tumor cell subtype to 304 drugs, with ESR1+ and AR+/PGR+ cells showing the highest sensitivity, with all other subtypes showing broad drug resistance. **(E)** UMAP colored by the sensitivity of each cell to first-line drugs docetaxel, gemcitabine, and doxorubicin, along with the broadly sensitive tacedinaline.

BP11

Budget impact of implementing a financial navigation program for cancer patients in Nigeria

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INTRODUCTION: Out-of-pocket (OOP) spending is a leading cause of financial catastrophe for cancer patients in low- and middle-income countries (LMICs). The COST-FIN randomized controlled trial tested whether a Financial Navigation Program (FNP) could mitigate financial toxicity (FT) and improve treatment adherence (TA) among Nigerian cancer patients. This analysis evaluated the budget impact (BI) and economic value of FNP implementation from both health-system and societal perspectives. **METHODS:** A BI analysis of the COST-FIN trial was conducted. The trial enrolled 159 adults with breast, colorectal, or prostate cancer across three Nigerian centers. 100 participants received 6 months of a structured FNP. Program costs—including navigator salaries, training, and administrative expenses—were prospectively collected. Patient-level data on OOP expenditures, health-care utilization, and TA were abstracted from medical records. Financial catastrophe (FC) was defined as OOP spending exceeding 25% of total household expenditure (HHE). OOP costs were derived from patient receipts collected throughout the study, and household expenditure data were obtained at baseline. BI was estimated as mean differences in costs between trial arms. ROI was estimated as the ratio of financial benefit to program cost. **RESULTS:** Median OOP costs decreased more rapidly among FNP participants than controls ($20 [₦30,000] vs $40 [₦60,000] at six months; $23 [₦30,000] reduction). The routine-care (RC) arm incurred approximately twice the median OOP cost of the FNP arm (Figure 1). FNP participants were less likely to experience FC than controls (OR 0.10; 95% CI 0.01–0.91; p = 0.04). No FNP participants discontinued treatment due to cost, compared with 15% of controls (p = 0.05). At the program level, total implementation—including navigator salaries and coaching—averaged $19,000 [₦29 million] over the 15-month period (≈ $9,500 per navigator), corresponding to an average cost of $214 [₦320,000] per patient. Downstream benefits yielded mean savings of $300 [₦456,000] per patient, producing a net benefit of $8,000 [₦12 million] and an ROI of 40%, with greater efficiency observed at the public than the private sites. **CONCLUSIONS:** The FNP represents a low-cost, feasible, and economically favorable strategy to reduce FT and improve TA to cancer care in LMICs. ROI estimates indicate modest short-term returns with a strong trajectory toward long-term value. These results support integrating FNPs into national cancer-control strategies to enhance financial protection, treatment continuity, and equity in resource-limited settings.

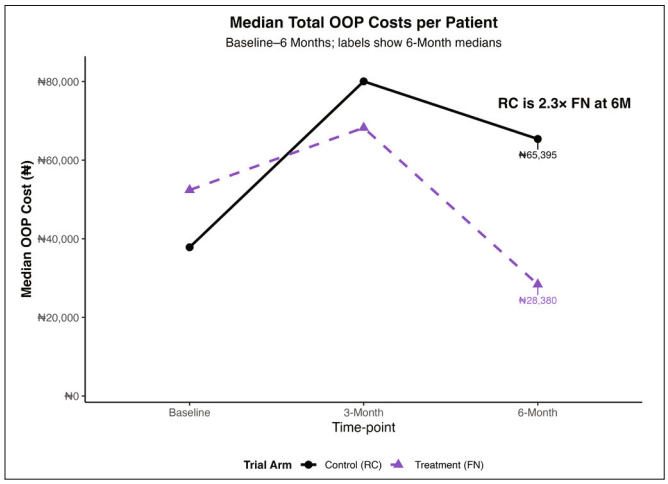

Figure. Medial Total OOP Costs per Patient

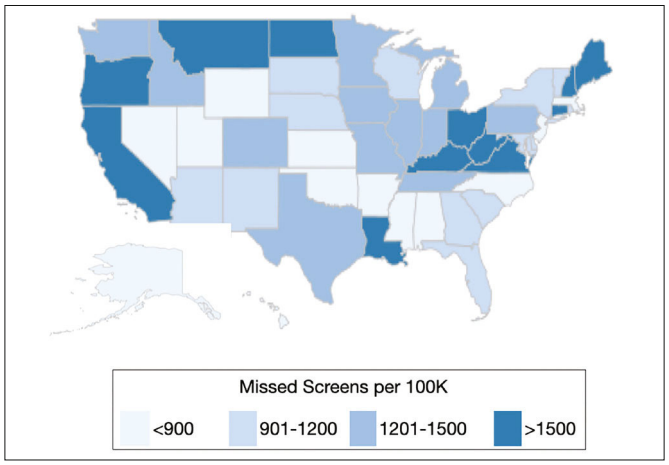

Figure. Estimated Missed Breast and Colorectal Cancer Screenings Attributable to Medicaid Coverage Loss, by State

BP12

One Big Beautiful Bill (HR1) Impact on Medicaid Enrollee Cancer Screening & Outcomes

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INTRODUCTION: The 2025 Budget Reconciliation Bill substantially reduces federal Medicaid funding via work requirements and more frequent recertification. These eligibility restrictions will disproportionately impact young and socially vulnerable enrollees served by the Medicaid program. **METHODS:** We built a monthly, state-level Medicaid panel of adult Medicaid enrollment from CMS Performance Indicators. For each state we defined baseline enrollment and identified the adult expansion share and treated remaining adults as non-expansion. We modeled two provisions. First, one-time work-requirement exits among expansion adults. Second, semiannual redetermination–induced churn implemented as an uplift to baseline monthly churn. We paired coverage losses with state-level BRFSS 2022 screening prevalences to estimate missed screenings among screen-eligible Medicaid adults. Missed screenings were converted to incident cancers using two-year risks, then mapped to stage shift and deaths using parameters drawn from CISNET modeling used by USPSTF and SEER calibration. **RESULTS:** Over the twoyears post-implementation, an estimated 7.5 million (95%CI 5-10.8 million) Medicaid adults eligible for breast or colorectal cancer screening will lose coverage. We estimate 401,862 (95%CI 320990–490856) missed mammograms and 600,719 (95%CI479863–733657) missed colorectal screening tests. Missed screening is projected to result in 1045 (95%CI 835–1276) undetected breast and 661 (95%CI 528–807) undetected colon cancers. Among these, 155 (95%CI 124–189) breast and 93(95%CI 74–114) colon cancers are estimated to present at an advanced stage rather than early through screening. We estimate 114 (95%CI 35-85) potentially avoidable cancer deaths. There was substantial variation across states in projected missed screenings and subsequent cancer-related outcomes. Rates of missed screenings per Medicaid enrollee were highest in Maine, California, and Oregon and lowest in North Carolina, Massachusetts, and Utah producing corresponding differences in excess late-stage cancers and deaths. **CONCLUSIONS:** Projected Medicaid coverage losses translate into substantial missed cancer screening resulting in more advanced disease diagnosis. National averages mask a greater than 10-fold variation across states, with steep shortfalls in some large states and smaller impacts where safety-net programs support uninsured screening. These findings highlight the scale of preventable morbidity and illustrate how national policy can result in costly health consequences.

BP13

Phase II Trial of Systemic Therapy Plus Intraperitoneal (IP) Paclitaxel (PTX) in Gastric/GEJ Cancer Peritoneal Carcinomatosis (GPC)- STOPGAP Trial

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INTRODUCTION: Peritoneal carcinomatosis (PC) is a common and deadly metastasis in gastric cancer. Systemic therapy alone may not adequately treat PC due to limited perfusion across peritoneum as result of blood-peritoneal barrier. Hence, combining intraperitoneal (IP) chemotherapy with systemic therapy is a viable alternate strategy to treat PC. We sought to evaluate the safety, feasibility, and preliminary efficacy of iterative normothermic IP PTX plus systemic therapy as consolidation strategy during first-line treatment. **METHODS:** STOPGAP is a single center, single arm, open label phase II trial. Patients (pts) with histology proven gastric/GEJ (Siewert 3) adenocarcinoma with peritoneal involvement and no evidence of visceral metastasis who had no evidence of disease progression after 3-6 months of systemic treatment were eligible. After diagnostic laparoscopy (diag lap), and IP port placement, pts were treated with IP PTX 40 mg/m2 plus IV PTX 50 mg/m2, leucovorin 20 mg/m2 and 5-fluorouracil 400 mg/m2 (bolus) on days1 and 8, every 21 days for 4 cycles. If indicated, anti-PD1 antibody +/- trastuzumab were continued as before enrollment. Pts without progression after 4 cycles underwent repeat diag lap. Pts with peritoneal cancer index (PCI) £10 were considered for cytoreduction (CRS) with heated IP chemotherapy (HIPEC). IP PTX was discontinued after CRS. The primary endpoints were safety and feasibility and 12-months progression free survival (PFS12); secondary endpoints included overall survival (OS) and patient- reported outcomes (EuroQol-5D-5L). **RESULTS:** Between May 2021 and July 2025, 31 pts were enrolled. Median age 50 years, M:F-15:16, median PCI=8 at enrollment (range 0-36); PCI 0 n=4,1-6 n=9, 7-14 n=10, >15 n=8. 98% of pts completed all 4 cycles of protocol treatment. Grade 3 AEs occurred in 15 pts (48.3%). The most common AEs were anemia (n=7; 21.9%), nausea (n=3; 9.4%) and neuropathy (n=3; 9.4%); 11/31(35.4%) pts underwent CRS (CC-0:100%). In CRS cohort, median PCI at enrollment was 6 (0-24) and at CRS was 1 (0-10). No pts had anastomotic leaks or 30-day readmissions. The PFS12 was 28% (95% CI 0.13:0.46). The median PFS and OS are shown in table. **CONCLUSIONS:** Iterative normothermic IP PTX plus systemic treatment in GPC is safe and feasible, with encouraging clinical efficacy and safety in historically poor risk patients. The ongoing Phase 2/3 EA2234 STOPGAP II randomized trial will investigate the OS benefit of this approach compared to systemic therapy alone.

Table: Median PFS and OS from Diagnosis and On Study (months (95% CI)

	Median PFS from diagnosis	Median PFS On study	Median OS from diagnosis	Median OS On study
All patients (n=31)	11.5 (8.3-14.8)	5.1 (3.4-8.1)	17.5 (12.6-19.3)	11.1 (7.7-12.9)
No CRS* (n=17)	8.3 (6.9-11.3)	3.4 (2.4-4.9)	13.9 (9.3-16.3)	7.7 (5.0-10.0)
CRS** (n=11)	22.2 (11.9-NA)	18.4 (7.9-NA)	38 (17.5- NA)	33.5 (11.7-NA)

*P<0.001 CRS vs. no CRS; **3 pts are awaiting CRS

BP14

A Phase 1 Dose Escalation and Expansion Trial to Evaluate the Safety and Efficacy of Mitomycin C (MMC) PIPAC + Second-line Systemic Chemotherapy for Unresectable Appendiceal and Colorectal Carcinomatosis

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INTRODUCTION: The efficacy of systemic therapy in unresectable peritoneal carcinomatosis (PC) from appendiceal or colorectal cancer is limited. Pressurized intraperitoneal aerosolized chemotherapy (PIPAC) is an optimized and minimally invasive way for repeated intra-peritoneal therapy. We aim to investigate the safety and efficacy of MMC-PIPAC with FOLFIRI. **METHODS:** In this US multicenter phase I study of MMC-PIPAC, patients ineligible for cytoreduction after ≥4 months of first- or second-line chemotherapy were included. MMC-PIPAC was given every 6 weeks (x3) and systemic FOLFIRI was given every 2 weeks except the week of PIPAC. Dose escalation was performed using a 3+3 design with 3 planned dose levels followed by dose expansion: DL1-7 (n=3), DL2-12.5 (n=13), and DL3-19 mg/m^2 (n=13). The primary endpoint was to evaluate safety and define the recommended phase 2/3 dose of MMC-PIPAC + FOLFIRI. Secondary outcomes were: Radiographic (RECIST criteria), Histologic (decline in peritoneal regression grading score), laparoscopic (decline in peritoneal carcinomatosis index (PCI)), biochemical (decline in CEA) responses, Progression-free survival (PFS), and overall survival (OS). **RESULTS:** 29 patients (16 M: 13 F) were enrolled with a median age of 60y (range 31-79y). Sixteen (55%) patients had appendiceal (non-low grade) and 13 had colorectal cancer. Average PCI was 26. Most (83%) completed two or more PIPAC treatments. Overall grade 3 adverse event (AE) rate was 38% (0% for DL1, 23% for DL2, and 61% for DL3). One patient on DL3 had a dose-limiting toxicity (small bowel obstruction) and another had grade 4 AE (delayed small bowel perforation). Other grade 3 AEs included thrombocytopenia, anemia, abdominal pain and surgical site infection. Maximum tolerated dose was not reached. PK studies demonstrated a 116-fold higher intraperitoneal MMC exposure. RECIST response was: 1- complete, 2 - partial, 16 – stable, 3 - disease progression, 7 - unassessed. PCI decreased in 76% of patients. (average decline of 51%). Histologic response was evaluable in 28 patients of which 22 (79%) had regression with complete response in 9 (32%). CEA declined in 24/29 (83%) of patients with a median maximum reduction of 50%. Median PFS and OS were 6.9 months (95% CI 5.5, 13.3) and 13.3 months (95% CI 7.3, 20.9), respectively. **CONCLUSIONS:** MMC-PIPAC+ FOLFIRI is safe and demonstrates promising early efficacy. DL2 showed fewer severe toxicities and higher completion rates than DL3; thus, MMC DL2 (12.5 mg/m²) was selected for the phase 3 IMPACT trial.

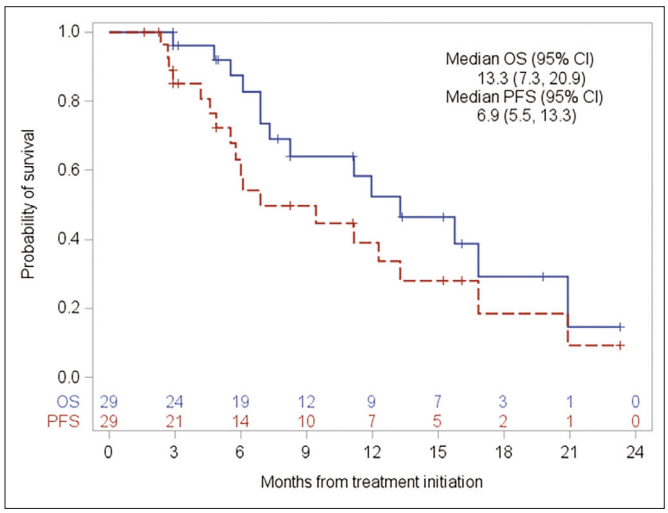

Figure. Overall and Progression Free Survival

BP15

Efficacy of a CEA-targeted antibody-dye conjugate (M5A-IR700) for near-infrared photoimmunotherapy of colorectal cancers

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INTRODUCTION: Near-infrared photoimmunotherapy (NIR-PIT) is a novel cancer treatment that combines monoclonal antibody specificity with light-activated cytotoxicity. This approach uses IR700Dx, a phthalocyanine photo-absorber dye conjugated to tumor antigen–specific antibodies, to selectively kill cancer cells upon NIR light exposure. The mechanism involves cell membrane disruption, leading to death and release of cellular contents into the microenvironment. The present study evaluates the efficacy of a CEA-targeted antibody-dye conjugate (M5A-IR700) to induce colon cancer cell death in vitro and in vivo. **METHODS:** Humanized anti-CEA antibody (M5A) was conjugated to NIR-activatable IRDye700DX (M5A-700). To confirm the specific binding, the CEA expressing human colon cancer cell line (LS174T) and CEA expressing murine colon cancer cell line (MC38) were incubated with M5A-IR700 and analyzed with flow cytometry. In vitro cytotoxicity and immunogenic cell death (ICD) upon exposure to NIR light were assessed via MTS, ATP, and HMGB1 release assays. In vivo efficacy was tested in athymic nude bearing subcutaneous LS174T tumors and C57BL/6J CEA-Tg mice bearing subcutaneous MC38 tumors. Treatment conditions: (1) M5A-IR700 intravenous only (75 ug), (2) M5A-IR700 + laser (24h post injection 150 mW/cm², 30 min), and (3) saline control. **RESULTS:** In vitro, M5A-IR700 showed specific binding and light/dose-dependent cytotoxicity, with increased extracellular ATP and HMGB1. In vivo, the antitumor effects of NIR-PIT were confirmed by significant reductions in tumor volume. In athymic nude mice, PIT treatment

had significantly delayed tumor growth at day 16 after treatment ($p< 0.01$). In immunocompetent CEA-Tg mice, phototherapy significantly suppressed tumors compared to other groups ($p< 0.05$). Two mice achieved complete tumor regression with no recurrence after rechallenge. **CONCLUSIONS:** CEA-targeted NIR-PIT using M5A-IR700 effectively induced tumor-selective immunogenic cell death in vitro and in vivo. Our results showed that treatment resulted in significant tumor volume reduction and prolonged survival in both immunocompromised and immunocompetent mice, with complete tumor regression observed in select cases. These findings highlight M5A-IR700–mediated NIR-PIT as a promising targeted therapeutic approach for further development in CEA positive colorectal cancers.

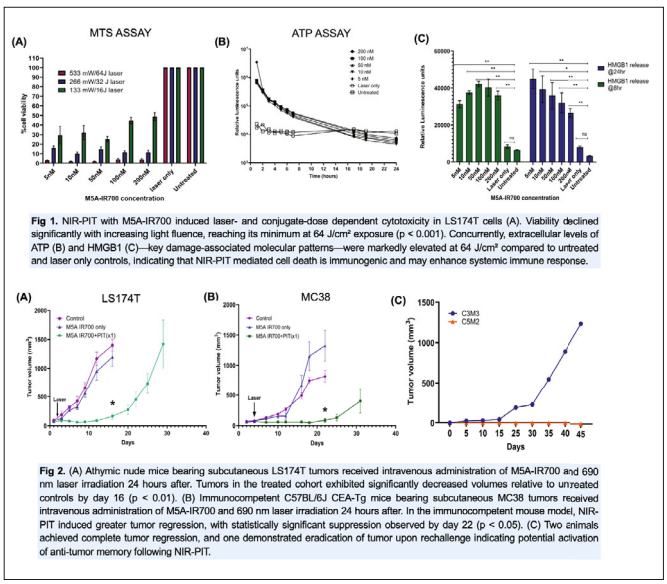

Figure. SSO 2026 Persuasive Data

BP16

Establishing Clinical Correlation of Patient-derived Tumor Organoids for HIPEC: Long-term Outcomes in Peritoneal Surface Malignancies

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INTRODUCTION: Patient-derived tumor organoids (PTOs) have been utilized to study the effects of HIPEC in patients with peritoneal surface malignancies (PSM). Here we evaluate the long-term clinical correlation of PTO drug screen data in PSM. **METHODS:** After IRB approval, tumor samples were obtained from patients with appendiceal, colon (CRC), and peritoneal mesothelioma (PM) cancers with peritoneal dissemination undergoing CRS/HIPEC. PTOs were biofabricated with a collagen-based hydrogel, then treated in an *in-vitro* HIPEC system with mitomycin C (MMC), oxaliplatin (Ox), and/or cisplatin. Post-treatment viability determined through ATP analysis. Matched PTO responses are defined as instances when the clinically utilized HIPEC drug demonstrated a significant treatment response in the matched PTO. **RESULTS:** From June 2019 - June 2022, 108 tumor specimens were collected from 76 patients who underwent CRS/HIPEC for low grade appendiceal (LGA) (40/108, 37%), high grade appendiceal cancer (29/108, 26.8%), CRC (23/108, 21.3%), and PM (16/108, 14.8%). Successful PTO studies were conducted in 97/108 specimens (89.8%). Median follow-up was 34.4 months. Thirty-nine patients demonstrated matched PTO responses, while 17 demonstrated non-matched responses. Patients with matched PTO responses were observed to have longer median overall survival (OS; 48.5 months vs. 35.9 months, [HR 1.342, 95% CI 0.6721 to 2.682]). LGA matched responses had improved progression free (21.6 months vs. 12.6 months [HR 1.45, 95% CI 0.3473 to 6.049]) and OS (59.0 months vs. 44.6 months, [HR 2.0, 95% CI 0.4027 to 10.35]). The average post-treatment viability was significantly lower (more cell killing) in matched PTO responses compared to non-matched responses for appendiceal (MMC 30.5% vs. 57.9%, $p< 0.001$; Ox 33.6% vs. 63.1%, $p< 0.0001$) and CRC (MMC 23.4% vs. 64.7%, $p< 0.0001$; Ox 24.5% vs. 62.8%, $p< 0.01$) PTOs. **CONCLUSIONS:** Assessing PTO viability responses may help guide perfusion selection parameters and maximize survival benefit in PSM. Longer follow up may be needed to identify survival differences.

BP17

The YAP1-IGFBP2 axis as a potential predictive marker and therapeutic target in gastric cancer tumorigenesis and metastasis

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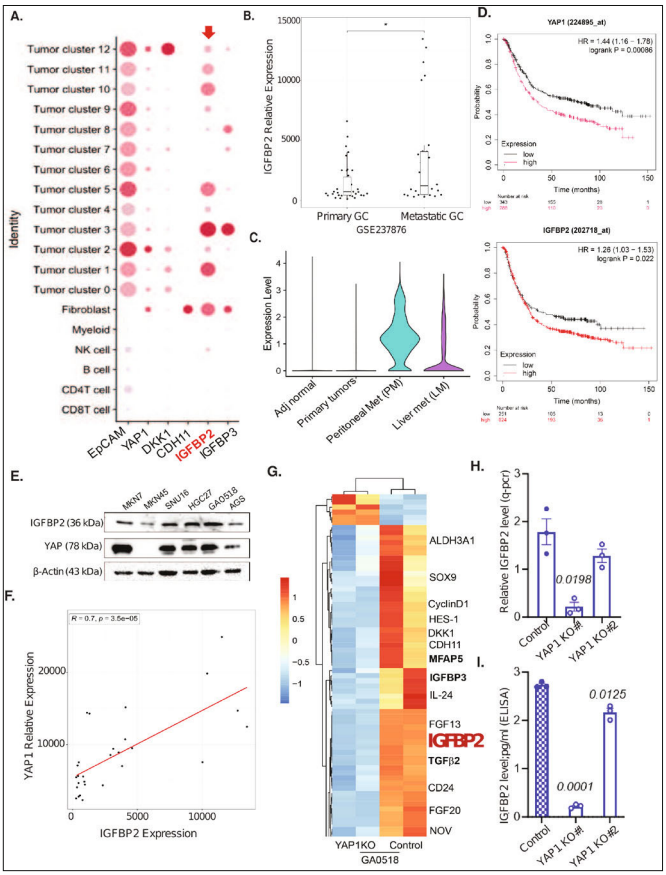
INTRODUCTION: Gastric cancer (GC) with peritoneal metastasis (PM) carries a dismal prognosis, with a reported five-year survival rate of just 5%. Insulin-like growth factor binding protein 2 (IGFBP2) has emerged as a key regulator in various malignancies, influencing tumor proliferation, invasion, and metastasis through modulation of IGF-dependent and independent pathways. However, its specific role in GC tumorigenesis and PM remains unclear. **METHODS:** Single-cell RNA sequencing (scRNA-seq) was performed on GC primary tumors, matched normal tissues, and PM to map IGFBP2 expression across cellular compartments. RNA sequencing of Yes-associated protein 1 (YAP1) knockout (KO) vs control GC cell lines, followed by quantitative PCR (Qpcr) and enzyme-linked immunosorbent assay (ELISA), was used to evaluate YAP1-dependent regulation of IGFBP2 transcription and secretion. Functional assays, including migration and invasion analyses, were conducted in IGFBP2-manipulated cell lines. **RESULTS:** scRNA-seq analysis revealed that both YAP1 and IGFBP2 are highly enriched in PM of GC compared to primary and normal gastric tissues, and their elevated expression is associated with poor prognosis, suggesting a role in metastatic adaptation. Among nine GC cell lines, AGS, GA0518, SNU16, HGC27, and MKN7 cells had high expression of both IGFBP2 and YAP1 protein levels as assessed by western blot. RNAseq analysis from YAP1 KO vs control cells revealed that IGFBP2 expression is significantly downregulated upon YAP1 loss, implicating YAP1 as a critical upstream regulator. Consistently, Qpcr and ELISA confirmed that both IGFBP2 Mrna and secreted protein levels were markedly reduced in YAP1 KO cells. Functionally, recombinant IGFBP2 (Rigfbp2) restored the invasive capacity suppressed in YAP1 KO patient-derived GC PM GA0518 cells. **CONCLUSIONS:** Our findings identify IGFBP2 as a YAP1-regulated oncogenic driver that promotes GC tumorigenesis and PM. Elevated IGFBP2 could serve as both a predictive and prognostic biomarker and represents a promising therapeutic target in patients with GC with PM.



A. ScRNA-seq analysis of ascites samples from 20 GC patients demonstrates that IGFBP2 is highly expressed in most tumor cell clusters and fibroblasts; B. Relative IGFBP2 expression is significantly higher in metastatic GC compared to primary GC, as shown in the public dataset GSE237876; C. ScRNAseq analysis of GC patient samples, including adjacent normal tissue, primary GC, PM, and liver metastases revealed that IGFBP2 is highly enriched in PM samples; D. High IGFBP2 expression in 875 GC samples and high YAP1 expression in 631 GC samples are each significantly associated with poor survival (kmplot.com/analysis); E. Western blot analysis showed IGFBP2 expression in multiple GC cell lines, with beta-actin used as an internal control; F. A positive correlation of IGFBP2 and YAP1 expression was further confirmed in a GC dataset (GSE237876; R=0.7, p=3.5e-05); G. RNAseq analysis of GA0518 cells with YAP1 KO vs control demonstrated downregulation of IGFBP2 upon YAP1 KO; H. Qpcr further confirmed decreased IGFBP2 Mrna levels following YAP1 KO; I. Secretion of IGFBP2 was significantly reduced upon YAP1 KO in two different clones.

BP18

PTPR alterations define an immune-activated gastric cancer with enhanced ICB sensitivity

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INTRODUCTION: Despite the broad success of immune checkpoint blockade (ICB) in solid tumors, gastric cancer demonstrates comparatively lower response rates. Mutations in receptor-type protein tyrosine phosphatase (PTPR) genes have been associated with ICB-sensitivity in other malignancies, though their significance in gastric cancer is unknown. This study evaluates the immune-oncologic significance of PTPR alterations in gastric cancer. **METHODS:** Patients who underwent resection of gastric cancer were identified in a prospectively maintained database at our institution. Patients with tumor sequencing data were stratified by PTPR status, such that tumors with any alteration in PTPRD, PTPRS, or PTPRT were considered PTPR-altered. A subset of patients with single-cell RNA sequencing (scRNA-seq) of tumor and lymph node tissue were evaluated to characterize the immune environment of PTPR-altered tumors. The clinical significance of PTPR alterations was then evaluated in a post-hoc analysis of the CheckMate 649 trial – a phase III randomized controlled trial of patients with metastatic gastric cancer treated with chemotherapy ± ICB. **RESULTS:** Among the 393 patients in our institutional cohort, 72 patients (18%) were PTPR-altered. PTPR-altered tumors were more-often microsatellite instability-high and had higher PD-L1 combined positive score (CPS) (19.6 vs. 4.7; $p < 0.001$). Among microsatellite stable tumors, CPS remained higher in PTPR-altered tumors than PTPR-wild-type (wt) tumors (11.6 vs. 4.1; $p = 0.015$). Nineteen patients with scRNA-seq data were stratified by PTPR status (9 PTPR-altered vs. 10 PTPR-wt). PTPR-altered tumors had greater abundance of cytotoxic CD8+ T cells and exhausted CD8+ T cells. In a biomarker analysis of patients in the CheckMate 649 trial, 57 of 275 sequenced tumors (21%) had identified PTPR alterations. The addition of ICB to chemotherapy improved survival in PTPR-altered tumors (overall survival (OS): HR = 0.48 (95% CI, 0.27–0.88); $p = 0.017$; progression-free survival (PFS): HR = 0.49 (95% CI, 0.26–0.91); $p = 0.024$) but did not improve survival in PTPR-wt tumors (OS: HR = 0.86 (95% CI, 0.64–1.15); $p = 0.298$; PFS: HR = 0.90 (95% CI, 0.67–1.21); $p = 0.490$). **CONCLUSIONS:** We identify PTPR alterations as a novel predictor of immune sensitivity in gastric cancer. PTPR-altered tumors demonstrated significantly higher PD-L1 CPS and distinct T cell profiles consistent with enhanced immune activation. The clinical relevance of these findings was validated in a randomized prospective trial cohort, where patients with PTPR-altered tumors derived greater survival benefit from ICB therapy.

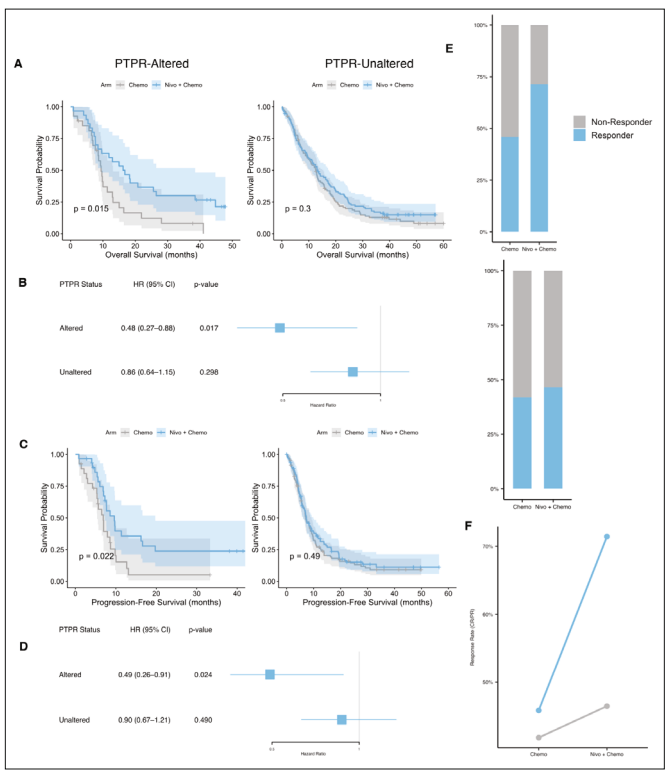

Figure. Survival outcomes with and without nivolumab by PTPR status

BP19

Dioxin exposure accelerates gastric cancer growth through arylhydrocarbon receptor-driven CCR5-mediated T regulatory cell recruitment

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INTRODUCTION: Dioxins are toxic, persistent environmental pollutants that activate the aryl hydrocarbon receptor (AhR) signaling pathway and promote soft-tissue sarcomas and lymphomas. Humans are exposed to dioxins through cigarette smoke, contaminated animal products, and industrial byproducts. Previous studies have shown that dioxins induce chemokine production through AhR activation, contributing to immune dysregulation. However, how dioxins affect gastric cancer progression remains unclear. **METHODS:** Primary gastric cancer cell lines were generated from transgenic mice on a C57BL/6 background with parietal cell-specific deletion of *Trp53, Cdh1, and Arid1a.* Cell proliferation was assessed using live-cell imaging after treatment with 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), a potent AhR agonist. Cells were allografted into 7-week-old C57BL/6 mice following two weeks of TCDD exposure. Tumor volumes were measured three times per week, and tumor weights recorded 28 days post-implantation. *CYP1A1* expression, an AhR activation marker, was measured via quantitative PCR. Single-cell RNA sequencing was performed on dissociated tumors. **RESULTS:** TCDD exposure did not affect *in vitro* gastric cancer cell proliferation. However, tumor-bearing mice treated with TCDD developed significantly larger (948 mm^3 vs. 334 mm^3, $P < 0.0001$, **Fig. 1A**) and heavier (375 mg vs. 90 mg, $P < 0.001$) tumors with higher *CYP1A1* expression (55 AU vs 1 AU, $P < 0.01$). No metastases were observed in controls, whereas 8% of low-dose and 27% of high-dose TCDD-treated mice developed metastases ($P < 0.0001$, **Fig. 1B**). Single-cell RNA sequencing revealed AhR-driven transcriptional reprogramming of the tumor immune microenvironment toward immune suppression (**Fig. 1C**). TCDD-treated tumors showed expansion of activated regulatory T cells (Treg; *Foxp3*$^+$*Il2ra*$^+$*Icos*$^+$*Tnfrsf4*$^+$*Ctla4*$^+$, 46% vs. 20%) that highly expressed *CCR5* ($P < 0.0001$, **Fig 1D**). This expansion was accompanied by increased tumor-associated macrophages (*CD68*$^+$*Adgre1*$^+$*Csf1r*$^+$, 22% vs. 19%) and exhausted CD8$^+$ T cells (*Pdcd1*$^+$*Lag3*$^+$*Tigit*$^+$, 22% vs. 5%). **CONCLUSIONS:** Dioxins promote gastric cancer progression and development of an immunosuppressive tumor microenvironment characterized by expansion of *CCR5*$^+$Tregs, tumor-associated macrophages, and exhausted CD8$^+$ T cells. Our findings point to a potential AhR–CCR5–Treg axis as a key driver of immune evasion and tumor progression, thus implicating AhR inhibition as a potential therapeutic target.

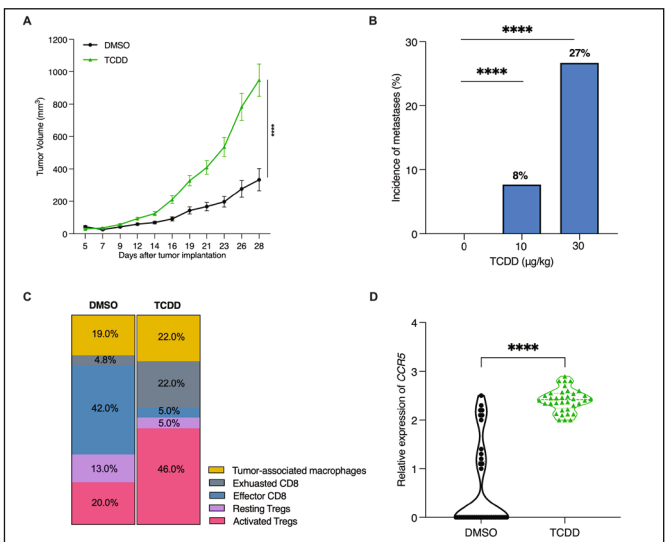

Figure 1 TCDD caused increased gastric cancer growth via AhR-mediated immune reprogramming. **(A)** Mean tumor volume (mm^3) ± SEM **(B)** Incidence of metastases in TCDD-treated mice **(C)** Relative proportions of immune cell types from single cell RNA sequencing. **(D)** *CCR5* expression in Tregs in TCDD-treated tumors. **** $P < 0.0001$.

BP20

Perioperative and volume-based outcomes for hepatic arterial infusion (HAI) pump chemotherapy: a multicenter analysis from the international HAI Consortium Research Network

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INTRODUCTION: HAI chemotherapy is increasingly used for colorectal liver metastases (CRLM) and intrahepatic cholangiocarcinoma (ICC). Outcomes from high-volume centers have been reported, but real-world data are limited. The HAI Consortium Research Network (HCRN) established an international registry to enable multicenter analysis. This study evaluated perioperative and volume-based outcomes in patients treated with HAI. **METHODS:** The HCRN registry (2000–2024) was retrospectively reviewed. Demographics, clinical features, and perioperative outcomes were analyzed. Change-point analysis using polynomial regression identified thresholds in annual center volume associated with HAI-specific complication risk. Chi-square tests compared unadjusted complication rates across center- and surgeon-volume groups, and multivariable logistic regression estimated adjusted odds of postoperative complications. **RESULTS:** 1,480 patients underwent pump placement at 36 centers (median 6 cases/yr [1–43]). 1,375 (93%) had CRLM (957 (70%) unresectable; 418 (30%) adjuvant) and 105 (7%) ICC. Median time from diagnosis to HAI pump placement was 9 months; 94% had prior chemotherapy. Open implantation occurred in 81%; the gastroduodenal artery was cannulated in 99% and 28% required variant arterial ligation. Concomitant procedures included colorectal resection (36%), minor hepatectomy (34%), major hepatectomy (12%), and ablation (25%). Median length of stay was 5 days (IQR 4-7). HAI-specific complications occurred in 460 patients (33%): 17% pocket (5% infection), 3% arterial (1% pseudoaneurysm), and 3% perfusion complications. Floxuridine (FUDR) was administered in 97% of patients. Biliary sclerosis occurred in 7%. 90-day non-HAI morbidity was 9%, reintervention 10% and mortality 2%. Complication risk declined with increasing volume. A threshold of 8 cases/yr defined low (< 8) vs high (≥8) volume centers (Figure). High-volume centers had 32% lower odds of complications (OR 0.68, 95% CI 0.50–0.92, p=0.01); high-volume surgeons showed similar benefit (OR 0.68, 95% CI 0.53–0.87, p=0.003). **CONCLUSIONS:** In the largest multicenter analysis of perioperative HAI outcomes, pumps were mainly performed via laparotomy for unresectable CRLM. The risk of complications was decreased when centers and surgeons performed ≥8 cases annually. As use of HAI expands, balancing accessibility with regionalized expertise is essential.

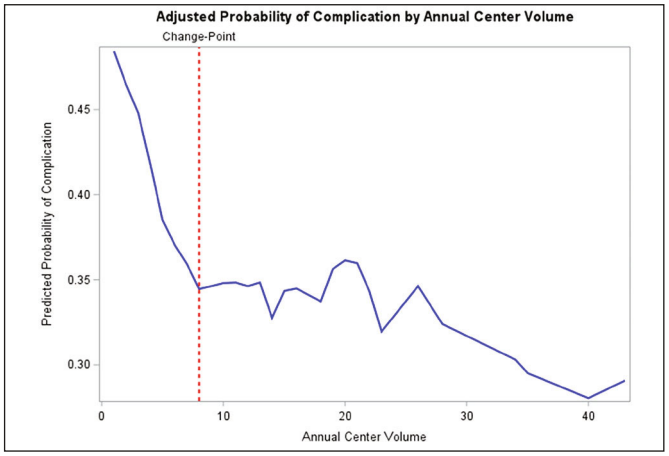

Figure. Adjusted HAI related complication rates per annual center volume

BP21

Myeloid-Stromal IL1RAP as a Therapeutic Vulnerability in Pancreatic Cancer: Rationale for a Neoadjuvant Chemoimmunotherapy Clinical Trial

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) remains highly resistant to chemo- and immuno-therapy due to a tumor microenvironment (TME) dominated by myeloid-stromal immunosuppressive circuitries and T-cell dysfunction. Key mediators are interleukin-1 (IL-1) family cytokines, which converge on IL-1 receptor accessory protein (IL1RAP). We hypothesized that IL1RAP expressing myeloid-stromal networks sustain a therapeutic barrier in PDAC, and that disrupting this via IL1RAP inhibition could enhance chemoimmunotherapy efficacy. **METHODS:** PDAC samples from the Human Tumor Atlas Network (HTAN) were stratified by *IL1RAP* expression. Post hoc analysis of CANFOUR trial (NCT03267316), in which advanced PDAC patients were treated with the anti-IL1RAP antibody nadunolimab (Nadu) and gemcitabine+nab-paclitaxel (GnP), was performed. Preclinical studies, including scRNAseq and flow cytometry were conducted in IL1RAP^{hi} Ptf1a$^{Cre/+}$;LSL-KrasG12D;Tgfbr2$^{fl/fl}$ (PKT) mice treated with murine nadunolimab (mNadu). Combination mNadu, GnP, and anti-PD1 therapy was tested in survival studies. **RESULTS:** In HTAN, *IL1RAP* was enriched in chemotherapy resistant samples, predominantly in myeloid and stromal transcriptomes. Stratification of specimens from CANFOUR trial revealed correlation between high stromal (p=0.006) and myeloid (p=0.014) IL1RAP expression and prolonged duration of response with Nadu+GnP treatment. In PKT mice, mNadu reduced tumor volume (p=0.019) and stromal fibrosis. Flow cytometry showed reduced myeloid cell (p=0.008) and increased T-cell (p=0.003) abundance, which were corroborated in paired human biopsies pre/post Nadu treatment, showing diminished myeloid cell infiltration and expansion of T-cells. scRNAseq in PKT tumors revealed reprogramming in myeloid (↑antigen presentation, Type I IFN response; ↓IL-1/TNF signaling) and T-cell (↑activation/memory, TCR engagement; ↓regulatory/exhausted states) transcriptomes. Phenotypic skewing toward memory progenitor memory CD8+ subsets (Ly108+CD69+/-) supported enhanced immune responsiveness. Triple therapy (mNadu+GnP+anti-PD1) significantly prolonged survival vs controls (p< 0.001). **CONCLUSIONS:** IL1RAP expressing myeloid-stromal networks may represent a distinct therapeutic barrier in PDAC, which can be disrupted pharmacologically to invigorate immunotherapy-permissive CD8$^+$ T-cell pools and improve chemoimmunotherapy sensitivity. These findings support an upcoming neoadjuvant trial combining Nadu with GnP/anti-PD1 in patients with operable PDAC.

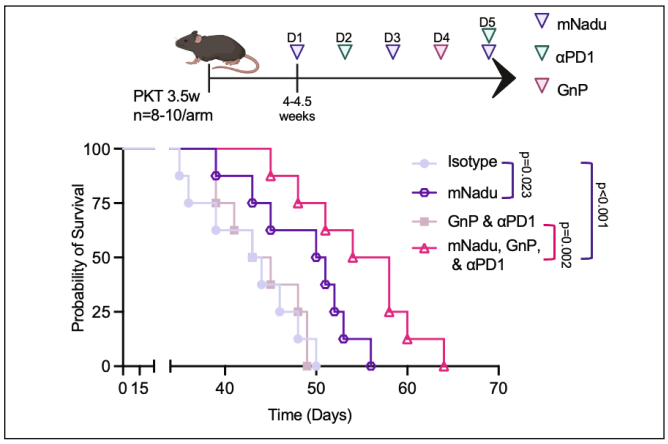

Figure. Treatment schema and Kaplan–Meier survival analysis of PKT cohorts treated with isotype control, mNadu monotherapy, GnP plus anti-PD1, or mNadu combined with GnP plus anti-PD1 (n=8 mice/group).

BP22

Landscape of molecular subtypes in metastatic pancreatic cancer

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is a highly lethal cancer, with most patients diagnosed at advanced stages and facing limited treatment options. Although PDAC frequently metastasizes to multiple organs, patients with lung-only metastases consistently demonstrate better overall survival (OS) than those with liver-only metastases. The molecular underpinnings of these survival differences remain unclear. **METHODS:** Retrospective analysis of PDAC patients treated with neoadjuvant therapy and surgical resection at a single institution was performed. RNA sequencing was performed on primary tumors as well as matched metastatic biopsies when available. Additional data from three public datasets were integrated into paired analysis. Molecular subtyping was performed using PurIST, a single-sample classifier for PDAC subtyping. **RESULTS:** Among 144 patients, 54 (38%) did not develop documented progression. Metastatic progression included liver-only (23; 16%), lung-only (20; 14%), peritoneum-only (15; 10%), other sites (8; 5%), and multifocal (24; 17%). Patients with lung-only metastases had significantly longer median OS (51 months; 95% CI, 38-66) than those with liver-only (20 months; 95% CI, 17-24), peritoneum-only (28 months; 95% CI, 25-33), or multifocal (20 months; 95% CI, 17-25) metastases (log-rank $P <$ 0.0001). Notably, lung metastases were transcriptionally more classical than their matched primaries (paired Wilcoxon $P = 0.0313$), while liver metastases exhibited no consistent shift. Gene set enrichment analysis further revealed that lung metastases were positively enriched for epithelial differentiation programs and negatively enriched for mesenchymal and neuronal pathways. **CONCLUSIONS:** These findings suggest that the lung microenvironment may favor more classical and differentiated transcriptional programs in metastatic PDAC, potentially contributing to the observed survival advantage.

BP23

Assessment of Tumor Infiltrating Lymphocyte therapy for metastatic epithelial cancers using Patient Derived Tumor Organoids

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INTRODUCTION: Adoptive cell transfer of neoantigen specific tumor infiltrating lymphocytes (TIL) has the ability to mediate responses in patients with metastatic epithelial cancers. While some identified factors are associated with response, there is a need for ways to determine which patients will benefit from treatment with TIL. Patient derived tumor organoids (PDTO) retain the genetic makeup of the tumor from which they are derived and are a useful tool in personalized medicine to test the effectiveness of anti-cancer therapies. While organoids have been used to assess CAR-T cells and immune checkpoint inhibitors, their use in TIL therapy has been less explored. Organoids are an ideal *ex vivo* reagent as they retain tumor-specific antigen processing and presentation. We therefore examined whether organoid reactivity could predict clinical response after TIL therapy. **METHODS:** Tumor organoids and TIL were grown from patients with metastatic epithelial cancers treated on a TIL protocol from June 2022 to January 2025. Cocultures of autologous PDTO and CD8+ enriched TIL infusion products were performed. Reactivity of TIL was analyzed by interferon gamma secretion as measured by ELISpot and 4-1BB upregulation measured by flow cytometry. Positive recognition of PDTO by TIL was defined as 4-1BB% more than double background and greater than 3%. Patient clinical response was measured using Response Evaluation Criteria in Solid Tumors 1.0. **RESULTS:** Final TIL infusion products from thirty treated patients were tested against their PDTO. The most common histologies were colorectal (21 patients, 70%), pancreatic (4 patients, 13%), and breast (2 patients, 7%) cancer. Of 15 patients whose infusion product showed organoid recognition, 8 achieved objective responses (53%) while only one patient without organoid recognition responded (7%; p=0.014). The median 4-1BB expression after coculture from responders and non-responders were 10.9% and 1.4%, respectively (p=0.0377). Patients with organoid reactive TIL were more likely to exhibit tumor shrinkage after treatment (Figure 1). **CONCLUSIONS:** In vitro TIL reactivity against autologous tumor organoid appears to be associated with objective clinical response in patients with metastatic epithelial cancers. Despite only accounting for CD8+ reactivities, there was still a strong correlation between organoid recognition and clinical response. Organoids have the potential to be a valuable pre-clinical reagent to test adoptive cell therapy efficacy and further study T-cell mediated tumor rejection.

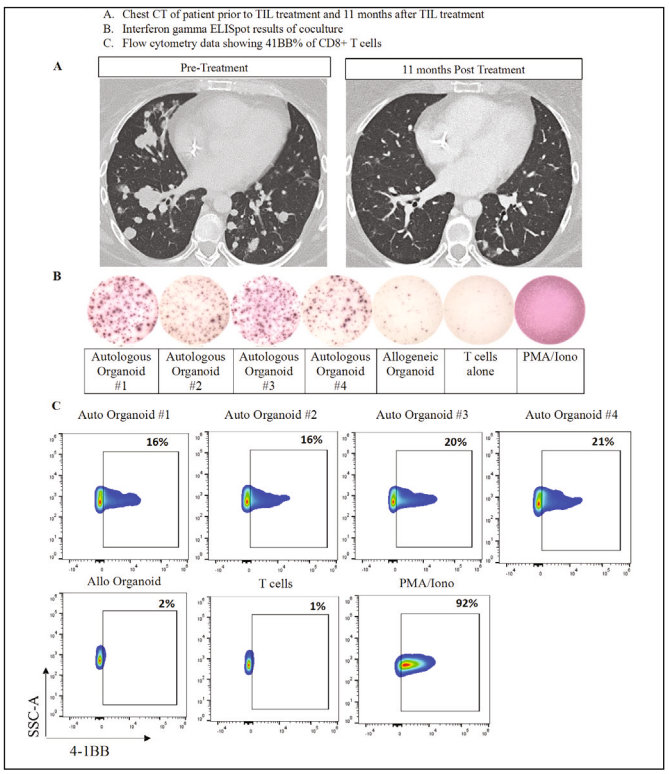

Figure. Example of autologous organoid reactive TIL co-culture and corresponding patient scans

BP24

Improved overall survival in patients who receive radiation before simultaneous resection of rectal cancer and liver metastases: a comprehensive cancer center analysis

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INTRODUCTION: In locally advanced rectal cancer, neoadjuvant systemic chemotherapy and pelvic radiation (nRT) is the standard of care. However, the role of nRT in the management of rectal cancer in patients with synchronous resectable liver metastases (RCLM) is controversial, particularly prior to simultaneous hepatic and rectal resection. This study examines the utilization and outcomes of nRT prior to simultaneous resection of RCLM. **METHODS:** A single-center, retrospective analysis of patients who underwent curative-intent, simultaneous total mesorectal excision and hepatectomy for RCLM was conducted (January 2011 - May 2024). Patients who received nRT were compared to those who did not. Demographics, postoperative courses, and oncologic outcomes were analyzed and reported. **RESULTS:** Ninety-two patients in total were analyzed. Median age was 55 (IQR 47-63) and 37 patients (40%) were female. Median Clinical Risk Score was 4 (IQR 3-4) and number of liver metastases were 4 (IQR 2-6). Median number of chemotherapy cycles was 6 (IQR 3-10). 88% of patients received a low anterior resection (LAR) (n=81). 49% of patients received pelvic radiation. Of those who received radiation, half received chemoradiation (long-course) and half received radiation only (short-course). Patients who received radiation had cancers that were closer to the anal verge (8 v 13cm, $p< 0.001$) and received abdominoperineal resection (APR)'s at a higher rate (19 v 4%, $p=0.03$). Patients who received nRT had longer median overall survival compared to those who did not (111.2m v 41.8m, $p=0.04$) and were associated with lower odds of mortality on univariate analysis (OR 0.48, 95% CI 0.24 – 0.97) and multivariate analysis (**Figure 1**) (HR 0.44, 95% CI 0.21 – 0.96). When patients receiving radiation were grouped into cohorts receiving long-course versus short-course radiation, long-course radiation was associated with higher overall survival on multivariate analysis (HR 0.35, 95% CI 0.13 – 0.95). No difference was seen in rate of complications (Clavien-Dindo ≥3+) or anastomotic leaks in patients receiving radiation versus not. No difference was seen between the two groups in rate of positive margins or of pelvic recurrence. **CONCLUSIONS:** nRT, most frequently used prior to simultaneous resection of RCLM with distal rectal cancers, was associated with improved overall survival. Use of long-course radiation may result in better survival when compared with short-course. These findings argue for nRT in patients with synchronous resectable liver metastases from rectal cancer.

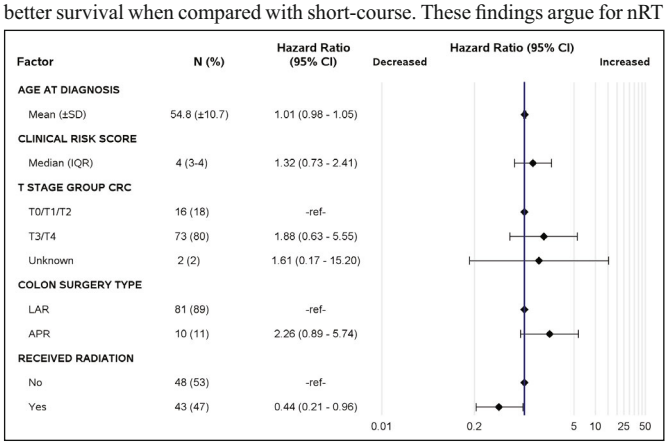

Figure 1. Multivariate analysis of overall survival for patients with simultaneous resection of synchronous rectal cancer liver metastases

ABSTRACTS

PODIUM ABSTRACTS

SSO 2026 ANNUAL MEETING

Society of Surgical Oncology

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LBA 1

Long-term outcomes following prophylactic total gastrectomy for Lobular Breast and Diffuse Gastric Cancer Syndrome

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INTRODUCTION: Prophylactic total gastrectomy (PTG) remains a standard-of-care treatment option for patients with pathogenic CDH1 alterations. Rates of gastric cancer in these patients are lower than previously thought, and data supporting close endoscopic surveillance has increased. While short-term outcomes of PTG are well described, more information is needed about long-term outcomes and life after PTG to support shared decision making. **METHODS:** We created an online voluntary survey to be completed by patients who have undergone PTG for pathogenic CDH1 alteration or Diffuse Gastric and Lobular Breast Cancer Syndrome (DGLBCS) that encompasses health-related, social, and personal questions. They survey was distributed by a patient advocacy group for DGLBCS. The survey was completely anonymous. **RESULTS:** 74 participants completed the online survey and reported that they had undergone PTG for a documented pathogenic alteration of the CDH1 gene (n=72) or with clinical criteria for DGLBCS (n=2). 67 participants (91%) were female and 71 (96%) were white. The median age at PTG was 44 years (range 18-67). The median time from PTG to survey completion was 5.0 years (range 0.5-19.0). 72 (97%) reported ability to maintain their weight with oral intake only. Long-term medical and psychosocial outcomes are summarized in the Table. Notably, 15 participants (20%) have a continuous glucose monitor, while another 35 (47%) have considered obtaining one. 58 participants (78%) report chronic gastrointestinal symptoms, mostly commonly dumping. 33 participants (45%) reported a psychiatric diagnosis, most commonly anxiety or depression. 50 patients (68%) reported regular alcohol consumption. Of the 67 female participants, 43 (64%) have been pregnant and 4 (6%) are considering pregnancy. 7 female participants (10%) reported pregnancy after PTG. 14 participants (19%) reported additional cancer diagnoses besides gastric or lobular breast after PTG. **CONCLUSIONS:** In this cohort of predominantly female patients who have undergone PTG for DGLBCS, nearly 80% of patients report chronic GI symptoms after initial recovery from surgery, most commonly dumping syndrome. >60% of patients have or are considering use of a continuous glucose monitor. Anxiety and depression are common over the long-term, and pregnancy is possible after PTG. These data will help to inform shared decision making about PTG or endoscopic surveillance, which is critically important for patients with pathogenic CDH1 alterations.

P1

Oncological and surgical outcomes of risk reducing nipple sparing mastectomy in germline pathogenic variant carriers

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INTRODUCTION: Nipple-sparing mastectomy (NSM) is increasingly used for risk reduction in women with germline pathogenic variants (PVs). While the oncologic safety of risk-reducing mastectomy is established in BRCA1/2 carriers, evidence for NSM and for other high- or moderate-penetrance PVs remains limited. This study evaluated the incidence of new breast cancer, cosmetic outcomes, and surgical complications after risk-reducing NSM in PV carriers. **METHODS:** A multicenter retrospective cohort from 12 institutions of women undergoing bilateral (BRRM) or contralateral (CRRM) risk-reducing NSM from 2008–2025 was analyzed. Patients with breast cancer detected at NSM were excluded. Crude rates of new breast cancer and complications were reported. Cosmetic outcomes were assessed using the Harvard four-point scale. Risk factors for complications were assessed by univariable (UVA) and multivariable (MVA) logistic regression. **RESULTS:** Among 524 patients (743 mastectomies; 219 BRRM, 305 CRRM), 46.0% carried BRCA1, 25.4% BRCA2, and 15.1% TP53 PVs. Median age was 40 years. At a median follow-up of 41.2 months (IQR 13.1-60.3), three patients (0.6%) developed breast cancer: one nodal recurrence post-BRRM, and two flap recurrences post-CRRM (BRCA1 [n=2] and BRCA2 [n=1]). Breast cancer-related death occurred in three patients (0.6%), all following CRRM. Cosmetic outcomes were favorable, with 90% rated as excellent or good. Surgical complications occurred in 101 patients (19.3%), more frequently after CRRM (24.6%) than BRRM (11.9%) (p< .001). On UVA, complications in BRRM were associated with obesity (OR 9.15, 95% CI 2.08-40.2, p=0.003) and Wise-pattern incision (OR 35.0, 95% CI 2.57-47.3, p=0.008). In CRRM, comorbidities (OR 2.76, 95% CI 1.38-5.54, p=0.004) and Wise-pattern incision (OR 7.33, 95% CI 1.65-32.5, p=0.009) were significant. On MVA, comorbidities (OR 2.59, 95% CI 1.23-5.47, p=0.012) and Wise-pattern incision (OR 7.83, 95% CI 1.73-35.5, p=0.008) remained independently associated with complications in CRRM; no independent predictors were found in BRRM. **CONCLUSIONS:** This multicentric cohort of risk-reducing NSM in women with high- and moderate-penetrance PVs demonstrated an extremely low rate of new breast cancers (0.6%) and high cosmetic satisfaction, supporting NSM's oncologic safety. Complications were more frequent after CRRM and associated with comorbidities and Wise-pattern incisions. These data support NSM as a safe and cosmetically favorable prophylactic approach in genetically predisposed populations.

Clinical and surgical characteristics, n (%)	Overall (n=524)	Bilateral risk-reducing NSM (n=219)	Contralateral risk-reducing NSM (n=305)
Pathogenic variant gene			
BRCA1	241 (46.0)	111 (50.7)	130 (42.6)
BRCA2	133 (25.4)	61 (27.9)	72 (23.6)
TP53	79 (15.1)	17 (7.8)	62 (20.3)
PALB2	36 (6.9)	18 (8.2)	18 (5.9)
PTEN	1 (0.2)	0 (0.0)	1 (0.3)
CHEK2	19 (3.6)	9 (4.1)	10 (3.3)
ATM	10 (1.9)	3 (1.4)	7 (2.3)
BARD1	2 (0.4)	0 (0.0)	2 (0.7)
RAD51C	1 (0.2)	0 (0.0)	1 (0.3)
RAD51D	2 (0.4)	0 (0.0)	2 (0.7)
BMI, median (range)	24.2 (17.2–39.0)	23.8 (18.0–36.3)	24.5 (17.2–39.0)
Missing	224	98	126
Obesity	29 (9.7)	9 (7.4)	20 (11.2)
Missing	224	98	126
Comorbidities	60 (11.5)	20 (9.1)	40 (13.3)
Missing	4	0	4
Age at risk-reducing NSM, median (range)	40 (20-68)	41 (20-67)	40 (22-68)
NSM incision			
Radial	41 (8.1)	16 (7.5)	25 (8.6)
Periareolar	83 (16.5)	36 (16.9)	47 (16.2)
Inframammary fold	354 (70.2)	155 (72.8)	199 (68.4)
Wise pattern	26 (5.2)	6 (2.8)	20 (6.9)
Missing	20	6	14
Breast weight in grams, median (IQR)	250.0 (185.5–325)	226.0 (46.0–670.0)	270.0 (35.0–1200.0)
Missing	150	62	88
Breast implant volume, median (range)	390.0 (175.0–675.0)	362.5 (175.0–620.0)	400.0 (175.0–675.0)
Missing	135	51	84
Reconstruction type			
Direct implant	447 (85.5)	194 (88.6)	253 (83.2)
Tissue expander	76 (14.5)	25 (11.4)	51 (16.8)
Missing	1	0	1
Implant plane			
Subpectoral	378 (72.8)	168 (77.4)	210 (69.5)
Prepectoral	141 (27.2)	49 (22.6)	92 (30.5)
Missing	5	2	3
Surgical complications			
No	423 (80.7)	193 (88.1)	230 (75.4)
Yes	101 (19.3)	26 (11.9)	75 (24.6)
Post-surgical complication type			
Partial NAC necrosis	31 (5.9)	9 (4.1)	22 (7.2)
Complete NAC necrosis	7 (1.3)	0 (0.0)	7 (2.3)
Wound dehiscence	37 (7.1)	11 (5.0)	26 (8.5)
Infection	33 (6.3)	9 (4.1)	24 (7.9)
Hematoma	20 (3.8)	4 (1.8)	16 (5.3)
Implant loss	22 (4.2)	4 (1.8)	18 (5.9)
Capsular contracture			
Absent	19 (3.6)	5 (2.3)	14 (4.6)
Baker 1	353 (67.5)	171 (78.4)	182 (59.7)
Baker 2	106 (20.3)	29 (13.3)	77 (25.2)
Baker 3	45 (8.6)	13 (6.0)	32 (10.5)
Radiotherapy	126 (24.0)	20 (9.1)	106 (34.8)
Additional reconstructive surgery	38 (7.3)	11 (5.0)	27 (8.9)
Cosmetic outcome by Harvard Scale			
Excellent	230 (59.9)	111 (71.6)	119 (52.0)
Good	113 (29.4)	40 (25.8)	73 (31.9)
Fair	25 (6.5)	1 (0.6)	24 (10.5)
Poor	16 (4.2)	3 (1.9)	13 (5.7)
Missing	140	64	76
Follow-up time in months after risk-reducing N	30 (13.1 – 60.3)	29 (13.0 – 69.0)	32 (13.0-58.0)
Breast cancer after risk-reducing NSM			
No	521 (99.4)	217 (99.1)	304 (99.7)
Yes	3 (0.6)	2 (0.9)	1 (0.3)
Breast cancer death			
No	521 (99.4)	219 (0)	302 (99.0)
Yes	3 (0.6)	0 (0.0)	3 (1.0)

Figure. Clinical and surgical characteristics of patients undergoing nipple-sparing mastectomy according to type of risk-reduction surgery.

P2

Nodal disease burden in patients with clinically node-positive breast cancer undergoing tailored axillary surgery with or without axillary dissection in the neoadjuvant and upfront surgery setting: preplanned TAXIS/OPBC-03 study

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INTRODUCTION: The safety of omitting axillary dissection (ALND) in patients with clinically node-positive breast cancer (cN+ BC) may depend on the nodal disease burden left behind in the axilla. This study aimed to evaluate nodal disease volume, quantify nodal understaging without ALND, and identify factors associated with additional nodal disease at ALND in these patients. **METHODS:** The international phase-III TAXIS trial (NCT03513614) randomized patients with cN+ stage II-III BC to ALND or axillary radiotherapy (ART) following tailored axillary surgery (TAS). TAS removed sentinel, biopsied, and palpably suspicious nodes. Patients had upfront surgery or residual nodal disease after neoadjuvant chemotherapy (NACT). 1500 patients were randomized from 08/2018 to 08/2025. **RESULTS:** Of 1418 patients with available data, 712 (50.2%) underwent ALND. Nodal disease was detected by imaging in 735 patients (51.8%). Clinical nodal stage was cN1 in 1232 (86.9%). Tumors were HR+ and HER2- in 1140 patients (80.4%), HER2+ in 160 (11.3%), and triple negative in 96 (6.8%). 552 patients (38.9%) underwent NACT. TAS removed a median of 5 nodes (interquartile range [IQR] 3-7), 2 (IQR 1-4) of which were positive. After TAS, ALND removed a median of 11 additional nodes (IQR 8-16), 1 (IQR 0-4) of which was positive. At ALND (n=712) additional positive nodes after TAS were removed in 430 (60.4%), AJCC pN upstaging occurred in 226 (31.7%), and 336 (47.2%) had (y)pN2/3 stage. Nodal burden by use of NACT is shown in the table. On multivariable logistic regression the number of positive nodes on TAS was associated with higher odds of having additional positive nodes on ALND in the NACT (odds ratio [OR] 1.57, 95% confidence interval [CI] 1.21-2.03, p< 0.001) and upfront surgery group (OR 1.39, 95%CI 1.23-1.57, p< 0.001). Furthermore, the odds of having additional positive nodes on ALND were higher in macrometastatic nodal disease on TAS after NACT (OR 2.24, 95%CI 1.10-4.55, p=0.026), and in palpable nodal disease at upfront surgery (OR 1.66, 95%CI 1.05-2.63, p=0.032). **CONCLUSIONS:** Nodal disease burden is high in patients included in the TAXIS trial. Among patients who underwent ALND, almost half had (y)pN2/3 disease, and 60.4% had additional positive nodes removed. Nodal disease volume on TAS was associated with higher odds of having additional positive nodes on ALND. Interim analysis raised no safety concerns in the TAXIS study, and long-term follow-up will determine if ART is oncologically non-inferior to ALND.

P3

Epigenetic alterations associated with increased tumor proliferation in patients with obesity and triple-negative breast cancer

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INTRODUCTION: Triple-negative breast cancer (TNBC) accounts for 15–20% of breast cancers and is associated with a higher risk of metastasis and death compared to other breast cancer subtypes. Obesity has been linked to the development of TNBC and poorer clinical outcomes, potentially through pro-inflammatory signaling and altered tumor microenvironments. However, the contribution of epigenetic mechanisms to obesity-associated TNBC remains unclear. **METHODS:** We retrospectively identified 55 treatment-naïve TNBC patients from three institutions with available body mass index data and high-quality DNA methylation profiles. Patients were classified as obese (n=17) or non-obese (n=38) using WHO guidelines. Genome-wide DNA methylation was assessed using the Infinium Methylation EPIC v2.0 BeadChip; data were normalized using the R package ChAMP. Expression methylation quantitative trait loci (emQTLs) were obtained from Ankill et al. (2022), HiTIMED was used for tumor immune microenvironment deconvolution, and clusterProfiler was used for pathway enrichment analysis. Ki-67 data was examined in a subset of patients (n=48). **RESULTS:** A total of 871,358 CpG sites were analyzed to assess DNA methylation levels in obese and non-obese patients with TNBC. Obese patients had global DNA hypomethylation compared with non-obese patients, with 17,543 hypomethylated and 1,419 hypermethylated CpG sites identified. Hypomethylated loci were enriched in emQTLs regulating the cell cycle, suggesting increased proliferative potential. Promoter hypomethylation of NR1H3 and hypomethylation at liver X receptor (LXR) binding sites, a transcription factor linked to increased proliferation, suggest transcriptional activation linked to obesity and cancer cell proliferation. Concordantly, TNBC tumors from obese patients had significantly increased Ki-67 expression compared to non-obese patients; interestingly, immune profiling also revealed reduced memory B-cells and epigenetic deregulation of B-cell–related pathways. **CONCLUSIONS:** Obesity is associated with global DNA hypomethylation, activation of proliferative pathways, and impairment of B-cell-mediated immune responses in patients with TNBC. Consistent with these findings, obese patients demonstrated higher Ki-67 expression, reflecting more aggressive tumor characteristics. These findings highlight potential mechanisms underlying poorer outcomes in obese patients with TNBC and support the need for further investigation into obesity-driven epigenetic regulation of breast cancer progression.

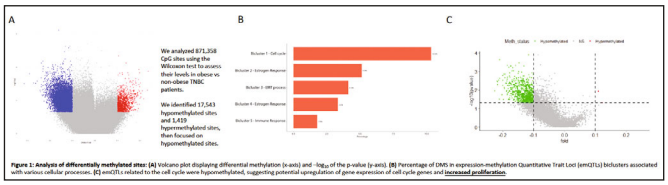

Figure. Analysis of differentially methylated sites

P4

Intratumoral dendritic cell immunotherapy reduces both the dissemination and capacity of metastasis initiating cancer cells to form overt metastasis

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INTRODUCTION: Metastasis initiating cancer cells (MICs) are known to drive the outgrowth of overt metastatic disease in breast cancer (BC) patients. There are no proven therapies available that specifically target and inhibit dissemination of MICs and MIC-driven metastasis. Our recent findings demonstrate that tumor antigen targeting type 1 conventional dendritic cells (cDC1) activate immune effector cells to halt MIC dissemination and metastasis in preclinical models. This study aims to evaluate the effects of intratumoral (IT) cDC1 immunotherapy on MIC dissemination and metastasis seeding in BC patients treated with neoadjuvant chemotherapy (NACT). **METHODS:** Bone marrow (BM) samples were obtained during BC surgery under an ongoing IRB-approved, single-center prospective study. MICs were isolated from the BM using immunomagnetic negative selection and EpCAM-based immunomagnetic enrichment. The MICs were then quantified and confirmed for cancer cell phenotype by flow cytometry, cytopathology and single cell RNA sequencing. Additionally, IT cDC1 immunotherapy- mediated alterations in MIC dissemination in BC patients (pts) was examined. The ability of patient-derived MICs to grow primary tumors and metastasis was evaluated using NSG immunodeficient mouse model. **RESULTS:** A total of 62 female pts underwent BM aspiration during BC surgery. The median age was 57 (range 27-83) years old. All pts were treated with standard of care (SOC) NACT. Twenty five of the pts also received IT cDC1 immunotherapy prior to NACT. The mean number of MICs per ml of BM was 48.2 for the cDC1 + SOC group (n=25) vs 162.2 for the SOC only group (n=37). Sixteen (64%) of the cDC1 group had a pathologic complete response (pCR) on final pathology compared to 16 (43.2%) of the SOC only group. Notably, IT cDC1 immunotherapy significantly reduced the disseminating MIC phenotypes (HER2+PR-PCK+ and HER2+PR-WNT4+RANKL+PCK+) in the tumor lesions of HER2+ BC patients. MICs from SOC-treated pts were able to grow primary tumors and metastasis in NSG mice. Strikingly, MICs from pts treated with IT cDC1 immunotherapy failed to grow both primary tumors and metastasis in NSG mice. **CONCLUSIONS:** IT cDC1 immunotherapy administered prior to chemotherapy attenuated the dissemination of MICs from the tumor lesions of BC pts. It also diminished the MIC burden in the BM and overt metastatic potential of MICs compared to SOC alone. These findings highlight IT DC1 immunotherapy as a promising approach to specifically target and inhibit MICs, thereby reducing recurrence and overt metastasis in BC pts.

P5

Impact of Advances in Neoadjuvant Chemotherapy on Nodal pCR and Axillary Surgery

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INTRODUCTION: There have been many advances in systemic therapies including dual-agent HER2-targeted therapy (pertuzumab in 2018) and addition of immunotherapy (IO) for TNBC (pembrolizumab in 2021). We aim to evaluate how nodal pCR (npCR) rates have changed in HER2+ and TNBC disease and assess association with rates of axillary dissection (ALND) and OS. **METHODS:** Utilizing the National Cancer Database we identified patients (pts) with cN+ stage II-III HER2+ or TNBC treated with neoadjuvant chemotherapy 2013-2023. Total pCR (tpCR) was defined as ypT0/ypTis, ypN0/ypN0i+. To evaluate impact of IO in TNBC we compared patients treated without IO (2013-2020) and with IO (2021-2023). For impact of dual agent HER2 therapy we compared patients treated prior to 2018 and 2018 onwards. Chi-square tests compared percentages. Multivariable Cox proportional hazards regression was used to analyze OS. **RESULTS:** Of 74,565 patients (40,847 HER2+, 33,718 TNBC), npCR was 62% and tpCR was 43%. npCR and tpCR were highest for ER-/HER2+ (77%, 48%) compared to ER+/HER2+ (58%, 38%) and TNBC (58%, 38%). From 2013 to 2023 npCR rates significantly increased in TNBC (49% to 69%), ER+/HER2+ (51% to 61%) and ER-/HER2+ disease (68% to 79%). Among TNBC, npCR was higher in pts treated with IO (69%) than in patients without IO (53%, p< 0.001). npCR was higher in the era of dual-agent HER2-targeted therapy than single-agent era [80% vs 72% for ER-/HER2+ and 61% vs 53% for ER+/HER2+ (both p< 0.001)]. In dual agent era, npCR was higher in ER-/HER2+ (80%) vs ER+/HER2+ disease (61%, p< 0.001). ALND (±SLN surgery) decreased from 2013 to 2023 for each subtype: ER+/HER2+ (83% to 45%), ER-/HER2+ (82% to 40%), TNBC (82% to 42%), each p< 0.001. ALND surgery decreased significantly in TNBC with use of IO from 68% to 44% overall and from 52% to 31% in ypN0 and from 86% to 73% in ypN+ disease. Similar decrease in ALND was seen in HER2+ disease (see Figure). OS was highest with tpCR and poorest with residual disease in both breast and nodes for each subtype; however, for patients with residual disease npCR only (residual breast disease) had better OS vs residual disease in breast and lymph nodes in each subtype: ER-/HER2+ (adjusted HR 0.43, 95% CI: 0.38-0.50), ER+/HER2- (adjusted HR 0.59, 95% CI: 0.52-0.67), TNBC (adjusted HR 0.39, 95% CI: 0.37-0.42), each p< 0.001. **CONCLUSIONS:** The advances in systemic therapies with dual agent HER2 therapy and IO for TNBC have led to increase in nodal pCR and also impacted surgical management with decrease in ALND. OS is improved for nodal pCR over residual nodal disease.

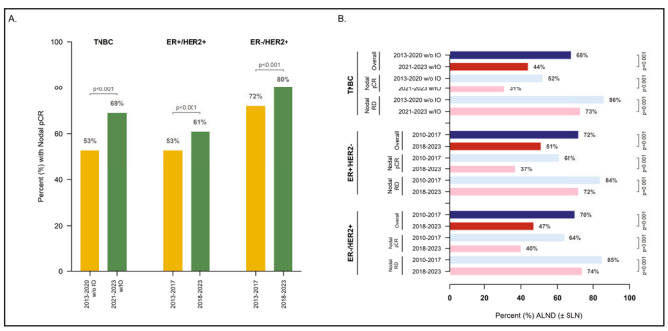

Figure 1

P6

Application of SOUND/INSEMA at a Metropolitan Breast Cancer Program: Who needs a Sentinel Node Biopsy?

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INTRODUCTION: In an era of de-escalation, omitting sentinel lymph node biopsy (SLNB) in patients with a negative axillary ultrasound (SOUND/INSEMA) has become a priority focus. Inclusion criteria between the two trials have variability in T-stage, high risk features, and definition of "suspicious node." We aimed to define the false negative rate (FNR) of negative axillary ultrasound performed at our institution and determine if there are any tumor or patient characteristics that may increase the risk of a false negative ultrasound to further delineate patients who are appropriate for SLN biopsy omission. **METHODS:** Our institutional IRB approved prospective breast cancer database was queried for cases undergoing axillary ultrasound followed by SLN biopsy from October 2023 to August 2025. Patient demographics, clinical

characteristics, tumor biology, ultrasound findings, core biopsy pathology (tumor and node if applicable), interpreting radiologist, adjuvant treatment offered/provided and clinical/surgical pathologic staging were recorded. **RESULTS:** We identified 225 internally performed axillary ultrasounds. Of these, 154 were called negative (68.4%) with 131 cases revealing negative SLNB and 23 with a positive SLN - 17 macrometastases (FNR 10.3%) and 6 micrometastases (FNR 4.2%). Of the 17 cases with macrometastases, 13 had 1 positive SLN and 4 had 2 positive SLNs. No cases had ≥3 positive SLN. Of the 73 axillary ultrasounds called suspicious, 4 had a positive SLNB (TPR 2.7%). There was a statistically significant association between histology and false negative ultrasound—ILC was seen in a higher proportion of false negative ultrasound cases (p=0.022). The SLNB findings resulted in recommendations for changes in the adjuvant therapy plan in 5 patients: Ribociclib in 2 patients, Ribociclib and Verzenio in 1 patient, PMRT in 2 patients. **CONCLUSIONS:** Our institutional axillary ultrasound macrometastasis FNR (10.3%) falls within the SOUND FNR (8.7%) and INSEMA FNR (11.6%) which is similar to published SLNB FNR (10%). We found that ILC histology was significantly associated with a false negative ultrasound in our limited dataset. We will continue to follow SOUND/INSEMA criteria for SLNB deferral given these results. Further investigation is needed into predicting the possibility of false negative axillary ultrasound as well as identifying strategies to minimize the FNR.

HF only	Macromets = 17	Micro = 6
Type		
IDC	9	3
ILC	7	1
IPC	0	1
Mucinous	0	1
Pap/NE	1	0
LVI on core	None	Possibly in 1
Age range	47-83	38-77
BMI range	20-40	23-38
T stage	T1: 13 T2: 3 T3: 1	T1: 4 T2: 1
1 positive LN	13	6
2 positive LNs	4	0
3+ positive LNs	0	0
Grade	G1: 2 G2: 11 G3: 4	G1: 2 G2: 4
No Genomic Testing	2 (TNBC)	1 (refused tx)
Oncotype	10 (0-20)	4 (0-26)
Mammaprint	3 (2 high, 1 low)	1 (high)

Figure. Characteristics of Cases with Negative US but Positive SLNB

P7

De-escalation of axillary surgery in early breast cancer: translating SOUND and INSEMA into clinical practice

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INTRODUCTION: Axillary surgery in patients with breast cancer continues to evolve. The SOUND and INSEMA trials showed no difference in regional recurrence or disease-free survival with omission of sentinel lymph node biopsy (SLNB) in cT1-T2N0 patients with a negative axillary ultrasound (US) undergoing breast-conserving surgery (BCS). We prospectively evaluated how often axillary staging can successfully be omitted in postmenopausal, HR+/HER2- patients. **METHODS:** From 3/1/24-9/1/25, SLNB was omitted in postmenopausal women age 50-70 years with clinical stage 1, grade 1/2, HR+/HER2- cancers undergoing BCS. After INSEMA was published in December 2024, patients with tumors up to 2.5 cm were included. Normal axillary US was required and multicentric disease was excluded. Patients with grade 3 tumors were excluded to avoid underutilization of CDK4/6 inhibitors without nodal staging. Patients with DCIS at presentation who upgraded to invasive disease and met the above criteria were eligible. Those with tumors on final pathology that were grade 3, ≥ 3cm, or HR- or HER2+ underwent SLNB if multidisciplinary consultation indicated that nodal status would inform adjuvant therapy. Adjuvant systemic and radiation therapies were determined based on primary tumor characteristics and genomic profiling. **RESULTS:** 475 patients met inclusion criteria for SLNB omission. Of these, 22 (5%) had an abnormal axillary US and underwent SLNB; 4 (18%) had SLN metastases. 12 patients (2.5%) requested SLNB and 1 had a SLN metastasis. Overall, SLNB was omitted in 441 patients; median age was 63 years, median mammographic tumor size was 0.9 cm, and 74% were grade 2 (Table). 34 (7.7%) patients had high-risk features on surgical pathology (grade 3: n = 20; T > 3 cm: n = 11; HER2+: n = 3), 14 (3.2%) of whom returned for SLNB (grade 3: n = 6; T > 3 cm: n = 6; HER2+: n = 2). Of these, 2 had SLN metastases (T > 3 cm: n = 1; HER2+: n = 1). In 318 patients where initial SLNB was omitted, adjuvant treatment data were available. 305 (96%) have received adjuvant radiotherapy (46% whole breast, 54% partial breast) and 300 (94%) have initiated systemic therapy. **CONCLUSIONS:** Adoption of SOUND and INSEMA dramatically reduced the use of SLNB, allowing omission in 97% of postmenopausal patients ≤ age 70 with cT1-2N0, grade 1/2, HR+/HER2- cancers and a normal axillary US. The incorporation of clinical trial results into multidisciplinary consensus-driven practice can effectively de-escalate surgical management of patients with early-stage breast cancer.

Table. Clinical and pathologic features of patients without SLNB at initial surgery

Age (years)	Median
	62.8 (IQR 58.4-66.6)
Clinical Tumor Size (cm)	Median
Mammogram	0.9 (IQR 0.7-1.2)
Ultrasound	0.8 (IQR 0.6-1.1)
MRI	1.1 (IQR 0.8-1.5)
Clinical T Stage	n (%)
T1mi	5 (1.2)
T1	427 (96.8)
T2	9 (2.0)
Tumor Histology	n (%)
Ductal	345 (78.2)
Lobular	72 (16.3)
Mixed	24 (5.5)
Clinical Grade	n (%)
1	100 (22.7)
2	325 (73.7)
No grade[1]	16 (3.6)
Lymphovascular Invasion	n (%)
Absent	413 (93.7)
Present	28 (6.3)
Receptors	n (%)
ER+ (> 10%) PR+ (≥ 1%)	395 (89.6)
ER+ (> 10%) PR- (< 1%)	43 (9.8)
ER- (≤ 10%) PR+ (≥ 1%)	1 (0.2)
ER+ (> 10%) No PR[1]	2 (0.4)
	Median
ER	96% (IQR 91%-99%)
PR	90% (IQR 30%-95%)

Abbreviations: SLNB, sentinel lymph node biopsy; IQR, interquartile range; ER, estrogen receptor; PR, progesterone receptor; DCIS, ductal carcinoma in situ

[1]Grade and PR missing for DCIS with microinvasion at biopsy

P8

Primary Breast Angiosarcoma: Clinicopathologic Features and Oncologic Outcomes

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INTRODUCTION: Primary breast angiosarcoma is a rare, aggressive malignancy with low overall survival (OS). There is limited data related to outcomes for this disease as studies often combine patients with both primary and secondary angiosarcomas; however, these tumor types are distinct entities with different molecular signatures. This study aims to capture clinicopathologic features and treatment patterns for patients with primary breast angiosarcoma from a comprehensive cancer center to inform future management. **METHODS:** A retrospective study was conducted of patients with primary breast angiosarcoma who received care at a single tertiary care center from 1991 through 2025 and underwent surgical resection. Patients were excluded if they had insufficient data, short follow-up, or prior chest radiation. Clinicopathologic features and treatment patterns were analyzed using descriptive statistics, and survival data were analyzed using the Kaplan-Meier method. **RESULTS:** Among 176 total patients, 138 met inclusion criteria. Most were Caucasian (77%) and female (99%), with a median age of 40 (IQR 32, 49). Most tumors were high grade (39%) at presentation, with a median size of 6.5 cm (IQR 4.5, 9.6). All patients underwent surgical resection with most undergoing mastectomy (88%). Axillary nodal surgery was undertaken in 37% of patients, with only 4% having nodal metastases. There were 121 patients (88%) who received multimodal treatment: chemotherapy + surgery (n=46, 38%), radiation therapy (RT) + surgery (n=15, 12%), or chemotherapy + RT + surgery (n=60, 50%). Median OS was 6 years (IQR 3.5, 8.7) with a 5-year OS of 58%. Sixty-two percent of patients experienced disease recurrence with a median RFS of 3 years (IQR 1.4, 7.7) and a 5-year RFS of 33%. Most recurrences were distant (79%) and occurred at multiple sites. Tumor size >5cm and high-grade pathology were independently associated with lower OS. When stratified by treatment modality, there was no statistical difference in OS (p=0.475). **CONCLUSIONS:** Primary breast angiosarcoma arises in young women whereby large (>5cm) and high-grade tumors portend worse survival outcomes. In this series, distant recurrence was common, and there were low rates of nodal metastases and local failure. Most patients received multimodal therapy with a combination of surgery, chemotherapy, and radiation without clear impact of modality on OS; however, further collaborative studies may be required to assess the impact of modality on disease outcomes.

Table. Univariable and multivariable analysis of overall survival

Variable	N (%)	5-year survival rate, %	Univariable P value	Hazard ratio	95% confidence interval	Multivariable P value
All patients	138 (100)	58				
Tumor factors						
Age > 50 years	30 (22)	65	0.5			
Grade*, high	65 (45)	40	**0.08**	1.9	1.1, 3.3	**0.027**
Margin, positive	18 (14)	50	0.381			
Tumor size*, > 5 cm	88 (68)	50	**0.002**	3.6	1.8, 7.2	**<0.001**
Treatment factors						
Surgery only	17 (12)	65	Referent			
Surgery + Radiation	15 (11)	48	0.6			
Surgery + Chemotherapy	46 (33)	54	0.2			
Triple modality therapy	60 (43)	61	0.5			

* If discrepancy between size on final pathology and at diagnosis, largest size was used. If discrepancy between grade on final pathology and pathology at diagnosis, highest grade was used.

P9

Discovery of novel genetic drivers of Cowden Syndrome using genome-wide CRISPR/Cas9 screening

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INTRODUCTION: Variants in the tumor suppressor gene PTEN drive the cancer predisposition syndrome Cowden syndrome (CS), characterized by an increased risk of both benign and malignant breast, thyroid, endometrial, and other cancers. Only about 25% of patients who meet clinical criteria for CS have a germline PTEN variant to explain their phenotype. We used genome-wide CRISPR screening to identify novel candidate genetic variants that may drive differential PTEN expression in patients with PTEN-wildtype CS. **METHODS:** We performed fluorescence-activated cell sorting based genome-wide CRISPR/Cas9 screens in four cancer cell lines (HCT116 (colorectal), PC9 (lung), MCF7 (breast), and OCI-AML2 (leukemia)) to identify genes whose knock-out resulted in either a decrease or increase in PTEN expression. We paired these screen results with whole-exome sequencing data from 87 patients with PTEN wildtype CS to identify candidate driver gene mutations. Allele frequencies were compared between our patient cohort and population controls from the Genome Aggregation Database (gnomAD) using Fisher's Exact methods. **RESULTS:** 4 genes scored as strong positive PTEN regulators in all four screens (EIF4G2, STRAP, ZNF236, and MTOR), 5 genes scored as strong positive regulators in 3 out of 4 screens (EIF4A1, DDX3X, CSDE1, DYRK1A, and ATXN7L3), and 2 genes scored as strong negative PTEN regulators in 3 of 4 screens (DUT, RTEL1). Within the Cowden-like syndrome patient cohort, we found a total of 28 potentially deleterious mutations of 9 of these 11 candidate genes. 18/28 (64%) had a higher prevalence in the Cowden-like syndrome cohort than in gnomAD (Fisher's exact, $p< 0.05$), so we focused our subsequent validation on this subset. Using ChIP-seq and a reporter assay, we demonstrated that the two patient-identified variants in ZNF236 disrupt binding of ZNF236 to the PTEN promoter (Figure 1 A-C). **CONCLUSIONS:** We have identified novel candidate PTEN regulators, variants of which may explain the clinical phenotype of Cowden Syndrome in the absence of a germline PTEN mutation. We demonstrate the feasibility of combining in vitro screening techniques with patient sequencing data to identify pathogenic gene variants. Further characterization of these new regulatory pathways and mutations will provide novel insights into disease pathogenesis and also improve molecular diagnosis, especially predictive testing, cancer risk assessment, genetic counseling, and clinical management in PTEN wildtype CS.

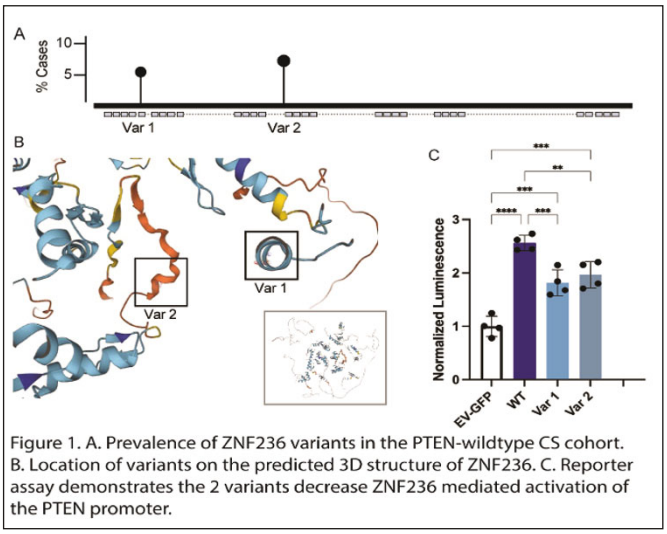

Figure 1. A. Prevalence of ZNF236 variants in the PTEN-wildtype CS cohort. B. Location of variants on the predicted 3D structure of ZNF236. C. Reporter assay demonstrates the 2 variants decrease ZNF236 mediated activation of the PTEN promoter.

Figure. Patient-derived ZNF236 variants impact PTEN promoter activation

P10

Is routine intraoperative sentinel lymph node frozen section necessary in clinically node-negative patients treated with neoadjuvant chemotherapy?

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INTRODUCTION: There is mounting evidence that axillary lymph node dissection (ALND) does not provide oncologic benefit in patients with low-volume nodal disease (isolated tumor cells [ITCs] and micrometastases) after neoadjuvant chemotherapy (NAC). The rate of nodal metastases (ypN+) in cN0 patients who undergo NAC is low (3-27%), and about half have low-volume disease. We evaluated the utility of intraoperative sentinel lymph node (SLN) frozen section (FS) by subtype in cN0 patients treated with NAC. **METHODS:** Consecutive cT1-3N0 breast cancer patients treated with NAC followed by surgery between 1/2014-12/2021 were identified. Clinical nodal status was determined by physical exam. If axillary imaging was performed, patients with indeterminate lymph nodes were included if lymph node biopsy was negative or if second-look imaging was normal. Clinicopathological factors were compared between ypN0 and ypN+. Multivariable logistic regression (MVR) was used to identify preoperative factors associated with ypN status. The SLN FS false-negative rate (FNR) was calculated using the total negative FS result as the denominator. **RESULTS:** Of 718 cN0 patients, only 69 (9.6%) were ypN+ on final pathology. Median age was 50 years; the majority of patients had cT2 (median size 3 cm), ductal (95%), and HER2+ (44%) or 38% triple negative (TN) tumors. The rate of ypN+ varied significantly by subtype: HR+/HER2- 18%, HR+/HER2+ 10.6%, HR-/HER2+ 3.8%, and TN 6.6% (Table). On MVR, cT3 tumors (Ref [cT1]: OR 3.11, 95% CI 1.00-9.63) and lobular histology (Ref [ductal] OR 5.26, 95% CI 2.17-12.8) were independently associated with ypN+, while TN subtype (Ref [HR+/HER2-] OR 0.43, 95% CI 0.20-0.93) and radiological complete response (cCR) on MRI (Ref [non cCR] OR 0.24, 95% CI 0.08-0.69) were independently associated with ypN0. FS diagnosis was deferred in 0.2% (n = 2). Of the 652 negative FS cases, 3 were ypN+ on permanent H&E (FNR 0.5%); all had low-volume disease. Of 69 ypN+ patients, 33 (48%) had low-volume disease (n = 10 [15%] ITCS, n = 23 (33%) micrometastases). The overall rate of residual macrometastases was 5% (n = 36), but varied by subtype (HR+/HER2- [11%], HR+/HER2+ [5.5%], HR-/HER2+ [2.5%], and TN [4%]). **CONCLUSIONS:** If FS had been omitted in this cohort of cN0 patients treated with NAC, only 5% (n = 36) of patients with residual macrometastases would have required return to the operating room for completion ALND. Our findings suggest that routine use of FS could be eliminated, especially in patients with HR-/HER2+ and TN tumors.

Table. Clinicopathologic Characteristics

	Overall N = 718	cN0 → ypN0 n = 649	cN0 → ypN+ n = 69	P-value*
Patient Characteristics				
Age, years (IQR)**	50 (41, 58)	50 (41, 58)	49 (41, 62)	0.5
Race**				0.092
White	394	356 (90%)	38 (10%)	
Black or African-American	113	102 (90%)	11 (10%)	
Asian	103	97 (94%)	6 (6%)	
Hispanic or Latino	65	60 (92%)	5 (8%)	
Other/Unknown	41	32 (78%)	9 (22%)	
Tumor Characteristics				
Clinical T stage at presentation				**< 0.001**
1	91	86 (95%)	5 (6%)	
2	515	478 (93%)	37 (7%)	
3	112	85 (76%)	27 (24%)	
Clinical tumor size (cm)	3.00 (2.50, 4.50)	3.00 (2.50, 4.00)	4.00 (3.00, 6.00)	**< 0.001**
Subtype				**0.001**
HR+/HER2-	129	106 (82%)	23 (18%)	
HR+/HER2+	237	212 (89%)	25 (11%)	
HR-/HER2+	79	76 (96%)	3 (4%)	
HR-/HER2-	273	255 (93%)	18 (7%)	
Histology				**< 0.001**
Ductal	680	626 (92%)	54 (8%)	
Lobular and mixed	38	23 (61%)	15 (39%)	
Grade				**< 0.001**
I	12	11 (92%)	1 (8%)	
II	229	187 (82%)	42 (18%)	
III	472	446 (94%)	26 (6%)	
Unknown	5	5 (100%)	0 (0%)	
Preoperative Axillary Staging				
Axillary nodes on US				0.5
Not Performed	225	205 (91%)	20 (9%)	
Performed				
Normal	328	299 (91%)	29 (9%)	
Indeterminate with negative biopsy	165	145 (88%)	20 (12%)	
Axillary nodes on MRI				> 0.9
Not Performed	101	91 (90%)	10 (10%)	
Performed				
Normal	456	413 (91%)	43 (9%)	
Indeterminate with negative biopsy	161	145 (90%)	16 (10%)	
Post Neoadjuvant Chemotherapy Imaging				
Mammogram complete response				**0.014**
Yes	117	113 (97%)	4 (3%)	
Unknown	72	64 (89%)	8 (11%)	
MRI complete response				**< 0.001**
Yes	173	169 (98%)	4 (2%)	
Unknown	98	89 (91%)	9 (9%)	
Surgery and Pathology				
Number of SLNs removed	3 (2, 5)	3 (2, 5)	3 (3, 5)	0.13
Breast pCR	307	304 (99%)	3 (1%)	**< 0.001**
Residual breast tumor size (cm)	0.20 (0.00, 1.30)	0.10 (0.00, 1.00)	2.00 (0.90, 2.80)	**< 0.001**

Frequency (row percent) reported for categorical variables and median (range) reported for continuous variables. *Results from Fisher's exact test for categorical variables and Wilcoxon rank-sum test for continuous variables. **Age and race refer to n = 716. Abbreviations: IQR, interquartile range; HR, hormone receptor; US, ultrasound; SLNs, sentinel lymph nodes; pCR, pathologic complete response.

P11

Patient-reported upper extremity dysfunction following axillary surgery for breast cancer

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INTRODUCTION: Upper extremity (UE) morbidity after breast cancer (BC) surgery is common, with up to 1/3 of patients experiencing notable postoperative impairment. The aim of this study was to assess patient-reported trends in upper extremity dysfunction (UED) after axillary surgery for BC in a large, contemporary cohort of patients using the QuickDASH questionnaire, a validated 11-item survey measuring UE function, symptoms, and impact on daily life. **METHODS:** From 9/2022 to 1/2025, the QuickDASH was given to patients undergoing axillary surgery for BC preoperatively, and then 2 weeks, 6 months and 1 year postoperatively. Those who completed at least 1 survey were included. Scores range from 0 (no impairment) to 100 (complete impairment), with a 12 point change considered clinically meaningful. Multivariable linear regression models were used to assess associations between clinicopathologic variables and UED. **RESULTS:** Of 4,378 patients, 442 (10.1%) underwent axillary lymph node dissection (ALND) and 3,936 (89.9%) sentinel lymph node biopsy (SLNB). Compared to SLNB, ALND patients were younger ($p< 0.024$) and more often treated with mastectomy ($p< 0.001$), chemotherapy ($p< 0.001$) and radiation therapy (RT) (< 0.001). ALND patients had greater UED compared to SLNB patients at 2 weeks ($p=0.022$) and 6 months postoperatively ($p< 0.001$). This difference was no longer clinically apparent at 1 year after

surgery (Table 1). From baseline to 6 months, ALND patients who had RT reported the greatest increase in UED [12 (ALND+RT) vs. 4 (SLNB+RT), p=0.015]. Findings were similar on multivariable analysis, with worse UED among ALND patients at 6-months compared to SLNB (β = 7.4; CI: 4.4, 11, p< 0.001). ALND was associated with greater UED after mastectomy vs. lumpectomy (β = 8.8; CI: 4.5, 13, p< 0.001vs β = 4.7; CI: 0.32, 9.2, p=0.036), respectively. Mastectomy alone increased UED compared to mastectomy with reconstruction (β = 12; CI: 4.4, 19, p=0.002). At 1 year postoperatively, there was no clinically significant difference in UED from baseline after SLNB or ALND. **CONCLUSIONS:** UED varied based on type of breast and axillary surgery and use of adjuvant RT. Patients undergoing ALND and mastectomy had more severe and prolonged UED compared to those treated with SLNB and lumpectomy. RT further exacerbated postoperative UED, whereas reconstruction appeared to mitigate impairment. Although UED largely resolved by 1 year, targeted rehabilitation and early intervention should be prioritized for patients at highest risk—particularly those undergoing ALND, mastectomy, or RT—to optimize long-term functional recovery and quality of life.

Table 1. QuickDash scores preoperatively and 2 weeks, 6 months and 1 year postoperatively by type of axillary surgery

Characteristic	Overall N = 4,378	SLNB N = 3,936	ALND N = 442	p-value[1]
Baseline UED, Mean (Min, Max)	4 (0, 100)	4 (0, 100)	5 (0, 84)	0.035
N	3,135	2,819	316	
2 Week UED, Mean (Min, Max)	15 (0, 95)	15 (0, 91)	21 (0, 95)	0.022
N	697	611	86	
6 Month UED, Mean (Min, Max)	8 (0, 98)	7 (0, 98)	15 (0, 89)	<0.001
N	924	832	92	
1 Year UED, Mean (Min, Max)	8 (0, 95)	8 (0, 95)	9 (0, 59)	0.037
N	662	598	64	

[1] Wilcoxon rank sum test

P12

Sentinel lymph node biopsy after neoadjuvant chemotherapy is accurate in patients presenting with locally advanced breast cancer

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INTRODUCTION: In patients presenting with locally advanced breast cancer defined as skin/chest wall involvement (cT4) and/or heavy nodal burden (cN2/3), the accuracy of sentinel lymph node biopsy (SLNB) after neoadjuvant chemotherapy (NAC) is uncertain. We performed a prospective, single-arm clinical trial to determine the false-negative rate (FNR) of SLNB after NAC in this group. **METHODS:** Patients with cT4 and/or cN2/N3 breast cancer receiving NAC with a nodal clinical complete response (cN0) on physical exam were eligible for enrollment. SLNB was performed with dual tracer mapping; nodal clipping was not required, but those with clipped nodes underwent specimen X-ray of the retrieved SLNs. All patients had a completion ALND. Target accrual was 150 patients. FNR calculations were based on the patients having ≥ 3 SLNs removed and those with < 3 SLNs in whom the clipped node was retrieved as an SLN. We anticipated 84 patients would meet these criteria, and that 47 would have residual disease after NAC (nodal pCR rate 45%). Assuming a true FNR of 10%, we estimated this sample size would allow estimation of FNR within a margin of error (95% CI half-width) of +/- 8.6%. **RESULTS:** From 8/2017-6/2025, 429 patients with cT4 and/or cN2/3 disease were screened for eligibility prior to receiving NAC at 2 participating sites. The 347 (81%) who became cN0 after NAC were eligible, and 154 enrolled on study. Prior to surgery, 16 patients withdrew, resulting in 138 evaluable patients. Median age was 49 years (IQR 42, 58); 44% of patients had inflammatory breast cancer (cT4d), 24% had other cT4, 12% had cN2, and 20% had cN3 disease. Most had HER2 positive (37%) or triple negative (31%) breast cancer, and 64 (46%) had a clipped node. At least 1 SLN was identified in 104 patients (75%), with no patient or clinical factors associated with failure to map. Of 104 patients, 21 had 1-2 SLNs retrieved and 83 had either ≥ 3 SLNs (n = 78) or 1-2 SLNs with a clipped node retrieved (n = 5). Of 83 patients with adequate mapping eligible for FNR calculation, the nodal pCR rate was 46%; of 45 (54%) with residual disease after NAC, 1 false-negative SLN was observed yielding an SLN FNR of 2.2% (95% CI, 0.1, 13.2) (Table). **CONCLUSIONS:** In a prospective cohort of patients with locally advanced breast cancer, the SLN identification rate was 75%: lower than the rate observed in patients with cN1 disease. Notably, the FNR among those with adequate mapping was < 10%, suggesting that SLNB may be an appropriate method to stage the axilla in this cohort.

Table. SLNB identification rates, nodal pCR, and FNR in patients with locally advanced breast cancer

	N (%)	Nodal pCR (%)	FNR*
Overall	138 (100%)	46%	5.6% (95% CI 1.4, 16.3)
Failed mapping	34 (25%)	38%	NA
1-2 SLNs retrieved	21 (15%)	57%	22.2% (95% CI 3.9, 59.8)
≥ 3 SLNs or 1-2 SLNs with clipped node	83 (60%)	46%	2.2% (95% CI 0.1, 13.2)

*False-negative rate calculated only in those patients with residual disease; excludes failed mapping. Abbreviations: pCR, pathologic complete response; FNR, false-negative rate; CI, confidence interval; NA, not available; SLNs, sentinel lymph nodes

P13

Adjuvant CDK 4/6 inhibitors may be associated with delayed recurrence following complete surgical resection of retroperitoneal liposarcoma

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INTRODUCTION: Retroperitoneal liposarcomas (RPS) are treated primarily with surgery, yet recurrence is common, and often lethal, following surgery. Cyclin-dependent kinase (CDK) 4/6 inhibitors have shown therapeutic benefit in unresectable and advanced RPS and their adjuvant use may delay the time to subsequent treatment. This multi-institutional series further evaluates the use of adjuvant CDK 4/6 inhibitors to delay recurrence in completely resected RPS. **METHODS:** Institutional databases from two high-volume RPS centers were utilized. Patients with primary or recurrent RPS who underwent curative-intent comprehensive complete gross resection were included. Patients were individually evaluated for CDK4/6 inhibition postoperatively. Patients who received adjuvant CDK4/6 inhibitors (palbociclib or abemaciclib) for prevention of tumor recurrence (treatment arm) were compared to patients who underwent active surveillance following surgery (control). We analyzed the impact of adjuvant CDK4/6 inhibition on all patients with grade 2 or 3 tumors as well as patients with primary RPS whose post-op sarculator 5-year

risk of recurrence was > 35%. The primary outcome was time to recurrence. Time-to-event analysis was performed and Kaplan-Meier curves were stratified by treatment group. **RESULTS:** Overall, 69 patients with a median age of 65 years old underwent a total of 79 surgeries, 53 (67%) of which were primary resection. Of the 79 surgeries, 24 were grade 2 and 23 were grade 3. In total, 11/24 (46%) patients with grade 2 RPS and 10/23 (44%) patients with grade 3 were selected for adjuvant CDK4/6 inhibition. Age and median tumor size did not differ between groups. The treatment group had significantly better recurrence-free survival at one year (70.4% vs 35%, p=0.01). Median time to recurrence was 18.5 months for the treatment group and 9.1 months for the control. Of the 53 patients who underwent primary resection, 33 had a sarculator 5-year recurrence risk of >35% (a < 65% predicted disease free recurrence). Of these, 13 were selected to receive adjuvant CDK4/6 inhibition. Again, the treatment arm was associated with improved 1-year recurrence rates (91.7% vs 40.8%, p< 0.01) and medial time to recurrence (23.8 vs 9.8 months). **CONCLUSIONS:** In this multi-institution series, the use of adjuvant CDK 4/6 inhibition is associated with delayed recurrence following comprehensive resection of high-risk retroperitoneal liposarcoma. These findings warrant evaluation in a prospective randomized trial.

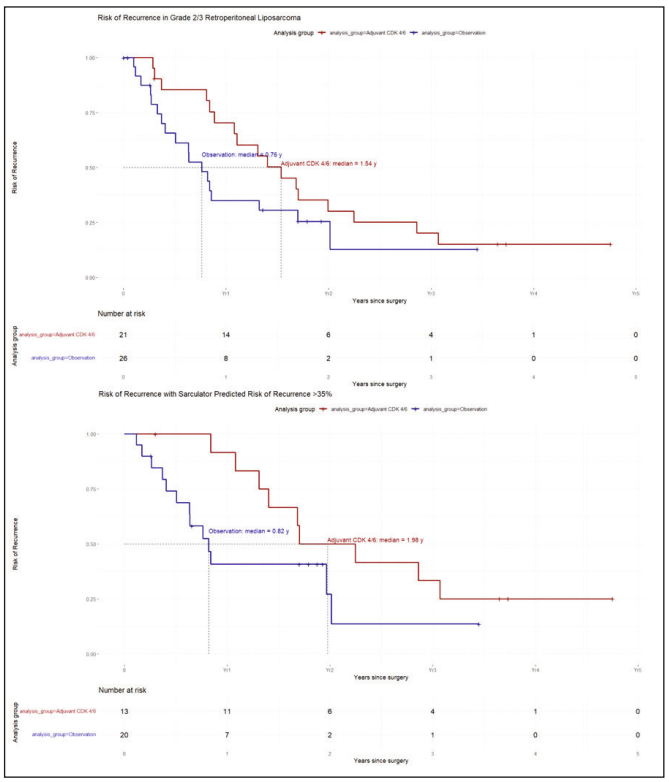

Figure. Risk of recurrence in Grade 2/3 Retroperitoneal Liposarcoma and risk of recurrence in patients with Sarculator score > 35%

P14

Refining Patient Selection for Pembrolizumab in Localized Soft Tissue Sarcoma of the Extremity: A Sarculator-Based Reanalysis of the Randomized SU2C-SARC032 Trial

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INTRODUCTION: To assess which stage III extremity/limb girdle soft tissue sarcoma (elgSTS) patients benefit most from adding pembrolizumab (P) to preoperative radiotherapy (RT) and surgery in the SU2C-SARC032 trial, using the Sarculator nomogram. **METHODS:** SU2C-SARC032 randomized grade 2-3 elgSTS to preoperative RT (50 Gy in 25 fractions) and surgery ± perioperative P (RT+P). In RT+P, P was given before, during, and after RT, then continued up to 14 cycles postoperatively. Sarculator was used to predict 10-year overall survival (pr-10y-OS) and distant-metastasis (DM) risk (pr-10y-DM), and predictions were classified as favourable (pr-10y-OS ≥60% or pr-10y-DM < 36.5%) and less favourable (pr-10y-OS < 60% or pr-10y-DM ≥36.5%). Actual outcomes were reported within these prediction groups. Disease-free survival (DFS) was compared with Kaplan–Meier/log-rank; DM incidence with Fine–Gray competing-risk regression with death as a competing risk. **RESULTS:** 122 patients were included (RT n=62; RT+P n=60). In the RT arm, DFS was higher but not significant, in patients with favourable vs less favourable predictions (24-month: 57% vs 48%; 36-month: 50% vs 42%; p=0.617). In the RT+P arm, DFS again trended higher with favourable predictions (24-month: 73% vs 60%; 36-month: 67% vs 53%; p=0.167). Across the cohort, RT+P produced a numerically greater improvement in DFS favourable predictions (24-month: 57% [RT] vs 73% [RT+P]; 36-month: 50% vs 67%; p=0.170) than in less favourable predictions (24-month: 48% [RT] vs 60% [RT+P]; 36-month: 42% vs 53%; p=0.563). Fine–Gray analysis showed less DM with RT+P in favourable predictions (24-month: 43% [RT] vs 23% [RT+P]; 36-month: 50% vs 27%; p=0.055) vs less favourable predictions (24-month: 45% vs 38%; 36-month: 51% vs 42%; p=0.564). **CONCLUSIONS:** While no comparisons reached statistical significance, trends suggest that patients with favourable Sarculator-predicted outcomes may benefit more from adding perioperative P to preoperative RT and surgery. This is the first application of Sarculator in an immunotherapy-treated cohort, and these hypothesis-generating findings warrant investigation in larger, risk-adapted studies.

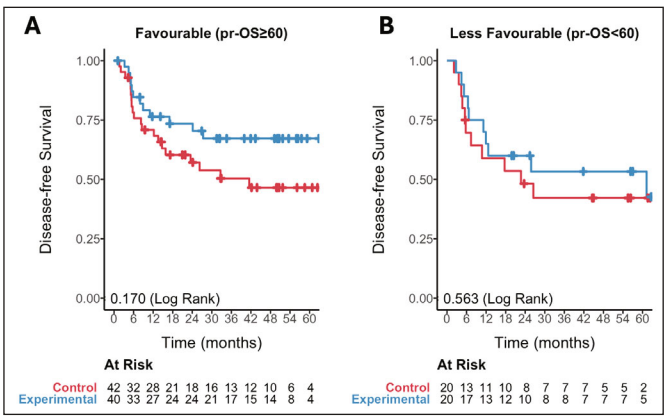

Figure 1. DFS by treatment arm and predicted OS (favourable group, 10-yr predicted OS >/= 60% vs less favourable group, 10-yr predicted OS < 60%)

P15

Potency of the new multikinase inhibitor NB003 for Gastrointestinal stromal tumor

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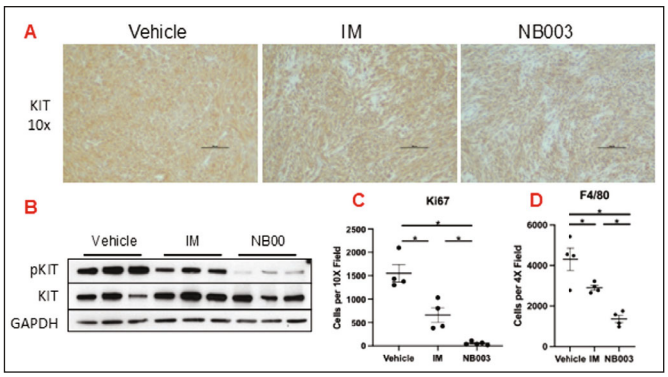
INTRODUCTION: Introduction: Gastrointestinal stromal tumor (GIST) is the most common human sarcoma, typically driven by a mutated Kit tyrosine kinase receptor. Imatinib, a tyrosine kinase inhibitor (TKI), is the first-line therapy in GIST. The fact that most patients ultimately acquire resistance to imatinib has prompted the development of TKIs targeting a broader spectrum of Kit mutations. One such TKI, NB003, has shown promising results in a Phase I clinical trial. We sought to test its anti-tumor effects in a

genetically engineered mouse model of GIST. **METHODS:** Methods: Female KitV558D/+ mice (8 week-old, n=5/group) on a C57BL/6 background were treated with NB003 once daily by gavage for 14 days, imatinib in the drinking water, or vehicle. Tumor analysis included flow cytometry, microscopy, immunohistochemistry, PCR and western blot. **RESULTS:** Results: NB003 resulted in greater tumor weight reduction compared to imatinib (79% vs. 62%, p=0.03). There was markedly less tumor Kit staining in the NB003 group versus imatinib and control (Figure A), and western blot demonstrated significantly less phosphorylated Kit in the NB003 group compared to imatinib and vehicle (Figure B). Ki67 was significantly decreased in tumors treated with NB003 versus imatinib (Figure C, 96% decrease from vehicle vs. 58% from imatinib, p=0.01). We observed that mice treated with NB003 had some loss of fur pigmentation, indicating that it also inhibited wild-type Kit and not just mutant Kit. We also noted that the livers of mice treated with NB003 appeared paler and less healthy than livers from mice treated with imatinib or vehicle control, with 3 of 5 mice experiencing a marked rise in alkaline phosphatase versus those treated with imatinib. Since we have previously demonstrated that a subset of Kupffer cells in the liver depend on the tyrosine kinase receptor CSF1R, we stained livers for the Kupffer cell marker F4/80. NB003-treated animals had substantial depletion of F4/80+ Kupffer cells compared to those treated with imatinib (Figure D, 67% vs. 47%, p=0.03). **CONCLUSIONS:** Conclusions: NB003 has greater efficacy in a mouse model of GIST in terms of tumor weight, Kit signaling, and proliferation and even inhibits wild-type Kit. Nevertheless, NB003 initially has some liver toxicity that is associated with a reduction in liver Kupffer cells.



Figure

P16

Localized Drug Delivery for Retroperitoneal Sarcoma (RPS): An Organotypic Model

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INTRODUCTION: RPS exhibit a high locoregional recurrence rate after macroscopically complete resection. Systemic therapies have limited efficacy and significant adverse effects. Localized drug delivery platforms delivering these same systemic therapies lead to decreased recurrence and improved survival in small animal models. This study employed organotypic culture to characterize the mechanism of action of paclitaxel (PTX) delivered at sustained supratherapeutic doses. Submitted to SUS ASC Feb 2026. **METHODS:** 2 million liposarcoma cells (LP6) were subcutaneously inoculated into NU/J mice and allowed to grow until 1,000 mm3. Tumors were harvested, sliced with a vibratome (250 µm), and cultured. LP6 monolayer culture served as a control. Model viability (days 0-10) was established with MTS, trypan blue, and amine reactive dye via flow cytometry. Tumor slice microenvironment characterization was performed via staining with CD44, a cell surface adhesion protein overexpressed in sarcoma. Tumor slice cell viability in response to varying concentrations (0.1-30,000 ng/mL) and exposure time (day 1-4) of PTX was established via MTS and flow cytometry. Differential gene expression was examined using a qPCR cancer gene array. Functional validation of caspase 8 activity was performed with fluorescence inhibitor of caspase staining via flow cytometry. **RESULTS:** Organotypic culture viability was maintained up to 7 days with greater than 50% viability. Tumor slices were composed of 82% human liposarcoma cells by CD44 staining with the remainder being mouse stroma. A decrease in tumor slice cell viability was seen only at 30,000 ng/mL and 4-day treatment with PTX (24%) with a 7,000X right shift in IC50 as compared to monolayer (57,505 vs 8.17 ng/mL, p< 0.001), while lower concentrations or shorter exposure did not lead to cell death, contrary to monolayer behavior. A subset of 17 genes was significantly differentially expressed as compared to untreated controls after 4 days of treatment, while no genes were differentially expressed after 1 day. Gene set enrichment analysis demonstrated enrichment in apoptotic, extracellular matrix, cell motility, and cell cycle pathways. Caspase 8 activation occurred at ≥10,000 ng/mL PTX after 4 days of treatment (39% & 75% for 10,000 & 30,000 ng/mL PTX of dying or dead cells, respectively). **CONCLUSIONS:** A reproducible, representative organotypic culture model of liposarcoma was established. This model exhibited drug resistance at conditions mimicking systemic administration, but demonstrated susceptibility at sustained supratherapeutic conditions, such as those achieved by localized drug delivery systems, via modulation of apoptotic and drug resistance pathways.

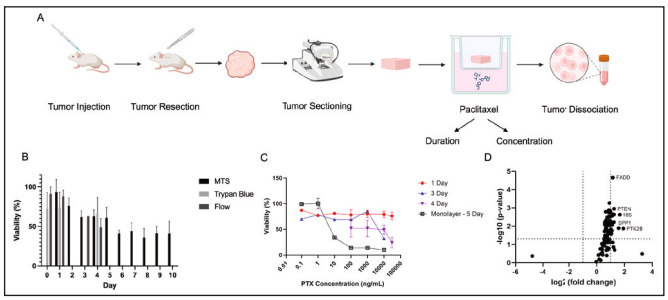

Figure 1. A: Organotypic model schema demonstrating liposarcoma 6 cell line injection, tumor resection, sectioning, treatment with paclitaxel, and dissociation in cases of single cell assays. B: Cell viability via MTS, trypan blue, and flow cytometry amine reactive dye from culture day 0 to 10 for 8mm slices (p-value = 0.258 for assay technique, p-value < 0.0001 for time, two-way ANOVA). C: Viability as measured by flow cytometry using an amine reactive dye demonstrates cell death at 10,000 ng/mL or greater when treated for at least 3 days. Monolayer viability is measured by MTS. D: Differential gene expression from Taqman Array Human Molecular Mechanisms of Cancer for tumor slices treated with 10,000 ng/mL paclitaxel for 4 days as compared to day 4 untreated tumor slices. 17 genes are significantly differentially expressed.

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Impact of surgery on survival in SDH-deficient GISTs: an update from the NIH Wild-Type GIST Clinic

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INTRODUCTION: Succinate dehydrogenase-deficient gastrointestinal stromal tumors (SDH-def GISTs) exhibit a more indolent disease course compared to non-Wild Type GISTs. The lack of effective systemic therapies leaves surgery as the mainstay of treatment, even when metastatic. In this study, we aim to evaluate characteristics, surgical outcomes, and long-term survival in patients with SDH-def GIST seen at the NIH. **METHODS:** This is a retrospective chart review of patients diagnosed with SDH-def GIST by immunohistochemistry and/or molecular testing from the Wild-Type (WT) GIST clinic database from 01/2008 to 10/2025. Medical records, clinical notes, operative and histopathology reports, imaging studies, germline testing, and

results of next generation sequencing of tumor tissue were reviewed. Time from diagnosis to date of last known follow-up was used as a surrogate for survival. Kaplan-Meier curves and cumulative distribution graphs were used to model overall survival. **RESULTS:** Among 117 patients with confirmed SDH-def GIST, all mutational subtypes were represented. Mean follow-up with our institution was 3.6 years (SD 4.4, 95% CI [2.8-4.4]). 40 patients (34.2%) had metastases at diagnosis via imaging or discovered at index surgery, with the liver being the most common site (50%). 71 patients (64%) experienced recurrence or progression after their first surgery, with multiple sites involved (liver, intra-abdominal/peritoneal, and/or lymph nodes) in 47.9% of all recurrences. 14 patients (12%) died during the course of this study. Mean survival was calculated to be 8.4 years (SD 8.4, 95% CI [0.69-38.9]). Kaplan-Meier curves showed a mean overall survival of 10.8 years for patients who underwent 1 surgery, 10.2 years for patients who underwent 2 surgeries, and 19.8 years for patients who underwent ≥3 surgeries. **CONCLUSIONS:** SDH def GISTs exhibit an indolent course, with most patients living more than 5 years after diagnosis. Many patients will experience recurrence and/or progression during their disease courses but lack proven effective systemic therapies. Until such therapies exist, our data supports the close monitoring and intermittent debulking of these recurrences for symptomatic management and prolonging survival.

P18

ERR-α promotes gastrointestinal stromal tumor proliferation via Wnt/β-catenin

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INTRODUCTION: Tyrosine kinase inhibitor (TKI) resistance remains a barrier to effective treatment of advanced gastrointestinal stromal tumors (GISTs). Using transcriptomics to identify alternative targets, we discovered that GISTs express high levels of estrogen-related receptor-alpha (ERR-α), an orphan nuclear receptor that promotes tumor progression and metastasis in various types of cancer. The aim of this study is to investigate the function of ERR-α in GIST to assess its potential as a therapeutic target. **METHODS:** We used a selective ERR-α inhibitor (XCT790) or ERR-α siRNA to study the effects of ERR-α inhibition in human GIST cell lines T1 and HG129 (imatinib-sensitive) and HG130 (imatinib-resistant). Breast cancer cell line, MCF7, was used as a positive control. Dojindo CCK-4 assay was used to measure cell viability and scratch assay used to assess cell migration. Western blot and qPCR were used to detect changes in protein or mRNA levels. Bulk RNA sequencing was performed on T1 cells after ERR-α knockdown or non-target control (n=3). **RESULTS:** qPCR and Western blot confirmed high ERR-α expression in the 3 GIST cell lines and 10 primary human GISTs relative to MCF7. Pharmacologic ERR-α inhibition with XCT790 significantly reduced cell viability at 72 hours in T1 (10 μM), HG129 (10 μM), and HG130 (20 μM) (all $p < 0.01$) (Fig 1A). ERR-α knockdown similarly decreased viability and KIT expression (both $p < 0.01$). Bulk RNA-seq of ERR-α knockdown was performed and analysis showed significant downregulation of pathways that promote migration and metastasis (Figure 1B) including Epithelial-Mesenchymal Transition (EMT), Colorectal Cancer (includes Wnt/β-catenin) and TGF-β signaling (Figure 1B) pathways. qPCR and Western blot of select genes supported these findings and showed a dramatic drop in β-catenin ($p = 0.0001$) and suppression of downstream β-catenin targets Cyclin D1, Snai1, and WNT11 ($p < 0.0001$). The effects on Wnt/β-catenin are particularly interesting because our prior research has shown upregulation of this pathway can contribute to tumor growth and aggressive GIST phenotypes. Additionally, we tested invasion and metastatic potential by performing a scratch assay. We observed significantly less wound closure ($p < 0.01$; Figure 1C) and impaired migratory capacity in cells treated with XCT790, further supporting our RNA-seq analysis. **CONCLUSIONS:** Our evidence shows ERR-α is highly expressed in GIST and primarily targets genes that promote loss of adhesion, EMT, and eventual metastasis. This leads us to conclude that ERR-α is a key regulator in GIST progression and may be an effective therapeutic target for treatment.

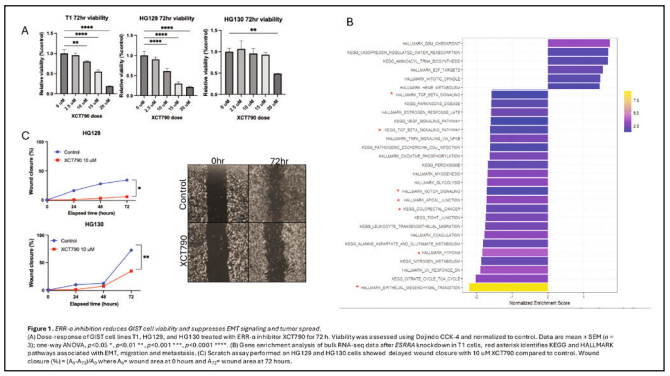

Figure 1. *ERR-α inhibition reduces GIST cell viability and suppresses EMT signaling and tumor spread.* (A) Dose–response of GIST cell lines T1, HG129, and HG130 treated with ERR-α inhibitor XCT790 for 72 h. Viability was assessed using Dojindo CCK-4 and normalized to control. Data are mean ± SEM ($n = 3$); one-way ANOVA, $p<0.05$ *, $p<0.01$ **, $p<0.001$ ***, $p<0.0001$ ****. (B) Gene enrichment analysis of bulk RNA-seq data after *ESRRA* knockdown in T1 cells, red asterisk identifies KEGG and HALLMARK pathways associated with EMT, migration and metastasis. (C) Scratch assay performed on HG129 and HG130 cells showed delayed wound closure with 10 uM XCT790 compared to control. Wound closure (%) = $[A_0-A_{72}]/A_0$, where A_0= wound area at 0 hours and A_{72}= wound area at 72 hours.

P19

BayeSarc: Bayesian Update of Sarculator for Primary Retroperitoneal Sarcoma

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INTRODUCTION: The objective of this study was to develop a geotemporally sensitive update of Sarculator (BayeSarc) for application to patients with primary retroperitoneal sarcoma (RPS), using Bayesian Sequential Learning (BSL). Unlike Sarculator, which is built on a traditional two-phase development–validation framework, using one cohort for model training and others for external validation, BayeSarc employs sequential updating to integrate information from each new cohort. This allows the model to dynamically adjust hazard ratios (HRs) and capture temporal or cohort-related variations in prognosis, thereby optimizing the use of available data. **METHODS:** BayeSarc applies a BSL adaptation of the Cox proportional hazards model to predict overall survival (OS) and disease free survival (DFS) in patients with primary localized RPS treated with surgery. Starting from the original Sarculator cohort (Milan, 2010-2017), BayeSarc sequentially integrated seven additional cohorts of patients with primary RPS treated with surgery during the same study period (London, Paris-IGR, Toronto, Boston, Warsaw, Paris-Curie, Amsterdam). At each iteration, the posterior distribution of all parameters becomes the prior for the subsequent step. This approach efficiently leverages prior knowledge, continuously updates the model, and simultaneously provides external validation at each step. BayeSarc performance at 5 years post-resection was evaluated using Harrell's C-index and Brier score (BS), and compared with Sarculator. **RESULTS:** Overall 1101 patients from eight centers were included. BayeSarc was based on the Sarculator variables: age, tumor size, FNCLCC grade, histology, multifocality, completeness of resection and center volume (high volume if ≥13 patients/year). Compared with Sarculator, BayeSarc achieved equal or superior discrimination (higher C-index) and calibration (lower BS), as shown in Table 1. For OS, the C ranged from 0.610-0.796 (mean 0.706) for Sarculator vs 0.674-0.821 (mean 0.741) for BayeSarc; the 5-year BS ranged 0.155-0.238 (mean 0.191) vs 0.144-0.201 (mean 0.167). DFS performance metrics were similarly impacted (Table 1). Moreover, BayeSarc substantially reduced uncertainty: credibility intervals were ~60% narrower for the C-index (OS/DFS) and ~26% (OS) and ~69% (DFS) narrower for the 5-year BS. **CONCLUSIONS:** BayeSarc provides more accurate and precise predictions for both OS and DFS in patients with primary RPS compared with Sarculator. It reduces uncertainty, refines variable weighting, and enhances model generalizability across centers.

Table 1

Cohort	Sarculator		BayeSarc	
	C-index (95% CrI)	Brier 5-year (95% CrI)	C-index (95% CrI)	Brier 5-year (95% CrI)
		OS		
Milan	0.751 (0.726–0.763)	0.155 (0.150–0.162)	0.751 (0.726–0.763)	0.155 (0.150–0.162)
Boston	0.610 (0.492–0.688)	0.198 (0.172–0.238)	0.674 (0.628–0.714)	0.166 (0.155–0.186)
London	0.707 (0.640–0.751)	0.179 (0.162–0.200)	0.777 (0.761–0.791)	0.150 (0.144–0.157)
Warsaw	0.796 (0.747–0.829)	0.176 (0.159–0.196)	0.821 (0.798–0.838)	0.144 (0.132–0.158)
Paris IGR	0.716 (0.668–0.745)	0.168 (0.149–0.188)	0.734 (0.713–0.752)	0.159 (0.149–0.171)
Paris-Curie	0.690 (0.632–0.749)	0.238 (0.195–0.286)	0.726 (0.692–0.761)	0.194 (0.165–0.232)
Toronto	0.659 (0.573–0.702)	0.182 (0.166–0.203)	0.714 (0.690–0.732)	0.170 (0.162–0.178)
Amsterdam	0.722 (0.637–0.779)	0.230 (0.200–0.266)	0.731 (0.701–0.758)	0.201 (0.178–0.227)
		DFS		
Milan	0.701 (0.689–0.710)	0.192 (0.187–0.199)	0.701 (0.689–0.710)	0.192 (0.187–0.199)
Boston	0.638 (0.600–0.677)	0.238 (0.200–0.278)	0.643 (0.617–0.668)	0.207 (0.188–0.232)
London	0.680 (0.638–0.712)	0.205 (0.192–0.221)	0.701 (0.689–0.711)	0.196 (0.191–0.203)
Warsaw	0.762 (0.716–0.793)	0.169 (0.148–0.195)	0.779 (0.763–0.796)	0.140 (0.132–0.149)
Paris IGR	0.672 (0.644–0.695)	0.217 (0.205–0.233)	0.672 (0.655–0.690)	0.210 (0.203–0.218)
Paris-Curie	0.720 (0.683–0.763)	0.225 (0.192–0.265)	0.726 (0.699–0.752)	0.212 (0.187–0.246)
Toronto	0.679 (0.629–0.726)	0.212 (0.190–0.234)	0.699 (0.679–0.718)	0.209 (0.200–0.219)
Amsterdam	0.674 (0.603–0.742)	0.235 (0.195–0.288)	0.729 (0.698–0.748)	0.188 (0.175–0.204)

Table legend: C-index, Harrell's C-index; CrI, Credibility Interval; Brier, Brier Score; OS, Overall Survival; DFS, Disease Free Survival.

P20

Extracellular vesicle–mediated delivery of miR-210 drives angiogenesis in retroperitoneal sarcomas

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INTRODUCTION: Retroperitoneal soft-tissue sarcomas (RSTS) are rare and heterogeneous tumors. Angiogenesis, a fundamental hallmark of cancer, is essential for tumor progression and metastasis. Extracellular vesicles (EVs) serve as key mediators of intercellular communication and can modulate angiogenesis through the transfer of molecular cargo, including miRNAs. In this study, we explore the pro-angiogenic role of miR-210 carried by RSTS-derived EVs, using an innovative multicellular 3D spheroid model. **METHODS:** Extracellular vesicles (EVs) were isolated from human liposarcoma, fibrosarcoma, and leiomyosarcoma cell cultures and used to stimulate endothelial cells (ECs). Functional assays were performed to assess EC proliferation, migration, and invasion, while angiogenesis was evaluated using in vitro Matrigel tube formation and in vivo plug assays. The expression of angiogenesis-associated microRNAs (miR-130a and miR-210) was quantified in both RSTS-derived EVs and in stimulated ECs by qRT-PCR. Finally, multicellular 3D spheroids composed of ECs and RSTS cells were employed to specifically investigate the role of EV-derived miR-210 in angiogenesis. **RESULTS:** EVs derived from all three RSTS cell lines markedly enhanced EC proliferation, migration, and invasion. They also promoted angiogenesis, as demonstrated by increased tube formation in vitro and elevated CD31-positive vessel density in plug assay sections in vivo. In addition, ECs exposed to RSTS-derived EVs showed upregulation of miR-130a and miR-210. Multicellular spheroids composed of ECs and RSTS cells were successfully generated, and treatment with EVs overexpressing miR-210 led to an increased number of ECs within the spheroids. **CONCLUSIONS:** RSTS-derived EVs promote angiogenesis by enhancing endothelial cell functions and transferring pro-angiogenic miRNAs, particularly miR-210. These findings suggest that EV-mediated signaling contributes to sarcoma progression through modulation of the tumor microenvironment.

P21

Histology, age and prior radiation are associated with germline predisposition risk in surgical patients with soft tissue sarcoma

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INTRODUCTION: Over 50% of soft tissue sarcoma (STS) patients with heritable risk factors do not meet criteria for classic clinical syndromic diagnoses. This study sought to evaluate patient and histology-specific characteristics associated with germline mutations in STS surgery patients. **METHODS:** Genomic and matched normal blood samples from 650 patients surgically treated for STS from 1993 to 2024 were sequenced with targeted sequencing panels; germline variants were called using a standardized, CLIA-approved, institutional pipeline. Annotation of STS histologic variants was performed using a prospectively maintained database. Univariate logistic regression models were applied to assess risk of germline mutations. **RESULTS:** Germline mutations were detected in 169 (26%) patients; 61% (n=103) of these mutations had not been diagnosed with prior testing or clinical criteria. The most common events were noted in NF1 (n=39), TP53 (n=19), DNA damage repair genes (n=40), RB1 (n=7), mismatch repair genes (n=10) and the SDH gene family (n=15). Risk of germline mutations was higher in STS patients with genomically complex tumors (109/352, 31%) than in those with translocation-associated lesions (23/191, 12%; OR=3.28, p< 0.001). In the whole cohort, age was not related to risk, but among patients with genomically complex STS, risk was significantly higher in patients diagnosed at age < 42 years (median age of cohort) as compared to those in the older age group (44 vs. 22%, OR=2.74, p< 0.001). High rates of germline mutations were observed not only in patients with malignant peripheral nerve sheath tumor (MPNST, 72% with germline NF1 or CDKN2A mutations) and wild-type GIST (62% with NF1 or SDH family events), but also among those with soft tissue leiomyosarcoma (33% of patients noted to have germline mutations), sarcoma, NOS (31%), epithelioid sarcoma (27%), undifferentiated pleomorphic sarcoma (27%), myxofibrosarcoma (26%), and angiosarcoma (AS; 23%). 38% (10/26) of patients with radiation-associated sarcomas (RAS) vs. 25% (159/624) of patients with sporadic STS had germline mutations (OR=1.83, p=0.14) with all AS-associated germline events (3 of 8 patients; 38%). **CONCLUSIONS:** Routine germline screening identified high rates of mutations associated with germline predisposition syndromes in STS patients undergoing surgery. In addition to standard testing for patients with MPNST or wild-type GIST, germline assessment should particularly be considered in cohorts with RAS and genomically complex tumors.

P22

Myeloid derived suppressor cells drive resistance to IL-15-based immunotherapy in mouse and human sarcoma

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INTRODUCTION: Myeloid derived suppressor cells (MDSCs) are immunosuppressive cells associated with poor outcomes in cancer, including sarcomas. Interleukin 15 (IL-15) is a pro-inflammatory cytokine that has shown promise in cancer immunotherapy, but efficacy is limited by toxicity. We have recently shown that adjuvant IL-15 led to paradoxically worse oncologic outcomes in dogs undergoing amputation for osteosarcoma and implicated the IL-15/IL-15 receptor alpha (IL-15RA) axis in MDSCs in the results. Here, we sought to characterize the effects of IL-15 on MDSC phenotype and function in human and mouse sarcomas. **METHODS:** Human MDSCs were generated in vitro with and without IL-15 prior to co-culture with stimulated NK and T

cells. Mouse MDSCs were isolated from spleens of tumor-bearing mice, with and without IL-15, and co-cultured with stimulated NK and T cells. Intratumoral MDSCs were isolated from sarcoma patients undergoing surgery and cultured with and without IL-15 before using flow cytometry and multiplex ELISA to evaluate phenotype and function. **RESULTS:** Human and mouse MDSCs cultured with IL-15 demonstrated significantly greater suppressive effects on NK and T cell proliferation ($P< 0.05$) and cytotoxicity ($P< 0.05$) as measured by Ki67 and Granzyme B. Sarcoma-infiltrating MDSCs cultured with IL-15 demonstrated significantly greater expression of inhibitory proteins PD-L1, B7H3, and CD155 ($P< 0.05$) and increased production of immunosuppressive cytokines IL-4, IL-13, and IL-10 as well as pro-tumorigenic factors MMP-1, MMP-9, and MCP-1 ($P< 0.05$ all). In a mouse model of surgery for sarcoma, MDSCs from tumor-bearing mice treated with IL-15 in vivo showed increased expression of PD-L1 and arginase-1 ($P< 0.05$). **CONCLUSIONS:** In human patients and mouse sarcoma models, IL-15 increases MDSC suppressive phenotype and function in vitro and in vivo leading to significantly decreased NK and T cell function. These findings in conjunction with previous canine data showing increased IL-15RA expression after surgery for sarcoma support our hypothesis that the IL-15/IL-15RA axis in MDSCs is a novel mechanism of resistance to IL-15 immunotherapy. Targeting MDSCs in the setting of IL-15 immunotherapy to improve outcomes in sarcomas appears warranted.

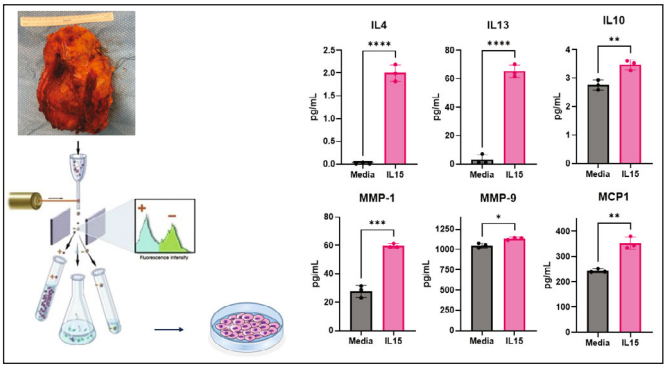

Figure. IL-15 increases immunosuppressive and pro-tumorigenic cytokine production by MDSCs

P23

Transcriptional heterogeneity in dedifferentiated liposarcoma reveals distinct cell-cycle subtypes

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INTRODUCTION: Our previous work in ER$^+$/HER2$^-$ breast cancer demonstrated that cell cycle plasticity underlies fractional resistance to CDK4/6 inhibition. Given the near universal CDK4 amplification in dedifferentiated liposarcoma (DDLPS) and heterogeneous responses to CDK4/6 inhibitors, variability in cell cycle regulation may impact sensitivity to CDK4/6 inhibitors. In this study we used gene expression data to define subtypes of dedifferentiated liposarcoma based on differential expression of cell cycle regulator genes to understand the landscape of cell cycle regulation that may contribute to variable CDK4/6i sensitivity. **METHODS:** RNA-sequencing data from The Cancer Genome Atlas (TCGA-SARC) were filtered for DDLPS cases (N=57). Expression values for key cell-cycle regulators (CDK4, CDK6, CCNA2, CCNB1, CCNE1, E2F1, RB1, MKI67, CDKN2A, CDK2) were z-score normalized and grouped using unsupervised spectral clustering. Cluster-level expression differences were analyzed and descriptive statistics were performed. **RESULTS:** Three transcriptionally distinct DDLPS subtypes were identified, reflecting differential activation of cell-cycle genes. The "Sensitive-like" subtype demonstrated lower expression of proliferation-associated genes and maintained features of RB-mediated control, consistent with canonical CDK4/6 dependence. In contrast, the "Resistant-like" subtype exhibited a hyperproliferative transcriptional profile with elevated E2F1, CCNE1, CCNA2, CCNB1, CDK2, and MKI67, suggesting functional bypass of the CDK4/6-RB checkpoint. A third, intermediate cluster showed partial overlap between the two phenotypes. Violin and heatmap analyses confirmed these differences, with clear segregation of proliferative markers between clusters (Figure 1A-B). Although CDK4 expression was uniformly high, variability in downstream regulators appeared to drive divergence in pathway activation, supporting intrinsic resistance in a subset of tumors. **CONCLUSIONS:** Transcriptomic clustering of TCGA DDLPS reveals molecular subtypes defined by distinct activation cell cycle mediators. These findings mirror resistance mechanisms described in breast cancer, suggesting that cell cycle plasticity resulting in escape from CDK4/6 mediated cell cycle arrest may be conserved across tumor types. These findings inform future studies to determine biomarkers to select patients for CDK4/6i therapy.

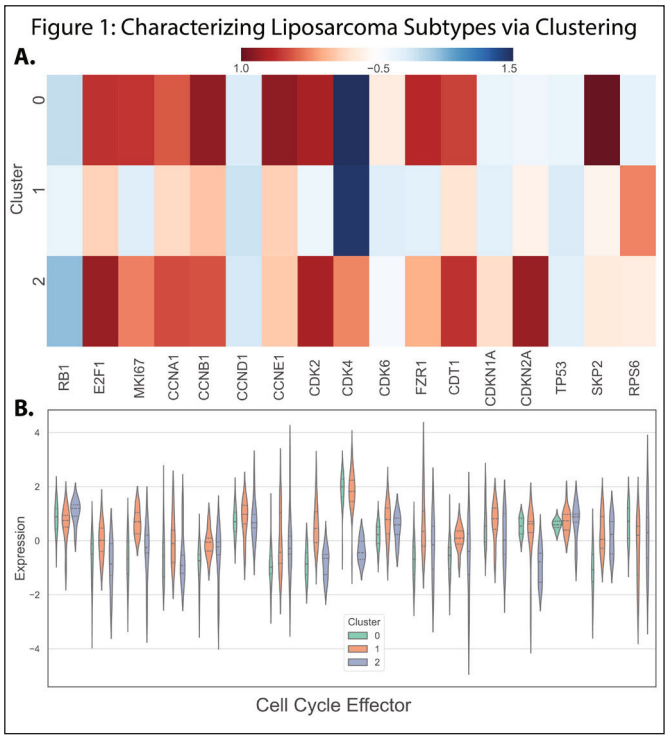

Figure. Transcriptomic clustering of TCGA dedifferentiated liposarcoma (DDLPS) based on cell-cycle gene expression. (A) Heatmap illustrating distinct transcriptional profiles within the CDK4/6–RB–E2F network, defining three DDLPS molecular subtypes. (B) Violin plots show normalized expression of cell-cycle regulators across clusters

P24

Cancer-associated Fibroblast Expression in Sarcomas Varies by Histology and Tumor Grade

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INTRODUCTION: Cancer-associated fibroblasts (CAF) play an active role in the tumor microenvironment. Sarcomas with high CAF are associated with superior overall survival and decreased markers of cell proliferation. Given the prognostic relevance of CAF, we investigated how the expression of CAF markers vary across different sarcoma grades. **METHODS:** The National Library of Medicine Gene Expression Omnibus Repository was queried for sarcomas with RNA sequencing. Two sets of sequencing had bulk RNA and tumor grade (GSE45510 and GSE221492). 135 tumors were included: 99 leiomyosarcomas (LMS) from GSE45510 and 36 dedifferentiated liposarcomas (DDLPS) from GSE221492. Bulk RNA sequencing was cleaned and TMP-normalized gene expression scores, calculated using RStudio, were used for downstream analysis. Pairwise Wilcoxon rank-sum test were applied to assess statistical differences between groups. P values were adjusted for multiple testing. **RESULTS:** Of the 135 tumors, 26 (19%) were low grade, 44 (33%) were intermediate grade, and 65 (48%) were high grade. CAF-like composition

differed between DDLPS and LMS, with DDLPS samples exhibiting higher CAF signals compared to LMS. We examined expression of 8 established CAF markers, 21 extracellular matrix (ECM) remodeling genes, and five gene sets from GSEA MSigDB. For DDLPS, only low- and intermediate-grade samples were compared, since the number of high-grade samples was limited. No significant differences were observed for ACTA2, FAP, PDGFRA, PDGFRB, VIM, S100A, PDPN, and TAGLN in DDLPS. However, VIM expression was significantly higher in low-grade compared to intermediate-grade tumors, as was S100A. Additionally, no significant differences were observed in the expression of the 21 ECM genes or in the angiogenesis, matrisome, and hypoxia gene sets between low- and intermediate-grade DDLPS tumors. With regard to LMS tumors, no significant correlations were observed between tumor grade and CAF markers. However, ECM genes such as MMP9, COL1A1, COL3A1, COL5A2, and POSTN showed significantly increased expression in high-grade compared to low-grade tumor samples. Compared to low-grade LMS, hypoxia-related genes were significantly upregulated in intermediate- and high-grade tumors. **CONCLUSIONS:** CAF marker and ECM gene expression were consistently higher in DDLPS samples across all grades compared to LMS. LMS samples showed a positive correlation between grade and several ECM markers. Intermediate- and high-grade LMS tumors exhibited increased hypoxic signaling. These findings highlight distinct grade-associated stromal dynamics between DDLPS and LMS.

P25

Pancreatic Cancer Derived Cancer Associated Fibroblast Inhibition of Cytotoxic T-cells is PD-L1 Dependent

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INTRODUCTION: Introduction: Pancreatic ductal adenocarcinoma (PDAC) has a poor prognosis with limited treatment options. Better understanding of cancer-associated fibroblasts (CAFs) in the immunosuppressive tumor microenvironment (TME) may improve therapeutic targeting of PDAC. Here, we show that immunosuppression mediated by patient-derived CAFs is dependent on its expression of immune checkpoints PD-1 and PD-L1. **METHODS:** Methods: Under IRB approved protocol, human surgical PDAC specimens were used to examine tumor immune components and its stromal interactions. Tumor was sectioned for histology, flow cytometry, organoid creation, tumor infiltrating lymphocyte (TIL) expansion, and fibroblast culture. Tissue slides were stained with fluorescent antibodies against CAF markers alpha smooth muscle actin (a-SMA) and fibroblast activation protein (FAP). Single-cells from tumor digest were used for isolation of TILs and expanded with IL-2 and anti-CD3/CD28 antibodies. CD45, CD3, CD4, CD8, CD25, CD69, PD-1, and ICOS antibodies were used to phenotype T-cells. Sections were stained with antibodies against immune markers CD3, CD69, CD25, FOXP3, PD-1 and PD-L1. CAFs were cultured from tumor in 3D matrix for 4-5 passages with FGF, and analyzed by flow cytometry, western blot, and qPCR. TILs were co-cultured with CAFs/CAF culture supernatant +/- PD-L1 inhibitor Atezolizumab or PD-1 inhibitor Pembrolizumab. TILs co-cultured were analyzed by flow cytometry, and co-culture media was analyzed IFN-g ELISA. **RESULTS:** Results: Flow cytometry showed that CAFs express PD-L1 and PD-1 on cell surface, and verified by western blot and qPCR. TILs co-cultured with CAFs or CAF supernatant showed >90% decreased IFN-g release vs control, however Atezolizumab and Pembrolizumab both significantly reduced release to 60% of control ($P< 0.05$). T-cells had increased surface PD-1 and reduced CD69, a marker of T-cell activation, however pre-treatment of CAFs with Atezolizumab significantly reduced reduction of CD69 on T-cells vs T-cells co-cultured with non-pretreated CAFs ($P< 0.05$). **CONCLUSIONS:** Conclusion: Our results indicate that CAFs contribute to T-Cell suppression in PDAC by expression of PD-L1. Reversibility of this process suggests a novel mechanism to incorporate immunotherapies to improve the cytotoxic immune response in PDAC.

P26

Enhancing efficacy of dual therapy KRAS inhibitor and B7-H3 CAR T cells in preclinical pancreatic ductal adenocarcinoma models

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INTRODUCTION: Chimeric antigen receptor (CAR) T cells targeting B7-H3 are an encouraging treatment option in pancreatic ductal adenocarcinoma (PDAC). Yet, their clinical application is hindered by the hostile tumor microenvironment (TME), made of a dense stroma with immunosuppressive cells limiting CAR T cell infiltration and cytotoxicity. Novel KRAS inhibitors provide initial tumor control but fail to deliver long-term survival due to resistance development. However, they promote favorable immunogenic and anti-tumor effects in the TME by increasing T cell infiltration and reducing myeloid-derived suppressor cells. While both are limited as single agent therapies, leveraging the immunomodulatory functions of the KRAS inhibitor can reshape the PDAC TME and enhance CAR T cell function. We evaluated the synergistic effect of B7-H3 CAR T cells and the pan-KRAS inhibitor daraxonrasib (DAR) in preclinical models of PDAC. **METHODS:** Patient-derived PDAC9 and cancer-associated fibroblast (CAF) cell lines were used for all experiments. In vitro, PDAC9 and CAF were co-cultured (1:1 ratio) and treated with a combination of DAR and B7-H3 CAR T cells at various effector to target (E:T) ratios. Cell viability was assessed via imaging and metabolic activity assays. In vivo, an immunodeficient, orthotopic PDAC mouse model was treated with 5 million B7-H3 CAR T cells alone, DAR alone (25 mg/kg), or in combination. Tumor size and survival were evaluated. **RESULTS:** In vitro the EC50 for PDAC9 was 57 nM. Combination therapy with B7-H3 CAR T cells and DAR was significantly more effective in killing tumor cells than either CAR alone or DAR alone, especially at lower E:T ratios (1:2. 1:4, 1:8) in vitro. The greatest synergistic effect was seen at the 1:8 E:T ratio with cell viability of 32.3% vs. 50.1% in DAR alone ($p< 0.007$) vs. 78.9% in CAR alone ($p< 0.001$). Combination therapy with CAR T cells at 1:1 E:T reached the lowest cell viability of 16.3%. In vivo, tumors were significantly smaller at death in the combination group with mean ± SD mm2 of 62.2 ± 23.9 compared to either therapy alone (DAR 109.3 ± 11.7, CAR T 151.6 ± 44.8, control 207.4 ± 55.7, $p< 0.001$). Survival was significantly longer in the combination and DAR groups ($p=0.03$). Further subgroup survival and B7-H3 CAR T cell phenotyping and penetration assays are ongoing and expected. **CONCLUSIONS:** B7-H3 CAR T cells synergize with daraxonrasib in killing PDAC cells and reducing tumor size, with the largest in vitro effect occurring at lower E:T ratios. By leveraging different mechanisms, this combination therapy is highly promising as an effective therapy in PDAC.

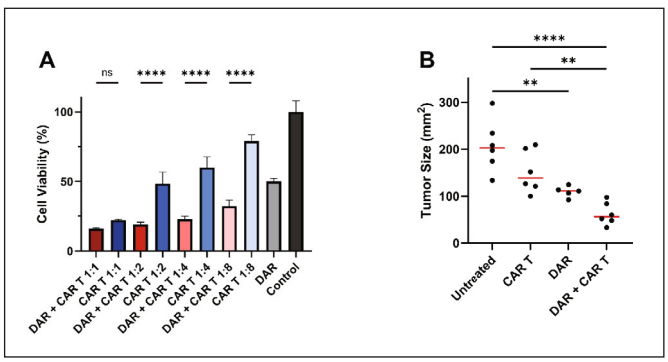

Figure 1. (A) PDAC9 and CAF cell viability after co-culture with B7-H3 CAR T cells at varying E:T ratios alone, DAR alone, or in combination measured via MTT assay. (B) Comparison of tumor size obtained from orthotopic PDAC mouse model at time of death.

P27

Pain mitigation in pancreatic adenocarcinoma: A long-term analysis of denervation via transvascular RF energy-based ablation

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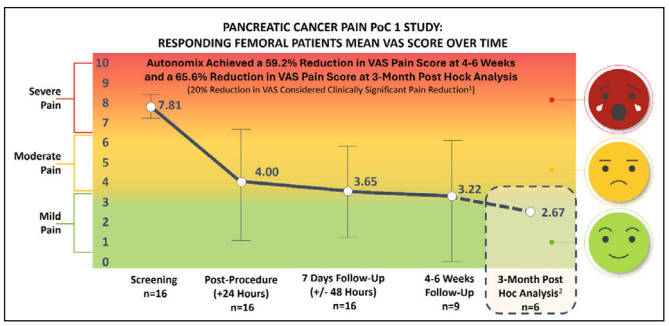
INTRODUCTION: The purpose of this study was to develop and

implement a procedure to reduce severe pain from pancreatic cancer due to overactive sympathetic nerve activity using transvascular radiofrequency (RF) nerve ablation. **METHODS:** 20 patients with severe abdominal pain from unresectable pancreatic cancer were enrolled and 19 treated with transvascular energy. Angio-CT/MRI were used to assess the tumor and plan the procedure. After accessing the vessel through a standard transfemoral or transbrachial approach, transvascular RF energy was delivered via catheter sequentially to multiple sites, including the celiac trunk, common hepatic artery, and/or splenic artery. All treated patients were evaluated within 24 hours, after 24 hours, 7 days, 4-6 weeks, and 3-months post-procedure for the following outcomes: adverse events, pain severity (VAS, 1-10), quality of life assessment (EORTC-30, 0-7), and opioid use. **RESULTS:** Responding femoral patients (N=16) represented 84% of treated patients with a mean pain reduction of 4.16 on the VAS pain scale (baseline of 7.81 to 3.65), or 53.3% improvement, at 7-days post-procedure. At 4-6 weeks post-procedure, responders (N=9) reported a mean 4.67 reduction on the VAS pain scale (baseline of 7.89 to 3.22), or 59.2% improvement. 100% of responders were at zero opioid use at 7-days post-procedure, while 73% of responders (N=11) were at zero opioid use at 4-6 weeks post-procedure. In a post hoc analysis, pain reduction remained consistent at 3 months post-procedure, where surviving patients in the responder group (N=6) reported a mean pain reduction of 5.08 (baseline 7.75 to 2.67) or 65.6% improvement. In addition to lasting pain relief, all responders (N=6) experienced remarkable improvement in global health (mean 76.5% improvement), functional ability (mean 51.5% improvement), and symptom management (mean 50.4% improvement). Additionally, 100% of responders (N=7) were opioid free at their 3-month post-procedure follow-up. There were no device or procedure-related serious adverse events. The number of patients decreased over time due to natural disease progression, including deaths unrelated to the procedure or device. **CONCLUSIONS:** RF ablation of the somatosensory nerve via a transfemoral approach to the celiac plexus showed significant pain relief, improved quality of life, and reduced opioid use. These promising feasibility results prove that transvascular RF nerve ablation is both safe and effective in reducing severe pain from pancreatic carcinoma.



P28

Development of patient derived organotypic spheroids to study immune checkpoint inhibition in colorectal liver metastasis following preoperative injection with OX40-ligand expressing oncolytic virus.

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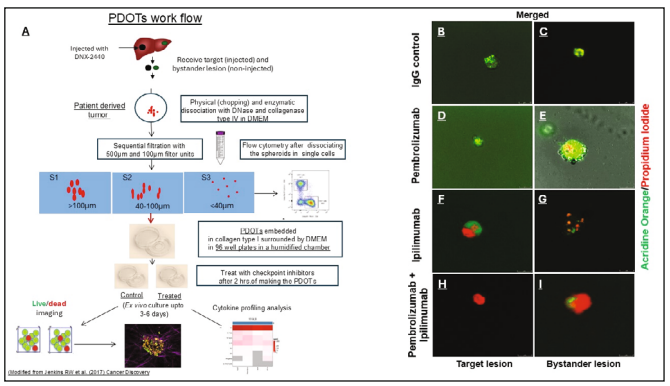
INTRODUCTION: Patients with colorectal liver metastasis (CRLM) have a 5-year overall survival of 15% with high risk of recurrence following curative surgery. Development of model systems to study alternative therapies is essential. We hypothesize that intra-tumoral injection of an oncolytic virus expressing OX-40 ligand (DNX-2440) would lead to innate and adaptive immunologic response against CRLM following immune check point inhibition (ICI). We present the development and characterization of patient derived organotypic spheroids (PDOTs) using CRLM injected with DNX-2440 followed by ex-vivo ICI treatment. **METHODS:** Patients with 2 or more CRLM undergoing curative intent surgical resection were enrolled in a phase 1 trial testing pre-operative injection of DNX-2440 in a target lesion, followed by resection of both target and bystander (non-injected) lesions. Designated patient tumor tissue was harvested, and PDOTs were created, incubated for 4-5 days and tested with single or dual ICI. Culture media from the incubations experiments was used to perform cytokine profiling analysis (Bio-Plex Pro Human cytokine 10-plex assay). Flow cytometry using cell lineage markers, and Live/Dead staining was used to characterize PDOTs and ICI response. **RESULTS:** Among 7 treated patients,13 tumors were harvested, and PDOTs successfully created from 6 paired target and bystander lesions and 1 unpaired target lesion. Flow cytometry analysis of PDOTs revealed presence of immune and non-immune cellular populations. Notably, we noted significant heterogeneity in cellular populations and tumor viability across all PDOTs. Cytokine analysis revealed consistent expression of IL-6 in 4 of 6 paired patient samples, while TNF-alpha, IL-10 and IL-1 cytokines were only detected in 2 of 6 paired patient's samples. We observed variability to single and dual ICI treatment, ranging from cell death induction to no response. Interestingly, similar treatment responses were seen in 3 of 6 patients paired lesions suggesting an abscopal effect. **CONCLUSIONS:** Colorectal liver metastasis PDOTs can be successfully generated as a model system to recapitulate the CRLM tumor microenvironment, and as such represents a good model to study ex-vivo personalized treatments. PDOTs assays revealed tumor heterogeneity following DNX-2440 and ICI treatment highlighting the importance of personalized treatment for patients. Future studies will aim to understand the intra-patient tumoral heterogeneity observed in this study.



P29

Detecting Early Failure in Pancreatic Cancer: Persistent ctDNA Identifies Chemotherapy Resistance after Neoadjuvant Therapy

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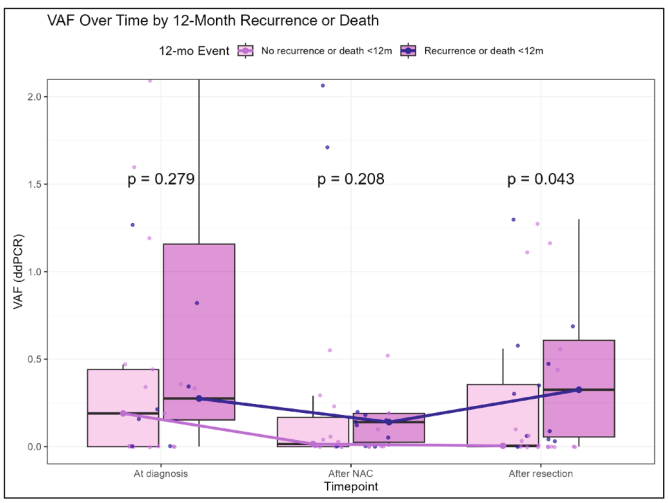
INTRODUCTION: Early recurrence remains common in pancreatic ductal adenocarcinoma (PDAC) despite multimodality treatment. Circulating tumor DNA (ctDNA) offers a sensitive tool to detect minimal residual disease (MRD). We evaluated a highly sensitive assay for KRAS-mutant ctDNA to identify persistent MRD and chemotherapy resistance in patients treated with neoadjuvant chemotherapy (NAC), surgery, and adjuvant chemotherapy

(AC). **METHODS:** Patients with localized PDAC were enrolled in a phase II pragmatic trial (NCT04616131) from Oct. 2020 - Dec. 2024 and treated with NAC, surgery, and AC. Digital droplet PCR was used to probe for KRAS G12D, G12V, and G12R mutations and quantified maximum variant allele frequency (mVAF). Recurrence-free survival (RFS) from resection was estimated by Kaplan-Meier and compared using Multivariable Cox regression adjusting for age, sex, and clinical stage. VAF differences were assessed by Wilcoxon rank-sum test. **RESULTS:** Among 58 patients who received NAC and resection, 160 total blood samples were collected. Median NAC duration was 2.6 months, and 96.5% achieved R0 resection. Patients who were ctDNA+ (n = 31) after surgery had shorter RFS vs ctDNA- patients (median 16.3 vs 28.6 mo, p = 0.037), which independently predicted RFS in multivariable analysis (adjusted hazard ratio [aHR] 7.36, 95% CI 2.20–24.67, p = 0.001). Lack of ctDNA clearance from diagnosis to post-resection yielded shorter RFS compared to the 59% of patients who cleared ctDNA (median 13.4 vs 28.6 mo, p = 0.016; aHR 17.77, CI 1.28–247.31, p = 0.032). Patients recurring within ≤12 months of surgery had dramatically higher ctDNA mutational burden postoperatively than those who recurred >12 months (median 0.325% mVAF vs 0.005% mVAF, ~65-fold, p = 0.043; Figure 1), which independently predicted RFS (aHR by 0.1% mVAF increase: 1.22, CI 1.08–1.38, p = 0.001). In 45 patients who completed AC, treatment failed to mitigate the poor prognosis of those who were ctDNA+ after NAC and surgery, with median RFS limited to 16.6 months (vs not reached in ctDNA-, p = 0.041), and only 9 of 28 clearing ctDNA with AC. **CONCLUSIONS:** Persistent KRAS ctDNA after NAC and surgery identifies patients with chemotherapy-resistant disease, susceptible to early recurrence despite AC. These findings highlight that AC fails to overcome poor biology of ctDNA+ disease. Evaluation of ctDNA mutational burden and clearance support quantitative ctDNA monitoring for risk-adapted postoperative management. This high-risk group may benefit most from novel KRAS-directed therapies.



P30

Adjuvant Chemotherapy in Pancreatic Ductal Adenocarcinoma Patients After Pathologic Complete Response to Neoadjuvant Treatment: Necessary or Overtreatment? An Insight from NCDB

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INTRODUCTION: Pancreatectomy is the main treatment for patients with resectable pancreatic ductal adenocarcinoma (PDAC). Neoadjuvant treatment (NAT) has emerged as an important strategy to improve outcomes in patients with borderline resectable and locally advanced PDAC. The pathologic response to NAT serves as an important surrogate marker of NAT efficacy. The aim of this study was to evaluate the potential benefit of adjuvant chemotherapy (AC) in PDAC patients who achieved a pathologic complete response (PCR) after receiving NAT. **METHODS:** Utilizing the National Cancer Database, we included all patients with stage I–III PDAC diagnosed between 2010 and 2021 who achieved a PCR after receiving NAT and followed by a pancreatectomy. Patients who died within 30 days of surgery were excluded. PCR was defined as ypT0ypN0. Multivariable Cox hazard regression analysis was performed to evaluate factors associated with overall survival (OS). Kaplan–Meier survival analysis was used to demonstrate OS across different groups. **RESULTS:** Among 16,858 individuals who met the inclusion criteria, 536 (3.2%) patients achieved a PCR. Patients with a PCR had a higher median OS compared to those who did not achieve a PCR (105 vs 25 months, p < 0.001) (Figure 1). Among patients with a PCR, 106 (19.8%) received AC. There was no statistically significant difference in baseline characteristics (age, sex, Charlson comorbidity index, cT, cN, and tumor location) between patients who did or did not receive AC. Among patients that achieved a PCR, the adjusted multivariable analysis revealed no significant difference in survival between patients who received AC and those who did not (adjusted hazard ratio [aHR]: 0.86; 95% CI: 0.57-1.31; P = 0.49). However, among patients who did not achieve a PCR, receiving AC was associated with higher OS compared to patients who did not receive AC (aHR: 0.78, 95% CI: 0.73-0.83, P < 0.001). **CONCLUSIONS:** Although the rate of a PCR remains low among PDAC patients who received NAT, receiving AC after achieving a PCR was not associated with a survival difference. This study also confirmed findings from previous studies that OS was significantly higher among patients that achieved a PCR. Nevertheless, AC was associated with higher survival in patients that did not have a PCR. These findings should be considered when discussing role of adjuvant treatment for patients with PDAC that have a PCR after NAT.

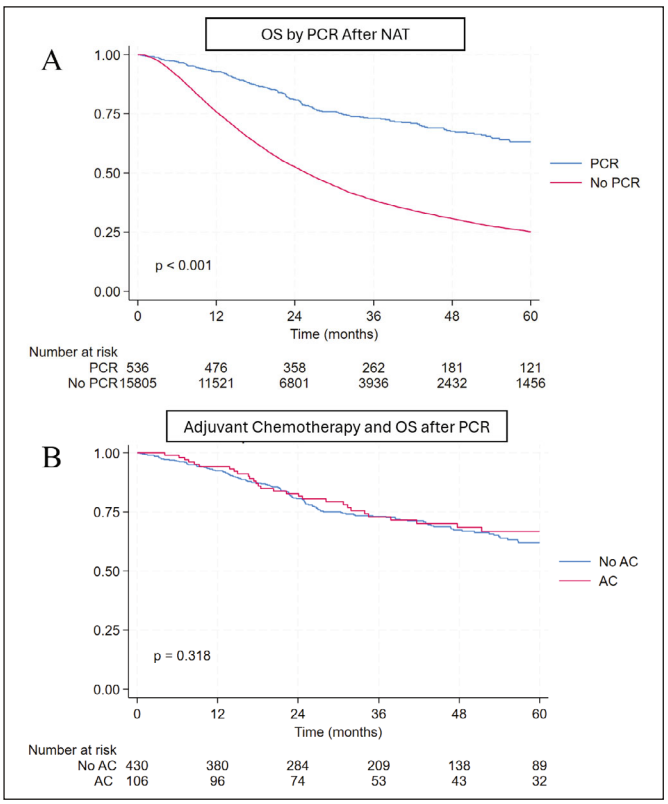

Figure 1. Kaplan-Meier curves comparing overall survival (OS): A) association between PCR and OS among patients who received neoadjuvant treatment (NAT) followed by a pancreatectomy, and B) association between adjuvant chemotherapy and OS among patients that had a PCR after NAT.

P31

Long-term outcomes of adjuvant hepatic arterial infusion chemotherapy after resection of hepatic metastases from colorectal cancer: a secondary analysis of a phase III trial

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INTRODUCTION: Multiple randomized trials have demonstrated that perioperative systemic chemotherapy following resection of colorectal liver metastasis (CRLM) does not improve overall survival (OS). Hepatic arterial infusion (HAI) plus systemic chemotherapy has been shown as the only adjuvant therapy to significantly improve 2-year OS in a randomized trial. **METHODS:** This is a secondary analysis of a single-institution, phase III trial that enrolled 156 patients with resected CRLM between 1991–1998, with follow-up updated as of February 7, 2025. The primary aim was to assess long-term oncologic outcomes (hepatic recurrence, recurrence at any site, disease specific survival), estimated using cumulative incidence functions to account for competing risks (death without hepatic recurrence, death from other/unknown causes). Comparisons were made using Gray's test. Overall survival was estimated using Kaplan-Meier (KM) and median follow-up via reverse KM. **RESULTS:** A total of 156 patients were treated on trial and randomized to receive adjuvant HAI with floxuridine plus systemic fluorouracil (n=74) or systemic fluorouracil alone (n=82). The median follow-up was 26 years (95% CI: 19-29) for the entire cohort. The cumulative incidence of hepatic recurrence at 5 and 10 years was 27% (95% CI: 17–38) and 30% (95% CI: 20–41) in the HAI group, versus 52% (95% CI: 40–62) and 53% (95% CI: 41–64) in the systemic group (p=0.002). The cumulative incidence of recurrence (any site) at 5 and 10 years was 58% (95% CI: 46–68) and 62% (95% CI: 50–72) in the HAI group, versus 63% (95% CI: 52–73) and 70% (95% CI: 58–78) in the systemic group (p=0.2). Median OS was 5.7 years (95% CI: 4.4-12) in the HAI group and 4.9 years (95% CI: 3.5-7.1) in the systemic therapy. The cumulative incidence of disease-specific death at 5, 10, and 15 years was 39% (95% CI: 28–50), 55% (95% CI: 43–66), and 55% (95% CI: 43–66) in the HAI group, versus 50% (95% CI: 39–60), 63% (95% CI: 52–73), and 66% (95% CI: 55–76) in the systemic group (p=0.14). **CONCLUSIONS:** Adjuvant HAI in combination with systemic chemotherapy offer long-term durable hepatic disease control after resection of CRLM. Although differences in disease-specific death were not statistically significant, this was an underpowered study for long-term survival outcomes; nevertheless, the effect size and direction of the association support a potential oncologic benefit and justify renewed investigation of HAI in contemporary randomized trials.

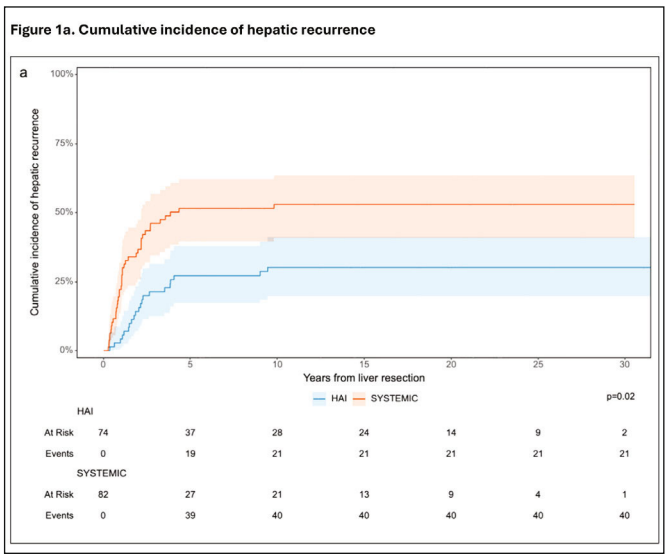

Figure 1a. Cumulative incidence of hepatic recurrence

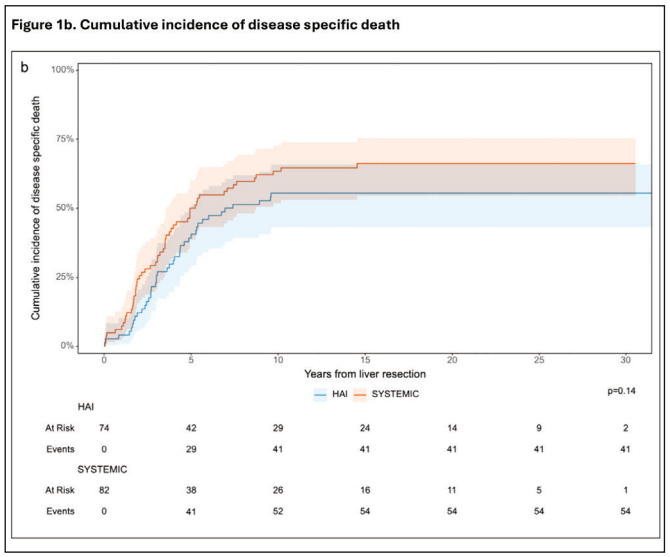

Figure 1b. Cumulative incidence of disease specific death

P32

MasSpec Pen Performance in Distinguishing Hepatocellular Carcinoma from Non-Malignant Liver Tissue: An Ex-Vivo Analysis

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INTRODUCTION: Hepatocellular carcinoma (HCC) remains a leading cause of cancer-related mortality worldwide. Curative-intent hepatectomy offers the best opportunity for long-term survival; however, differentiating tumor from cirrhotic parenchyma or regenerative nodules intraoperatively can be challenging, with significant clinical implications. This study evaluated the diagnostic performance of the MasSpec Pen, a handheld mass spectrometry–based device, in distinguishing malignant from benign hepatic tissue. **METHODS:** An ex vivo analysis was conducted on banked human liver tissues, including 82 non-malignant and 33 HCC specimens. Each analyzed region was correlated with matched histopathology. Molecular data were used to construct and validate classification models differentiating HCC from benign liver based on metabolic and lipidomic signatures based on Least Absolute Shrinkage and Selection Operator (LASSO) regression. **RESULTS:** The MasSpec Pen identified distinct molecular fingerprints between malignant and non-malignant tissues. The resulting model achieved 96% sensitivity, 82% specificity, and 86% overall accuracy in the training cohort (n = 92), and 100% sensitivity, 81% specificity, and 86% accuracy in the validation cohort (n = 22). Key discriminants included glutamine, vitamin C, and several lipid classes (phosphatidylethanolamines, phosphatidylglycerols, phosphatidylserines). To further characterize spatial heterogeneity, we employed desorption electrospray ionization mass spectrometry imaging (DESI-MSI) integrated with spatial transcriptomics (Visium HD). This multimodal approach localized metabolites and transcripts at the HCC–benign tissue interface with 10 µm spatial resolution, providing molecular context to the MasSpec Pen predictive model. **CONCLUSIONS:** Mass spectrometry–based molecular profiling with the MasSpec Pen reliably differentiates HCC from benign hepatic tissue and demonstrates promise as a rapid, non-destructive adjunct for intraoperative tissue evaluation. The integration of DESI-MSI and spatial transcriptomics enhances understanding of tumor–normal interface biology, supporting future clinical translation of the MasSpec Pen for precision surgical oncology.

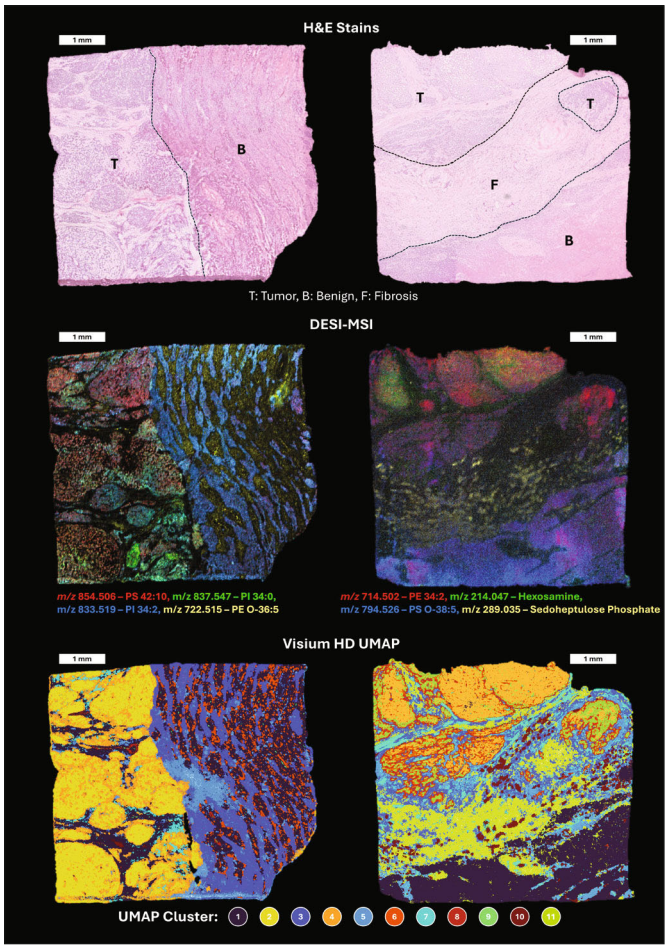

Figure. H&E Stain, DESI-MSI, and Visium HD UMAP of Tumor, Benign Tissue, and Fibrosis

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Recurrent Pancreatic Neuroendocrine Tumors in Lymph Node Negative Patients: A Multi-Institutional Risk-Score of Recurrence and Survival

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INTRODUCTION: Lymph node (LN) metastasis is a known predictor of recurrence in pancreatic neuroendocrine tumors (PanNETs). However, many patients without LN involvement still recur, and risk-adapted tools to guide surveillance and therapy are lacking. This study aimed to define clinicopathologic predictors of recurrence in LN-negative PanNETs and develop a validated risk score for recurrence and survival. **METHODS:** A multi-institutional, retrospective case-control study was conducted across five high-volume U.S. centers between 2000 and 2023. Patients with localized, surgically resected PanNETs and ≥8 examined LNs with negative nodal status were included. Multivariable logistic regression identified independent predictors of recurrence. A 13-point composite risk score was constructed and validated internally and externally. C-statistics assessed model discrimination. Kaplan-Meier and log-rank tests evaluated disease-free survival (DFS). In an external cohort, whole genome sequencing was analyzed to identify recurrence-associated somatic mutations. **RESULTS:** Among 2024 patients, 770 met inclusion criteria. Median age was 58.7 years; 52.6% were male. Most tumors were sporadic (94.1%), non-functional (90.4%), and located in the body/neck (50.9%). Tumor recurrence occurred in 82 patients (10.6%) at a median of 32.4 months postoperatively. Independent predictors of recurrence included male sex (OR 2.2), tumor size >3 cm (OR 2.64), WHO grade ≥2 (OR 3.70), and lymphovascular invasion (OR 3.84). The risk score stratified patients into low- (2.4%), moderate- (9.0%), and high-risk (27.7%) recurrence groups (P< 0.001), with corresponding 10-year DFS rates of 96.1%, 83.6%, and 51.3% (P< 0.001). The model showed excellent discrimination (AUROC 0.83 internal; 0.95 external). Recurrent tumors harbored higher tumor mutational burden and recurrent mutations in CDC42BPB, DAXX, ERI2, GALNT9, MTOR, NUMA1, and TRPC7. **CONCLUSIONS:** Despite negative LN status, a significant subset of PanNET patients remain at risk for recurrence. This validated clinical-genomic risk score provides a framework for personalized surveillance: annual imaging for low-risk patients (discontinued after 5 years), 10-year annual surveillance for moderate-risk, and intensified surveillance every 6 months for 3 years, then annually for 10 years in high-risk cases.

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Oncologic outcomes of hepatic arterial infusion (HAI) chemotherapy for unresectable colorectal liver metastases: a multicenter analysis from the international HAI Consortium Research Network (HCRN)

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INTRODUCTION: HAI pump chemotherapy can provide durable disease control and enable conversion to resection for unresectable colorectal liver metastases (uCRLM). Prior studies report outdated regimens or are limited to high-volume centers. The HCRN established an international registry to evaluate real-world, multicenter outcomes. This study evaluates oncologic outcomes of HAI for patients with uCRLM. **METHODS:** Patients receiving HAI for uCRLM were identified from the HCRN registry (2000-2024). Demographics, clinical features, and perioperative outcomes were analyzed. Survival was estimated by Kaplan-Meier and evaluated by multivariable Cox regression. Patients with < 12 mo follow-up were excluded. Outcomes were stratified by prior chemotherapy; comparisons used Kruskal-Wallis, Fisher's exact, or Mantel-Haenszel tests. **RESULTS:** 957 patients were included from 33 centers (median age 54 years, 61% male, 78% white). 87% had synchronous CRLM, 56% had >10 CRLM, and 18% had extrahepatic disease. 98% received prior chemotherapy (median 12 cycles). 283 (31%) patients had an HAI-specific complication. 90-day mortality was 2%. 97% received FUDR (median 6 cycles). Time to FUDR and systemic therapy were 18 and 33 days, respectively. At 6 mo, 4% had a complete response, 31% partial response, 32% stable disease, and 32% progression of disease. Biliary sclerosis occurred in 6%. Of the 623 patients with adequate follow-up, median OS was 23 mo (IQR 12.2-40.9), PFS 7 mo (3.3-12.9), hepatic PFS (hPFS) 9.7 mo (4.9-17.2), and extrahepatic PFS (ePFS) 9.4 mo (3.9-17.9). Conversion to resection occurred in 10%, was the strongest predictor of OS (HR 0.36, 95% CI 0.23-0.57, p< 0.001), and independently predicted PFS, hPFS, and ePFS. Nonwhite race (HR 2.36, 95% CI 1.17-4.76, p=0.02), hepatic disease burden (HR 1.54, 95% CI 1.11-2.12, p=0.01), and KRAS mutation (HR 1.44, 95% CI 1.10-1.88, p=0.01) predicted worse OS. Less pre-HAI chemotherapy (0 vs 1-12 vs 13+ cycles) was associated

with longer PFS (median 10 vs 8 vs 5 mo, p=0.003), hPFS (14 vs 10 vs 8 mo, p< 0.001), and ePFS (10 vs 10 vs 8 mo, p=0.049), but not median OS (22 vs 19 vs 18 mo, p=0.155). **CONCLUSIONS:** HAI resulted in durable disease control across centers. Conversion to resection was the dominant predictor of survival, and heavier pre-HAI chemotherapy was associated with inferior PFS, suggesting earlier integration may improve long-term outcomes.

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Impact of Genomic Pathway Alterations on Clinical Outcomes in Pancreatic Ductal Adenocarcinoma: A Trans-Atlantic Pancreatic Surgery (TAPS) Consortium Study

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INTRODUCTION: While KRAS mutations occur in ~90% of pancreatic ductal adenocarcinomas (PDAC), alterations in other major oncogenic pathways may hold greater prognostic and therapeutic relevance. This study examines the association between key driver pathway mutations and overall survival in PDAC, and evaluates differential chemotherapy response by mutational profile. **METHODS:** This retrospective study included consecutive patients from 5 referral centers in the Unites States and the Netherlands, who were diagnosed with localized PDAC and received at least one cycle of (m)FOLFIRINOX or Gemcitabine-based chemotherapy as initial treatment (2012-2022). Patients were included if targeted next-generation sequencing (NGS) was performed on pre-treatment biopsy, resected specimen or biopsy of a metastatic lesion. The primary outcome was overall survival (OS), defined as the time between date of diagnosis until date of death or last follow-up. **RESULTS:** Out of 2834 patients with localized PDAC, 805 (28.4%) had NGS performed. Overall, 87.7% (n=706) of tumors harbored oncogenic alterations in RTK/RAS pathway, 66.2% in the TP53 pathway, 26.5% in the Cell Cycle Regulation (CCR) pathway, 12.5% in the TGF-β/SMAD pathway, and 7.0% in the HRD pathway. Overall, 64.7% (n=521) underwent pancreatic resection. In this cohort, KRAS G12D had worse survival outcomes regardless of CCR status (HR: 1.6 (95%CI: 1.1 – 1.8)), compared to KRAS wildtype (WT). In patients with other KRAS mutations without CCR pathway mutation, survival was comparable to KRAS WT (HR: 1.2 (95%CI: 0.8 – 1.9)). However, if patients had other KRAS mutations with a concomitant CCR pathway mutation, their survival was worse compared with no CCR pathway mutation (HR: 2.0 (95%CI: 1.2 – 3.2)). Patients with no mutation in the HRD pathway receiving gemcitabine-based regimen had worse survival compared to FOLFIRINOX (HR: 1.6 (95%CI: 1.3 – 2.1)). Similarly, patients with a HRD pathway mutation had worse survival outcomes when receiving gemcitabine-based regimen compared to FOLFIRINOX (HR: 3.2 (95%CI: 1.2 - 8.6)). **CONCLUSIONS:** This international cohort of patients starting FOLFIRINOX or gemcitabine-based neoadjuvant chemotherapy for localized PDAC showed that specific genomic alterations, particularly in KRAS G12D and CCR pathways, were independently associated with overall survival. HRD mutation status also influenced response to neoadjuvant therapy, with FOLFIRINOX tied to better outcomes. These findings support genomic profiling to guide treatment selection in localized PDAC.

N = 521

Predictors		N	HR (95% CI)	P-Value
KRAS Mutation / CC Regulation Pathway	Wild Type (w/ and w/o CC Reg)	41	Baseline	
	G12D (w/ and w/o CC Reg)	176	1.6 (1.1, 2.5)	0.025
	Other KRAS w/o CC Reg	233	1.2 (0.8, 1.9)	0.333
	Other KRAS w/ CC Reg	71	2.0 (1.2, 3.2)	0.006
No HRD Pathway	Folf	378	Baseline	
	Gem	110	1.6 (1.3, 2.1)	<0.001
Yes HRD Pathway	Folf	28	Baseline	
	Gem	5	3.2 (1.2, 8.6)	0.023

Figure. Cox Proportional Hazard Model For Overall Survival in Resected Patients Only

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Increased mortality with early adoption of robotic pancreaticoduodenectomy: a national EHR study

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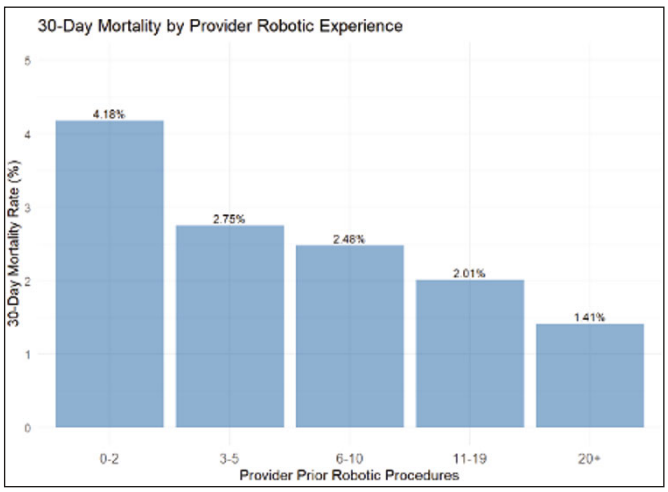
INTRODUCTION: Robotic pancreaticoduodenectomy (RPD) is increasingly performed in the United States. Understanding factors associated with safe adoption is critical to reducing perioperative mortality during the learning curve. **METHODS:** Using the Epic Cosmos database, we identified all adult patients age (≥18) who underwent PD between 2017 and 2025. Modified Poisson regression was used to assess factors associated with 30-day mortality, adjusting for age, sex, race, ethnicity, insurance, marital status, rural/urban residence, socioeconomic status, diagnosis, and procedure type. Among surgeons performing RPD, those with ≥2 cases were analyzed to determine mortality trends across case-number thresholds. Mortality risk was assessed by cumulative RPD and non-robotic PD experience, adjusting for age and diagnosis. **RESULTS:** Among 25,255 patients (median age 69 [IQR 61-75]), 1,623 (6.4%) underwent RPD. The proportion of robotic cases increased from 4.0% in 2020 to 10.3% in 2025. Thirty-day mortality was higher after RPD than non-robotic RPD (3.0% vs. 2.3%; aRR = 1.44 [1.05-1.93], p=0.02). In RPD, mortality decreased with increasing provider experience: 4.18% (0-2 cases), 2.75% (3-5), 2.48% (6-10), 2.01% (11-19), and 1.41% (>20) (Figure). The mortality rate after ≥20 RPD cases approximated that of non-robotic PD at top-volume centers (1.6%). Increased RPD experience was associated with improved mortality, approaching statistical significance (doubling robotic experience: aRR = 0.80 [0.65-0.99], p=0.04). Non-robotic PD experience was not associated with mortality improvement (doubling non-robotic experience: 0.91 [0.78-1.07], p=0.26). **CONCLUSIONS:** Nationwide, early adoption of RPD is associated with increased 30-day mortality, which decreases substantially with increasing surgeon experience. Mortality rates among experienced RPD surgeons approach those of high-volume centers performing open PD. These findings suggest that structured, competency-based training pathways are needed to ensure safe dissemination of RPD.



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Beyond BMI: Association of Artificial Intelligence-Derived CT Body Composition with Survival in Melanoma Treated with BRAF/MEK Inhibitors

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INTRODUCTION: An obesity paradox has been observed in both BRAF/MEK inhibition (BRAF/MEKi) and immune checkpoint inhibitor (ICI) therapy

for melanoma, though the association between higher body mass index (BMI) and improved survival appears more significant with BRAF/MEKi. Because BMI poorly reflects body composition, we used artificial intelligence (AI)-derived computed tomography (CT) body composition analysis to test whether adiposity drives the observed obesity paradox. **METHODS:** Pre-treatment CT scans were analyzed using Comp2Comp, a validated deep learning pipeline for automated body composition segmentation. Skeletal muscle and visceral adipose tissue were quantified at the third lumbar vertebral (L3) level. The skeletal muscle index (SMI) and visceral adipose tissue index (VATI) were calculated after height normalization. Sarcopenia and visceral obesity were defined using published sex- and age-specific thresholds for SMI and VATI. Associations between body composition and progression-free (PFS) and overall survival (OS) were evaluated using sex-stratified Cox proportional hazards models adjusted for BMI and ECOG performance status. **RESULTS:** 65 patients (33 males, 32 females) with a median age of 57 years were included. Median BMI was 27.1 kg/m² for males and 27.8 kg/m² for females. A total of 19 (29.2%) were obese and 24 (36.9%) sarcopenic. Body composition phenotype, defined by sarcopenia and visceral obesity status, was significantly associated with PFS (p< 0.001; Figure 1A). Sarcopenic patients, regardless of obesity status, had markedly shorter PFS (median 4.4 vs 15.6 months, p< 0.001) and OS (median 17.5 vs 44 months, p=0.045). In contrast, visceral obesity showed no significant association with PFS (median 14 vs 9.4 months, p=0.35) or OS (median 38 vs 16 months, p=0.12). Sex-stratified analyses (Figures 1B-C) confirmed sarcopenia's adverse effect in both sexes (p< 0.001), whereas visceral obesity showed no significant effect (p=0.660). In multivariable models, sarcopenia remained independently associated with PFS (HR 2.67, p=0.003), but not OS (HR 1.28, p=0.47); visceral obesity (HR 1.09, p=0.82) and BMI (HR 0.94, p=0.09) were not significant. **CONCLUSIONS:** AI-derived body composition analysis revealed that decreased skeletal muscle mass was associated with shorter PFS, whereas visceral adiposity and BMI showed no significant association. These findings suggest that the obesity paradox may be driven by a protective effect of preserved muscle mass rather than increased adiposity.

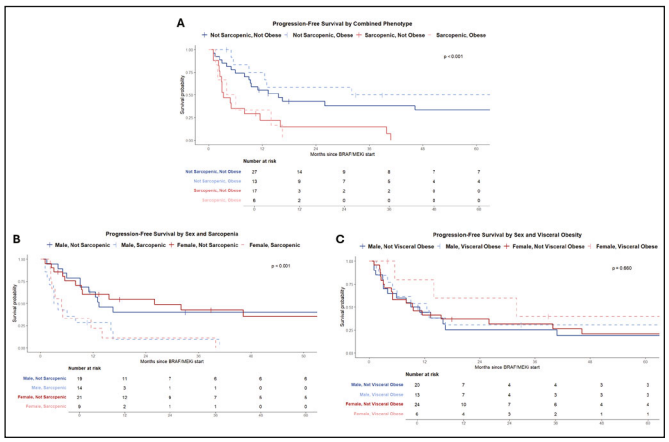

Figure. Progression-free survival by artificial intelligence-derived body composition phenotypes and sex in melanoma treated with BRAF/MEK inhibitors.

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Impact of vaccine adjuvants on immune activation at the vaccine site after melanoma helper peptide vaccination

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INTRODUCTION: Peptide-based cancer vaccines rely on local adjuvants to activate antigen-presenting cells (APCs) at the vaccine site to induce antigen-specific T cell responses. The objective of this study was to compare immune activation in the vaccine site microenvironment (VSME) induced by melanoma vaccines prepared with a Toll-like receptor 3 (TLR3) agonist, polyICLC, and either incomplete Freund's adjuvant (IFA) or agonistic CD40 antibody (CDX-1140). We hypothesized that targeting the co-stimulatory molecule, CD40, on APCs at the vaccine site would enhance local T cell activation compared to IFA. **METHODS:** Patients with high-risk, definitively-treated melanoma immunized with melanoma-specific peptides targeting CD4+ T cells (6MHP) prepared with polyICLC either in an emulsion of IFA (NCT03617328) or aqueous mixture of CDX-1140 (NCT04364230) were selected for analysis. Vaccine site biopsies were evaluated by Nanostring targeted gene expression profiling and multiplex immunofluorescence histology (mIFH) to identify differences in gene and protein expression in the VSME between adjuvant groups. Peripheral blood immune responses were measured by IFNγ ELISpot and ELISA. **RESULTS:** Twenty-nine patients were evaluated after vaccination with 6MHP and polyICLC plus either IFA (n=14) or CDX-1140 (n=15). In the VSME, 144 differentially expressed genes (|fold-change| >1.5, adjusted-p< 0.05) were identified after CDX-1140 vaccination compared to IFA, including 47 upregulated and 97 downregulated genes (Figure 1A). Significant changes in gene expression suggested increased B cell infiltration and regulatory markers (FOXP3, TIGIT) in the VSME with CDX-1140. On mIFH, patients vaccinated with CDX-1140 had significantly more mature dendritic cells and lymphocytes at the vaccine site compared to IFA; however, there were no differences in proliferating B cells and T cells (Figure 1B-D). Lower peripheral T cell (CDX-1140 vs. IFA: 27% vs. 64%) and antibody (CDX-1140 vs. IFA: 7% vs. 100%) response rates were found with CDX-1140 vaccination. **CONCLUSIONS:** Contrary to our hypothesis, these data suggest that co-administration of polyICLC and CDX-1140 with a melanoma vaccine targeting CD4+ T cells may induce a more immunosuppressive VSME compared to polyICLC and IFA, despite promoting greater T cell and B cell infiltration. This study suggests a duality of local CD40/TLR3 agonism with activating and regulatory effects at the vaccine site that have implications for future use as an adjuvant for vaccine monotherapy or in combination with other immunotherapies for patients with melanoma.

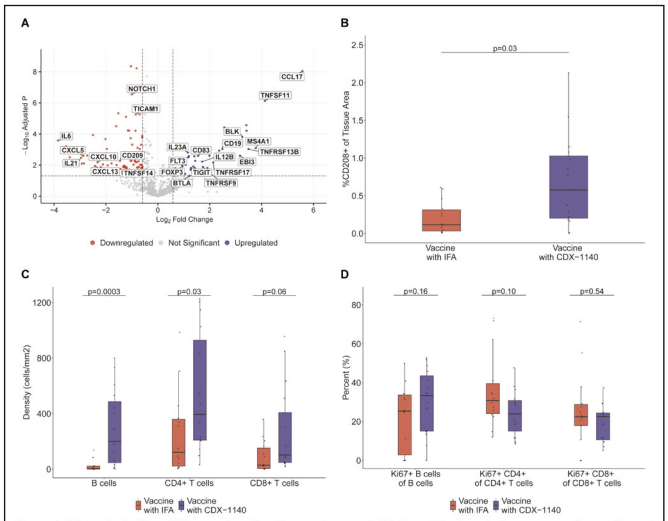

Figure 1. Characterization of the vaccine site microenvironment. (**A**) Nanostring targeted gene expression profiling of vaccine sites biopsies with volcano plot of differentially expressed genes (|fold-change|>1.5 and adjusted-p<0.05) in the VSME of patients vaccinated with CDX-1140 (n=14) compared to IFA (n=12). (**B-D**) mIFH of vaccine site biopsies in patients vaccinated with CDX-1140 (n=15) and IFA (n=14) with comparisons by Mann-Whitney test (significant p<0.05): (**B**) area quantification of mature (CD208⁺) dendritic cells and cell quantification of (**C**) lymphocyte densities and (**D**) percentages of proliferating (Ki67⁺) lymphocytes.

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A Randomized Controlled Trial Comparing Inguinal to Ilio-inguinal Lymphadenectomy for Inguinal Metastatic Melanoma with Negative Pelvic Nodes on PET / CT Scan (The EAGLE FM Study): Final Results

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INTRODUCTION: The EAGLE FM study was designed to determine the best surgical option for patients with metastatic melanoma in the inguinal lymph nodes (LNs) but no evidence of pelvic LN or distant spread on staging PET/CT scan and brain scan. At the time the study was designed there was wide variation between institutions performing inguinal lymphadenectomy (IL) or ilio-inguinal lymphadenectomy (I-IL). **METHODS:** Investigator led, international phase III, non-inferiority, prospective randomized controlled trial (RCT) of IL versus I-IL. The aim was to accrue 580 patients over 5 years. Patients were eligible with macroscopic or sentinel node (SN) detected inguinal LN, with known or unknown primary melanoma. The primary endpoint was disease free survival (DFS) 5 years after randomisation. Secondary endpoints were overall survival (OS), regional recurrence free survival (RRFS), and distant metastasis free survival (DMFS) and surgical morbidity. **RESULTS:** Recruitment commenced 2/03/2015 but was suspended on 16/12/2019 on the advice of the DSMC with investigators advised to complete follow up. There were 96 patients randomized across 16 sites with Australia recruiting 34.4%, Brazil 18.8% and UK / Europe 46.9%. Mean age was 56 years, 45.8% were male, 55.2% were macroscopic LN and 44.8% SN detected. The DFS at 5 years was 50.5% for IL and 47.4% for I-IL (NS). At 5 years the OS was 80.8% for IL and 62.9% for I-IL (p=0.074), RRFS was 63.1% for IL and 56.3% for I-IL (NS) and DMFS 64.7% for IL and 52.7% for I-IL (NS). All 5-year survival outcomes numerically favored IL. Surgical morbidity was similar in the 2 groups, but chronic pain was non-significantly greater in the I-IL group (p 0.09). **CONCLUSIONS:** EAGLE FM is the only RCT investigating IL vs I-IL in patients with negative pelvic nodes on PET / CT. The study commenced at a time of rapid changes in melanoma management with DeCOG SLT and MSLT II confirming no benefit from completion lymphadenectomy and the rapid uptake of nascent effective systemic therapy drugs from stage 4 and unresectable stage 3 melanoma into the earlier settings impacting recruitment and DFS. Nevertheless, these data show no significant benefit in terms of DFS, OS, RRFS or DMFS from having an I-IL, which is a larger, minimally more morbid surgery. The results of this study support recommending IL for patients with this clinical scenario and should be considered when deciding on management in more contemporary settings.

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Receipt of adjuvant checkpoint inhibitor therapy for melanoma and risk of subsequent skin cancer

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INTRODUCTION: Patients with melanoma have an increased risk of subsequent skin cancer, including second primary melanoma. Although immune checkpoint inhibitor therapy (ICI) is effective in reducing risk of recurrence or death from high-risk melanoma, it is unknown whether the development of subsequent skin cancer(s) is modified by receipt of adjuvant ICI or associated with risk of immune related adverse events (irAEs). **METHODS:** In an international, 17-institution retrospective cohort of patients diagnosed with sentinel lymph node (SLN) positive melanoma from July 2017-June 2022, receipt of adjuvant immunotherapy, defined as at least one dose of ICI after definitive surgical management, was evaluated for its association with subsequent skin cancer (melanoma, squamous cell carcinoma [SCC], basal cell carcinoma [BCC], or Merkel cell carcinoma [MCC]). Patients with unknown incidence of subsequent skin cancer, incomplete dermatology surveillance at the abstracting institution, or receipt of adjuvant BRAF/MEK inhibitors were excluded from analysis. Mixed effects logistic regression models were created to compare receipt of ICI with or without irAEs and subsequent skin cancer, adjusting for clinical factors and treating institution. **RESULTS:** Of 1,228 included patients with a median follow up of 3.4 years (Interquartile Range [IQR] 2.1, 5.1), 717 (58.4%) received adjuvant ICI (204 [28.5%] with irAEs, 513 [72.5%] without irAEs) and 511 (41.6%) did not receive ICI. Subsequent skin cancer was reported in 197 (16.0%) patients (melanoma: 74 [6.0%], SCC: 63 [5.1%], BCC: 89 [7.3%], MCC: 1 [0.1%]). Additionally, subsequent skin cancer was reported in 34 patients (16.7%) who received ICI and had irAEs, 87 (17.0%) who received ICI without irAEs, and 76 (14.9%) who did not receive ICI. After adjusting for clinical factors, there was no association between immunotherapy receipt and subsequent melanoma (ICI with irAEs: OR=1.50, 95% CI 0.64, 3.47; ICI without irAEs: OR=1.40, 95% CI 0.70, 2.81) or non-melanoma skin cancer (ICI with irAEs: OR=1.67, 95% CI 0.91, 3.06; ICI without irAEs: OR=1.25, 95% CI 0.75, 2.09) (Table). **CONCLUSIONS:** This study demonstrated no effect of receipt of ICI therapy on subsequent melanoma or non-melanoma skin cancer at early follow-up, regardless of immune-related toxicity. Capture of non-melanoma skin cancers may be incomplete due to different institutional reporting methodologies and should be studied in a prospective longitudinal manner.

Table. Factors associated with subsequent skin cancer (melanoma and non-melanoma skin cancer [NMSC]) adjusted for clinical factors and treating institution.

Clinical Variables	Odds ratio of subsequent skin cancer OR (95% CI), p-value	
	Melanoma (N=1,200)	NMSC (N=1,200)
ICI		
No ICI	*Reference*	*Reference*
ICI with irAEs	1.50 (0.64, 3.47) *p=0.35*	1.67 (0.91, 3.06) *p=0.10*
ICI without irAEs	1.40 (0.70, 2.81) *p=0.34*	1.25 (0.75, 2.09) *p=0.39*
Age at SLNB	1.01 (0.99, 1.03) *p=0.27*	1.04 (1.03, 1.07) *p=<0.01*
Sex		
Male	*Reference*	*Reference*
Female	1.14 (0.66, 2.00) *p=0.63*	0.83 (0.55, 1.25) *p=0.37*
Autoimmune Disease		
Absent	*Reference*	*Reference*
Present	1.50 (0.55, 4.08) *p=0.42*	0.50 (0.55, 1.25) *p=0.17*

OR= Odds ratio; CI= Confidence interval; NMSC= Non-melanoma skin cancer; ICI= Immune checkpoint inhibitor therapy; irAEs= Immune-related adverse events; SLNB= Sentinel lymph node biopsy

P41

Predictors of manufacturing success after tumor tissue procurement for tumor infiltrating lymphocyte cell therapy

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INTRODUCTION: Autologous tumor infiltrating lymphocyte (TIL) cell therapy is a treatment for patients with metastatic melanoma who have progressed on systemic therapy. TIL therapy requires surgical tumor tissue procurement (TTP) for product manufacturing, including TIL isolation, expansion, and infusion. Data is limited on how surgical factors impact TIL manufacturing success; the current standard is to select a site that will result in at least 1.5cm2 of viable tissue. FDA specifications for TIL products are largely undisclosed other than the final product contains 7.5 - 72x109 cells. The aim of the TIL TTP Working Group, a multi-institutional collaborative, is to optimize TTP. The aim of this study is to identify predictors of initial manufacturing success to guide future TTP site selection. **METHODS:** Patients who underwent TTP at a TIL TTP Working Group center with available manufacturing outcomes were included after local IRB approval. Clinical, oncologic, peri-operative, and outcome variables were collected. The primary outcome was initial manufacturing success, defined as production of an in-spec TIL product. Secondary outcomes were variables associated with manufacturing success. **RESULTS:** Between December 2023 and August 2025, 87 patients from six institutions underwent TTP for commercial TIL, 85% (74/87) of which resulted in manufacturing success. Aggregate size (cm2), history of immunosuppression or being on steroids at the time of TTP, donor tissue type, or preoperative Hounsfield units were not associated with manufacturing success. Four of the six patients who received radiation to the TTP donor site had successfully manufactured TIL (p=0.22). Although not statistically significant, higher SUV on pre-operative PET may be associated with a decreased likelihood of manufacturing success with a larger cohort (mean[SD] success: 16.09[14.60] vs 28.68[22.04], p =0.09). Necrosis on final pathology was not associated with a decreased likelihood of manufacturing success, though was not reported in 34.5% of patients. However, surgeon assessment of gross necrosis during TTP was associated with a decreased likelihood of manufacturing success (in-spec: 9%, out-of-spec: 33.3%, p=0.04). **CONCLUSIONS:** The TIL TTP Working Group was established to optimize TIL TTP in the real-world setting. In this initial series, gross necrosis during TTP was associated with a decreased likelihood of manufacturing success, and elevated SUV of the donor site on PET warrants further investigation. Multi-institutional and academic-industry partnerships are essential to improve TIL TTP outcomes.

TIL Tumor Tissue Procurement Initial Manufacturing Success

	Yes N = 74	No N = 13	p-value
Prior autoimmune disease (n=86)	7 (9.6%)	0 (0.0%)	0.588
On steroids at time of TTP (n=86)	16 (21.9%)	4 (30.8%)	0.489
TTP donor site growing on imaging (n=85)	49 (68.1%)	9 (69.2%)	>0.999
Maximum SUV of TTP donor site (n=43) (Mean (SD))	16.09 (14.60)	28.68 (22.04)	0.090
Maximum HU of TTP donor site (n=28) (Mean (SD))	126.00 (76.69)	135.40 (38.79)	0.384
Radiation to donor site (n=87)	4 (5.4%)	2 (15.4%)	0.218
Donor tissue type (n=87) *			
Skin/subcutaneous/soft tissue (n = 36)	30 (40.5%)	6 (46.1%)	>0.999
Visceral organ (n=16)	14 (18.9%)	2 (15.4%)	>0.999
Lymph node (n=39)	34 (45.9%)	5 (38.5%)	0.617
Number of lymph nodes in donor tissue (n=39)			0.254
Single from single basin (n=24)	22 (64.7%)	2 (40.0%)	
Multiple from single basin (n=13)	11 (32.4%)	2 (40.0%)	
Multiple from multiple basins (n=2)	1 (2.9%)	1 (20.0%)	
TTP donor tissue size submitted (cm^2) (n=81) (Mean (SD))	11.46 (13.66)	11.78 (8.79)	0.544
Necrosis noted on local pathology (n=57)	15 (32.6%)	4 (36.4%)	0.266
Gross necrosis noted by surgeon (n=79)	6 (9.0%)	4 (33.3%)	0.040
Time from TTP to TIL Infusion (days) (n=70) (Median, IQR)	50 (48-55)	N/A	

* Patients whose TTP included multiple tissue types are multiply represented

P42

Missed opportunities for neoadjuvant immunotherapy in Melanoma – Time to change imaging guidelines for newly diagnosed patients?

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INTRODUCTION: Melanoma treatment for patients presenting with clinical adenopathy has recently been transformed by clinical trials demonstrating improved melanoma event free survival (EFS) with neoadjuvant immunotherapy (NADINA and SWOG 1801). While European guidelines recommend ultrasound evaluation of the nodal basins for clinical stage Ib/II melanoma patients, current NCCN guidelines recommend these patients only undergo sentinel lymph node biopsy (SLNB) without prior imaging. As such, patients with nodal disease identifiable on ultrasound but not on physical exam would not be considered for neoadjuvant immunotherapy, potentially compromising patient melanoma EFS. **METHODS:** Our institution maintains a melanoma outcomes registry. We queried our database for clinical stage Ib/II melanoma patients who underwent a SLNB for which the pathologic size of the metastases was recorded in the pathology report. As 10 mm malignant nodes are widely reported to be detectable by ultrasound, comparative statistics were performed for patients with macro metastases (>10 mm) compared to those with micro metastases (< 10 mm). **RESULTS:** There were 168 clinical stage Ib/II melanoma patients (stage Ib; n= 89 (53.0%) and stage II; n= 79 (47.0%) who underwent SLNB, for which 31 (18.5%) had a positive node, and 29 (17.3%) had the size of the nodal metastasis recorded. There was 6/29 (20.7%) with a macro metastasis identified, with the mean metastasis size of 23.8 mm in the macro metastases group vs. 1.9 mm in the micro metastases group, (p=0.0002). Patient median BMI was higher in the macro metastases group (42.0) compared to 29.6 in the micro metastases group, p=.056, but did not reach statistical significance. Overall, 5/79 (6.3%) clinical stage II patients had a macro metastasis. Utilizing a cutoff of 4 mm metastasis, widely reported as being identifiable on ultrasound with high specificity for malignancy, 10/79 (12.7%) clinical Stage II patients may have been identified as node positive based on pre-operative ultrasound. **CONCLUSIONS:** Newly diagnosed clinical stage II melanoma patients may benefit from pre-operative ultrasound of nodal basins. This could be of particular benefit in obese patients for whom detection of clinical adenopathy on physical exam is challenging.

Our study suggests up to 12% of clinical stage II patients could be identified with malignant adenopathy prior to SLN biopsy and might be candidates for neoadjuvant immunotherapy.

P43

Does Sentinel Node Biopsy Reduce the Risk of Death from Melanoma? A Systematic Review and Meta-analysis

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INTRODUCTION: Whether sentinel node biopsy (SNB) for melanoma results in a survival benefit has been controversial. The MSLT-I randomized controlled trial (RCT) demonstrated a statistically non-significant trend towards a reduced risk of death from melanoma (hazard ratio (HR) 0.88) but was underpowered to provide a definitive answer. This systematic review and meta-analysis aimed to address this question. **METHODS:** Medline, Embase, Cochrane CENTRAL and the ClinicaTrials.gov website (to 8th January 2025) were searched using terms for melanoma, SNB and survival. Screening and data extraction were performed in duplicate. Selected studies that reported survival outcomes for patients who underwent SNB and patients who did not. Studies that had undertaken multivariable adjusted analyses were included in a meta-analysis. Protocol registration: CRD4203494674. **RESULTS:** Of 59 included studies from the systematic review, fourteen were included in the meta-analysis: one RCT and 13 multivariably-adjusted cohort studies (reporting 42,853 patients). The meta-analysis using a fixed effects model gave an HR of 0.88 (95%CI: 0.83-0.93, p< 0.00001) for risk of death from melanoma after SNB compared to no SNB, with low-moderate heterogeneity (I2=0.26). Sensitivity analyses confirmed that this result was not dependent on any single study or the use of systemic therapy. Recurrence was reported in nine studies (reporting 11,625 patients); meta-analysis gave an HR of 0.71 (95%CI 0.66-0.76, p< 0.00001) with low heterogeneity (I2 23%). **CONCLUSIONS:** This large meta-analysis of the best available data confirmed the HR of 0.88 found by the MSLT-I RCT, with adequate power to achieve statistical significance (p< 0.00001). This 12% relative reduction in risk of death from melanoma was also stable on sensitivity analyses, confirming its robustness. The results indicate a likely true survival benefit for patients undergoing SNB in addition to wide excision of their primary melanoma.

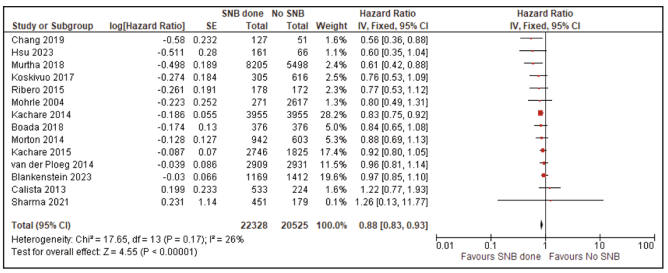

Figure. Forrest plot demonstrating the meta-analysis of risks of death from melanoma in patients undergoing sentinel node biopsy or not in studies that used multivariable analysis, propensity score matching or were a randomised controlled trial.

P44

Surgical and Clinical Determinants of Lifileucel Manufacturing Success in Adoptive Cell Therapy for Advanced Melanoma

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INTRODUCTION: Adoptive cell therapy using autologous tumor-infiltrating lymphocytes (TIL-ACT) is now FDA-approved for PD-1–refractory advanced melanoma as lifileucel. While surgical guidelines aim to minimize contamination, the optimal tumor procurement sites for generating high-quality TIL-ACT products (ACTPs) remain undefined and depend on surgical discretion. Out-of-specification (OOS) ACTPs that fail to meet release criteria create clinical dilemmas—whether to delay therapy for repeat harvest or proceed under the Expanded Access Program (EAP), where efficacy may be reduced. **METHODS:** We prospectively collected data from 34 patients who underwent ≥1 surgery for lifileucel manufacturing at a single institution between May 2024 and August 2025. Patient demographics, tumor characteristics, and surgical harvest sites were analyzed for association with OOS ACTP production. Categorical variables were analyzed by Chi-squared or Fisher's exact test; continuous variables with the Mann-Whitney U test. **RESULTS:** Thirty-four patients underwent 40 TIL-ACT surgeries, 41% for acral or mucosal melanoma. After excluding three contaminated cases, 11 (30%) yielded OOS products due to low viable cell dose (n=8), potency (n=2), or purity (n=1). Five OOS products were given under EAP, four patients required repeat harvests, and two discontinued therapy due to progression. Age, sex, histologic subtype, BRAF status, and tumor mutational burden were not associated with OOS outcomes. Extensive prior systemic therapy lines (≥3 vs. < 3) increased OOS risk (47.1% vs. 14.3%; OR 5.33; p = 0.0367), and higher LDH correlated with OOS (median 249 IU/L vs. 187 IU/L; p = 0.046). Surgical harvest sites were mainly lymph nodes (46%) and subcutaneous nodules (32%), with additional sites including lung and liver. While all sites could yield in-specification ACTPs, lymph nodes showed a non-significant trend toward fewer OOS products (23%) compared with subcutaneous nodules (41%). **CONCLUSIONS:** Thirty percent of surgeries resulted in an OOS ACTP. Higher LDH reflecting greater tumor burden and ≥3 prior systemic therapy lines were associated with increased OOS risk. While all anatomic sites could yield ACTPs, lymph nodes showed a trend toward being more reliable harvest sites than subcutaneous tumors and should be prioritized when feasible. These findings highlight the importance of patient and tumor selection in optimizing lifileucel production and support tumor procurement earlier in the treatment course to improve manufacturing success.

Table 1: Patient and Tumor Characteristics for lifileucel manufacturing

Characteristic	Total Surgeries (N=37*)	Not OOS (N=26)	OOS (N=11)
Age, years, median	62	62	62
Sex, female, No. (%)	19 (51)	11 (42)	8 (73)
Melanoma subtype			
Cutaneous	16 (43)	13 (50)	3 (27)
Acral	10 (27)	7 (27)	3 (27)
Mucosal	5 (14)	2 (8)	3 (27)
Unknown primary	6 (16)	4 (15)	2 (18)
LDH (IU/L), median (range)	204 (121-985)	187 (121-683)	249 (148-985)
Number of prior systemic therapies, median (range)	2 (1-7)	2 (1-6)	3 (1-7)
<3 Prior Systemic Therapies	20 (54)	17 (65)	3 (27)
≥3 Prior Systemic Therapies	17 (46)	9 (35)	8 (73)
Prior systemic therapies, No. (%)			
Anti-PD-1	37 (100)	26 (100)	11 (100)
Anti-PD-1 plus anti-CTLA-4	32 (86)	24 (92)	8 (73)
Anti-PD-1 plus anti-LAG3	5 (14)	4 (15)	1 (9)
BRAF +/- MEK inhibitor	5 (14)	4 (15)	1 (9)
Chemotherapy	6 (16)	4 (15)	2 (18)
BRAF V600E Status, No. (%)			
WT	32 (86)	22 (85)	10 (91)
Mut	5 (14)	4 (15)	1 (9)
Tumor mutational burden, No. (%)			
Low	18 (49)	14 (78)	4 (22)
Intermediate	11 (30)	8 (72)	3 (27)
High	5 (14)	3 (60)	2 (40)
Unknown	3 (8)	1 (4)	2 (18)
Site of Harvest, No. (%)			
Subcutaneous	12 (32)	7 (27)	5 (45)
Lymph Node	17 (46)	13 (50)	4 (36)
Lung	2 (5)	1 (4)	1 (9)
Liver	1 (3)	1 (4)	0 (0)
Liver+Lymph Node	1 (3)	1 (4)	0 (0)
*Other	4 (11)	3 (11.54)	1 (9)
Number of tumors harvested, No. (%)			
1	25 (68)	17 (65)	8 (73)
≥2	12 (32)	9 (35)	3 (27)

*thoracic pleural tumor nodule, parotid gland tumor nodule (2), bone-associated soft tissue tumor nodule

P45

The management of mucosal melanoma: a population-based analysis of treatment patterns and outcomes

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INTRODUCTION: Mucosal melanoma (MM) is a rare malignancy with complex anatomic and therapeutic considerations, and historically poor prognosis. Evidence is limited and most data predates the use of immunotherapy (IO) and targeted therapy (TT). We describe temporal trends in MM incidence, treatment, and survival in a population-based cohort. **METHODS:** Adults with MM were retrospectively identified through the Ontario Cancer Registry (2010-2022) and linked with administrative databases to capture disease features, treatment, overall (OS) and cancer-specific survival (CSS). Primary sites were anorectal (AR), gastrointestinal (GI), gynecologic (GYN), head and neck (HN) and urologic (URO). Descriptive, survival, and multivariate regression analyses (MVA) were performed to identify factors associated with OS and CSS. **RESULTS:** We included 632 patients (median age 72y, 73% female). Annual standardized incidence rate (ASIR) was 0.30-0.54/100,000. Most common sites were GYN (37%, ASIR 0.15) and HN (33%, ASIR 0.13), followed by AR (18%, ASIR 0.07), GI (8%, ASIR 0.03) and URO (3%, ASIR 0.01). Within 6 months of diagnosis, 95% of patients had surgical (SO), 60% radiation oncology (RO) and 54% medical oncology (MO) consultations (Table 1). MO consultations rose after 2017 (43 vs 65%, p< 0.001); RO and SO remained stable. Staging imaging was performed in 93% of patients: thorax CT (88%), abdominopelvic CT (87%) and brain imaging (40-44%). Stage was unrecorded in 80% of cases. Surgery was completed in 363 (75%) cases, including primary tumor resection (74%) and lymph node biopsy/dissection (17%), with no site differences. Chemotherapy (ChT) was given in 40% and was the most common systemic treatment within 1 year (68% adjuvant [ADJ], 6% neoadjuvant [NA]), followed by IO (33%, ADJ 65%, NA 6%) and TT (3%). Systemic therapy use increased after 2017 (ChT 30 vs 52%, IO 15 vs 52%, both p< 0.001), with no site differences. ADJ radiation was given in 25% cases, more often in HN (46%, p< 0.001), with no temporal change. Five-year OS was 32% (95% CI 27-36), higher in GYN (39%) and URO (39%) and lower in AR (24%) and GI (23%)(p=0.01), with no improvement over time (2010-2016 29% vs 2017-2022 34%, p=0.3). Five-year CSS was 38% (95% CI 34-43), with no site-specific difference. On MVA, older age, AR, GI and H&N sites were associated with worse OS and CSS. **CONCLUSIONS:** MM requires complex multidisciplinary care. Despite increasing MO involvement and IO use, outcomes remain poor. Strengthening cancer registries, early referral to cancer centers and inclusion in clinical trials are essential to improving care.

Table 1. Clinical and treatment characteristics

	Total (n=483)	Anorectal (n=90)	Gastro intestinal (n=37)	Gynecologic and urologic (n=193)	Head and neck (n=163)	P value
Demographics						
Sex (female)⁺	354 (73)	52 (58)	12 (32)	185 (96)	105 (64)	<0.001
Age at diagnosis#	72 (62-80)	72 (62-81)	72 (65-80)	70 (60-79)	74 (63-80)	0.3
Consultations						
Medical Oncology⁺	261 (54)	65 (72)	20 (54)	104 (54)	72 (44)	<0.001
Time to consultation (days)#	53 (31-94)	41 (30-81)	30 (17-48)	70 (36-105)	49 (27-89)	<0.001
Radiation Oncology⁺	290 (60)	41 (46)	19 (51)	92 (48)	138 (85)	<0.001
Time to consultation (days)#	33 (18-68)	52 (31-98)	43 (21-105)	35 (19-86)	29 (16-49)	0.001
Surgical specialties⁺	460 (95)	*85-89	28 (76)	*188-192	*158-162	<0.001
Time to consultation (days)#	21 (3-56)	19 (3-48)	29 (2-66)	21 (1-50)	20 (6-57)	0.7
Staging imaging						
Any⁺	449 (93)	*85-89	*32-36	175 (91)	149 (91)	0.04
MRI brain⁺	213 (44)	34 (38)	15 (41)	65 (34)	99 (60.7)	<0.001
CT head⁺	194 (40)	39 (43)	12 (32)	65 (34)	78 (48)	0.03
CT thorax⁺	425 (88)	*81-85	*32-36	170 (88)	138 (85)	0.2
CT abdomen / pelvis⁺	422 (87)	*85-89	*32-36	173 (90)	127 (78)	<0.001
Systemic treatment						
Immunotherapy⁺						
Within 1 year of dx	159 (33)	35 (39)	12 (32)	54 (28)	58 (36)	0.2
Neoadjuvant	10	6	0	*1-5	*1-5	-
Adjuvant	104	19	8	*33-37	*38-42	0.02
Targeted therapy⁺						
Within 1 year of dx	13 (3)	*1-5	0	6 (3)	*1-5	0.8
Neoadjuvant	*1-5	*1-5	0	*1-5	0	-
Adjuvant	*5-9	*1-5	0	*1-5	*1-5	-
Chemotherapy⁺						
Within 1 year of dx	195 (40)	39 (43)	15 (41)	78 (40)	63 (39)	0.9
Neoadjuvant	11	*1-5	0	*1-5	*1-5	-
Adjuvant	133	*22-26	10	*52-56	*45-49	0.3
Radiation treatment						
Radiotherapy⁺						<0.01
Adjuvant	121 (25)	13 (14)	6 (16)	27 (14)	75 (46)	
Palliative	95 (20)	15 (17)	6 (16)	44 (23)	30 (18)	
Surgical treatment						
Any surgical treatment⁺	363 (75)	69 (77)	23 (62)	151 (78)	120 (74)	0.1
Primary tumor resection⁺	359 (74)	67 (74)	23 (62)	150 (78)	119 (73)	0.2
Lymph node biopsy / dissection	84 (17)	8 (9)	8 (22)	42 (22)	26 (16)	0.05

Values presented as: #median (IQR), ⁺n (%), ᵍmedian (95% CI)
*Small cell values presented as ranges to protect confidentiality

P46

Percutaneous versus isolated hepatic perfusion for metastatic uveal melanoma: a propensity score-matched analysis

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INTRODUCTION: A diagnosis of metastatic uveal melanoma (UM) confers a markedly poor prognosis, driven by the disease's high propensity for hepatic metastasis. Percutaneous hepatic perfusion (PHP) and isolated hepatic perfusion (IHP) are two methods to isolate the liver and regionally deliver melphalan to metastatic UM with limited systemic exposure. Both PHP and IHP have demonstrated significant improvement in progression free survival (PFS) and hepatic response rates compared with best alternative care (BAC) in several clinical studies but with different safety profiles. Given that direct comparisons are currently limited to systematic reviews and meta-analyses, our goal was to perform a propensity score-matched analyses to compare outcomes between PHP and IHP. **METHODS:** A retrospective review of a prospectively collected database included UM patients with liver metastasis treated with at least one PHP or IHP from 2008-2024 at two centers. The two groups were propensity score matched (PSM) for presence of extra-hepatic metastases, largest liver tumor diameter, number of hepatic metastases, age and sex. **RESULTS:** 154 patients were identified (110 underwent IHP and 44 underwent at least one PHP). Mean age for IHP was 60.9 years and 59.8 for PHP. 62 patients were matched under a 1:1 ratio between the two groups and were well-balanced. On Kaplan-Meier analysis (KM) (figure 1), there were no significant differences between

IHP and PHP in terms of overall PFS (median 11.3 vs 10.7 months), hepatic PFS (median 12.8 vs 14.5 months) and extrahepatic PFS (median 14.2 vs 11.9 months). Disease specific survival (DSS) (median 16.1 vs 24.2 months) and overall survival (OS) (median 16.1 vs 22.4 months) were also not significantly different. However, we see a clinically relevant 6-8 month improvement in DSS and OS favoring PHP. **CONCLUSIONS:** In this first propensity score matched analysis comparing IHP and PHP, there was a 6-8 month clinically relevant improvement in DSS and OS favoring PHP, although not significantly significant. This supports the use of PHP as it is less invasive, applicable to more centers in terms of program setup requirements, less complex and repeatable compared to IHP without sacrificing survival.

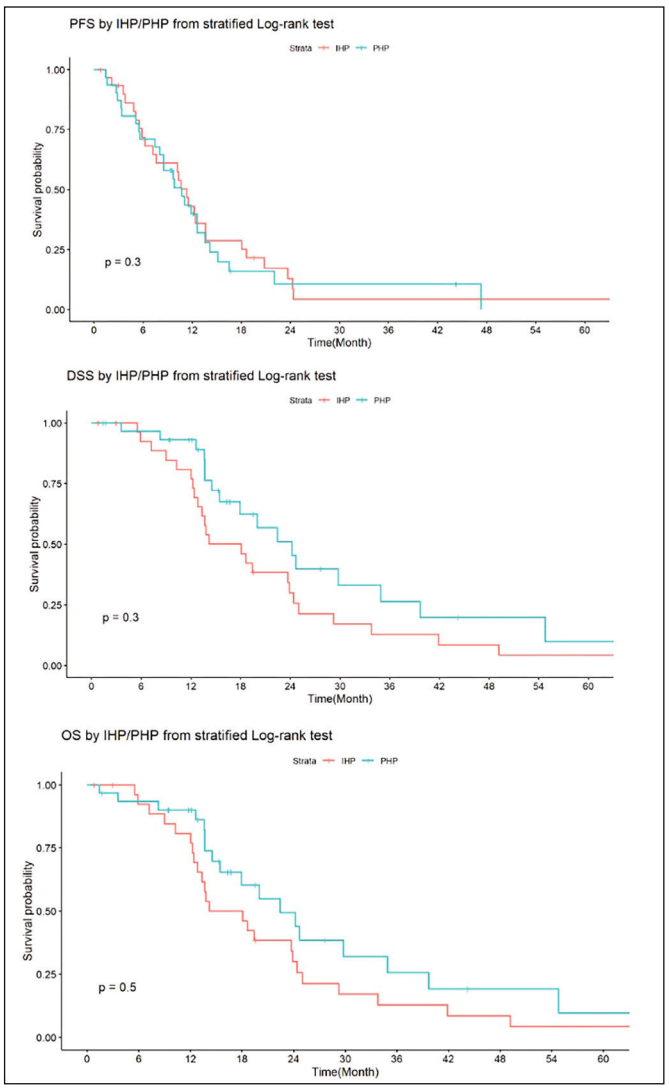

Figure. Survival Outcomes for PHP vs IHP PSM

P47

Outcomes of Percutaneous Hepatic Perfusion with Melphalan for Metastatic Uveal Melanoma to the Liver: Post FDA Approval Real World Data

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INTRODUCTION: Uveal melanoma (UM) has a high propensity to metastasize (mUM) to the liver, leading to a poor prognosis. Percutaneous hepatic perfusion (PHP), a minimally invasive technique to isolate and saturate the liver with high-dose melphalan, approved in August 2023 for hepatic dominant mUM. We report our experience with PHP post FDA approval to present. **METHODS:** A retrospective review of a prospective database evaluating patients who underwent PHP. Data collected: demographic, imaging, treatment characteristics to assess progression free survival (PFS), disease specific survival (DSS), Overall Response Rate (complete response/partial response) and Disease Control Rate (complete response/partial response/stable disease) from first to last PHP, and adverse effects. **RESULTS:** Eighteen patients underwent a total of 81 PHPs with a median of 4.5 PHPs (range, 1-7). The median age was 66.5 (41-76); 72% female. The median time from UM to mUM was 33 mo (range, 7-199), and median time from mUM to first PHP was 2.5 mo (range 1-27). Four (22%) had previously been treated for mUM prior to PHP; 2 with immunotherapy, 1 with liver resection, and 1 with immunoembolization. PHP was well tolerated with minimal toxicity; 1 had fluid overload/pulmonary edema, 1 G3 thrombocytopenia requiring transfusion, and 5 with G1 bone marrow suppression. All patients had complete resolution of toxicities except 1 with prolonged G1 cytopenia. Median hospital length of stay was 1 day (range,1-3). Median follow up from first PHP was 8 mo (range, 2 to 30). Eight (44%) pts completed 6 PHPs every 6-8 weeks. Four (22%) discontinued due to progression of disease (PD) and 1 (6%) secondary to DVT/PE. Six (33%) have ongoing PHP. Hepatic ORR was 44% and DCR was 83%. The median intrahepatic and extrahepatic PFS was 11 and 10.5 mo. One pt died of disease, median DSS not reached. To date, 5 (28%) pts have not progressed. While being treated with PHP, 4 pts progressed with extrahepatic disease, all successfully treated with SBRT or resection, and PHP continued. Five (28%) pts developed extrahepatic progression after completing 6 PHPs; all treated with SBRT. One pt received 7 PHPs after progression in liver 2 years after first PHP. **CONCLUSIONS:** PHP achieves excellent hepatic DCR and PFS. Extrahepatic progression with control of liver disease during PHP, can be treated with resection or SBRT while undergoing additional PHPs. The majority of patients complete 6 PHPs with minimal toxicity.

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Duration of adjuvant immunotherapy in sentinel node positive melanoma: How important is completing a full year?

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INTRODUCTION: One year of adjuvant immunotherapy (IO) improves survival in patients with sentinel lymph node (SLN) positive melanoma. However, patients may prematurely discontinue treatment due to immune-related adverse events (irAEs), early disease recurrence, or other factors. The objective of this study was to determine whether a complete adjuvant IO course confers additional oncologic benefit for patients alive without recurrence a year after positive SLN biopsy. **METHODS:** This international retrospective cohort study compared duration of adjuvant IO (full course ≥1 year vs. partial course < 1 year) and recurrence-free survival among patients with SLN positive melanoma at 17 institutions July 2017-June 2022. Patients who underwent immediate completion axillary dissection or received other targeted therapy were excluded. To mitigate bias associated with early discontinuation of adjuvant IO due to recurrence, only patients who were alive with no recurrence one year after positive SLN biopsy (usual adjuvant IO window) were included. Analyses included Chi square tests, assessment of Kaplan-Meier curves, and Cox proportional hazards models adjusted for clinical variables including irAEs. **RESULTS:** Of 1,450 patients, 824 (56.8%) received adjuvant immunotherapy. Of these, 164 (20.0%) recurred and another 54 (6.6%) were lost to follow up and/or died in the year after SLN biopsy. Among the remaining 606 patients, 312 (51.5%) received a full IO course and 294 (48.5%) received a partial IO course (median partial duration 9 months (Interquartile Range [IQR] 5-11)). The two groups were well-matched for AJCC T and N stage. In a median clinical follow-up of 2.7 years (IQR 1.6-4.2) after the adjuvant window, there were 201 (33.2%) recurrences with no difference for full (31.7%) vs. partial IO (34.7%) (p=0.4). Kaplan-Meier curves (Figure) demonstrated greater recurrence with partial IO than full IO in the first two years after the adjuvant window which converged thereafter. In adjusted models, relative to full IO, partial IO was associated with increased risk of recurrence within one (HR=2.3, 95% CI 1.3-4.1) and two years (HR=1.7, 95% CI 1.1-2.4) after the adjuvant window. This difference was attenuated over the entire follow-up period (HR 1.2, 95% CI 0.9-1.7). **CONCLUSIONS:** Among patients who were alive with no recurrence one year after a positive SLN biopsy for melanoma, a full IO course may protect against early recurrence within two years, but no difference was seen with longer follow-up. Future work should consider the impact of salvage strategies for recurrent disease on disease-specific survival.

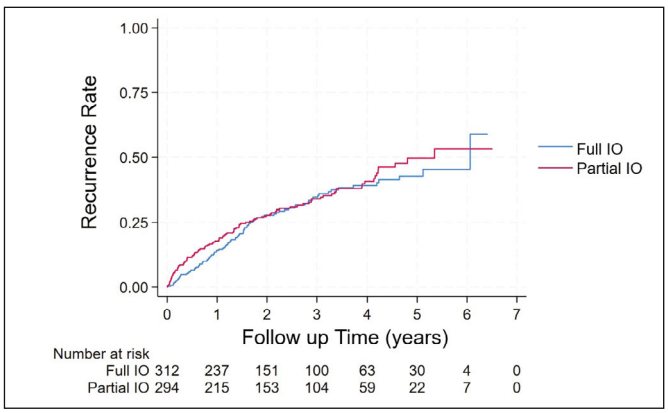

Figure. Kaplan-Meier curve of recurrence rate by IO (immunotherapy) duration (full vs. partial IO duration) over time, where follow up begins after completion of the one-year adjuvant window.

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Peritoneal Lavage Exosomes Quantity and Gene Expression are Prognostic in Gastrointestinal Peritoneal Carcinomatosis

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INTRODUCTION: Previous work from our group has shown that exosomes are abundantly present in the peritoneal lavage (PL) fluid from patients with gastrointestinal peritoneal carcinomatosis (GI PC). Given the significance of exosomes in premetastatic niche creation and cancer progression, we sought to evaluate the association of PL exosomes quantity, distribution, and gene expression with outcomes in GI PC. **METHODS:** PL samples from patients with GI PC were obtained at the time of diagnostic laparoscopy or cytoreductive surgery (CRS) and were grouped based on primary tumor site (gastric, appendix, or colon) and receipt of systemic therapy (ST) (pre-or post-ST). Patient demographics, tumor characteristics, and clinical outcomes were collected. Patients were grouped as poor or good prognosis based on recurrence and/or death. Exosomes were isolated from PL. Distribution (0.5-99.5nm and 100.5-199.5nm) and quantity of exosomes were assessed by nanoparticle tracking analysis (NTA). Exosome RNA was extracted and analyzed utilizing NanoString's gene PanCancer Progression Panel (770 genes). Differential gene expressions were performed with log2 fold expression change cutoff of ≥1.5 to ≤ -1.5 with p-value of ≤ 0.05. **RESULTS:** A total of 34 patients with GI PC were included: appendiceal (n =12), colon (n =16), and gastric (n =8). Median age was 61.5; 53% were female; pre-ST (n=16) and post-ST (n=18). Median peritoneal cancer index (PCI) was 19 (range 1 – 39). CRS was performed in 18 patients. Recurrence or death occurred in 21/34 (61.7%). The quantity of exosomes was significantly higher in the pre-ST PL (n=12) compared to post-ST (n=14) across all primary sites (p< 0.0001). In the poor prognosis group, the quantity of exosomes post-ST was significantly higher compared to the good prognosis group (p< 0.0001). Poor prognosis group also showed significant differential overexpression of genes associated with epithelial mesenchymal transition, extracellular matrix structure, cell motility, and inhibition of apoptosis (COL1A1, VIM, RPS27A, SPARCL1, TPM2, UBA52, OGN, TXNIP, CCDC80 and STAT3). **CONCLUSIONS:** PL exosomes quantity and gene expression pattern post ST were predictive of outcomes in patients with GI PC. These results highlight the utility of PL exosomes as a predictive liquid biopsy tool for PC prognostication.

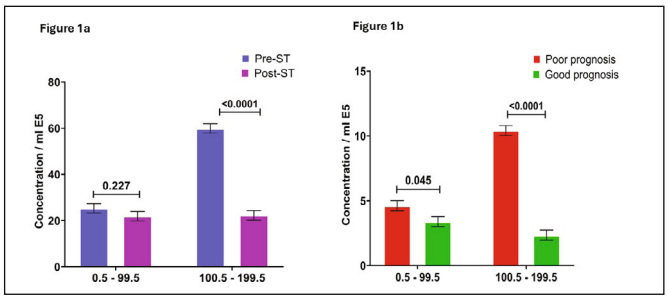

Figure 1A: Nanoparticle tracking analysis (NTA) assessing the exosome concentration and size distribution in the GI-PC groups pre- and post-systemic therapy Figure 1B: NTA assessing the exosome concentration and size distribution in patients with recurrence of their malignancy after CRS and/or mortality vs patients who did not recur and are alive

P50

Pressurized Intraperitoneal Aerosolized Chemotherapy: A Pilot Study to Evaluate Patients with Peritoneal Carcinomatosis from Gastrointestinal Malignancies

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INTRODUCTION: Pressurized Intraperitoneal Aerosol Chemotherapy (PIPAC) represents an innovative therapeutic option for patients with gastrointestinal (GI) malignancies presenting with isolated peritoneal metastasis who are not candidates for cytoreductive surgery (CRS) with or without heated intraperitoneal chemotherapy (HIPEC). This study evaluates the implementation of a PIPAC program at a tertiary center specializing in peritoneal surface malignancies. **METHODS:** A registry study was designed to enroll patients diagnosed with GI cancers metastatic to the peritoneum only. Eligible participants had previously received a minimum of two lines of systemic therapy and were determined by the surgical team to be unsuitable

for CRS-HIPEC at enrollment. The protocol involved administration of three cycles of PIPAC (utilizing oxaliplatin or cisplatin/doxorubicin), followed by standard of care systemic chemotherapy. Cross-sectional imaging was obtained after each cycle to assess disease response or progression. Quality of life (QOL) measures were collected before and after each PIPAC cycle. Assessment of treatment efficacy encompassed safety, pathological response, QOL, and clinical outcomes. **RESULTS:** Nine patients have been enrolled thus far: 6 with appendiceal, 1 with colon, and 2 with gastric adenocarcinomas. Among these, 2 were goblet cell carcinoma and 3 had signet ring features. Six patients had undergone prior surgical resection for cancer. Of the cohort, 5 have completed all prescribed PIPAC cycles, 2 remain on active treatment, and 2 were discontinued due to disease progression. No Clavien-Dindo grade 3+ complications were observed. All patients were discharged after overnight hospital stay. Median baseline peritoneal cancer index (PCI) was 20. Among those who completed the protocol, PCI score decreased by a median of 5 points. Peritoneal Regression Grading Score (PRGS) improved significantly in 86%, with many exhibiting major pathologic response with fibrosis (Figure). Notably, two patients became eligible for CRS ± HIPEC following 3 PIPAC treatments. Survey data indicated stable symptoms and QOL across treatment cycles, with no decline noted. **CONCLUSIONS:** PIPAC appears to be a safe and well-tolerated therapy for patients with GI malignancies and peritoneal metastases who are not eligible for CRS. Evidence suggests potential for pathologic response, enabling some patients to become candidates for subsequent CRS-HIPEC. Additional studies are warranted to clarify the impact of PIPAC on clinical outcomes and survival.

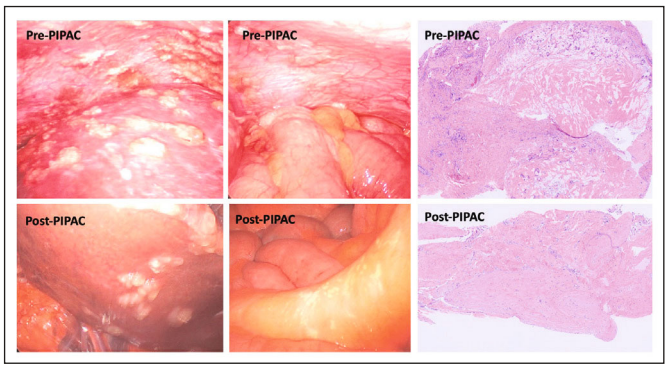

Figure. Clinical and Pathologic Response Following PIPAC Treatment

P51

Feasibility and Clinical Utility of Mass-Based Response Testing in Patients with Peritoneal Metastases

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INTRODUCTION: Treatment outcomes for peritoneal metastases (PM) remain highly variable, with marked interpatient heterogeneity in chemosensitivity and no established predictive biomarkers. Mass-based response testing (MRT) generates patient-specific drug sensitivity profiles by integrating genetic, epigenetic, and environmental factors. This study evaluates the feasibility of MRT in peritoneal metastases and its correlation with clinical response to chemotherapy before and after surgery. **METHODS:** During surgery, viable tumor cells from peritoneal metastases were collected and treated ex vivo with chemotherapeutic agents. The single-cell mass distributions of control and drug-treated populations were compared to generate drug sensitivity profiles within 48 hours of sample acquisition. MRT predictions generated from tumor collected during surgery were correlated retrospectively with responses to neoadjuvant chemotherapy and prospectively with outcomes from chemotherapy administered after surgery. **RESULTS:** MRT was performed on 29 patients: 19 with colorectal cancer, 7 with appendiceal cancer, 2 with mesothelioma, and 1 with an unknown primary. Among 18 patients evaluable for neoadjuvant chemotherapy, MRT predicted resistance in 83% (5/6) of patients who demonstrated radiographic progression. Correlation with post-surgery chemotherapy was available for 8 patients; MRT predicted resistance in 75% (3/4) patients who subsequently experienced progressive disease. Overall, 83% (15/18) of patients were predicted to be resistant to the chemotherapy they had received pre-operatively. Full radiographic correlations are summarized in Table 1. **CONCLUSIONS:** This study establishes the feasibility of performing MRT on PM samples, including those from previously treated patients. Across both neoadjuvant and adjuvant settings, tumors demonstrating resistance by MRT were associated with radiographic progressive disease. These findings support further evaluation of MRT as a functional precision-medicine tool to guide therapy selection in PM.

Table 1. Correlation between MRT predictions (derived from intraoperative samples) and radiographic response to chemotherapy administered before and after surgery

Radiographic Response to Neoadjuvant Chemotherapy (Before MRT Sampling)			
	Progressive Disease	Radiographic Improvemen:	Stable disease
MRT Predicted Sensitivity	1	1	1
MRT Predicted Resistance	5	2	8
Radiographic Response to Post-surgery Chemotherapy (After MRT Sampling)			
	Progressive Disease	Radiographic Improvemen:	Stable disease
MRT Predicted Sensitivity	1	0	1
MRT Predicted Resistance	3	1	2

P52

Single cell transcriptomic profiling of malignant ascites in patients undergoing Pressurized Intraperitoneal Aerosolized Chemotherapy (PIPAC)

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INTRODUCTION: Pressurized intraperitoneal aerosolized chemotherapy (PIPAC) is an emerging locoregional treatment for peritoneal metastases (PM), allowing for more even distribution of drug delivery and improved tumor penetration. While clinical and pathological outcomes, including peritoneal cancer index (PCI) and peritoneal regression grading score (PRGS), have been reported for gastrointestinal malignancies with PM undergoing PIPAC, the cellular and molecular changes in the peritoneal immune microenvironment remain incompletely understood. We sought to characterize transcriptomic alterations in ascites before and after PIPAC using single cell RNA sequencing (scRNAseq). **METHODS:** Patients enrolled in an ongoing prospective PIPAC registry trial with peritoneal metastases from appendiceal, gastric, or colorectal primaries were included. Ascites and four quadrant biopsies were collected prior to the first PIPAC and second PIPAC administration. All patients had received ≥12 cycles of systemic chemotherapy before trial enrollment and received another cycle of systemic chemotherapy between the first and second round of PIPAC. Single-cell suspensions were processed using 10X Genomics protocols and analyzed with the scanpy pipeline. PCI was recorded at each PIPAC, and PRGS was reported for the four quadrant biopsies. **RESULTS:** A total of six ascites samples from three patients were analyzed, yielding 18,876 high quality cells. Two patients had metastatic mucinous appendiceal adenocarcinoma. The third patient had metastatic gastric adenocarcinoma. All ascites samples were comprised of heterogenous microenvironments comprised of mesothelial cells, macrophages, dendritic cells, T cells, NK cells, B cells, and plasma cells. The microenvironment evolved following PIPAC in every patient, with a decrease in myeloid cells (75.8% to 60.8%) and an increase in T/NK cells (19.8% to 31.5%). PCI scores remained stable for two patients and improved from 30 to

22 after one round of PIPAC for one patient with appendiceal adenocarcinoma. These correlated with a PRGS of 3 for the patient with gastric adenocarcinoma, and 2 for the two patients with appendiceal adenocarcinoma. **CONCLUSIONS:** To our knowledge, we present the first scRNA-seq atlas of the peritoneal microenvironment of patients undergoing PIPAC. Our findings suggest that PIPAC induces an evolution of the peritoneal immune microenvironment. Further investigation into the mechanism of PIPAC is needed to optimize treatment strategies for peritoneal metastasis.

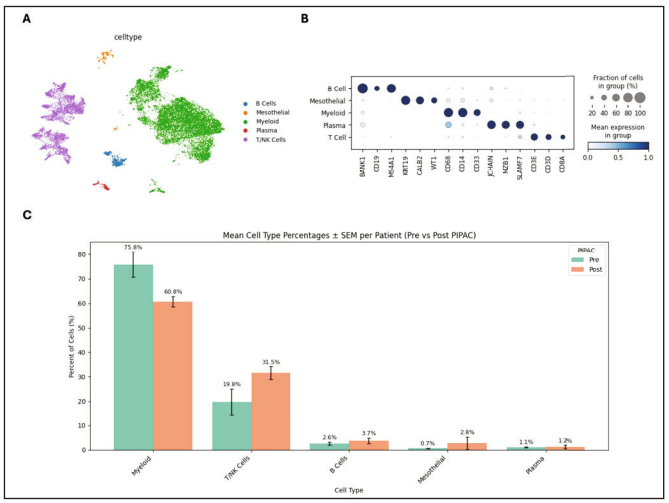

Figure. Clustering and differential expression by cell type pre- and post-PIPAC. (A) UMAP of all cells annotated by cell types. (B) Dotplot of canonical markers for each cell type identified on scRNA-seq. (C) Barplot displaying the cellular compositions pre- and post-PIPAC. Error bars represent SEM of percentages across patients.

P53

The Peritoneal Immune Landscape in Carcinomatosis: Associations with Disease Burden and Oncologic Outcome

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INTRODUCTION: Peritoneal carcinomatosis (PC) is a largely incurable condition marked by a highly maladaptive tumor immune microenvironment. We previously characterized the peritoneal fluid's soluble immune mediators and the peritoneal tissue's cellular and proteomic composition in PC patients. Here, we extend these findings by expanding the breadth of analytes and assessing their association with disease burden and oncologic outcome. **METHODS:** Peritoneum tissue and fluid samples were collected from benign patients (n=15), cancer patients without PC (n=30), and PC patients (n=41). Immunohistochemistry on tissue microarrays quantified immune cell densities. Multi-analyte Luminex assays measured soluble mediator levels in peritoneal fluid. Statistical analyses assessed differences in mediators, cell densities, and their associations with clinical burden of disease (peritoneal carcinomatosis index) and oncologic outcome (overall survival). **RESULTS:** PC tissue showed dense immune infiltration with significant ($p< 0.05$) increases in inflammatory cells (mast cells, neutrophils, monocytes) and adaptive immune cells ($CD4^+$ T cells, B cells, plasma cells) compared to controls, indicating an inflammatory and immunologically active peritoneal niche. Densities of $CD4^+$ T cells, $CD14^+$ monocytes, $CD20^+$ B cells, and $CD138^+$ plasma cells were significantly associated with PCI, linking these cells to disease burden. Cytokine profiling revealed elevated GRO, IL-6, IL-8, CXCL10, IL-10, and TGF-β in PC ascites, supporting a pro-tumorigenic and immunosuppressive milieu ($p< 0.05$). Prognostically, elevated B7-H6, GRO, and TGF-β correlated with decreased survival, as did peritoneal tissue neutrophil accumulation (HR 2.4, $p< 0.05$). Conversely, increased fluid IL-1rα and FGF-2, along with peritoneal tissue $CD1a^+$ dendritic cell enrichment, correlated significantly with favorable outcomes. **CONCLUSIONS:** In this study, we quantified the individual prognostic significance of elements of the maladaptive immune microenvironment of PC. Infiltrating innate immune cells and elevated cytokines (e.g., IL-6, IL-8, TGF-β) create a pro-tumor, inflammatory microenvironment fostering angiogenesis and immunosuppression. These data reveal a dual landscape of myeloid-driven inflammation and compensatory immune repair, offering mechanistic insight and identifying potential prognostic biomarkers and therapeutic targets in PC.

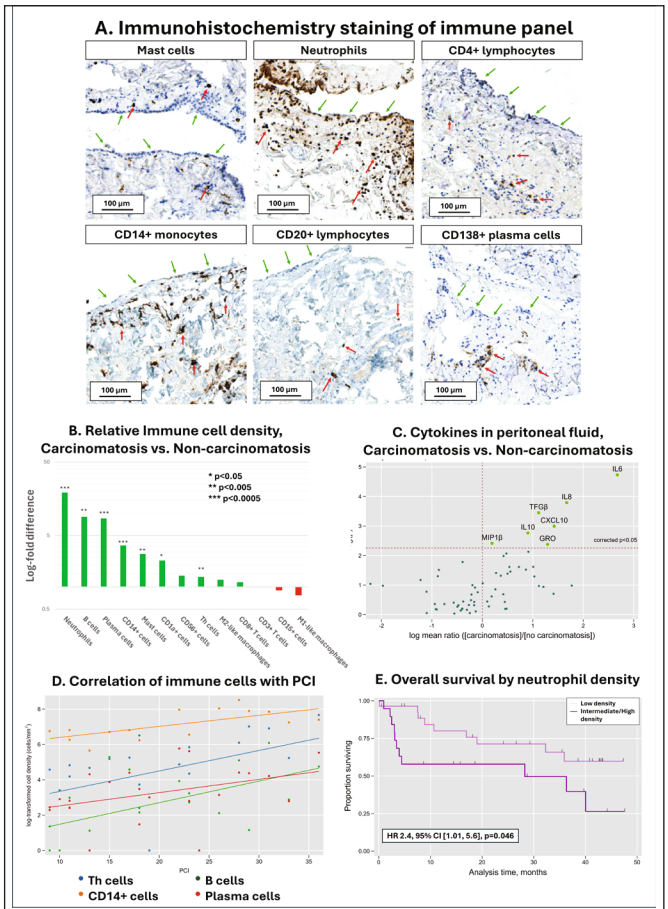

Figure 1-Immune and soluble mediator landscape in peritoneal carcinomatosis. (A) Representative IHC showing increased mast cells, neutrophils, $CD4^+$ T cells, $CD14^+$ monocytes, $CD20^+$ B cells, and $CD138^+$ plasma cells in PC. Red arrows denote representative identified cell and green arrows show peritoneal lining. (B) Quantification of immune cell enrichment vs. non-carcinomatosis. (C) Peritoneal fluid cytokine profiling reveals significantly elevated GRO, IL-6, IL-8, CXCL10, IL-10, and TGF-β in PC. (D) Lymphocyte densities positively correlate with peritoneal cancer index (PCI). (E) Peritoneal tissue neutrophil infiltration is associated with reduced survival.

P54

Intratumoral Lipopolysaccharide Induces Metabolic and Immunological Reprogramming Towards an Adaptive Cytotoxic State in Peritoneal Carcinomatosis

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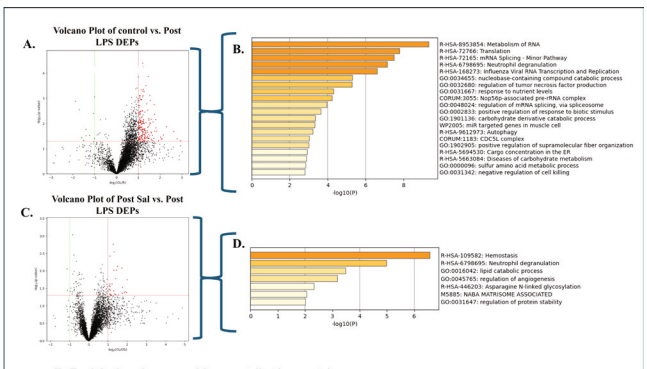
INTRODUCTION: Toll-like receptor (TLR) agonists and other immunomodulators are promising agents designed to repolarize the tumor

microenvironment (TME) into an adaptive cytotoxic state via intra-tumoral injection. However, the feasibility and biological activity of intra-tumoral immunotherapy remains understudied in peritoneal carcinomatosis (PC). This study presents secondary translational analyses from a Phase I trial evaluating intra-tumoral injection of the TLR4 ligand lipopolysaccharide (LPS) during laparoscopy in PC patients (RIOT-1, NCT05751837). **METHODS:** Twelve patients with appendiceal or colorectal peritoneal metastases received paired intratumoral injections of 1 µg E. coli O113-derived LPS or 1 mL saline into distinct tumor deposits. Resected lesions 14 days post-injection underwent mass spectrometry-based proteomic profiling of formalin-fixed paraffin-embedded samples from pre-injection and post-saline/LPS sites. Differential protein expression and pathway enrichment (Metascape) identified functional modules associated with immune activation, metabolism, and structural remodeling. **RESULTS:** Across 5178 quantified proteins, the pre- vs. post-saline group showed significant downregulation of epithelial junctional and extracellular matrix proteins (e.g., COL1A1, COL3A1), indicating tissue remodeling without overt immune activation. In contrast, the pre- vs. post-LPS group displayed strong enrichment in pathways including neutrophil degranulation (e.g., CTSC, TYROBP), cytokine-mediated signaling (e.g., ORM1/2, TOLLIP), RNA translation/metabolism (e.g., EIF6, RPS5), and autophagy-lysosomal regulation (e.g., BECN1, LAMTOR2/5). Direct comparison of post-LPS vs. post-saline samples confirmed LPS-specific immune remodeling with increased LYZ, PF4, PRKCB, and TOLLIP, alongside metabolic/structural mediators (e.g., PLA2G4A, ITGA1) consistent with lipid-mediator synthesis, integrin signaling, and mitochondrial β-oxidation. **CONCLUSIONS:** Intratumoral LPS injection in PC is feasible, safe, and biologically active, inducing cellular hyper-responsiveness and metabolic reprogramming. These findings demonstrate that local TLR4 activation drives a pro-inflammatory, metabolically engaged, and immunologically 'hot' TME in PC. In spite of the logistical challenges of intra-peritoneal injection, our results support ongoing evaluation of TLR agonists and other intratumoral immune modulators in PC.



E. Enriched pathways and key contributing proteins

Metascape / Reactome Term	Key Upregulated Proteins	Comparison(s)	Biological Effect
Induction o TLR4-driven inflammatory signaling	CTSC, DEFA6, FCER1G, TYROBP, NAIP, CYBA, MPEG1, LYZ	Pre vs Post-LPS; Post-LPS vs Post-Saline	Activation of myeloid and neutrophil granule enzymes; innate effector mobilization
Cytokine-mediated Signaling	ORM1, ORM2, FES, TOLLIP, PF4, PRKCB, TYROBP	Pre vs Post-LPS; Post-LPS vs Post-Saline	Induction of TLR4-driven inflammatory signaling
Translation	EIF6, EIF3G, RPS5, RPL36A, MRPL43, MRPS25	Pre vs Post-LPS	Ribosomal and translational upregulation; enhanced protein synthesis
Metabolism of RNA	POLR2C, POLR2G, SNRPA, SNRPD2, SNRPF, SF3B6	Pre vs Post-LPS	Increased RNA processing and transcriptional machinery
Autophagy	BECN1, LAMTOR2, LAMTOR5, BRCC3, TSPO	Pre vs Post-LPS; Post-LPS vs Post-Saline	Lysosomal activation, mTOR coupling, and stress adaptation
Structural & Metabolic Remodeling	PLA2G4A, ITGA1, ACADS	Post-LPS vs Post-Saline	Lipid mediator synthesis, ECM adhesion remodeling, β-oxidation shift

Figure 1-This figure shows volcano plots and top enriched pathways for differentially expressed proteins between (A, B) control and Post LPS, and (C, D) Post Sal and Post LPS groups. Table E demonstrates significant enriched pathways and key contributing proteins in respective comparisons.

P55

Understanding Quality of Life and Recovery After Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy: A Mixed Methods Analysis

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INTRODUCTION: Cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS-HIPEC) are complex, heterogeneous operations that can be difficult for patients to understand and prepare for. We characterize patient perspectives and quality of life (QOL) after CRS-HIPEC using a mixed-methods approach. **METHODS:** We conducted a longitudinal study of patients undergoing CRS-HIPEC at a tertiary academic center (2023-2025). QOL surveys were completed preoperatively, then 2 weeks, 1 month, 3 months, and 6 months postoperatively. Recovery and expectations after surgery were assessed. In-depth interviews were conducted with a subset of patients at 6 months to further explore patient perspectives and lessons learned. **RESULTS:** 38 patients were included: 74% were female, median age was 51 years, length of stay was 7 days. Primary tumors were low/high-grade appendiceal mucinous neoplasm (32%), appendiceal adenocarcinoma (11%), colon adenocarcinoma (29%), uterine sarcoma (18%) and peritoneal mesothelioma (5%). Median peritoneal cancer index (PCI) was 9 and 100% achieved optimal cytoreduction. Overall, QOL scores were stable at 6 months compared to preoperatively (Figure). Functional and physical components dropped after surgery but increased to baseline or better by 6 months. Emotional QOL improved slightly after surgery whereas social QOL remained stable. Mixed methods analysis highlighted 3 important aspects regarding the patient experience. In addition to counseling by their surgeon, patients used the internet or AI (79%), YouTube (29%), and patient support groups (26%) to prepare for CRS-HIPEC, stating there is no better inspiration than meeting patients leading normal lives after HIPEC. Secondly, while most felt almost completely recovered by 6 months, patients admitted that emotional, physical, and functional recovery were more difficult than expected. Many wished they had known the long-term challenges with prolonged post-discharge nausea, diarrhea, and fatigue. Despite these struggles, 100% of patients felt that undergoing CRS-HIPEC was "worth it," as it gave them hope to control their disease and gain more time with loved ones. **CONCLUSIONS:** In our study, recovery after CRS-HIPEC was longer and more challenging than patients expected, yet all believed it was worth it and would go through it again. By 6 months, QOL scores had recovered and patients felt almost back to baseline. Programs to improve preoperative education and incorporate adjunct resources may aid patients in setting expectations and managing their postoperative recovery.

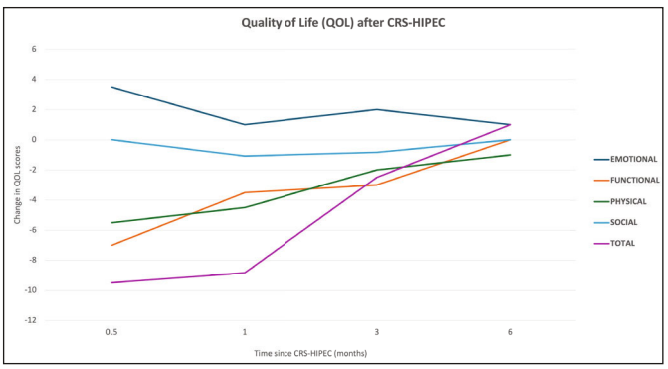

Figure. Quality of Life After CRS-HIPEC

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Standardizing Patient-Derived Tumor Organoid Generation: A Prospective Analysis of 515 Specimens Identifies Key Determinants of Success Across Diverse Malignancies

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INTRODUCTION: Patient-derived tumor organoids (PTOs) offer promising platforms for precision oncology, yet standardized protocols for diverse tumor types remain lacking. We conducted a large-scale prospective study to identify technical and biological factors influencing successful PTO generation across gastrointestinal and peritoneal malignancies. **METHODS:** Between December 2018 and March 2022, 515 consecutive tumor specimens from 288 patients undergoing surgical resection were prospectively processed using a standardized

protocol. Specimens included appendiceal (27.5%), skin/breast (17.3%), colorectal (15.5%), pancreatic (11.6%), brain (9.9%), and other malignancies. Over 30 variables per specimen were collected, including clinical metadata, tissue characteristics, and processing parameters. Primary outcomes included tissue viability (≥75%), viable cells per milligram (≥6,000), and organoid viability (log_{10} ATP luminescence at 14 days). Mixed-effects regression models identified predictors of success. **RESULTS:** Post-processing tissue mass strongly predicted all outcome measures (OR=1.178 for tissue viability, p=0.0006; β=0.053 for log_{10} viability, p=0.0055). Smaller cell diameter (< 10.6μm) was associated with improved tissue viability (OR=0.563, p< 0.0001). Prior surgery significantly reduced tissue viability (OR=0.434, p=0.0025) and viable cell yield (OR=0.586, p=0.0146). High cellular debris field (>1% particles < 5μm) decreased organoid viability (β=-0.302, p=0.0037). Multiple tumor sampling improved viability outcomes (β=0.461, p=0.0020). Notably, tumor origin was not an independent predictor when protocols were standardized. Endocrine, brain, colorectal, and mesothelioma specimens yielded significantly higher viable cells/mg than appendiceal tumors (all p< 0.01). **CONCLUSIONS:** This is the first study that establishes reproducible benchmarks for PTO generation: tissue mass >1000mg, minimal debris field, and uniform cell populations. Prior surgery and cellular debris represent modifiable barriers to success. These data-driven thresholds enable protocol standardization across institutions and inform patient selection for organoid-based precision oncology trials.

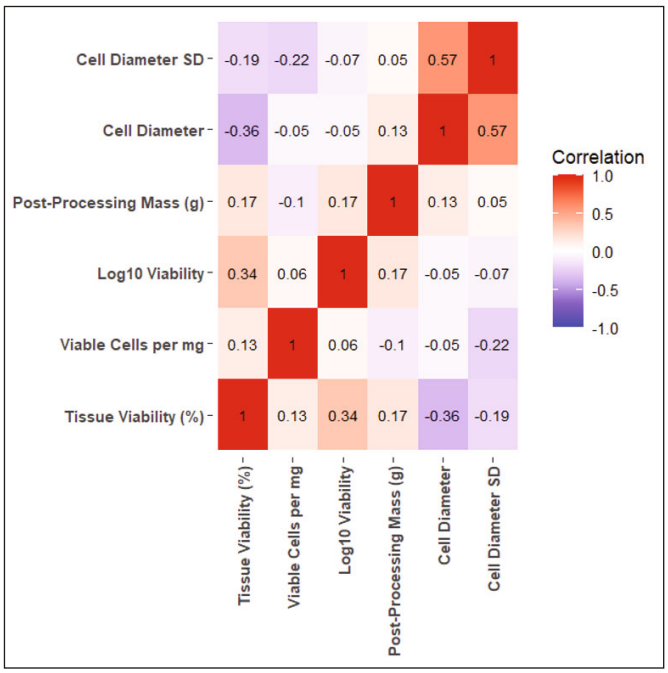

Figure. The correlation matrix presented in the heatmap shows the relationships between various factors such as post-processing mass, cell diameter, cell diameter standard deviation, log10 viability, tissue viability, and viable cells per mg. The color intensity indicates the strength and direction of the correlation, where blue shades represent negative correlations, and red shades represent positive correlations.

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Defining success parameters for appendiceal cancer organoids: the first comprehensive analysis of 223 specimens from 78 patients

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INTRODUCTION: Patient-derived tumor organoids represent a transformative tool for precision oncology, yet their application to appendiceal cancers remains limited due to perceived biological challenges, particularly mucin content. We systematically evaluated factors influencing organoid generation success in the largest cohort of appendiceal tumor specimens analyzed to date to identify clinical and pre-analytic predictors of success. **METHODS:** We analyzed 223 tumor specimens from 78 patients with appendiceal cancers undergoing cytoreductive surgery with hyperthermic intraperitoneal chemotherapy. Specimens underwent standardized enzymatic digestion and organoid culture in hydrogel matrices for 14 days. Viability and yield were quantified via live/dead fluorescence and luminescence-based assays. Over 30 clinical, pathological, and processing variables were evaluated by univariate and multivariate regression to identify predictors of successful organoid generation (tissue viability ≥ 74%, viable cell density ≥ 6,000 cells/mg). **RESULTS:** Of 223 specimens, 80.3% underwent same-day dissociation and 76.2% contained mucinous stroma. Median total yield was 7.6M cells (IQR 2.0–15.7 M), viability 75.9%, and viable count 5.6M. Median viable cell density was 3,073 cells/mg (IQR 1,362–5,951). Prior surgery independently predicted reduced organoid viability (OR = 0.258, p = 0.0019), a 74% decrease in odds of high viability. Larger cell diameter also predicted lower viability (OR = 0.396, p = 0.0005). Multi-site sampling improved organoid viability (Δ +0.649, p = 0.0088), while post-processing mass < 1 g predicted poorer outcomes (p = 0.0053). Neoadjuvant therapy reduced performance (Δ −0.481, p = 0.0393). Same-day processing trended toward benefit (OR = 2.33, p = 0.093). Mucin presence was not detrimental (p = 0.087), challenging the assumption that mucinous tumors are unsuitable for organoid culture. **CONCLUSIONS:** Successful organoid generation from appendiceal cancers is significantly influenced by modifiable clinical and technical factors rather than mucin content. Key actionable predictors include avoiding previously operated tissue sites, implementing multi-site sampling, ensuring adequate tissue mass (greater than 1 gram), and prioritizing same-day processing, providing an evidence-based framework for optimizing organoid protocols in mucin-rich tumors.

Table. Technical and clinical predictors of PTO viability

	Tissue Viability ≥ 75%				Viable cells per mg ≥ 6,000				Organoid Log_{10} Viability			
	Univariate		Multivariate		Univariate		Multivariate		Univariate		Multivariate	
Factor of Interest	OR	P-value	OR	P-value	OR	P-value	OR	P-value	Mean Diff.	P-value	Mean Diff.	P-value
Neo-adjuvant therapy	0.759	0.4964			0.926	0.8347			-0.497	0.0612	-0.4814	**0.0393**
Prior Surgery	0.265	**0.0006**	0.258	**0.0019**	1.02	0.9554			-0.202	0.4352		
Same-day processing	1.205	0.6762			2.066	0.1265	2.332	0.0926	0.054	0.8144		
Post-processing mass (mg)	0.217 (<250 mg)	0.1082			2.727 (<250 mg)	0.309			-0.641 (<250 mg)	**0.0053**	-0.522 (<250 mg)	**0.0113**
Stiffness factor (2-5)	0.334 (SF 2)	0.2602	0.108 (SF 2)	**0.0467**	0.762 (SF 2)	0.5979			0.159 (SF 2)	0.4878		
Digestion time (>60 mins)	0.83	0.5714			0.793	0.4845			0.038	0.8049		
Cell Debris Field	0.634	0.162			0.45		0.491	0.0598	-0.295	**0.0421**		
Mucin Present	0.666	0.3133			0.508	0.0638	0.495	0.0865	0.285	0.1345		
Multiple Sites	1.562	0.3271			1.008	0.9866			0.668	**0.0085**	0.629	**0.0088**
PCI	1.031	0.1255			0.978	0.2035				**0.0072**		
Cell Diameter	0.465	**0.0006**	0.396	**0.0005**	0.938	0.7516				0.4905		
Diameter Std. Dev	0.638	**0.0086**			0.784	0.1503				0.5023		

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Germline Mutation Profiles in Patients with Peritoneal Surface Malignancies of Appendiceal Origin

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INTRODUCTION: Peritoneal surface malignancies (PSM) of appendiceal origin are rare and biologically heterogeneous. While somatic alterations have been described, germline predisposition remains poorly characterized. Characterizing germline variants may identify biologically distinct subgroups and inform genetic counseling and therapeutic strategies. **METHODS:** Thirty-eight patients with peritoneal surface malignancies of appendiceal primaries underwent germline mutation testing (Invitae 70-gene hereditary cancer panel) using saliva swabs. Variants were classified as pathogenic or variants of uncertain significance (VUS). Genes were grouped into DNA repair, tumor suppressor, and RTK/oncogenic signaling pathways. Clinicopathologic correlations with tumor grade, histology, peritoneal cancer index (PCI), and overall survival (OS) from time of PSM diagnosis were assessed. **RESULTS:** Thirteen of 38 patients (34%) harbored germline variants, including 2 (5%) with pathogenic mutations and 11 (29%) with variants of unknown significance (VUS). Three patients (23%) had multiple alterations. Half of all mutations (8/16, 50%) involved DNA repair genes (MUTYH, ATM, BRCA1/2, PALB2, POLD1), followed by tumor suppressor genes (TSC1, FLCN, SMARCA4, POT1, STK11; 5/16, 31%), and RTK/oncogenic signaling genes (RET, PRKAR1A; 3/16, 19%). All pathogenic mutations occurred in DNA repair genes. No significant association was found between mutation status and tumor grade (p = 0.81), histology (p=0.09), or PCI (>20 vs ≤20, p= 0.3). Mutation prevalence was highest in goblet cell adenocarcinoma (5/10, 50%) compared with mucinous (0/2, 0%), colonic-type (3/11, 27%), and low-grade appendiceal mucinous neoplasms (5/15, 33%). Patients with DNA repair mutations tended to have higher PCI scores (>20) (Figure 1). Median overall survival (OS) was 35.2 months for mutation-positive patients and not reached for mutation-negative patients (p = 0.85). OS did not differ significantly among mutation subgroups. **CONCLUSIONS:** Germline variants were present in one-third of patients with appendiceal peritoneal metastases, most frequently affecting DNA repair genes. Although most alterations were variants of uncertain significance, the prevalence exceeded that reported in broader cancer populations (9–28%). These findings suggest underlying biologic heterogeneity and reinforce the value of routine germline testing to uncover hereditary risk and inform patient counseling.

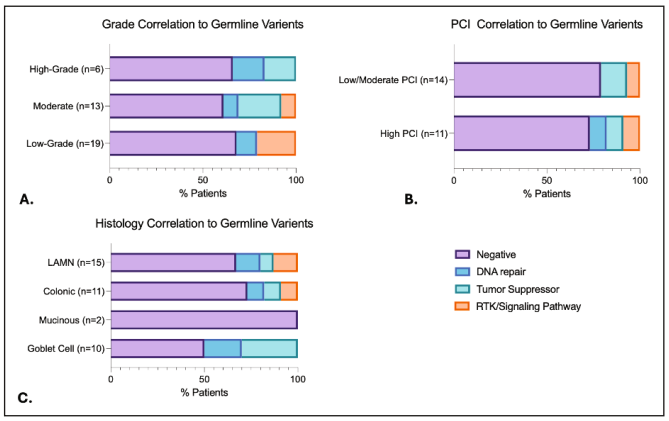

Figure. Clinicopathologic correlations with tumor grade (A), peritoneal cancer index (B) and histology (C) from time of diagnosis.

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Frontal EEG Monitoring During HIPEC – a Novel Opportunity to Improve Outcomes

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INTRODUCTION: Introduction: Excessive depth of anesthesia (DOA) is associated with postoperative delirium and intraoperative hypotension requiring the use of vasopressor which can lead to acute kidney injury and myocardial and cerebral hypoperfusion. The impact of hyperthermia during HIPEC on DOA is unknown. This study is the first to report on the impact of intraoperative hyperthermia on the DOA as measured by frontal electroencephalography (EEG). **METHODS:** Methods: With IRB approval, data were retrospectively collected on 13 patients undergoing HIPEC who had EEG monitoring and in whom the esophageal temperature exceeded 38ºC. Variables collected were spectral edge frequency (SEF), burst suppression ratio (BSR), temperature, SpO2, end-tidal isoflorane, mean arterial blood pressure (MAP), vasopressor use, and anesthetic drug concentrations. Mixed effects models in Matlab were used to analyze normalized SEF and the presence of burst suppression at one-minute intervals from 10 minutes preceding temperature rise during HIPEC to the start of temperature decline. **RESULTS:** Results: Nine (69.2%) patients were female and median age was 62.5 years. Four patients (31%) had an EEG showing burst suppression during the hyperthermic period and in the 9 patients without burst suppression, normalized SEF decreased when core body temperature exceeded 39°C (β = -0.092, p = 0.002, 95% CI: -0.15 to -0.03). There was no association between MAP and SEF, and there was no significant drug effect. Vasopressors were started or increased during HIPEC in 6 (46%) patients. Temperature was significantly associated with the presence of burst suppression (OR 4.6 per 1°C increase, P= < 0.001, 95% CI: 2.59-8.22). Patients with burst suppression had higher mean temperatures (38.38°C ± 0.61°C) compared to those without burst suppression (37.81°C ± 1.05°C). SpO2 was also significantly associated with burst suppression (OR = 2.17 (p = < 0.001), as was end-tidal isoflurane concentration OR = 1.31 (p = < 0.001). **CONCLUSIONS:** Conclusions: This is the first study to show that hyperthermia during HIPEC is associated with a deeper state of unconsciousness assessed using frontal EEG monitoring. It also shows an initiation or increase in the use of vasopressors in close to 50% of patients during HIPEC that may be related in part to the DOA. Increased awareness of the impact hyperthermia on DOA and possibly postoperative complications provides an novel opportunity for collaboration between surgeons and anesthesiologists to improve outcomes for patients undergoing HIPEC.

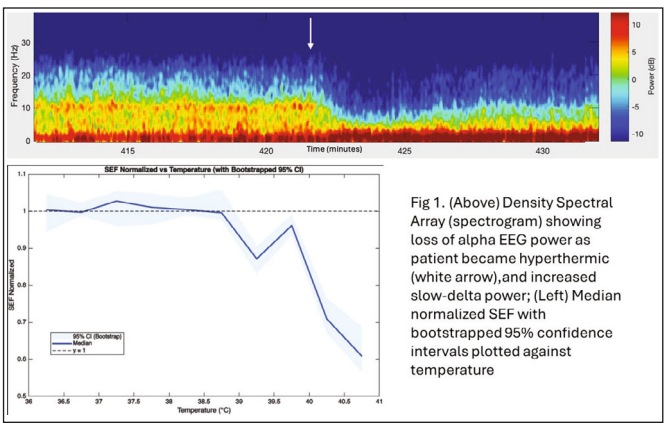

Fig 1. (Above) Density Spectral Array (spectrogram) showing loss of alpha EEG power as patient became hyperthermic (white arrow),and increased slow-delta power; (Left) Median normalized SEF with bootstrapped 95% confidence intervals plotted against temperature

P60

Rethinking the Staging System for Malignant Peritoneal Mesothelioma: A Data-Driven Survival Tree Algorithm

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INTRODUCTION: Malignant peritoneal mesothelioma (MPM) is a rare, aggressive malignancy characterized by diffuse peritoneal spread, making conventional TNM staging frameworks impractical. Current NCCN guidelines acknowledge the lack of an accepted staging system for MPM but suggest a staging model based on the Peritoneal Cancer Index (PCI). This study developed an advanced data-driven algorithm integrating PCI with additional clinicopathologic variables to improve prognostication and staging.

METHODS: Patients with MPM who underwent cytoreductive surgery with hyperthermic intraperitoneal chemotherapy at a single center (2001-2022) were included. Recursive feature elimination was used to objectively select prognostic variables. Recursive partitioning with conditional inference survival trees was employed to develop a hierarchical staging model that divided patients into subgroups with similar overall survival (OS), while maximizing OS differences between groups. The newly derived staging groups were then compared with the existing system proposed by Yan et al.: Stage I [PCI ≤10/N0/M0]; Stage II [PCI 11–30/N0/M0]; Stage III [PCI >30 or N1 or M1]. **RESULTS:** Of the 172 patients with MPM included in the analysis, 63% were women. Median age was 60 years; median PCI was 17. Epithelioid histology accounted for 86% of cases. After adjustment, higher mitotic rate, biphasic/sarcomatoid histology, higher PCI, and symptom progression were independently associated with worse OS (all p< 0.05). Survival algorithm objectively produced four distinct prognostic stages with divergent OS (p< 0.01): Stage I: [low mitotic rate (≤3)/PCI ≤10]; Stage II: [low mitotic rate/PCI >10]; Stage III: [high mitotic rate (>3)/epithelioid subtype]; Stage IV: [high mitotic rate/biphasic/sarcomatoid subtype]. Median OS by the tree-based model was not reached for Stage I; 42 months for Stage II; 22 months for Stage III; 5 months for Stage IV. In comparison, the traditional system showed median OS of 95 months for Stage I; 29 months for Stage II; and 42 months for Stage III; confirming superior risk stratification and better survival separation with the developed model (Figure 1). **CONCLUSIONS:** The current PCI-based staging framework for MPM appears to be suboptimal in discriminating risk of OS among disease stage groups. Our results suggest that the current TNM staging system could be improved with the newly identified clinicopathologic variables to achieve more accurate prognostic stratification and possibly treatment selection.

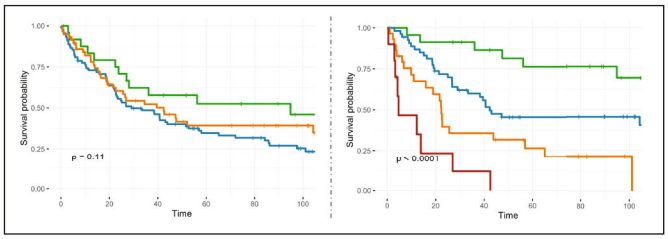

Figure 1. Kaplan–Meier survival curves comparing current staging system (left) versus the new tree-derived staging system (right), demonstrating superior separation of overall survival (p < 0.01).

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Neutrophil extracellular trap inhibition restores 5-FU sensitivity via GLYR1 in colorectal liver metastases

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INTRODUCTION: Introduction: Colorectal cancer liver metastases (CRLM), the leading cause of CRC-related mortality, frequently exhibit poor response to 5-fluorouracil (5-FU)-based therapies. Emerging evidence suggests that chemotherapy can promote neutrophil recruitment and formation of neutrophil extracellular traps (NETs), which contribute to therapeutic resistance. We hypothesized that NET inhibition with DNase I would enhance 5-FU efficacy and explored a mechanism involving the chromatin-binding protein glyoxylate reductase homolog 1 (GLYR1), recently linked to S-phase entry and 5-FU sensitivity. **METHODS:** CRLM were established by portal vein injection of GFP-labeled MC38 colorectal cancer cells into C57Bl/6 mice. Animals received weekly intraperitoneal injections of PBS (control), 5-FU, DNase I, or the combination of 5-Fu and DNase I for three weeks. Tumor progression was assessed by bioluminescent imaging and gross examination. To evaluate the role of NETs, tumor-bearing Pad4fl/flMRP8Cre mice (neutrophil-specific PAD4 knockout mice that are genetically incapable of NET formation) were treated with 5-FU. MC38 cells were co-cultured with isolated NETs and transcriptomic changes were analyzed through RNA sequencing. **RESULTS:** Combination therapy with DNase I and 5-FU reduced tumor burden and metastases compared to 5-FU alone. Similarly, neutrophil-PAD4 knockout mice demonstrated enhanced sensitivity to 5-FU, an effect reversed by re-addition of isolated NETs. RNA sequencing revealed that DNase I and 5-FU upregulated GLYR1, a nucleosome-destabilizing factor that promotes the G1-S cell cycle transition, whereas exposure to NETs suppressed GLYR1 expression in tumor cells. **CONCLUSIONS:** Pharmacologic or genetic NET inhibition augments 5-FU efficacy in CRLM. Mechanistically, NET-mediated downregulation of GLYR1 may blunt S-phase gene expression and impairs 5-FU metabolism, driving chemoresistance. Targeting NETs could represent a novel strategy to sensitize CRLM to chemotherapy and GLYR1 may serve as a biomarker of response or therapeutic vulnerability.

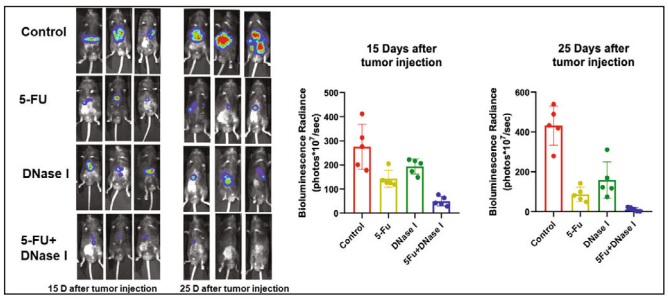

Figure. Combination DNase I and 5-FU therapy markedly reduces colorectal liver metastasis burden.

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Preoperative exercise induces Kupffer cell DNase 1l3 to enhance antitumor immunity in colorectal liver metastases

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INTRODUCTION: Surgical resection is a mainstay of treatment for colorectal cancer liver metastases (CRLM). However, perioperative stress activates innate immune cells including polymorphonuclear myeloid-derived suppressor cells (PMN-MDSCs) and triggers release of neutrophil extracellular traps (NETs), thereby promoting metastasis. Regular exercise is a potential cancer treatment strategy that modulates immune and inflammatory responses. Our group previously demonstrated that that a 4-week aerobic preoperative exercise (PEx) program attenuates liver inflammation resulting from hepatic ischemia-reperfusion (I/R) injury. However, whether PEx also protects against I/R-induced CRLM progression and through which immune mechanisms remain unknown. **METHODS:** Eight-week-old C57BL/6 mice were divided into sedentary (Sed) and preoperative exercise (PEx) groups. PEx mice ran on a motorized treadmill at 12.5 m/min for 1 hour/day, 5 days/week, for 4 weeks. To model CRLM, MC38 colon cancer cells were injected via portal vein, followed by 1-hour 70% hepatic I/R to simulate surgical stress. After 3 weeks, mice were euthanized and liver and tumor tissues were analyzed. Immune populations and interactions within the tumor microenvironment (TME) were quantified with single cell RNA sequencing (scRNA-seq) in Sed vs. PEx conditions. **RESULTS:** PEx significantly reduced liver tumor burden compared to the Sed group. scRNA-seq analysis revealed a shift toward an anti-tumor phenotype within the TME following PEx, including Kupffer cells (KCs) adopting anti-tumor transcriptional features and a decrease in PMN-MDSCs. NET levels in the TME were reduced, and CD8+ T cell proliferation and cytotoxicity were enhanced compared to Sed mice. CellPhoneDB analysis demonstrated a 1.8-fold increase in inferred interactions between KCs and PMN-MDSCs following PEx. DNase1l3 in KCs showed a substantial increase, with PEx inducing a 2.6- fold (liver) and 6-fold (tumor) higher expression than in Sed (p< 0.001). **CONCLUSIONS:** DNase 1l3, a rate-limiting enzyme for NET degradation, is significantly upregulated in KCs following exercise in our mouse model of CRLM. Our data suggest that increased KC-derived DNase1l3 contributes to an improved immune response by reducing NET burden and PMN-MDSC-mediated immunosuppression in the TME. CD8+ T cell function was enhanced as a result and tumor growth was reduced.

This work supports preoperative exercise as a potential strategy to improve outcomes in patients undergoing hepatic surgery for CRLM by enhancing antitumor immunity.

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Tumor-Associated Neutrophils (TANs) as a Favorable Prognostic Biomarker in Appendiceal Cancer

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INTRODUCTION: Tumor-associated neutrophils (TANs) exert tumor-promoting effects within the tumor microenvironment of gastrointestinal cancers, particularly in colorectal cancer, where TANs are associated with poor survival. However, the biological and prognostic significance of TANs in the appendiceal cancer (AC) tumor microenvironment (TME) remains understudied. This study, therefore, aimed to investigate the impact of TAN density on clinicopathologic features and oncologic outcomes in AC. **METHODS:** We analyzed 91 formalin-fixed, paraffin-embedded AC samples using tissue microarrays, stained for the neutrophil-specific immunohistochemical marker myeloperoxidase (MPO) and digital image analysis (QuPath). Association between TAN density and clinicopathologic variables, other immune cell populations ($CD3^+$, $CD8^+$, M1 macrophage ($CD86^+/CD68^+$), M2 macrophage ($CD206^+/CD68^+$), B cell ($CD20^+$), and mast cell (tryptase)), intra-tumor Fusobacterium nucleatum density, and oncologic outcome (progression-free survival/PFS and overall survival/OS). Statistical analyses included Spearman's rank correlation, Kruskal-Wallis tests, and Cox regression models. **RESULTS:** The density of TANs in AC was significantly lower in low-grade appendiceal mucinous neoplasms compared to invasive adenocarcinoma histologies (p=0.05). No significant differences in TAN density were observed based on patient demographics, treatment history, or other clinicopathologic features. Notably, a negative association was found between TANs and intra-tumoral M2-like macrophage density (ρ= -0.37, p=0.02), as well as with F. nucleatum density (ρ= -0.37, p=0.06)—the latter relationship being accentuated low histologic grade (G1) tumors (ρ= -0.65, p=0.02). High TAN density was correlated with significantly longer PFS (hazard ratio [HR] 0.43; 95% CI, 0.22–0.81; p=0.009) and OS (HR 0.40; 95% CI, 0.17–0.96; p=0.04). These associations remained significant after adjustment for tumor grade and LAMN histological subtype, thereby demonstrating the independent prognostic value of TANs relative to traditional clinicopathological stratification. **CONCLUSIONS:** In contrast to their typically reported pro-tumorigenic role in many other cancers, high neutrophil infiltration in AC is instead associated with improved survival. This unexpected finding highlights the unique immunobiology of AC. Further investigation is warranted to elucidate the mechanisms underlying this survival benefit and to refine the phenotypic and functional characterization of neutrophil subsets within the AC microenvironment.

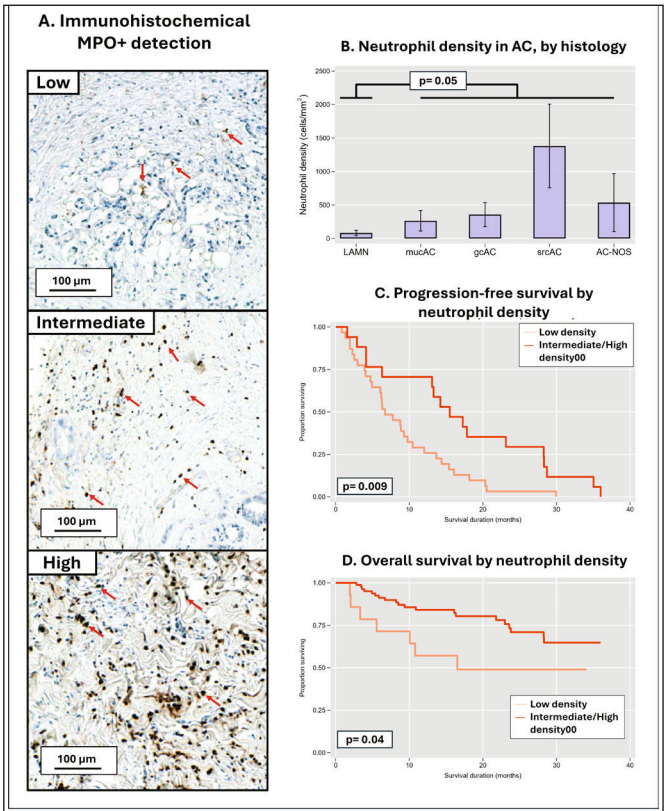

Figure 1: A) Representative IHC of MPO+ Neutrophils. B) Neutrophil density compared by histological subtype. C) Kaptan-Meier curves demonstrate progression-free survival based on Neutrophil density. D) Kaptan-Meier curves illustrate overall survival based on B cell density.

P64

Survival after attempt at cytoreductive surgery for colorectal cancer with high peritoneal disease burden: A secondary analysis of the Intraperitoneal Chemotherapy After Cytoreductive Surgery (ICARuS) randomized trial

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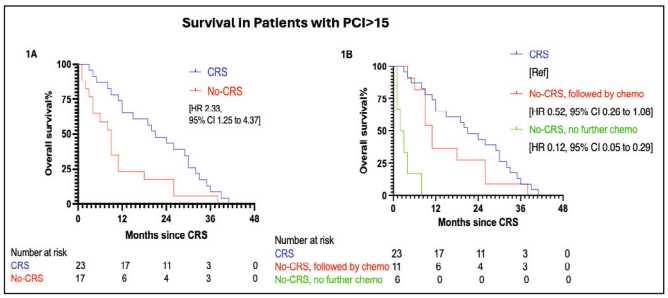
INTRODUCTION: Cytoreductive surgery (CRS) is favored for patients with colorectal cancer and peritoneal metastases (CRCPM) when complete CRS can be achieved. However, the oncologic impact of CRS in patients with high disease burden (Peritoneal Cancer Index [PCI] ≥15) remains poorly defined. This study evaluates the outcomes of CRCPM patients enrolled in a prospective trial with strict inclusion criteria, a subset of whom underwent complete CRS. **METHODS:** The Intraperitoneal Chemotherapy After Cytoreductive Surgery for Peritoneal Metastasis (ICARuS) randomized clinical trial enrolled CRCPM patients deemed eligible for CRS and intraperitoneal chemotherapy (IPC). Upon surgical exploration, patients who achieved a Completeness of Cytoreduction (CC) 0/1 CRS were randomized to one of two IPC arms (floxuridine or mitomycin C), whereas those who could not achieve CC 0/1 exited the trial. The clinicopathologic characteristics and oncologic outcomes of all patients explored were analyzed. **RESULTS:** Ninety-five patients were enrolled and surgically explored (median age 54 years, 47% female). CC0/1 CRS was achieved for 74 patients (CC0: 73; CC1: 1), whereas 21 patients did not have disease amenable to complete CRS. CRS was not achieved due to extraperitoneal disease (retroperitoneal lymphadenopathy) in 4 cases, and due to involvement of critical abdominal structures in 17 cases (all with PCI ≥ 15). In the entire cohort, CC0/1 CRS was associated with better survival (median overall survival [OS] 41 mo vs 9 mo, p< 0.0001). In the subset of patients with PCI ≥ 15 and no extraperitoneal disease, baseline demographics and clinical

variables were comparable between the CRS group (N=23) and the No-CRS group (N=17), except that right-sided primary tumors were more common in the CRS group (p=0.04). Six patients in the No-CRS group did not receive systemic therapy after exploration due to rapid progression and decline. CRS for patients with PCI≥15 was associated with improved OS (Figure 1A), but this difference was primarily driven by the rapid decline of No-CRS patients who were not able to return to chemotherapy after exploration (Figure 1B). **CONCLUSIONS:** CRCPM with PCI ≥15 confers a poor prognosis. Complete CRS in this population may be associated with a modest improvement in survival, but this has to be considered in the context of chemotherapy interruption risk for patients explored but ultimately unable to achieve complete CRS.

Figure 1: Survival in Patients with PCI>15



P65

Single-Cell Dissection of Early-Onset Colorectal Cancer Reveals Targetable Immunosuppressive and Oxidative Stress Pathways

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INTRODUCTION: Early-Onset Colorectal Cancer (EOCRC) has rapidly emerged as a major public health concern, with incidence rates rising by 1-4% yearly.This year EOCRC became the leading cause of cancer-related mortality in young Americans, yet the etiology and unique characteristics responsible for its aggressive biologic features remain unclear. **METHODS:** Single-cell transcriptomic data of tumors resected from untreated patients diagnosed with microsatellite-stable (MSS) colorectal cancer (CRC) were analyzed. Patients were stratified based on age into EOCRC (< 50 years) and Late-Onset CRC (LOCRC, ≥ 50 years). Tumor cell composition and gene expression data were investigated to identify differences in the tumor microenvironment (TME) between EOCRC and LOCRC. Results were validated at scale with RNA from the TCGA-COAD project. **RESULTS:** Compositional landscape analysis revealed no significant differences between the TME of EOCRC (n = 27) and LOCRC (n = 91). Restricting the LOCRC group to patients aged over 65 (n = 41) revealed a significant enrichment of metaplastic cells in EOCRC. EOCRC tumors demonstrated broad immune dysfunction, with gene set enrichment analysis (GSEA) showing impaired lymphocytic activation and differentiation, immunoglobulin production, antigen presentation, and leukocyte chemotaxis relative to LOCRC. Immune cell interactions were also reduced in EOCRC tumors, accompanied by significant upregulation of immunosuppressive signaling pathways involving macrophage migration inhibitory factor (MIF) and annexin A1 (ANXA1; Fig. 1). In epithelial cells, EOCRC showed increased activity of the Myc pathway, oxidative phosphorylation, and peptidylprolyl isomerase A (PPIA) signaling - programs linked to oxidative stress exposure, tumor progression, and immune suppression. These findings were validated in the TCGA-COAD cohort (n = 466), where GSEA confirmed significant downregulation of immune pathways in early versus late-onset tumors. **CONCLUSIONS:** This study is the largest multi-population analysis to date characterizing the TME of EOCRC. Leveraging single-cell transcriptomic data enabled granular dissection of composition and functional states, revealing an impaired immune landscape as a mechanistic basis for the accelerated tumor progression observed in young patients. These analyses uncovered distinct oxidative stress-associated and immunosuppressive pathways uniquely enriched in EOCRC, highlighting potential targets for precision immunotherapeutic strategies that differ from those relevant in LOCRC.

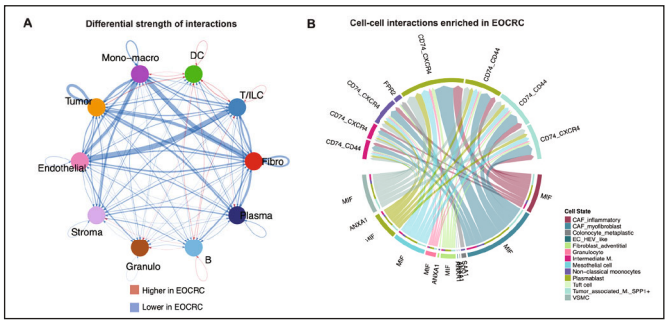

Figure 1. Weak and immunosuppressive interactions in EOCRC.

P66

Evaluating the Use of Low-Value Systemic Cancer Therapies for Colorectal Carcinoma Across a Large Payer Organization

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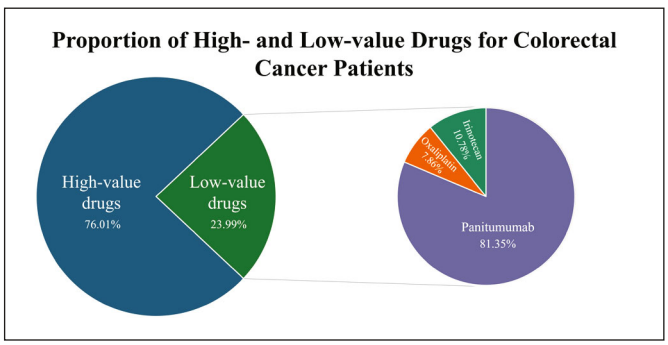
INTRODUCTION: The relation between cancer drug expenditures and clinical value within the US health system remains a topic of ongoing investigation. This project aims to describe cancer drug utilization and expenditure for colorectal carcinoma (CRC) across a large payer organization to identify areas of low-value use and potential cost savings. **METHODS:** We conducted a retrospective cross-sectional analysis of most commonly used systemic cancer treatments administered across a large payer organization from January 1st, 2024, to December 31st 2024 for CRC. Cancer drugs were categorized in high- or low-value using the validated European Society for Medical Oncology Magnitude of Clinical Benefit Scale (ESMO-MCBS). Expenditures were estimated using the Centers for Medicare & Medicaid Services (CMS) approved average cost per beneficiary for each drug. **RESULTS:** 2,926 CRC patients were included in the analysis. They were 60.0±12.5 years old, 57.7% (n=1,689) male and 65.0% (n=1902) identified as White. Ten oncology infusion drug combinations most commonly utilized for CRC were identified during the study period. Annual expenditure associated with the cancer drugs was $41,556,107.15. Bevacizumab accounted for the largest share of spending (49.5%, $20,569,149.15), followed by pembrolizumab (26.3%, $ 10,906,807.36), and panitumumab (19.5%, $8,109,481.38). Oxaliplatin, irinotecan, and fluorouracil collectively represented less than 5% of total costs. When stratified by clinical value, $9,968,025.18 (24.0%) of the total expenditures were attributed to low-value therapies, defined as agents with limited or no demonstrable survival benefit based on the ESMO-MCBS framework. For CRC, most evaluated drugs demonstrated a median overall survival (OS) gain of less than six months in pivotal trials. Low-value spending was largely driven by monoclonal antibody therapies such as panitumumab (4.2-month OS gain; $8,109,481.38) and by cytotoxic agents including irinotecan (2.1-month OS gain; $1,074,789.40) and oxaliplatin (2–3-month OS gain; $783,754.40). **CONCLUSIONS:** Approximately one-fourth of all cancer drug expenditures within a large payer organization are directed toward low-value therapies with limited survival benefit. Ongoing efforts are needed to align treatment selection with demonstrated clinical benefit to improve delivery of high value, patient-centered oncology care.



P67

Changing Landscape of Multidisciplinary Management in Locally Advanced Rectal Cancer (2015–2023)

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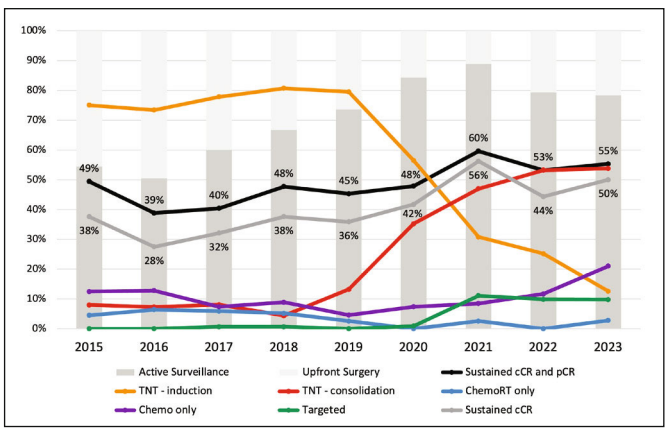
INTRODUCTION: Multidisciplinary management of locally advanced rectal cancer has evolved over the last decade with publication of multiple prospective clinical trials. This study identifies trends in the changes to treatment of rectal cancer over time. **METHODS:** Data from a single-center cohort of patients with cT3-4 or N+ tumors located 1-15 cm from the anal verge were analyzed from January 1, 2015, to December 31, 2023. **RESULTS:** A total of 1,176 patients were identified. Fifty-five (5%) proceeded directly to surgery and 1,121 (95%) received neoadjuvant therapy, including total neoadjuvant therapy (TNT) with chemoradiotherapy and systemic chemotherapy (924; 82%), chemotherapy alone (118; 11%), chemoradiotherapy alone (38; 3%), or immunotherapy/targeted therapy (41; 4%). Following neoadjuvant therapy, most patients entered organ preservation protocols: 793 (71%) underwent active surveillance, 328 patients (29%) underwent immediate surgery. Trends over time include increasing use of (i) TNT with chemoradiation and consolidation chemotherapy (from 10% in 2015 to 81% in 2023), (ii) chemotherapy without radiation followed by surgery (from 13% to 21%), (iii) immunotherapy/targeted therapy (from 0% to 10%), and (iv) capecitabine (rather than IV 5-fluorouracil) in combination with oxaliplatin (from 4% to 56%). In the TNT group, nonoperative management with sustained clinical complete response rose from 38% to 50%, and the combined rate of clinical or pathological complete response increased from 49% to 55%. With increasing identification of clinical complete responders who can avoid surgery, the rate of pathological complete response decreased from 18% to 6%. Robot-assisted surgery was preferred (530; 88%), and avoidance of ileostomy was more common in patients receiving chemotherapy (49; 47%) than for those receiving TNT followed by surgery (12; 4%). Complications of Clavien-Dindo grade 3 or higher and anastomotic leaks remained stable at 10% and 1.8%, respectively. **CONCLUSIONS:** Recent trends in multidisciplinary management of locally advanced rectal cancer show that results of prospective trials have been quickly incorporated into clinical care. Patients with locally advanced rectal cancer have many treatment options allowing for more patient-centric decision making.



P68

Impact of Care Bundle Implementation for Preventing Anastomotic Leakage in Minimally Invasive Low Anterior Resection for Rectal Cancer

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INTRODUCTION: Anastomotic leakage (AL) after low anterior resection (LAR) for rectal cancer increases morbidity, prolongs hospitalization, and may compromise oncological outcomes. Although individual measures—robotic surgery, ICG fluorescence imaging (ICG-FI), rectal tube, diverting stoma, and oral antibiotics—have been reported, real-world evidence for an integrated, standardized bundle in minimally invasive (MI)-LAR is limited. We assessed whether a multimodal care bundle reduces AL and other complications. **METHODS:** We retrospectively reviewed 306 consecutive patients who underwent MI-LAR between 2011 and 2024 at a high-volume center. A late-phase cohort (n=81) treated after September 2019 received a predefined bundle comprising: (1) robot-assisted surgery, (2) preoperative oral antibiotic preparation, (3) ICG-FI perfusion assessment, (4) selective diverting stoma, (5) rectal tube placement, and (6) transanal anastomotic reinforcement. Outcomes were compared with an early-phase cohort (n=225) without bundle care. The primary endpoint was clinically relevant AL (grades B/C). Secondary endpoints included surgical site infection (SSI), severe complications (Clavien–Dindo ≥III), reoperation, and postoperative length of stay. Propensity score matching (PSM) balanced baseline and operative factors. **RESULTS:** Overall AL occurred in 11.4% (35/306). The AL rate fell from 14.7% (33/225) in the early phase to 2.5% (2/81) after bundle implementation (P< 0.01). After PSM, AL remained significantly lower in the bundle cohort (1.3% vs. 18.0%, P< 0.001). SSIs decreased from 19.6% to 8.6% (P=0.02) and severe complications from 16.0% to 6.2% (P=0.03); both effects persisted after PSM. No reoperations for AL occurred in the bundle cohort, whereas reoperations were required in the historical cohort. Median blood loss was lower post-bundle, while operative time was comparable. On multivariable analysis, absence of bundle implementation (odds ratio [OR] 6.36, 95% confidence interval [CI] 1.42–28.4; P=0.01) and male sex (OR 3.05, 95% CI 1.24–7.52; P=0.01) independently predicted AL. Postoperative stay tended to be shorter after bundle introduction, and patients with AL had markedly prolonged hospitalization. **CONCLUSIONS:** A standardized multimodal care bundle substantially reduced AL, SSI, and major complications after MI-LAR. These real-world data support bundle-based perioperative standardization to improve safety and may translate into downstream oncological benefits given the established association between AL and recurrence.

Comparison of postoperative short-term outcomes before and after propensity score matching.

Total (n=306)	Care Bundle		*P* value
	Before (n=225)	After (n=81)	
CD≥2	75 (33.3%)	27 (33.3%)	1.00
CD≥3	36 (16.0%)	5 (6.2%)	**0.03**
Anastomotic leakage	33 (14.7%)	2 (2.5%)	**< 0.01**
SSI†	44 (19.6%)	7 (8.6%)	**0.02**
Reoperation	9 (4.0%)	**0 (0%)**	0.07
Hospital stay (days)	14 (7–152)	16 (9–45)	0.29
after PSM (n=156)	Before (n=78)	After (n=78)	*P* value
CD≥2	29 (37.2%)	25 (21.1%)	0.50
CD≥3	12 (15.4%)	4 (5.1%)	**0.03**
Anastomotic leakage	14 (18.0%)	1 (1.3%)	**< 0.001**
SSI†	17 (21.8%)	6 (7.7%)	**0.01**
Reoperation	3 (3.9%)	**0 (0%)**	0.08
Hospital stay (days)	14 (8–110)	16 (9–45)	0.17

†including anastomotic leakage

CD, Clavien-Dindo grading; SSI, surgical site infection; PSM, propensity score matching

Figure. Comparison of postoperative short-term outcomes before and after propensity score matching.

P69

Polar KRAS substitutions are associated with earlier recurrence in patients with colorectal liver metastasis

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INTRODUCTION: With the advent of KRAS switch pocket inhibitors, it is becoming more important to explore the impact of KRAS mutations at an individual substitution resolution. While in vitro, different substitutions alter GTP-hydrolysis rates and downstream signaling pathways, there are few data exploring the impact of these substitutions on recurrence and survival in patients with colorectal liver metastases (CRLM) who undergo curative-intent resection and/or ablation. **METHODS:** A retrospective study was conducted to assess the impact of KRAS G12 and G13 substitutions in patients with CRLM who underwent surgery between 2009 and 2024 at a tertiary care center. Next generation sequencing was completed on either the primary tumor or liver metastases. Polar substitutions (PS) included G12D, G12S, and G13D, whereas G12A, G12C, G12V, and G13V were non-polar substitutions (NPS). Student's T-tests, ANOVA, Chi-squared were used for univariate statistics, and Kaplan-Meier and log-rank tests were used for survival analysis. **RESULTS:** A total of 86 patients with CRLM met inclusion criteria, with a median age at diagnosis of 58 (IQR 49-66) years old, 47% male, a median of BMI 26 kg/m2 (23-30), and a median follow up time of 47 months (95% CI 40-71). The most common substitutions were G12D (30, 35%), G12V (18, 21%), G13D (16, 19%), and G12C (14, 16%). There were 50 (58%) patients with PS, and 36 (42%) with NPS. Patients with PS had fewer incidence of asthma (2% vs 14%, $p < 0.05$), a higher proportion of ASA class II (30% vs 6%, $p < 0.05$). Both groups had similar primary tumor characteristics such as location, T and N stage, tumor grade, age at diagnosis. Patients with PS had a higher rate of perineural invasion (32% vs 11%, $p < 0.05$). There were no significant differences in neoadjuvant or adjuvant therapies received, nor operative characteristics. There was a trend towards a higher rate of intrahepatic recurrence (68% vs 50%, $p = 0.092$), and PS patients had a significantly shorter time to overall recurrence with a median of 8 vs 13 months ($p < 0.05$, figure A), as well as intrahepatic recurrence, with a median of 11 vs 29 months ($p < 0.05$, figure B). There was no significant difference between the PS and NPS groups with regards to median overall survival (54 vs 75 months, $p = 0.854$) and recurrence free survival (8 vs 13 months, $p = 0.082$). **CONCLUSIONS:** Patients with CRLM and PS are healthier, and also exhibit earlier overall and intrahepatic recurrences after resection, suggestive of more aggressive tumor biology. Currently available therapeutics largely target NPS, and the development of PS targeting interventions is urgently needed.

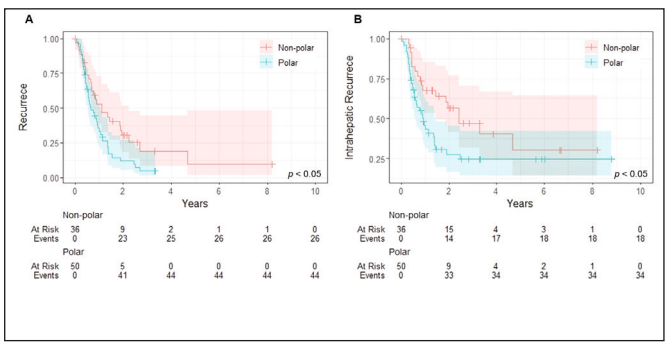

Figure. A. Recurrence free survival. B. Intrahepatic recurrence free survival.

P70

Prognostic Significance of B Cell Density in the Appendiceal Cancer Tumor Microenvironment

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INTRODUCTION: Appendiceal cancer (AC) is a rare and diverse malignancy, which has challenged large-scale studies of its tumor microenvironment (TME). While B cells have demonstrated variable roles in colorectal cancer, their contribution to AC pathogenesis and prognosis remains largely unexplored. This study aimed to evaluate B cell density within the AC TME and correlate it with clinicopathological features, immune cell populations, and patient outcomes to identify potential therapeutic targets. **METHODS:** We analyzed 79 formalin-fixed, paraffin-embedded AC tissue samples assembled into tissue microarrays. $CD20^+$ B lymphocyte density was quantified using digital image analysis (QuPath). Correlations were assessed between $CD20^+$ densities and patient factors (age, sex), tumor characteristics (histology, grade, stage, nodal involvement, tumor extent, treatment history), other immune markers ($CD3^+$, $CD8^+$, $CD86^+/CD68^+$, $CD206^+/CD68^+$, mast cell tryptase, myeloperoxidase), and patient survival (progression-free survival and overall survival). Statistical analyses included Spearman's rank correlation, Kruskal-Wallis tests, and Cox proportional hazards regression. **RESULTS:** B cell densities were significantly higher in primary AC tumors compared to peritoneal metastases ($p=0.05$). No significant correlations were observed with patient age, sex, or most tumor characteristics. However, prior cytoreductive surgery was negatively associated with B cell density ($p=0.02$). B cell density showed positive correlations with $CD3^+$ T cells ($\rho=0.463$, $p< 0.01$), $CD8^+$ T cells ($\rho=0.307$, $p< 0.01$), and mast cells (MCT^+) ($\rho=0.321$, $p< 0.01$), but not with other analyzed immune cell populations. Notably, a subset of tumors with low $CD20^+$ B cell density (lowest tertile) exhibited a trend towards poorer progression-free survival (HR 0.58 [95%CI 0.32, 1.0], $p=0.07$) and significantly poorer overall survival (HR 0.29 [95%CI 0.11, 0.76], $p=0.01$; see Figure). This association with improved OS for high B cell density remained significant even after adjusting for low-grade appendiceal mucinous neoplasm (LAMN) histology (HR 0.24 [95%CI 0.55, 1.05], $p=0.05$). **CONCLUSIONS:** Our findings indicate that B cell density varies within the AC TME, with higher densities observed in primary tumors. Low B cell density was identified as a poor marker for patient survival, suggesting a potential protective role for B cells in AC. These results warrant further investigation with more refined B cell subset analysis to elucidate underlying mechanisms and explore their therapeutic potential

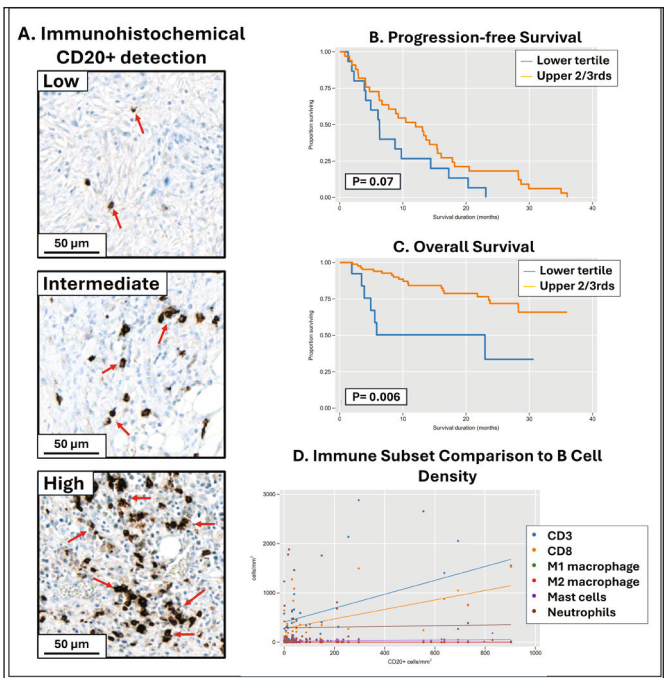

Figure 1: A) Representative IHC of CD20+ B cells B) Kaptan-Meier curves demonstrate progression-free survival based on B cell density. C) Kaptan-Meier curves illustrate overall survival based on B cell density. Low B cell density is associated with poor survival outcome. D) Correlation of B cell density with immune cell subsets

P71

Secreted methionine adenosyltransferase α2: a potential target in the development of colorectal liver metastases

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INTRODUCTION: Colorectal liver metastasis (CRLM) occurs in 50% of patients with colorectal cancer (CRC). Methionine adenosyltransferase (MAT) catalyzes the formation of S-adenosylmethionine (SAMe), the principal methyl donor. MAT1A (encodes MATα1) is expressed in normal adult liver, whereas MAT2A (encodes MATα2) is expressed in all extrahepatic tissues. MAT1A is a major defense against CRLM as loss of Mat1a sensitizes the liver to CRLM. In contrast, MAT2A is overexpressed in CRC and promotes oncogenicity. We found that human hepatocytes co-cultured with RKO (human CRC) cells, had lower MAT1A expression. We sought to determine if MATα2 is secreted by CRC and if it affects hepatocytes' MAT1A expression. **METHODS:** Our study included human hepatocytes, RKO cells, extracellular vesicle (EV) isolation, chromatin immunoprecipitation (ChIP), ChIP-seq, promoter activity assays, proliferation, migration, and invasion assays, western blotting, immunohistochemistry and immunofluorescence. We confirmed some of the findings using human hepatocyte spheroids, CRLM and normal liver tissue array, and plasma samples. **RESULTS:** CRCs secrete MATα2 in free but truncated form (MATα2-t) and intact within EVs. EV-MATα2 can be internalized by human hepatocytes and found within the nucleus, which then binds to MAT1A and MAT2A promoters on ChIP to lower and increase MAT1A and MAT2A promoter activities, respectively. In human CRLM samples, hepatocytes in nontumor regions express lower MATα1 but higher MATα2 as compared to normal liver. Treating RKO cells with EVs released from RKO cells overexpressing MAT2A promoted cell proliferation, migration, and invasion. MATα2-t was detected at a higher level in media from colon, pancreatic, and prostate cancer cell lines than corresponding normal epithelial cells as well as CRC patients' plasma than healthy controls. RKO cells treated with MATα2-t activated focal adhesion kinase (FAK), an important kinase for cancer cell evasion of apoptosis. Conversely, treatment with MATα2 neutralizing antibody inhibited FAK and induced apoptosis. **CONCLUSIONS:** CRC cells secrete both MATα2 within EVs and free MATα2-t. EV-MATα2 can be internalized and act as a transcription factor to lower hepatocytes' MAT1A, the major defense against CRLM, while promoting CRC oncogenicity. Freely released MATα2-t acts as a ligand in an autocrine fashion to activate FAK, which is essential for CRC survival. Taken together, secreted MATα2 plays an essential role in promoting CRLM. Furthermore, MATα2-t is a potential novel therapeutic target.

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Rectum preservation in patients with synchronous metastasis of rectal cancer to the liver

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INTRODUCTION: Treatment of rectal cancer with synchronous metastasis to the liver (RCL) has evolved with adoption of total neoadjuvant therapy (TNT) and watch-and-wait (WW). **METHODS:** An institutional database was searched for RCL diagnosed between 2011 and 2021. Overall survival (OS) and disease-free survival (DFS) with a preserved rectum were compared between patients diagnosed in 2011–2017 (early cohort) and patients diagnosed in 2018–2021, after institutional adoption of TNT and WW (late cohort). **RESULTS:** Of 232 patients identified (median age 50 years, 151 [65%] male), 135 and 97 were in the early and late cohorts, respectively. Primary tumor location (distance from the anal verge) was as follows: low (0–5 cm), 62 patients (27%); mid (6–10 cm), 116 patients (50%); high (11–15 cm), 50 patients (22%); unknown, 4 patients (1.7%). Initial treatment was chemotherapy (CT) in 216 patients (93%). Secondary treatment was radiotherapy (RT) (66; 31%), combined liver and rectal resection with or without hepatic artery infusion pump (HAIP) (62 patients; 29%), liver resection with or without HAIP (37; 17%), rectal resection with or without HAIP (32; 15%), or HAIP only (19; 8.8%). Compared to patients with high tumors, patients with mid- or low-rectum tumors more commonly received pelvic RT immediately following initial CT (63 [38%] vs. 2 [4.4%] patients; $p < 0.001$) and were less likely to undergo combined liver and rectal resection (38 [23%] vs. 23 [51%] patients; $p < 0.001$) or any rectal resection (55 [33%] vs. 38 [84%] patients; $p < 0.001$). Compared to patients in the early cohort, patients with mid- or low-rectum tumors in the late cohort were more likely to receive RT (57 [77%] vs. 45 [43%] patients; $p < 0.001$) and to undergo a liver-first approach with observational management of the rectum (37 [50%] vs. 25 [24%] patients; $p < 0.001$). After a clinical complete response, the 2-year rate of regrowth was 44%, with a 21% competing risk of death. Two-year rates of DFS with a preserved rectum were 20% and 25% in the early and late cohorts, respectively; for patients with low- or mid-rectum tumors, the rates were 24% and 27% in the early and late cohorts, respectively. Median OS was 52 and 55 months in the early and late cohorts, respectively. At last follow-up, 37% of the patients were alive, with median follow-up of 70 months. **CONCLUSIONS:** Treatment of RCL (particularly for mid- and low-rectum tumors) has shifted toward rectum preservation (including a liver-first approach), without an adverse impact on OS. The concomitant increase in DFS with a preserved rectum is particularly important, considering the sustained high risk of competing events.

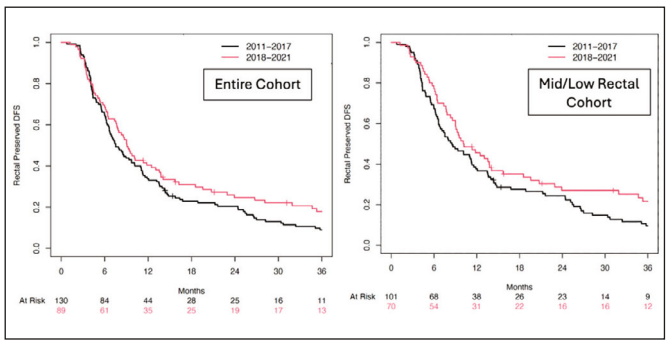

Figure 1. Kaplan-Meier analysis of disease-free survival with a preserved rectum.

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Barriers to the Implementation of Patient-Reported Outcome Measures for Primary Hyperparathyroidism

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INTRODUCTION: Primary hyperparathyroidism (PHPT) is a common disease where excess parathyroid hormone secretion raises blood calcium levels by stimulating its release from bones. Frequently underdiagnosed and undertreated, PHPT can result in severe end-organ damage (e.g., to the kidneys and bone).1-5,6-7 More than 90% of patients experience a decrease in quality of life from substantial neurocognitive/neuropsychiatric symptoms (NCPS, e.g., anxiety, depression, memory loss) caused by this calcium dysregulation. While there are many well validated tools to measure neurocognitive symptoms in PHPT clinically, namely through Patient Reported Outcome Measures (PROMs or PROs), their utilization is low.8-14. **METHODS:** This is an observational study. We developed and distributed a survey to surgeons using internal mailing lists obtained and managed by the American Association of Endocrine Surgeons. The survey was designed to identify and address potential hindering factors to PROM utilization recognized by practicing physicians in the management of PHPT. **RESULTS:** Among 147 surveyed surgeons, 128 were actively practicing (mean age 47.9; 43.0% female; 73.6% White, 6.3% Black, 11.7%

Asian, 7.0% Hispanic). Most were fellowship-trained endocrine surgeons (104, 80.6%), with fewer general surgeons (15, 11.6%) and fellowship-trained surgical oncologists (9, 7.0%). Familiarity with patient-reported outcomes (PROs) was limited, with 86 (67.2%) reporting general awareness and only 58 (45.3%) specifically for hyperparathyroidism. Despite PROs being extensively published, 65 (75.6%) cited barriers (e.g., uncertainty regarding interpretation, workflow disruption). Notably, 63.3% indicated increased likelihood to use PRO measures if incorporated during intake and 53.9% if managed by clinical staff. **CONCLUSIONS:** This study highlights barriers of using PROMs in clinical practice for early referral and surgical intervention of patients with PHPT. For patients experiencing NCPS, earlier referral prior to end-organ damage would prevent unnecessary decreases in quality of life. Future studies will be aimed at implementation of PROMs into clinical management for PHPT.

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PAX6: An Epigenetically-Regulated Candidate Tumor Suppressor in HPV-Associated Head and Neck Cancers

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INTRODUCTION: By epigenome-wide methylomic analyses, we have previously identified differentially methylated genes in HPV-positive (+) vs. HPV-negative (-) head and neck squamous cell carcinomas (HNSCC). Paired box gene 6 (PAX6), a lineage-specific tumor suppressor was identified as epigenetically downregulated in most HPV+ HNSCC. We examined the impact of PAX6 manipulation in HPV+ and HPV- HNSCC cell lines. **METHODS:** PAX6 expression was analyzed by reverse transcriptase-PCR and Western Blot in CRL3239 (HPV16+), HTB43 (HPV-) and its HPV E6/E7-transfected counterpart, CRL3212. The effects of PAX6 modulation by siRNA knockdown or full-length plasmid-mediated overexpression on cell proliferation (MTT), anchorage-independent growth (soft agar assay) and the transcriptome (RNA-Seq) were assessed. **RESULTS:** PAX6 was confirmed to be expressed in CRL3212 and HTB43, but absent in CRL3239. siRNA knockdown and forced overexpression were confirmed in all cell lines. In PAX6-expressing cell lines, siRNA knockdown resulted in both increased proliferation [CRL3212 ($p< 0.001$), HTB43 ($p< 0.001$)] and colony formation in soft agar [CRL3212 ($p=0.05$) and HTB43 ($p=0.04$)] compared to empty vector controls. In CRL3239, forced expression resulted in decreased proliferation ($p=0.0086$) and colony formation ($p=0.04$). Pooled RNA-seq analysis following PAX6 silencing revealed significant enrichment of cell cycle and oncogenic signaling pathways, including MYC ($q < 0.001$), E2F targets ($q < 0.001$), and G2/M checkpoint regulation ($q < 0.001$). **CONCLUSIONS:** We have demonstrated that PAX6 is an epigenetically-mediated tumor suppressor gene in HNSCC cell lines with its function being mediated by specific oncogenic and cell cycle pathways. Further studies are warranted to confirm the role of PAX6 in HPV-associated HNSCC carcinogenesis and its potential in preventive and therapeutic strategies.

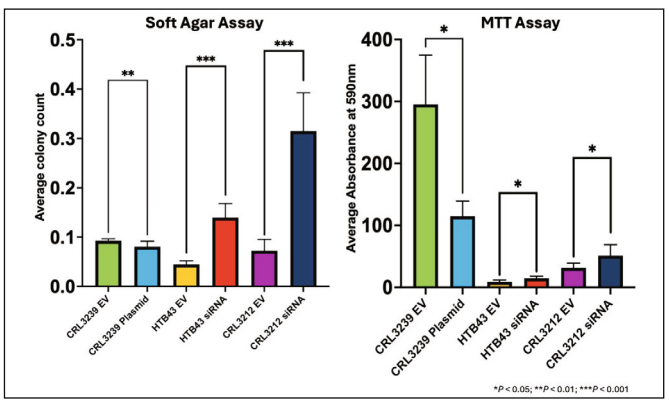

Figure 1. Proliferation (MTT) and Anchorage-Independent Soft Agar Growth Assay results.

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The role of cemiplimab in treating locally advanced cutaneous SCC: a UK single centre experience and the implications for surgical management.

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INTRODUCTION: While over 95% of patients presenting with cutaneous squamous cell carcinoma (cSCC) are cured with surgery or radiotherapy, a subset develops locally advanced disease and undergo major resection. In the head and neck region, such resections may include maxillectomy, partial craniectomy, rhinectomy or orbital exenteration, often necessitating free tissue transfer for reconstruction. These are high-risk procedures associated with prolonged recovery and uncertain oncological, functional, and aesthetic outcomes. Immune checkpoint inhibitors have shown promise in this setting. We report a single-centre UK experience of cemiplimab for locally advanced cSCC and our surgical experience of operating on a cemiplimab patient cohort. **METHODS:** This retrospective chart review included all patients treated with cemiplimab for ≥3 months between November 2021 and May 2025. We report the overall response rate (ORR) and in patients who progressed on treatment, describe operative findings and surgical outcomes. We present our early experience and discuss patient selection. **RESULTS:** Twenty-five consecutive patients were included, with a median follow up of 16 months. The median age was 79 years (range 48- 90), and 88% of locally advanced cSCCs were in the head and neck. 96% of patients had mild or moderately severe ACE-27 comorbidity decompensation score. The ORR was 64%, comprising 11 complete and 5 partial responses. The median time to clinical response was three weeks. Among the 20 patients with operable disease, three (15%) underwent surgical resection for progressive disease with no surgical complications attributable to earlier cemiplimab exposure. In total, 85% of patients avoided surgical intervention. At the time of data-cut off, neither median progression free survival nor median overall survival had been reached. Immunotherapy-related toxicities of any grade occurred in 68% of patients, with grade 3 events observed in 14%, leading to one treatment discontinuation. 8 patients (32%) received oral corticosteroids during their treatment course for management of toxicity. **CONCLUSIONS:** Cemiplimab continues to demonstrate robust activity in patients with advanced cSCC in this real-world population, with durable responses in long-term survivors. Salvage surgery appears feasible for patients with disease progression.

Table 1. Proposed surgical management, prior to cemiplimab commencement.

Patient number	Proposed resection surgery	Free flap reconstruction (Yes/No)	Nodal dissection
1-4	Inoperable		
5	Adjuvant therapy only: no target lesion		
6	1. Pinnectomy 2. Parotidectomy	Yes	Bilateral neck
7	Parotidectomy	Yes	Bilateral neck
8	Excision SCC scalp with bone burring	Yes	Unilateral neck
9	Borderline inoperable Excision SCC scalp with partial craniectomy Joint with neurosurgery	Yes	Unilateral neck
10	Parotidectomy	Yes	Unilateral neck
11	Large resection forehead and temple soft tissue	Yes	Access neck
12	1. Orbital exenteration 2. Excision forehead soft tissue with frontal bone Joint with neurosurgery	Yes	Unilateral neck
13	Borderline inoperable 1. Partial rhinectomy 2. Maxillectomy	Yes	Unilateral neck
14	Excision SCC scalp with partial craniectomy Joint with neurosurgery	Yes	Unilateral neck
15	Borderline inoperable 1. Extensive resection of cheek 2. Partial maxillectomy 3. Resection zygoma 4. Facial nerve resection	Yes	Unilateral neck
16	1. Partial rhinectomy 2. Excision upper lip 3. Partial maxillectomy	Yes	Access neck
17	Borderline inoperable: Parotidectomy	No	Bilateral neck
18	Parotidectomy	Yes	Unilateral neck
19	Excision occipital muscles and overlying soft tissue	Yes	Access neck
20	Excision SCC scalp with bone burring, near total scalp resurfacing	Yes	Access neck
21	Large scalp excision and partial craniectomy Joint with neurosurgery	Yes	Access neck
22	Excision SCC lower leg	Yes	Groin dissection
23	Transhumeral amputation	No	N/A
24	Groin and iliac lymph node dissection	No	Groin dissection
25	Excision zygoma Excision orbital floor with reconstruction Joint case with ophthalmology	Yes	Access neck

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Fewer Pills, Lower Bills: Antihypertensive and Cost Outcomes of Adrenalectomy in Primary Aldosteronism

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INTRODUCTION: Primary aldosteronism (PA) can be treated surgically with adrenalectomy or medically with mineralocorticoid receptor antagonists depending on disease lateralization and surgical candidacy. While adrenalectomy has proven clinical efficacy compared with medical management, there is a dearth of data directly comparing antihypertensive medication (AHM) trajectories and costs between these two strategies. **METHODS:** We performed a retrospective cohort study of patients with new PA diagnoses and adrenal vein sampling (AVS) to assess AHM outcomes and treatment costs using the national Optum Clinformatics® database (2004–22). Patients were stratified by receipt of adrenalectomy versus medical management alone. Index timepoint was defined as AVS for medically managed and adrenalectomy for surgically managed patients. Primary outcomes included number of AHM prescriptions from pre- to post-intervention and cost of therapy. Outcomes were assessed using regression models. Subcohort analysis compared outcomes in patients with resistant hypertension. **RESULTS:** Of 911 patients with PA who underwent AVS, 472 (52%) underwent adrenalectomy and 439 (48%) medical therapy. Adrenalectomy patients were younger (median 55.0 vs. 57.0 years, p=0.003) with higher household income and median Elixhauser score. Surgically and medically managed patients did not differ in AHM use at index (2.9 vs. 2.8, p=0.636). One year post-index, adrenalectomy patients used fewer AHMs (1.5 ± 1.4) than medically managed patients (2.5 ± 1.5, p< 0.001). On regression, age (β=0.02, 95% CI 0.01–0.03, p=0.002), male sex (β=0.40, 95% CI 0.20–0.60, p< 0.001), and baseline AHMs (β=0.43, 95% CI 0.37–0.49, p< 0.001) were associated with higher AHM requirement at one year. Patients who underwent adrenalectomy were prescribed 1.11 fewer AHMs at one year (95% CI 0.91–1.31, p< 0.001). In patients with resistant hypertension, adrenalectomy reduced AHMs by 1.35 (95% CI 1.08–1.62, p< 0.001). The median total cost of adrenalectomy was $26,805 (IQR $12,802–31,817). While AHM prescription costs at baseline did not differ significantly (p=0.744), surgically managed patients incurred lower median AHM prescription costs over one year ($161 vs. $830, p< 0.001). Adrenalectomy was associated with $908 lower total prescription costs on regression (95% CI $682–1135, p< 0.001). **CONCLUSIONS:** Patients with PA who undergo adrenalectomy demonstrate a significant reduction in AHMs compared with medically managed patients. While there is significant upfront cost to surgical intervention, reduced long-term prescription costs are realized.

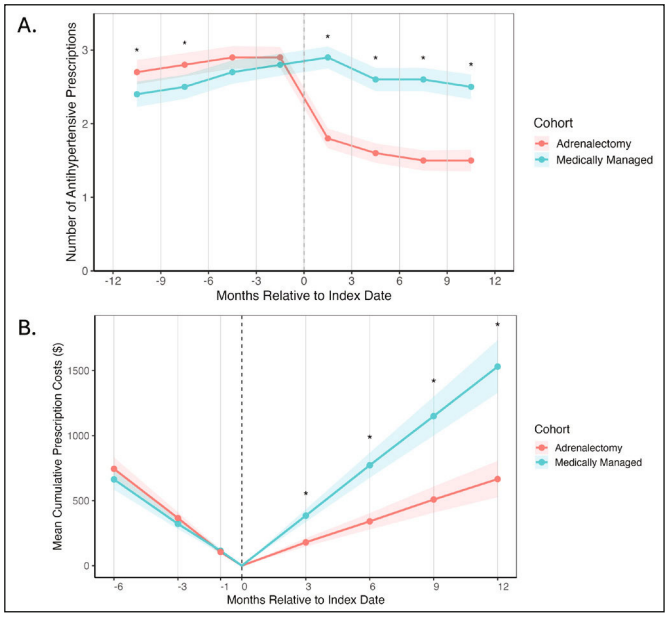

Figure. A) Antihypertensive medication trajectories and B) mean cumulative costs of antihypertensive medications over time as compared amongst patients undergoing medical versus surgical management. Ribbons represent 95% confidence intervals for each cohort; asterisks indicate p < 0.05 between cohorts at that time point.

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Investigating Adjuvant Radioactive Iodine Administration Patterns in Follicular Thyroid Cancer: Alignment with National Comprehensive Cancer Network Recommendations

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INTRODUCTION: Follicular thyroid carcinoma (FTC) has varying prognostic outcomes influenced by disease biology and treatment methods. This study aimed to evaluate treatment outcomes in FTC, analyze the impact of postoperative Radioactive Iodine (RAI) therapy on survival, and examine treatment adherence to National Comprehensive Cancer Network (NCCN) guidelines for low- and high-risk groups. **METHODS:** This retrospective study utilized data from the National Cancer Database (NCDB) to identify adult patients diagnosed with FTC between 2000 and 2024 who underwent thyroidectomy. The cohort was risk-stratified based on NCCN criteria. Treatment modalities and RAI administration were assessed. Factors influencing RAI treatment and survival outcomes were compared between groups. **RESULTS:** Among the 28,836 FTC patients, 5.1% were classified

as low-risk and 22.2% high-risk. Adjuvant RAI was administered to 37.1% of low-risk patients and 67.7% of high-risk patients. Postoperative RAI reduced mortality in high-risk patients (multivariable HR 0.74, [95% CI, 0.65-0.83], p< 0.05) but showed no significant benefit for low-risk patients (multivariable HR 0.76, [95% CI, 0.52-1.12], p< 0.05). Racial disparities were observed among high-risk patients with minorities receiving less RAI than White patients (multivariable HR, Black 0.84 [95% CI, 0.71-0.99], Hispanic 0.76 [95% CI, 0.62-0.94], Asian 0.76 [95% CI, 0.59-0.98], other/unknown 0.72, [95% CI, 0.55-0.93], p< 0.05). **CONCLUSIONS:** RAI therapy significantly improves survival in high-risk FTC patients and demonstrates minimal benefit to low-risk patients; however, there is a concerning gap in adherence to NCCN guidelines, with undertreatment in high-risk patients and overtreatment in low-risk patients. Racial disparities in RAI treatment were observed, with minority groups receiving less RAI than White patients. These findings underscore the need to improve adherence to treatment guidelines and address racial disparities to ensure equitable outcomes for all patients.

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Casein kinase II inhibition with proteosome inhibition demonstrates therapeutic potential in gastroenteropancreatic neuroendocrine tumor liver metastases via abrogation of NFκB signaling

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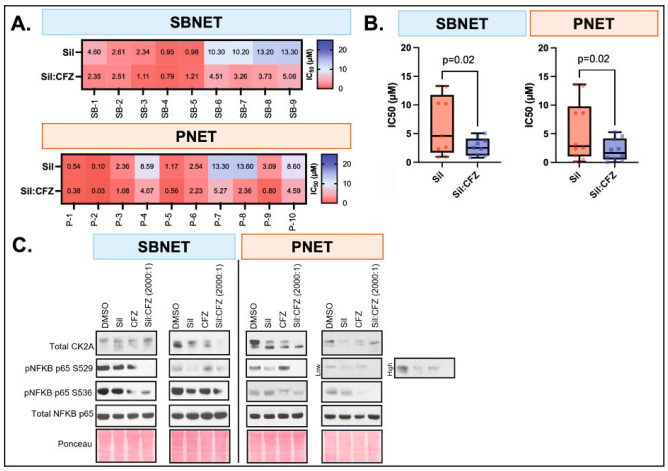
INTRODUCTION: NFκB signaling has been implicated in metastasis and everolimus resistance in gastroenteropancreatic neuroendocrine tumors (GEP-NETs). However, therapeutic exploitation has remained elusive. Casein kinase II (CK2) emerged as a novel target from our prior phosphoproteomic analysis of GEP-NET liver metastases and has a defined role in NFκB signaling through p65. Moreover, our lab has investigated hepatic regional delivery methods for proteasome inhibitors, which have shown efficacy in NFκB inhibition via 26S proteasome inhibition. We therefore sought to determine if combining CK2 inhibition with proteasome inhibition may effectively target NFκB signaling in GEP-NETs. **METHODS:** Patient-derived organoids (PDOs) were created, with drug response measured by CellTiter-Glo and fluorescent imaging post-96-hour post-treatment. Matched ex-vivo patient tumor-slice culture models were generated for signal transduction studies. Immunoblotting of patient tumor-slices were completed post-6-hour post-treatment with CK2 inhibition (silmitasertib, Sil), proteasome inhibition (carfilzomib, CFZ), or combination (Sil:CFZ; 2000:1). **RESULTS:** To evaluate the combination of Sil:CFZ, we evaluated cytotoxic response in 9 small bowel NET (SBNET) and 10 pancreatic NET (PNET) liver metastasis PDOs (Figure 1A-B). Sil:CFZ was more effective than Sil alone [SBNET: mean 2.7 mM vs. 6.5 mM (p=0.02); PNET: mean 2.0 mM vs. 5.3 mM (p=0.02)] or CFZ alone [SBNET: mean 1.4 nM vs. 9.3 nM (p=0.02); PNET: mean 1.0 nM vs. 12.2 nM (p=0.03)]. Next, ex-vivo validation of combination CK2 and CFZ inhibition was undertaken utilizing in a tumor-slice perfusion model to study NFκB signal transduction. Sil demonstrated efficacy in reducing expression of phospho-NFκB S529 and S536 in GEP-NET liver metastases. Furthermore, combined Sil:CFZ treatment resulted in lower expression of phospho-NFκB (S529 and S536) compared to Sil or CFZ alone (Figure 1C). **CONCLUSIONS:** Combination Sil:CFZ therapy demonstrates potential improved therapeutic efficacy and increased down-modulation of NFκB signaling of compared to CK2 or proteasome inhibition alone. These findings suggest translational utility of leveraging patient-derived ex vivo models for drug discovery.



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Utility of Preoperative Positron Emission Tomography in Detecting Occult Metastases in Clinically Node-Negative Merkel Cell Carcinoma

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INTRODUCTION: Merkel cell carcinoma (MCC) is an aggressive neuroendocrine tumor characterized by a high propensity for metastases. Current National Comprehensive Cancer Network guidelines recommend preoperative PET only for patients with clinically node-positive disease. However, the role of preoperative positron emission tomography (PET) in detecting occult metastases among clinically node-negative patients remains unclear. This study aims to evaluate the utility and impact of preoperative PET in the management of clinically node-negative MCC. **METHODS:** Patients diagnosed with MCC who underwent preoperative imaging and surgery were identified between 2001-2025 using a single-institution retrospective database. Patients with clinically apparent regional or metastatic disease and those without preoperative imaging were excluded. Change in treatment plan was defined as deviation from the initial preoperative plan based on PET findings. The diagnostic accuracy of PET was calculated using sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV). **RESULTS:** Of the 196 patients diagnosed with MCC, a total of 102 (52%) patients underwent preoperative PET, and 87 (44%) patients underwent non-PET imaging. Patients who underwent PET versus non-PET imaging were similar in age, sex, and race. A significant proportion of patients who were symptomatic underwent PET imaging compared to those with non-PET imaging (51% vs. 24.1%, P< 0.001). Most tumors were located on the head and neck (50%) and extremities (41.2%). Six patients (6%) were found to have unexpected positive findings on PET. The positive PET findings resulted in change in clinical management in 5 patients (83.3%), including initiation of immunotherapy or modification of the surgical plan. In the cohort of patients with negative PET who underwent curative-intent surgery, 21 (31.3%) had positive sentinel lymph node biopsy. When assessing the reliability of PET imaging in detecting clinically occult regional or distant disease, the sensitivity was14.3%, specificity was 98.4%, PPV was 83.3%, and NPV was 66.7%. **CONCLUSIONS:** Preoperative PET identified occult metastatic disease in a small subset of clinically node-negative MCC patients, leading to a change in management in the majority of these cases. Although the overall diagnostic performance of PET for nodal metastases was limited, these findings suggest that selective use of preoperative PET may improve staging accuracy and modify treatment strategy in patients with this rare neuroendocrine carcinoma of the skin.

P80

Preoperative Somatostatin-based Imaging should be Routinely Performed in Neuroendocrine Tumors

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INTRODUCTION: Incidence of metastatic disease at presentation for small bowel (SBNETs) and pancreatic (PNETs) neuroendocrine tumors (NETs) is approximately 35% and 50% in national databases. Somatostatin receptor (SSTR)-based functional imaging allows more sensitive detection of NET metastases throughout the body. The objective of this study was to determine the sites and frequency of SBNET and PNET metastases by SSTR imaging. **METHODS:** A single institutional retrospective review of a prospectively maintained database was performed in patients with SBNET or PNET who had operations between 2005–2024. Patients were included if they received preoperative SSTR imaging (Octreoscan or DOTA-PET/CT) and metastases found on imaging were recorded. Clinicopathologic variables were compared using chi square or Mann Whitney U tests, and trends determined by linear regression analysis. **RESULTS:** 248 SBNET and 119 PNET patients assessed by SSTR-imaging were included. Preoperative SSTR imaging was done in 63.1% of all SBNET and 53.8% of PNET patients (p=0.02), which increased over the study period from 44 to 82% in SBNET while remaining stable in PNET patients. Rates of distant metastatic disease at presentation on SSTR-imaging were 80.2% and 53.8% (p< 0.01). Nodal metastases were identified in the mesentery (69.4% and 0%), retroperitoneum (28.2% and 25.8%), thorax (14.9% and 5.0%), supraclavicular area (7.7% and 4.2%) and iliac areas (6.5% and 0%) of SBNET and PNET patients. Local nodal involvement was found in 69.4% of SBNETs and 17.6% of PNETs. Distant metastatic disease was identified in the liver in 72.6% and 51.7%, bone in 15.3% and 10.8%, and extra-abdominal disease in 27.4% and 17.5% of SBNET and PNET patients, respectively. Distant metastatic disease was associated with higher tumor grade (p=0.03), and not size, nodal status, sex, or age. SSTR underestimated local nodal disease compared with postoperative pathology (PNET: 61.3% (Path) vs. 17.6 (SSTR), p< 0.01; SBNET: 92.7% (Path) vs 69.4% (SSTR), p< 0.01), but accurately estimated distant metastatic disease (PNET: 44.5% (Path) vs. 53.8% (SSTR), p=0.15; SBNET: 81.5% (Path) vs 80.2% (SSTR), p=0.32). **CONCLUSIONS:** The incidence of distant metastatic disease at presentation using SSTR-based imaging was similar in PNET patients as reported in national databases, but was much higher in SBNET patients. Extrahepatic metastases are more common in SBNET. Because SSTR-imaging identifies metastatic disease effectively and contributes to surgical decision-making, these data support use of SSTR-imaging for staging all GEPNETs.

Table 1. SBNET and PNET Metastases location based on Preoperative Functional SSTR imaging.

Metastasis Location based on Preoperative Imaging	SBNET (n=248)	PNET (n=119)	p-value
Liver	180 (72.6%)	62 (51.7%)	<0.01
Bone	38 (15.3%)	13 (10.8%)	0.24
Peritoneum	33 (13.3%)	2 (1.7%)	<0.01
Pancreas	9 (3.6%)	'	
Lymph Nodes			
Regional	172 (69.4%)	21 (17.6%)	<0.01
Retroperitoneal	70 (28.2%)	31 (25.8%)	0.63
Thoracic	37 (14.9%)	6 (5.0%)	<0.01
Supraclavicular	19 (7.7%)	5 (4.2%)	0.2
Iliac	16 (6.5%)	0	<0.01

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Unraveling survival disparities in pancreatic cancer: tumor biology vs structural barriers

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is the third leading cause of cancer death in the US. Socioeconomic disadvantage, measured by Area Deprivation Index (ADI; higher percentile = greater deprivation), may affect outcomes beyond tumor biology. We evaluated ADI and overall survival (OS) in localized PDAC, accounting for clinical factors and biomarkers including KRAS circulating tumor DNA (ctDNA). **METHODS:** We analyzed 130 localized PDAC patients enrolled from a prospective phase II trial (NCT04616131; October 2020 - November 2024). ADI national percentile was grouped into tertiles, with OS measured from diagnosis. Survival was assessed with Kaplan–Meier (KM), log-rank tests, and restricted mean survival time (RMST). Multivariable Cox models adjusted for age, sex, stage, CA19-9, prognostic nutritional index (PNI), and insurance status. KRAS mutations were assessed by next-generation sequencing (NGS) to evaluate joint effects of ADI and tumor biology. **RESULTS:** Evaluation of median OS showed a clear social gradient: Low ADI 41.7 months, Medium 26.0, High 16.2 (log-rank p = 0.034). High vs Low ADI independently predicted OS (aHR 2.55, 95% CI 1.10–5.91, p = 0.029), with an RMST deficit of 6.5 months at 36 months (p = 0.015). Deaths were more frequent in High ADI vs Medium/Low ADI at 36 months (55% vs 32%, χ^2 p = 0.007). Both High ADI (HR 2.07, 95% CI 1.11–3.87) and KRAS ctDNA positivity (HR 3.65, 95% CI 1.62–8.20) independently predicted shorter survival, without significant interaction (Likelihood Ratio Test p=0.96). Stratified KM analysis showed that even in KRAS ctDNA– patients, those from High ADI neighborhoods demonstrated shorter survival. KRAS ctDNA+ patients from High ADI neighborhoods had the worst OS (Figure 1) and experienced the greatest RMST shortfall, losing 16.8 months of survival compared to the reference group. **CONCLUSIONS:** Greater ADI is linked to markedly reduced survival in localized PDAC, independent of clinical and tumor biomarkers, suggesting poor outcomes are due to structural disadvantage, and not solely attributable to tumor biology. These results indicate meaningful disparity and support interventions targeting structural barriers alongside oncologic care in highly deprived census block groups.

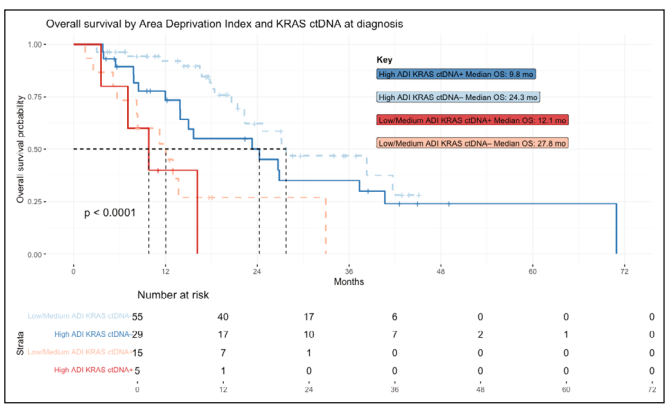

Figure. Evaluation of overall survival of ADI and KRAS ctDNA by stratified KM analysis demonstrates that in KRAS ctDNA– patients, those from High ADI neighborhoods demonstrated shorter survival and KRAS ctDNA+ patients from High ADI neighborhoods had the worst OS (log-rank p < 0.0001).

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Urban-Rural Disparities in Treatment and Outcomes for Colorectal Liver Metastases in the United States: A SEER-Medicare Analysis

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INTRODUCTION: Curative-intent resection or ablation of colorectal liver metastases (CRLM) offers the best chance for long-term survival, yet limitations in access may drive disparities in cancer care. Area-level disparity markers include socioeconomic status and rurality. Previous work has identified reduced use of liver-directed therapies and survival for regions with adverse socioeconomic conditions, whereas the impact of rurality on CRLM treatment and prognosis has not been previously studied. **METHODS:** The linked Surveillance, Epidemiology, and End Result (SEER)-Medicare database (2000-2020) was analyzed for patients aged 66-85 years with isolated CRLM. Urban-rural status was defined by linking patient zip code to the USDA Economic Research Service's Rural-Urban Commuting Area codes. The impact of rurality on receipt of therapy and survival was evaluated by multivariable logistic regression and Cox survival models, respectively, while adjusting for patient and tumor characteristics. Curative-intent liver therapy included any instance of hepatectomy, ablation, or transplantation. A landmark analysis minimized immortal time bias. **RESULTS:** A total of 34,781 patients with isolated CRLM were identified, with most residing in urban areas (n=27,225 [83.4%] compared with rural areas (n=5,416 [16.6%]). Rural populations were more likely to be white (86.7% vs. 76.6%; p< 0.01) and belong to the lowest socio-economic census tracts (Yost quintiles 1-3: 66.1% vs. 4-5 35.0%; p< 0.01). Tumor characteristics were similar between urban and rural populations. Rural residence was associated with higher odds of primary tumor resection (OR 1.13, 95% CI 1.04-1.24; p=0.01) but lower odds of systemic chemotherapy (OR 0.87, 95% CI 0.79-0.97; p< 0.01) and curative-intent liver therapy (OR 0.89, 95% CI 0.81-0.99; p=0.03). Rural residence was independently associated with worse overall survival (HR 1.10, 95% CI 1.05-1.14; p< 0.01). **CONCLUSIONS:** Despite similar tumor characteristics and higher likelihood of primary tumor resection, rural patients with CRLM were less likely to receive systemic and liver-directed therapy, and experienced worse survival. These findings highlight persistent geographic disparities in cancer care delivery and outcomes, underscoring the need for targeted interventions specific to rural CRLM populations.

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Variation in Oncology Clinical Trial Uptake: Examining Disparities in Evidence-Based Cancer Care Implementation

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INTRODUCTION: Variation in adoption of evidence-based cancer treatments after landmark trials may exacerbate inequities in care, yet between-trial variation in evidence implementation is poorly understood. The objectives of this study were to (1) identify factors associated with differential adoption of oncology clinical trials and (2) quantify variation across trials in adoption for vulnerable populations. **METHODS:** Treatment adoption patterns for three landmark trials were quantified using the National Cancer Database: CONKO-001 (pancreatic), MAGIC (gastric), and MSLT-II (melanoma). Time to 50% uptake of trial-supported care was calculated, and trial-supported care delivery was assessed across demographic and socioeconomic variables. Multilevel logistic regression was used to assess predictors of treatment receipt, adjusting for time since publication and patient-level factors. **RESULTS:** Overall, 86,676 patients (pancreatic n=21,434; gastric n=54,018; melanoma n=11,224) were included. Uptake exceeded 50% for CONKO-001 in 3 years compared with 7 years for MAGIC and less than 1 year for MSLT-II (P< 0.001). Significant variation was observed for adoption of CONKO-001, with patients being significantly more likely to receive trial-supported care if privately insured (OR=1.33, 95% CI 1.19–1.49, P< 0.001) or if they had high income (OR=1.28, 95% CI 1.18–1.39, P< 0.001). Similarly, patients with gastric cancer were more likely to receive MAGIC trial-supported care if privately insured (OR=1.50, 95% CI 1.40–1.60, P< 0.001) or if they had high income (OR=1.17, 95% CI 1.11–1.24, P< 0.001). Patients classified as Black were less likely to receive MAGIC trial-supported care (OR=0.39, 95% CI 1.11–1.24, P< 0.001). Academic hospitals were associated with more trial-supported care for patients with gastric cancer (OR=1.46, 95% CI 1.41–1.52, P< 0.001) but less trial-supported care for pancreatic cancer (OR=0.86, 95% CI 0.82–0.91, P< 0.001). No differences in adoption across either patient- or hospital-level subgroups was observed for MSLT-II. **CONCLUSIONS:** Substantial variation exists in the adoption of evidence-based treatments both across patient subgroups and between trials, potentially exacerbating disparities in timely access to new standards of care. However, one trial (MSLT-II) exhibited rapid and uniform uptake, indicating that robust implementation efforts can overcome inequities. Interventions targeting at-risk populations may allow additional trials to reach rapid and equitable implementation.

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Prophylactic lymphovenous bypass at the time of axillary lymph node dissection for lymphedema prevention: A retrospective study of lymphedema rates

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INTRODUCTION: Chronic lymphedema affects 30%-70% of patients who undergo axillary lymph node dissection (ALND). While studies have reported prophylactic lymphovenous bypass (pLVB) as an effective measure to prevent lymphedema after ALND, outcomes and complication rates are still underreported in literature due to small patient populations and short follow-up. The aim of this study was to report a real-world experience of implementing a pLVB program and evaluate its outcomes for patients who underwent ALND due to malignancy at a comprehensive cancer center. **METHODS:** This was a single-institution retrospective review from 2023 to 2025 examining surgeons' experiences and outcomes of ALND+pLVB in patients with breast and cutaneous malignancies. Patients were evaluated by physical therapy lymphedema specialists, and lymphedema was measured with limb volumes or International Society of Lymphology (ISL) staging. Institutional ALND+pLVB rates were compared to national reported ALND without pLVB with a one-sample exact binomial test. Two-tailed p values less than 0.05 were considered statistically significant, and exact 95% confidence intervals (Clopper–Pearson) were calculated. **RESULTS:** 44 patients were included, with a mean age of 58 years at the time of surgery. 86% of patients were female (n=38). Patients were diagnosed with breast cancer (n=35), melanoma (n=7), or squamous cell carcinoma (n=2). 22 patients received neoadjuvant chemotherapy or immunotherapy, and 19 received adjuvant radiation. All patients underwent ALND followed by immediate pLVB in the axillary surgical field. No major perioperative or postoperative complications were documented. The average operative length was 269 minutes, and a mean of two anastomoses were performed for pLVB. Drains were maintained for a mean of 19 days after surgery. At a median follow-up of 12.5 months, lymphedema occurred in 11.4% of patients (5/44; 95% CI, 3.8%-24.6%), with an average time of 152 days noted between surgery and lymphedema onset. When compared to national rates of lymphedema after ALND, institutional rates were significantly lower than the national reported incidence of 30% (p =0.007). **CONCLUSIONS:** pLVB reduces rates of lymphedema after ALND without increasing postoperative complications. A multidisciplinary approach can substantially decrease morbidity in this patient population. Further studies with longer follow-up will help define the potential benefits, cost, and long term outcomes of pLVB for patients requiring ALND.

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Language barriers to health literacy and mental health among non-English-speaking breast surgical oncology patients

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INTRODUCTION: Non-English-speaking (NES) patients experience increased language barriers navigating breast cancer care, leading to reduced understanding and heightened stress. We aim to compare health literacy barriers (HLB), mental health barriers (MHB), and concurrent health barriers (CHB) among NES compared to English-speaking (ES) breast surgical oncology patients. **METHODS:** We retrospectively analyzed prospectively collected, multi-institutional data from breast surgical oncology patients between 2018 and 2025. Variables included validated surveys on health literacy, mental health, sociodemographic information, and preferred or primary language. CHB is defined as the report of both HLB and MHB. Descriptive and associative statistics were used to analyze the data. **RESULTS:** A cohort of 4,194 patients was included, of which 51.1% (n=2,147) had NES and 48.9% (n=2,047) had ES. The racial/ethnicity breakdown including NES (%) of each subgroup is as follows: 41.7% Other-Hispanic/Latinx (n=1,752; 90.1% NES); 29.0% Black/African American (n=1,219; 8.7% NES); 16.2% White/Caucasian (n=682; 42.0% NES); 8.2% Other-Unspecified (n=344; 20.6% NES); 3.6% Asian (n=154; 49.3% NES); and 1.0% Native American (n=43; 62.7% NES). Of NES languages, the most prevalent was predominantly Spanish (87.6%%, n=1,882) followed by Haitian Creole (2.5%, n=55) and Chinese dialects (1.7%, n=38). All other NES languages (8.0%, n=172) were infrequent (20 or fewer) or unspecified. Reporting HLB was significantly more prevalent in NES (61.5%, n=1,322) compared to ES (27.8%, n=571)(OR 95%CI 4.14 [3.63-4.71]). Reporting MHB was significantly more prevalent in NES (11.1%, n=240) compared to ES (7.2%, n=148)(OR 95%CI 1.61 [1.30-2.00]). Reporting CHB was significantly more prevalent in NES (10.6%, n=228) compared to ES (4.8%, n=100)(OR 95%CI 2.31 [1.81-2.95]). The majority of data was collected post-COVID pandemic (66%, n=2,769). Rates of reported barriers widened over time between NES vs ES comparing pre/intra- to post-COVID pandemic for HLB (NES 54.1% to 65.0%; ES 41.0% to 20.3%), MHB (NES 9.7% to 11.8%; ES 8.9% to 6.2%), and CHB (NES 9.0% to 11.3%; ES 6.5% to 3.9%). **CONCLUSIONS:** Significant health barriers exist for NES breast cancer patients compared to ES which may be worsening. NES patients receiving care in a predominantly ES health system may face increased communication challenges, which could be linked to other disadvantaged socioeconomic factors.

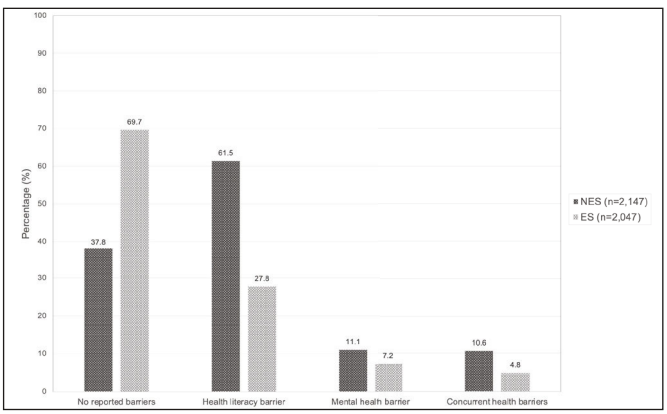

Figure. Prevalence of reported barriers among non-English-speaking (NES) and English-speaking (ES) patients

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Regionalizing pancreatic surgery improves access to care

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INTRODUCTION: Centralizing pancreatic surgery care at high volume centers is associated with improved outcomes. However, centralization limits access to care by increasing travel burden and financial toxicity. The Phoenix metroplex is the largest urban center in the southwestern United Sates, covering close to 15,000 square miles with a high proportion of older adults. Our cancer program embarked upon a regionalization initiative to increase patient access. This study describes the results and outcomes of our Cancer Center's regionalization initiative for patients undergoing pancreatectomy. **METHODS:** Over a five-year period, trends in pancreatectomies performed at our Main Cancer Center and our Regional facilities were evaluated. Travel distance was stratified by driving distance: less than 30 minutes (mins), 30-60 mins, 60-120 mins and more than 120 mins. Surgical outcomes such as length of stay (LOS) and hospital readmissions were reviewed. **RESULTS:** Between January 2021 and September 2025, 369 pancreatectomies were performed at our community health system by cancer center faculty. Pancreatic surgery volumes increased by 8% annually over this period. The proportion of surgeries performed at the Main Cancer Center versus Regional facilities steadily decreased from 98% in 2021 to 59% in 2025. During this period of time, there were significant reductions in median travel distance (40.2 miles to 15.1 miles, p< 0.01), and travel duration (50 minutes to 22 minutes, p< 0.01). Median travel times to the Regional facilities were shorter than the Main Cancer Center (22 minutes vs. 42 minutes, p< 0.01). Fewer patients traveled between 60-120 minutes, with a concurrent increase in patients travelling less than 30 minutes (Figure 1). Over this five-year period, readmissions decreased for pancreaticoduodenectomies (PD) from 32% in 2021 to 13% in 2025 (p=0.01). There was no significant change in rates of readmission for distal pancreatectomies (DP) over time. There were no differences in readmission for PD or DP between the Main Cancer Center or Regional facilities. Notably, readmissions were significantly higher in those travelling 60-120 minutes (37%) compared to the other groups (p=0.04). There were no significant differences in LOS between the Main Cancer Center or Regional facilities, or between distances travelled. **CONCLUSIONS:** Regionalizing pancreatectomies in a large metroplex reduces travel duration for patients, potentially improving access and ameliorating financial toxicity. Furthermore, it may be associated with reductions in readmissions after surgery.

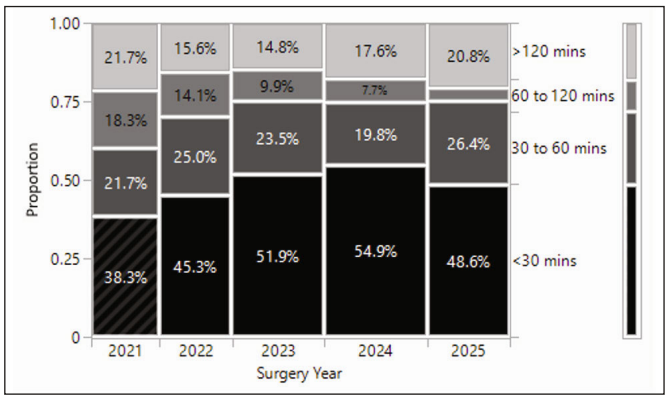

Figure 1

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Beyond coverage: how insurance and social vulnerability shape clinical trial participation

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INTRODUCTION: Historically, most state Medicaid plans have not covered the costs of clinical trials, creating financial obstacles to participation for low-income people. The state of New Jersey (NJ) uniquely requires coverage of routine clinical trial costs for patients with Medicaid. This study assesses the interplay of insurance type and socioeconomic barriers under this policy, which is being enacted nationally. **METHODS:** Insured NJ residents newly diagnosed with breast, colorectal, lung, pancreas, and prostate cancers from 2022-2025 at hospitals offering clinical trials were identified in the Vizient Clinical Database. The outcome of interest was clinical trial enrollment. Social vulnerability was defined using the Vizient Vulnerability Index (made up of 9 domains) in quartiles at the census tract level. Multivariable analysis was performed. A subset analysis among Medicaid patients explored the additive effect of social vulnerability through interaction analysis and identified social determinants barriers. **RESULTS:** Of 213,879 patients, 56.1% had Medicare, 32.5% private, 6.4% Medicaid, 3.1% other, 1.6% charity care, and 0.3% VA/military insurance. 1.6% enrolled in a clinical trial. After adjusting for age, sex, race, Charlson Comorbidity Index, hospital type, metastatic disease, and social vulnerability, Medicaid patients were equally likely to enroll in a trial (aOR 0.92, 95% CI 0.79–1.08, p=0.3055; ref private) but VA patients were less likely (aOR 0.37, 95% CI 0.14–0.98, p=0.046; ref private). Living in the most socially vulnerable quartile also significantly decreased the odds of enrollment (aOR 0.72, 95% CI 0.64–0.80, p< 0.0001; ref least vulnerable). Treatment at academic hospitals significantly increased enrollment (aOR 4.66, 95% CI 4.35–5.23, p< 0.0001; ref community). Among Medicaid patients, those living in the least vulnerable neighborhoods had more than twice the odds of enrollment than the most vulnerable (aOR = 2.08, 95% CI: 1.30–3.35, p< 0.0001). Neighborhood resources and public safety were the most significant barriers to enrollment for patients with Medicaid (Table). **CONCLUSIONS:** In NJ, state-mandated coverage for clinical trials has eliminated insurance disparities in trial enrollment for Medicaid patients. This study offers encouraging insights into the potential for national Medicaid policy to enhance equity in clinical trial enrollment for low-income populations, while also highlighting persistent structural and neighborhood-level barriers that hinder participation.

Social Vulnerability Domain	Adjusted OR*	95% Confidence Interval	p-value
Neighborhood Resources	0.39	0.22 - 0.70	0.0014
Public Safety	0.37	0.17 - 0.81	0.0126

* Comparing patients living in most vs. least vulnerable quartiles

Figure. Social vulnerability domains associated with clinical trial enrollment among Medicaid patients

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Prospective evaluation of safety and patient satisfaction with apixaban versus low molecular weight heparin for extended prophylaxis after cancer surgery

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INTRODUCTION: Current guidelines recommend low molecular weight heparin (LMWH) for extended postoperative prophylaxis for venous thromboembolism (VTE) in cancer surgery patients. Some specialties use direct oral anticoagulants (DOACs) as an alternative to subcutaneous LMWH with improved patient satisfaction. This study aimed to evaluate patient satisfaction and safety with DOAC use for extended prophylaxis in cancer surgery patients. **METHODS:** This single-center prospective cohort study enrolled adult patients from July 2023 to April 2025 who underwent gastrointestinal, soft tissue, and endocrine cancer surgery and qualified for 28 days of VTE prophylaxis. As a quality improvement study using two approved forms of prophylaxis, informed consent for medication administration was waived. The study was conducted in two sequential phases: (1) standard-of-care LMWH and (2) apixaban 2.5mg oral twice daily. A survey was sent on postoperative day 28 to assess the primary outcomes of compliance and satisfaction. Each phase was completed after an estimated 200 survey responses. Secondary outcomes included bleeding and thrombosis complications within 90 days and out-of-pocket cost. **RESULTS:** In total, 677 patients met study criteria, including 280 (41.4%) receiving LMWH and 397 (58.6%) apixaban. Surveys were completed by 411 patients (60.7%): 186 (66.4%) for LMWH and 225 (56.7%) for apixaban. Patients reported higher overall satisfaction with apixaban [median score 10 (IQR 8-10) vs 9 (6-10), p=0.005]. Although more patients missed an apixaban dose (37.2% vs 23.2%, p=0.003), the median number of missed doses for both was clinically insignificant at 2 (IQR 1-3, p=0.81). Patients reported less pain, bruising, and anxiety, and greater ease of administration with apixaban (all p< 0.001). There was no difference in total complications between apixaban and LMWH (4.0% vs 4.3%, p >0.99), but fewer major bleeding events (>2 g/dl decrease in hemoglobin or requiring intervention) occurred in the apixaban arm (0.5% vs 2.5%, p=0.038). There were no differences in rates of minor bleeding (1.8% vs 0.7%, p=0.32), VTE (1.0% vs 0.7%, p >0.99), ER visits (2.5% vs 1.4%, p=0.48), or readmissions (1.3% vs 1.8%, p=0.75). Mean cost was higher for LMWH ($55.30 vs $30.20, p=0.001), but this metric was limited by the availability of drug coupons for apixaban. **CONCLUSIONS:** After cancer surgery, extended postoperative VTE prophylaxis with oral apixaban was a safe and cost-effective alternative to standard-of-care LMWH. Apixaban was associated with improved patient satisfaction.

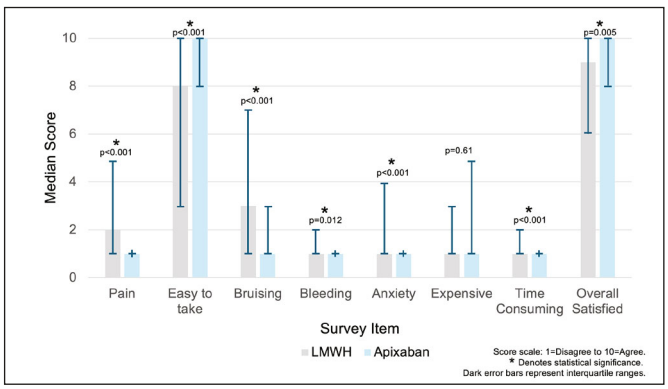

Figure. Patient Survey Responses after 28 Days of Extended Postoperative Prophylaxis with Low Molecular Weight Heparin (LMWH) vs Apixaban

P89

Hope for HOPO: the quest for a unified diagnostic and therapeutic radionuclide ligand in hepatocellular carcinoma theranostics

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INTRODUCTION: Theranostics may enable early detection and targeted therapy in hepatocellular carcinoma (HCC) by combining diagnostic imaging and delivery of therapeutic radionuclides. Humanized anti-glypican-3 (αGPC3H) antibody conjugated to positron emitting Zirconium-89 (Zr89) with deferoxamine (DFO) has shown favorable detection of HCC in our preclinical positron emission tomography (PET) model. However, DFO is unable to conjugate the therapeutic alpha-emitting radionuclide Thorium-227. A ligand that is able to bind both radionuclides can help ensure that visualized tumors are treated. Therefore, we developed a novel hydroxypyridinone (HOPO)-based

bifunctional chelator, tetra(Me-3,2-HOPO), able to bind Zr89 and Th227. We compared tumor uptake and biodistribution of Zr89-HOPO-αGPC3H and Zr89-DFO-αGPC3H in our orthotopic HCC model. **METHODS:** A tetra(Me-3,2-HOPO) ligand with a spermine backbone was developed. Tumors were established in athymic nude mice by subcapsular liver injection of human HepG2 cells and confirmed with bioluminescent imaging. Tumor-bearing mice received retro-orbital Zr89-HOPO-αGPC3H or Zr89-DFO-αGPC3H. Five days later, PET/CT was performed, and maximum tumor uptake (SUVmax) was measured. Tissue uptake was quantified in a gamma counter and normalized to injected dose per gram (%ID/g). **RESULTS:** Among mice receiving Zr89-DFO-αGPC3H (n=8) or Zr89-HOPO-αGPC3H (n=9), there was no difference in tumor bioluminescence (4.6 x 10^11 vs 4.9 x 10^11 ph/s, p=0.86) or Zr89-αGPC3H dose (230 vs 247 uCi, p=0.08). Zr89-DFO-αGPC3H demonstrated greater tumor uptake (80 vs 51 %ID/g, p< 0.05, Fig 1a) and higher tumor to liver uptake ratio (6.2 vs 2.1, p< 0.05, Fig 1b). Zr89-DFO-αGPC3H had lower off-target uptake in non-tumor liver (13 vs 24 %ID/g, p< 0.05), kidney (12 vs 19 %ID/g, p< 0.05), and femur (1.7 vs 8.9 %ID/g, p< 0.05, Fig 1c). While Zr89-DFO-αGPC3H also demonstrated two-fold greater tumor SUVmax (28 vs 13, p< 0.05, Fig 1d,e), Zr89-HOPO-αGPC3H nevertheless reliably detected tumors on PET/CT. **CONCLUSIONS:** Zr89-HOPO-αGPC3H can identify HCC tumors, although its performance was inferior to Zr89-DFO-αGPC3H. This may be due to relative in vivo instability of Zr89-HOPO-αGPC3H leading to radionuclide uptake in off-target tissues. Next steps will focus on optimization of this HOPO-based ligand to decrease off-target uptake with both diagnostic (Zr89) and therapeutic (Th227) radionuclides.

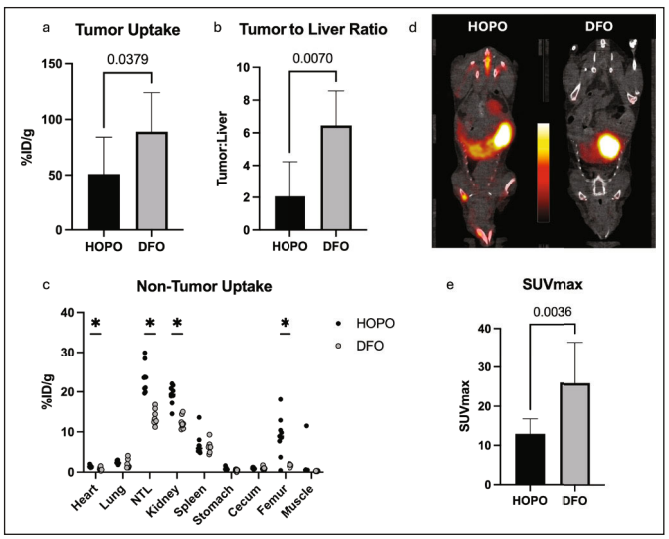

Figure 1. Comparison of tumor uptake (a,b), off-target uptake (c), and PET/CT signal (d, e) of HOPO versus DFO conjugated Zr89-αGPC3H

P90

High sensitivity proteomic profiling of archival pancreatic ductal adenocarcinoma defines tumor and tumor microenvironment changes

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INTRODUCTION: We previously identified two tumor-intrinsic molecular subtypes of pancreatic ductal adenocarcinoma (PDAC) with prognostic and therapeutic significance. We used multiplex inhibitor bead mass spectrometry (MIB/MS) and found that the two molecular subtypes harbor distinct kinomes. However, MIB/MS and related proteomic methods require large quantities of fresh-frozen tissue. New high sensitivity proteomics allows analysis of formalin-fixed, paraffin-embedded (FFPE) tissues. We determined the feasibility of these new technologies for resected PDAC FFPE samples. **METHODS:** De-identified FFPE PDAC samples were sectioned at 4μm and H&E stained. After pathologist review, paired macrodissected (MD) tumor and whole tumor sections (WTS) underwent Orbitrap Astral mass spectrometry. Proteins detected in at least 2 of 3 replicates were retained and $\log_2$-transformed. Differential expression between regions was evaluated with a moderated t-test (limma) and a ≥2-fold change threshold (1.5-fold for kinases). Kinases and proteins were compared to previously identified PDAC-subtype associated kinases and Moffitt tumor gene sets. **RESULTS:** We identified ~7500 proteins and 310 kinases across all samples. >90% of proteins were consistently detected in ≥2 replicates. Tumor regions demonstrated significant ($p < 0.05$) upregulation of kinases EPHB2, CSNK1G2, and STK10, all previously found to have PDAC subtype-specific protein expression via MIB/MS. Moffitt tumor-intrinsic proteins were similar between MD and WTS. However, MD tumor sections had significantly different global protein expression for 356 proteins compared to WTS ($p < 0.05$, log2FC > 1). Gene set enrichment analysis showed enrichment of epithelial mesenchymal transition and complement gene sets in the WTS compared to the MD tumors ($p < 0.001$, log2FC > 0.5). Gene sets upregulated by myc and cellular stress were enriched in the MD tumors vs the WTS ($p < 0.001$, log2FC > 0.5). Furthermore, SERPINB3 from the Moffitt 50 signature was highly expressed in MD but not WTS ($p < 0.001$, log2FC > 10), suggesting that some tumor-specific genes may be missed in the absence of MD. **CONCLUSIONS:** Our results show that FFPE proteomics recapitulate prior tumor and kinase signatures in both WTS and MD samples. Tumor regions display consistent enrichment of molecular subtype and subtype-specific kinases reflective of PDAC tumor biology. MD when feasible may further elucidate tumor and tumor microenvironment changes. This approach supports the feasibility and promise of FFPE proteomics in future studies.

P91

A Novel Phase II Trial of Hepatic Arterial Infusional Floxuridine With Systemic Chemotherapy in the Treatment of Pancreatic Cancer Liver Metastases

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is a highly lethal cancer. Best available systemic chemotherapy offers survival < 12 months for metastatic disease. We performed a proof-of-concept pilot study to evaluate hepatic arterial infusion pump (HAIP) chemotherapy in patients with PDAC liver metastasis. **METHODS:** Patients with synchronous, liver-dominant metastatic PDAC were recruited from 2019-2024. Patients were required to exhibit stable disease or partial response after at least two months of systemic chemotherapy. Diagnostic laparoscopy was performed on all to rule out peritoneal disease. Enrolled patients underwent open HAIP placement and were offered concurrent resection or irreversible electroporation (IRE) of the primary tumor. Floxuridine was delivered in 28-day cycles at 0.12 mg/kg/day for up to six cycles with systemic chemotherapy. The primary outcome measure was 1-year hepatic progression-free survival (PFS) with secondary outcomes including quality of life and overall survival (OS). A pre-defined clinically significant improvement from 14% to 40% 1-year hepatic PFS was used with a = 0.1 and power of 80% to obtain a sample size of 14 patients. **RESULTS:** Fourteen patients were enrolled with median age of 66 (range 49-79) and 10 were male (71.4%). Seven patients (50%) underwent distal pancreatectomy, two pancreaticoduodenectomy (14.3%), three IRE (21.4%), and two declined intervention. Postoperative pancreatic fistula occurred in 4/9 surgical patients (44.4%). Median cycles of floxuridine received was 4 (range 1-6). Eight patients (57%) demonstrated 1-year hepatic PFS, meeting the primary endpoint. Median hepatic PFS was 15 months (95% CI 13.5-16.6) (Figure 1). Of the six patients who did not achieve 1-year hepatic PFS, four did not exhibit hepatic progression at last follow-up. One patient died at 6 months from presumed cardiac event. Another had progressive dementia, declined follow-up imaging beyond 9 months, and died at 13 months. Two patients had peritoneal recurrence and died of disease at 11 months with no hepatic progression. Median OS was 13 months (95% CI 6.9–19.1), while 5/14 (35.7%) achieved 2-year OS. Global health status QOL did not differ between baseline and 6-month assessments (153±32 vs. 157±47, p=0.72). **CONCLUSIONS:** In this novel clinical trial, HAIP chemotherapy showed

promising disease control in the liver when administered with systemic therapy. While this represents a highly-selected patient population, further study of HAIP chemotherapy in the treatment of PDAC liver metastases is warranted.

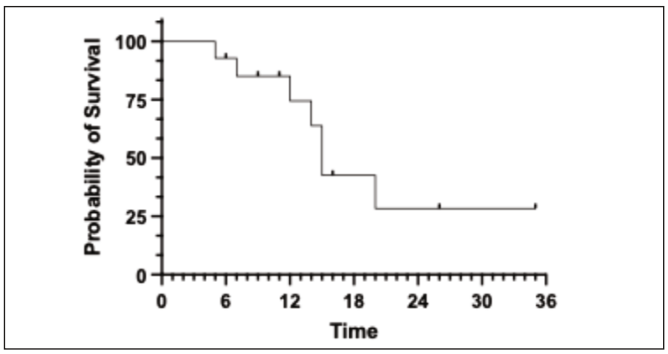

Figure 1. Hepatic progression-free survival

P92

Redefining the etiology of dysplastic progression in IPMN: Hydrostatic pressure, and not size, is associated with neoplastic change

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INTRODUCTION: The biological mechanisms driving dysplastic progression in intraductal papillary mucinous neoplasms (IPMNs) remain poorly understood. Current guidelines prioritize cyst size as a predictor of dysplasia, however, most cysts resected under these criteria ultimately harbor only low-grade dysplasia. We hypothesize that intracystic pressure, rather than cyst size, drives profibrotic signaling and microenvironment remodeling that promote dysplastic progression. **METHODS:** We quantified stromal content on H&E whole-slide images using a Random Forest pixel classifier across normal pancreas, pancreatitis, IPMN, and PDAC (n = 56). Observing a progressive increase in cellular and noncellular stroma, we tested whether hydrostatic pressure could induce this fibrotic phenotype. Human pancreatic ductal epithelial (HPDE) and stellate (HPSC) cells were exposed to 1 psi for 1 hour in a bioreactor, followed by bulk RNA-seq to derive a composite pressure-response signature. This signature was evaluated using single-nucleus RNA-seq (snRNA-seq) from 12 resected IPMN samples spanning dysplasia grades. Trends were analyzed by Spearman correlation. **RESULTS:** Whole-slide analysis showed stepwise stromal expansion: LGD < HGD (Δ = 25%, p = 0.001) and LGD < Invasive (Δ = 29%, $p \leq 0.001$) (Fig1.A). In vitro, pressure upregulated extracellular matrix genes (e.g. Fibronectin, Collagen 6, Metalloproteinases; $p \leq 1\times10^{-14}$) from which we created a unique expression signature. Gene ontology terms were enriched for response to mechanical stimulus and extracellular-matrix organization (FDR $\leq$ 0.005). Scoring of the pressure signature in snRNA-seq (99,463 cells) showed progressive increase with dysplasia ($p < 1\times10^{-10}$), strongest in acinar ($p < 1\times10^{-116}$) and ductal ($p < 1\times10^{-47}$) cells, followed by endothelial, B-, and T-cell populations ($p \leq 10^{-4}$). At the patient level, pressure signature correlated with dysplasia (p = 0.034) more strongly than cyst size (p = 0.130) (Fig1.B). **CONCLUSIONS:** In pancreatic ductal and stellate cells, hydrostatic pressure activates a mechano-responsive program, and the resulting pressure-derived gene signature increases progressively across IPMN dysplasia. These findings implicate ductal pressure as a driver of fibrosis and dysplastic progression in IPMN. Collectively, this work reframes our understanding of IPMN evolution, highlighting cyst pressure over cyst size as a determinant of malignant progression and a novel avenue for candidate biomarkers and therapeutic intervention.

Figure 1

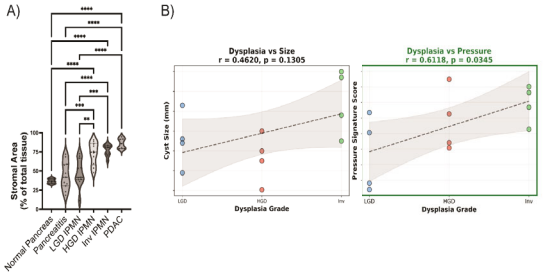

Figure Legend:
A. Quantification of stromal area on H&E whole-slide images from normal pancreas (healthy donors), pancreatitis, LGD IPMN, HGD IPMN, Inv IPMN, and PDAC. Percent stromal area was compared across groups using one-way ANOVA with Tukey's post hoc multiple-comparison adjustment.
B. Correlation between dysplasia grade and cyst size or pressure-signature score respectively, showing a stronger association of dysplasia with pressure than with cyst size.
Abbreviations: IPMN = intraductal papillary mucinous neoplasm; LGD = low-grade dysplasia; HGD = high-grade dysplasia; Inv = invasive carcinoma; PDAC = pancreatic ductal adenocarcinoma.
*p ≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001, **** p ≤ 0.0001.

Figure 1

P93

Surgical drain fluid as a novel liquid biopsy source for post-operative staging in pancreaticobiliary cancers

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INTRODUCTION: Patients with pancreaticobiliary (PB) cancers continue to have poor outcomes at all stages, with frequent recurrences post-operatively. Blood-based liquid biopsy can predict progression, recurrence, and survival, but sensitivity in early-stage disease remains low. To address this low sensitivity and specificity, we investigated surgical drain fluid as a novel liquid biopsy source, as its proximity to the resected tumor and tumor microenvironment may yield higher concentrations of tumor-derived nucleic acids and immune markers. **METHODS:** In a prospective cohort of patients with PB malignancies who underwent curative-intent surgical resection with pancreatectomy, paired surgical drain fluid and plasma samples were collected on post-operative day 1. Total cell-free DNA (cfDNA) concentrations, circulating tumor DNA (ctDNA) fractional abundance, and neutrophil extracellular traps (NETs) were quantified in the paired samples of blood and drain fluid. **RESULTS:** 35 patients with PB malignancies underwent curative-intent resection and had biofluid collected. Drain fluid contained an average of ~400-fold higher concentration of cfDNA than plasma, and 5.7 times higher concentration of NETs than plasma ($p< 0.001$). ctDNA was detectable in 5/35 patients in drain fluid, and 1/33 patients in plasma. Patients with N2 vs N0 disease, and those with R1 resection vs R0 resection had significantly higher levels of ctDNA ($p< 0.05$) in drain fluid, but not in plasma. Patients with early cancer recurrence within 1 year of surgery had a significantly higher ratio of plasma NETs relative to total plasma cfDNA ($p< 0.05$), and had a trend towards significantly higher levels of drain ctDNA and drain cfDNA. **CONCLUSIONS:** Surgical drain fluid is a rich source of nucleic acids, with greater DNA yield and higher ctDNA detection compared to plasma. It is also a clinically relevant biofluid, with drain fluid ctDNA levels correlating with pathologic features that are predictive of patient survival. Preliminary follow-up data show that plasma NETs help to predict recurrence, and suggest that drain fluid biomarkers can also be predictive of cancer recurrence. Future directions include increasing sample size, and additional characterization of immune-cell populations within this novel biofluid.

Table 1. Mutant allele fraction of plasma and drain fluid samples categorized by pathologic features and oncologic outcomes.

	Plasma ctDNA MAF	p-value	Drain Fluid ctDNA MAF	p-value
Non-Cancer Controls	0		0	
N0	0	0.350	0	**0.037**
N1	0		0	
N2	0.0048		0.0056	
R0	0.0027	0.478	0.0005	**0.034**
R1	0		0.0049	
No Recurrence	0	N/A	0.0007	**0.077**
+ Recurrence	0		0.0065	

P94

TP53 Mutant Variant Allele Frequency Can Improve Machine Learning Prediction of Post-operative Survival Outcomes in Pancreatic Cancer

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INTRODUCTION: Even after neoadjuvant therapy (NAT) and resection for localized pancreatic ductal adenocarcinoma (PDAC), overall survival (OS) varies greatly; while clinical factors such as positive lymph nodes (LNs) can stratify risk of poor outcome, there is need for greater precision. Comprehensive genomic profiling (CGP) of resected tumor has potential to bridge this gap. Here, we demonstrate a novel method of combining machine learning (ML) models with variant allelic frequency (VAF; % detected mutant alleles) to identify drivers of OS. **METHODS:** We identified all localized PDAC patients who completed NAT, resection, and had CGP data (fromTEMPUS xT 648 gene panel). Using OS from surgery as a binary variable (above vs. below median), eXtreme Gradient Boosting (XGBoost) ML framework was utilized to extract features of importance using clinicopathologic variables, as well as VAFs for any present pathogenic mutations (with VAF=0% for wildtype [wt]). Model performance was evaluated using area under the receiver operating characteristic curve (AUC) and Shapley additive explanation plots (SHAP), with Kaplan-Meier curves for clinical validation. **RESULTS:** 110 patients who completed NAT and resection had CGP data; 89 (81%) were KRAS mutated (G12D 33%, G12V 23%, and G12R 18%), and 67 (61%) had pathogenic TP53 mutation (mut). Initial XGBoost models using only known pathogenic mut VAFs identified TP53 as the highest impact feature. Addition of TP53 VAF, when combined with time-of-surgery clinical variables (e.g. age, comorbidity index, pathologic LN and T stage, lymphovascular or perineural invasion), improved prediction of OS (AUC = 0.81), vs. clinical variables alone (AUC = 0.73; Fig.a,b). SHAP analysis showed high TP53 VAF and LN+ status as the two highest contributing features for poor OS. When categorized by TP53 and LN status, TP53 mut/LN+ patients had significantly worse OS than all other groups (median 11.0 mo [95%CI 7.4-15.3] vs. 23.0 mo [20.4-32.1], p< 0.0001); there was no difference in OS between TP53 wt/LN+, TP53 mut/LN-, and TP53 wt/LN- patients (Fig.c). When stratified into high vs. low VAF by median (6.5%), only high VAF patients had worse OS (10.7 mo [6.7-22.0]) compared to wildtype (25.9 mo [16.5-38.7], p=0.05; Fig.d). **CONCLUSIONS:** VAF analysis from CGP can uncover novel predictive targets for post-surgical outcomes. TP53 mut, particularly when present with LN+, confers worst OS and may be a clonally dependent process (based on VAF). Post surgical TP53 mut/LN+ cohorts should be stratified as high risk and be considered for adjuvant treatment and clinical trials.

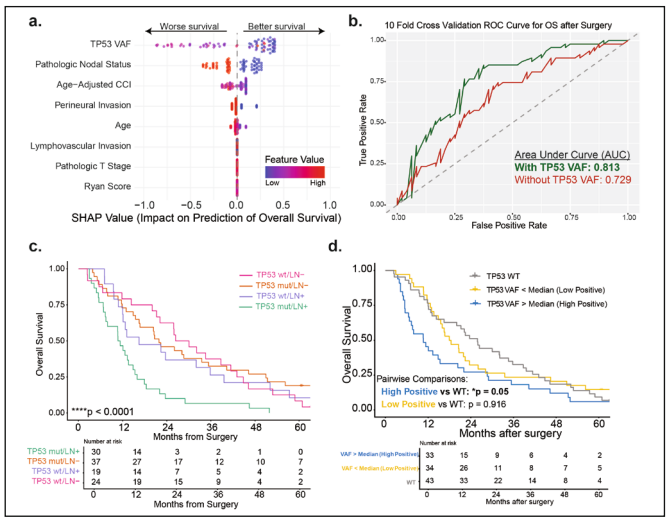

Figure 1

P95

Characterizing Biliary Sclerosis After Hepatic Arterial Infusion Pump Chemotherapy in the Modern Era: Multi-center Analysis from the International HAI Consortium Research Network (HCRN)

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INTRODUCTION: The use of hepatic arterial infusion pump (HAIP) chemotherapy for colorectal liver metastases and intrahepatic cholangiocarcinoma has increased expontentially over the past decade. Biliary sclerosis (BS) is one of the most concerning complications after HAIP, however, its occurence remains enigmatic and no modern multicenter hospital-level comparative safety data exists. Our objectives were to (1) characterize rates of BS, (2) identify predictors of BS, and (3) evaluate hospital-level variation of BS in the modern era. **METHODS:** A retrospective cohort analysis was completed using the international HAI Consortium Research Network (HCRN) registry of patients treated with HAIP chemotherapy (2015-2024). A multivariable logistic regression model was utilized to assess predictors of BS and hierarchical logistic regression models were created to assess comparative hospital-level outlier status. **RESULTS:** A total of 1,188 patients underwent HAIP placement from 36 centers, of which 94 patients (7.9%) developed BS requiring a stent. BS primarily occurred in the common hepatic/bile duct (70.0%) and was most commonly multifocal (57.0%). Median time from HAIP placement to BS was 261 days [IQR: 165, 434]. Rates of BS decreased over time (18.2% to 3.1%, p< 0.05). Independent predictors of BS included year of HAIP placement (OR 0.88, 95%CI 0.80-0.96), postoperative infection (OR 2.22, 95%CI 1.20-4.10), and FUDR dose (per 50mg) (OR 1.04, 95%CI 1.01-1.07). BS was not associated with aberrant arterial anatomy, prior chemotherapy, liver volume, pump placement indication, or hospital volume. At the hospital level, BS ranged from 0% to 20.8% (median 4.5%, IQR 0-11.8) and was not associated with hospital volume. After adjustment, 10 of 36 (27.8%) hospitals performed worse-than-expected, while 16 of 36 (44.4%) hospitals performed better-than-expected

(Figure). **CONCLUSIONS:** In the modern era, BS occured in less than 10% of patients, has decreased over time, and is associated with FUDR dose and postoperative infection. Wide variation in BS was observed at the hospital level. More research is needed to understand modifiable clinical predictors of BS and develop effective risk reduction strategies.

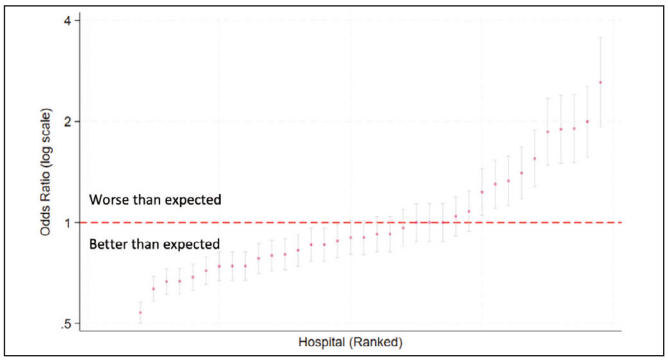

Figure. Comparative hospital level outlier status for biliary sclerosis complications after hepatic artery infusion pump placement from 2015-2024

P96

Antigen-presenting B cells sustain checkpoint immunotherapy responses in liver cancer

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INTRODUCTION: The role of B cells in shaping immune checkpoint inhibitor (ICI) efficacy remains poorly defined in liver cancers. We combined prospective clinical trial data, single-cell analyses, and in vivo studies using the SB1 cholangiocarcinoma (CCA) mouse model to define mechanisms of B cell-driven antitumor immunity during checkpoint immunotherapy. **METHODS:** Prospective clinical data from a trial of anti-PD-L1, anti-CTLA-4, and anti-VEGF in patients with intrahepatic cholangiocarcinoma (iCCA) or hepatocellular carcinoma (HCC) were integrated with single-cell RNA sequencing (scRNA-seq) and histopathology. Complementary analyses with flow cytometry and adoptive transfer experiments were performed in the SB1 murine CCA model. **RESULTS:** Regimens including upfront anti-PD-L1 + anti-CTLA-4 double therapy and triple therapy with anti-VEGF showed superior PFS and OS compared to double therapy (6.8 vs 2.3 months; 14.5 vs 7.6 months). In the SB1 CCA mouse model, triple therapy promoted tertiary lymphoid structures. Knockout of activation induced cytidine deaminase (AICDA) delayed triple therapy efficacy, suggesting a potential role for B cell affinity maturation in early responses. AICDA knockouts also showed notable intratumoral infiltration of antigen-presenting (APC) B cells. In addition, adoptive transfer of ex vivo–expanded tumor-infiltrating B cells from either triple-therapy– or placebo (IgG)–treated SB1 CCA tumors appeared to delay tumor growth in recipient mice compared with those that did not receive B cell transfer. In patients, scRNA-seq revealed that plasma cells expanded in tumors after any ICI therapy compared with tumors from patients who underwent surgery alone, but these plasma cells exhibited exhaustion signatures. **CONCLUSIONS:** Triple therapy efficacy appears to rely on B cell affinity maturation for early responses and may be sustained by infiltration of antigen-presenting B cells, suggesting antigen presentation, rather than plasma cell differentiation, could contribute to durable ICI benefit. Ongoing studies are validating these observations and further exploring the role of B cells in sustaining ICI efficacy.

P97

Serum Amyloid A determines outcomes in resectable pancreatic cancer

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) remains a major surgical challenge, with recurrence rates approaching 70% within two years of resection. Our previous work demonstrated that the IL6-STAT3-Serum Amyloid A (SAA) signaling axis in the liver promotes PDAC metastasis and shapes tumor immune infiltration. In this study, we investigated the role of liver inflammation in resectable PDAC and its impact on post-resection outcomes. **METHODS:** Clinical Proteomic Tumor Analysis Consortium mass spectrometry-based protein quantification data of preoperative serum samples from 38 patients with resectable PDAC were assessed to evaluate markers of liver inflammation. Parallel studies were conducted using genetic PDAC mouse models (LSL-KrasG12D/+ LSL-Trp53R172H/+ [KPC] or KPC SAA-/- [SAAko]). Pancreatectomy was performed when mouse tumors reached ~50 mm3, as assessed by ultrasound. Survival outcomes were assessed using Cox proportional hazards models, Kaplan-Meier curves, and ROC curve analysis. **RESULTS:** Among the ten hepatocyte-secreted acute-phase reactants analyzed from patient-derived serum samples, SAA1 and SAA2 were the strongest correlates of recurrence-free survival (RFS) after pancreatectomy (AUC 0.73 and 0.72). Patients in the upper half of preoperative SAA levels had significantly shorter RFS compared to those with low SAA (median RFS; 14 vs 40 months; P< 0.05). Cox proportional hazard regression confirmed independent associations between SAA1 (HR 1.22, P< 0.05) and SAA2 (HR 1.21, P< 0.05) and RFS, whereas other markers of liver inflammation were not significant, except complement component 3 (HR 0.36, P< 0.05). Notably, only one patient in the lowest quartile of SAA experienced recurrence within two years of surgery. Consistent findings were observed in mouse models, where KPC mice with high serum SAA (mean 1.92 mg/mL; n=11) experienced markedly worse overall survival (OS) after pancreatectomy compared to KPC mice with low serum SAA (mean 0.15 mg/mL; n=12; median OS: 28 vs 48 days, P< 0.01) despite having similar tumor volume and no evidence of metastasis at resection. Although non-treated SAAko and KPC mice showed similar survival, SAAko mice demonstrated significantly improved OS following pancreatectomy compared to KPC mice (median OS: 41 vs 56 days, P< 0.05). Necropsy revealed a substantially lower incidence of liver metastases in SAAko mice (16.6% vs 44.4%, P< 0.05). **CONCLUSIONS:** In both patient-derived samples and a resectable mouse model, SAA correlated with early recurrence after surgery in PDAC. These results highlight SAA as a potential guide to perioperative therapy and risk stratification.

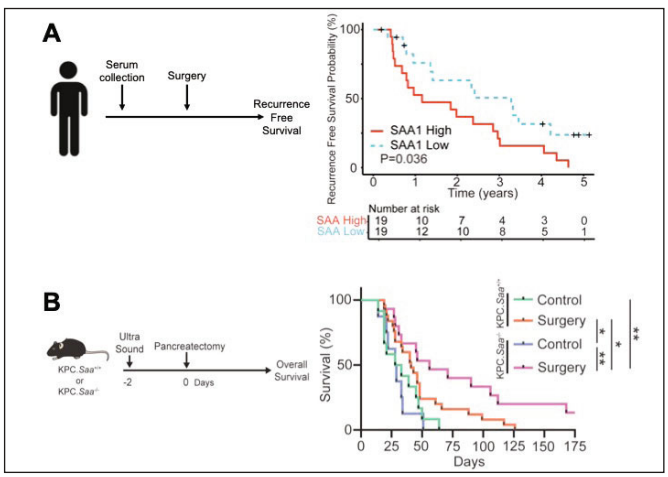

Figure. Serum Amyloid A is a significant prognosticator in patients and a mouse model of resectable pancreatic cancer

P98

Synonymous KRAS mutations confer altered sensitivity to targeted KRAS inhibition

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INTRODUCTION: KRAS is mutated in over 90% of pancreatic adenocarcinomas (PDAC) and is one of the most recalcitrant therapeutic targets. Activating missense mutations at G12, G13, and Q61 lock KRAS in a state of persistent signaling, driving PDAC growth. Synonymous, or silent, mutations are often disregarded clinically as they do not alter the encoded amino acid and are presumed functionally insignificant. However, in cancer patients, silent mutations can occur in KRAS at G12, G13, and G60. We have shown that KRAS is evolutionarily constrained to contain rare codons, and silent mutations at G12, G13, and G60 increase protein expression of wild-type (WT) KRAS, increase proliferation, and contribute to tumorigenic phenotypes. In this study utilizing KRAS inhibitors that target WT and mutant KRAS, we examine how NIH3T3 cells containing synonymous KRAS variants respond to targeted KRAS inhibition relative to the native KRAS nucleotide sequence and the oncogenic G12V mutation. **METHODS:** NIH3T3 cells expressing the native KRAS nucleotide sequence, KRAS G12V, and the nine possible KRAS G12G, G13G, and G60G silent mutations were treated with three different KRAS inhibitors with distinct mechanisms of action and proliferation assays were performed. Dose-response curves and GI_{50} values were generated in GraphPad Prism 10.6.1 from averaged data over three replicates. **RESULTS:** Dose-response assays in NIH3T3 cells expressing KRAS variants demonstrated selective growth inhibition by all three KRAS inhibitors. NIH3T3 cells with native KRAS exhibited minimal growth inhibition (GI50 > 3 μM). In contrast, NIH3T3 cells expressing the pathogenic KRAS G12V variant showed marked sensitivity, with an estimated GI_{50} value of 11.7 nM. Surprisingly, NIH3T3 cells containing several silent mutation variants, 36 T → A, 39 C → T, and 180 T → C, displayed growth inhibition curves that resembled the oncogenic control, rather than native KRAS expressing cells, despite their WT KRAS amino acid sequence. Estimated GI_{50} values for NIH3T3 cells expressing KRAS 36 T → A, 39 C → T, and 180 T → C were 14.4 nM, 30.0 nM, and 23.5 nM, respectively, significantly lower than NIH3T3 cells expressing native KRAS, and no different than NIH3T3 cells expressing KRAS G1V. **CONCLUSIONS:** These findings challenge the paradigm that all synonymous variants are biologically inert and suggest that certain silent mutations found in patients may alter KRAS function and/or expression. Further investigation is warranted to define the structural or translational mechanisms underlying these effects and to clarify their potential clinical relevance in the era of KRAS-targeted therapy.

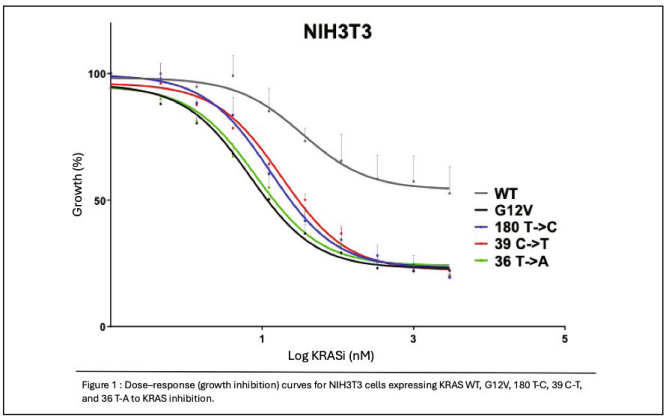

Figure 1 : Dose–response (growth inhibition) curves for NIH3T3 cells expressing KRAS WT, G12V, 180 T-C, 39 C-T, and 36 T-A to KRAS inhibition.

P99

Perioperative safety from clinical trial of novel immuno-oncology combination with radiotherapy for locally advanced pancreatic cancer

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INTRODUCTION: A previous locally advanced pancreatic cancer (LAPC) study, which combined GVAX/anti-PD-1 immuno-oncology (IO) with radiotherapy (RT), showed promising anti-tumor immune responses that were associated with long-term survival despite increased immunosuppressive tumor-associated macrophages (TAMs). Our current LAPC study added an IO targeting TAMs in combination with GVAX/anti-PD-1 and RT. We report the perioperative safety data from this clinical trial. **METHODS:** Patients in this Phase I/II clinical trial (NCT03767582) received six months of standard-of-care FOLFIRINOX chemotherapy, followed by stereotactic RT and combinatorial IO with anti-PD-1 antibody (Nivolumab) and CCR2/CCR5 inhibitor (BMS-813160) targeting TAMs, with or without a pancreatic cancer vaccine (GVAX). Patients were then considered for conversion surgery. We report perioperative outcomes following pancreatectomy, comparing results to a 4:1 propensity score-matched resected LAPC cohort at our institution. **RESULTS:** Of the 22 patients who completed treatment, 14 patients (64%) underwent conversion surgery, whereas 4 patients (18%) were found to have metastatic disease and 4 patients (18%) were deemed unresectable. Whipple procedures were performed in 57% of patients and there were high rates of vascular resection including venous reconstruction (7/14; 50%) and arterial resection (3/14; 21%). The vast majority (12/14; 86%) had negative margins. These 14 patients were compared to 55 LAPC patients, matched based on radiographic tumor size, extent of vessel involvement, and preoperative CA19-9. Both cohorts had similar rates of larger tumors (P=0.76), elevated CA19-9 (P=1), and extensive vessel involvement (P=0.97). Perioperative safety and surgical outcomes were also similar, including length of stay (7 vs. 8 days, P=0.92), all post-operative complications (50% vs 75%, P=0.15), severe complications (21% vs 24%, P=1); no complications were attributable to the novel IO combination. Rates of re-operation (7% vs 2%, P=0.37), 30-day mortality (0% vs 4%, P=1), and 90-day readmission (36% vs 36%, P=1) were comparable as well. **CONCLUSIONS:** This preliminary report of NCT03767582 demonstrates perioperative safety of a novel IO combination including a CCR2/CCR5 inhibitor targeting TAMs. No surgical complications resulted from the study drugs and perioperative outcomes were comparable to a matched cohort. Cancer-specific outcomes, immunologic endpoints, and survival data will be reported in forthcoming analyses.

Table: Preoperative variables used in the 4:1 propensity score matching (p values highlighted in red), and perioperative outcomes for patients on trial (NCT03767582) compared to patients in the matched cohort after induction chemoradiation for LAPC.

		J18163 (n = 14)	4:1 Matched Cohort (n = 55)	*P* value
Preoperative Variables				
Radiographic Tumor Size	≤2 cm	3 (21.4%)	7 (12.7%)	**0.76**
	≤4 cm	8 (57.1%)	33 (60.0%)	
	>4 cm	3 (21.4%)	15 (27.3%)	
Preoperative CA19-9	Non-elevated	9 (64.3%)	36 (65.5%)	**1**
	Elevated	5 (35.7%)	19 (34.5%)	
Resectability Status	BR	2 (14.3%)	6 (10.9%)	**0.97**
	LAPC 1	2 (14.3%)	10 (18.2%)	
	LAPC 2	2 (14.3%)	7 (12.7%)	
	LAPC 3	8 (57.1%)	32 (58.2%)	
Perioperative Outcomes				
Surgical Procedure	Whipple	8 (57.1%)	32 (58.2%)	0.27
	Distal	4 (28.6%)	21 (38.2%)	
	Total	2 (14.3%)	2 (3.6%)	
Venous Resection	Yes	7 (50.0%)	28 (50.9%)	1
Arterial Resection	Yes	3 (21.4%)	13 (23.6%)	1
Positive Resection Margin	Yes	2 (14.3%)	9 (16.4%)	1
Length of Stay (days)		7.0 [7.0 – 10.5]	8.0 [6.0 – 14.0]	0.92
Clavien-Dindo Classification	None	7 (50.0%)	14 (25.5%)	0.18
	Grade I/II	4 (28.6%)	28 (50.9%)	
	Grade III/IV/V	3 (21.4%)	13 (23.6%)	
Re-operation	Yes	1 (7.1%)	1 (1.8%)	0.37
30-day mortality	Yes	0	2 (3.6%)	1
90-day readmission	Yes	5 (35.7%)	20 (36.4%)	1

P100

Continuous exposure to proteasome inhibition leads to increased cytotoxicity in colorectal liver metastases

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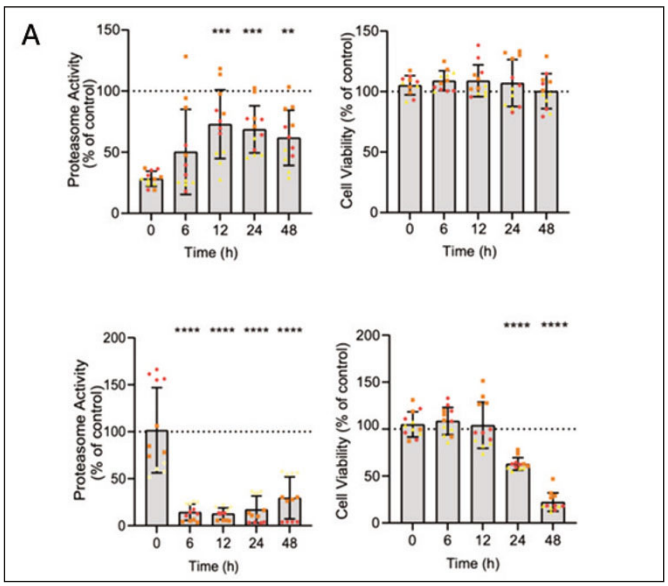
INTRODUCTION: Proteasome inhibition demonstrates promising antitumor activity against colorectal cancer in vitro; however, it has been ineffective against solid tumors in vivo, likely due to the intermittent exposure with subsequent proteasome recovery via new proteasome synthesis. We postulate that continuous infusion, such as through hepatic artery infusion (HAI) therapy, will lead to sustained proteasome inhibition with resultant cytotoxicity. **METHODS:** Two lines of patient-derived colorectal liver metastasis (CRLM) organoids were exposed to either intermittent (1 hour) or continuous (48 hour) treatment with carfilzomib (CFZ), a potent irreversible proteasome inhibitor. Organoids were then sequentially processed for measurement of proteasome activity and cell viability (up to 48 hours). To confirm the feasibility of administering a proteasome inhibitor via HAI, an ex-vivo liver perfusion model was used to treat segments of human liver containing CRLM with arterial administration of CFZ. Ki67 and cleaved caspase-3 (CC3) expression were measured via IHC. **RESULTS:** In CRLM organoids, intermittent exposure (1 hour treatment, 30nM) to CFZ led to immediate suppression of proteasome activity, to less than 50% of control. However, proteasome activity began to recover significantly at later timepoints (12-48 hours). No changes in cytotoxicity were seen, with organoids demonstrating 100% viability at all timepoints. Following the continuous exposure (48 hour treatment, 30nM), sustained inhibition of proteasome activity was observed at all timepoints, including up to 48 hours after initiation of treatment. After the proteasome had been inhibited for at least 24 hours, significant decreases in cell viability were seen. Using an ex-vivo perfusion model, continuous arterial administration of CFZ was achieved for 48 hours. Human CRLM demonstrated decreased proliferation (Ki67 expression) and increased apoptosis (CC3 expression), while the adjacent normal hepatic parenchyma remained unaffected. **CONCLUSIONS:** Continuous exposure to CFZ is necessary for sustained proteasome inhibition, which leads tumor cell apoptosis in CRLMs. Here, we present proteasome inhibitor administration via HAI as a novel mechanism for treating colorectal liver metastases. A phase I clinical trial is forthcoming.



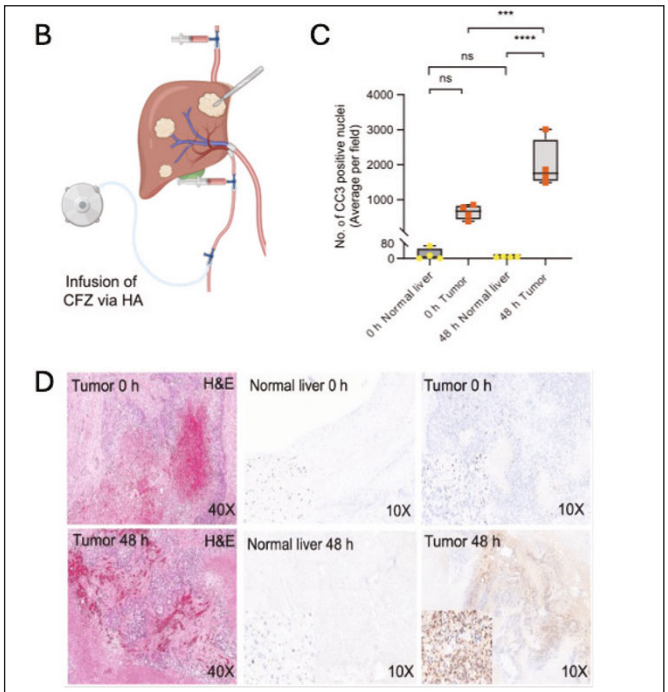


Figure1. A. Proteasome activity and cell viability after treatment with carfilzomib (30nM) for 1 hour (top row) or 48 hours (bottom row) in patient derived organoids isolated from colorectal liver metastasis (n=3). **B.** Schema depicting ex-vivo perfusion of human liver bearing CRLM, treated with intra-arterial CFZ to simulate HAI administration. **C.** Cleaved caspace-3 (CC3) expression in human CRLM after 48 hours of CFZ treatment. **D.** H&E and CC3 staining at 0h and 48h of treatment with CFZ.

P101

Surgical management of de novo stage IV breast cancer over the past decade: A propensity score-matched analysis

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INTRODUCTION: Surgical resection of de novo stage IV breast cancer (BC) remains controversial in light of inconclusive data on definitive survival benefit. We compared outcomes and trends in primary tumor surgery utilization among a large institutional cohort of de novo stage IV BC patients. **METHODS:** This was a retrospective review of all stage IV BC patients treated at a comprehensive cancer center (2014-2022). Linear regression and mixed-effects models were used to identify temporal variability among patients undergoing primary breast surgery. 1:2 propensity score matching was performed to select no surgery (systemic therapy only) and surgery cohorts matched by age, race/ethnicity, receptor subtype, histology, and grade. Kaplan-Meier method, log-rank test, and multivariable Cox proportional hazards model were used for survival analysis. **RESULTS:** In total, 1290 patients with de novo stage IV BC were treated at our institution over a 9-year period. Of these, 16.7% (215) underwent primary tumor resection after systemic therapy. Compared to the no surgery cohort, patients undergoing surgery were younger (median age 49 vs. 55) with higher nodal burden (N2-3: 48.8% vs. 28.2%), higher grade (52.1% vs. 31.4%) and greater rate of HER2+ disease (34.4% vs. 19.8%) (all $p < 0.01$). There were no significant temporal differences in the overall proportion of stage IV patients receiving surgery ($p=0.46$); however, surgery rates significantly decreased over time for clinical T2 ($p=0.042$) and N1 tumors ($p=0.02$) and increased for patients with inflammatory breast cancer ($p=0.037$). After matching, 199 and

398 patients were included in the surgery and no surgery cohorts, respectively. Surgical resection conferred a survival benefit on multivariable Cox regression hazards model both before (HR 0.33, 95% CI: 0.35-0.44, p< 0.001) and after matching (HR 0.42, 95% CI: 0.29-0.62, p< 0.001). Matched stage IV BC patients treated with surgery had significantly higher 5-year overall survival rate of 66.1% (95% CI: 59.3-73.7%) versus 32.2% (95% CI: 25.3-40.9%) for those receiving systemic therapy alone (p< 0.0001). **CONCLUSIONS:** Despite temporal variability in primary tumor resection for de novo stage IV BC at our institution, surgery conferred a significant survival benefit compared to systemic therapy alone in our patient cohort. While selection bias cannot be ruled out, the large magnitude of difference observed between the two cohorts, even after propensity score matching, warrants re-exploration of surgical intervention with curative intent for stage IV BC patients.

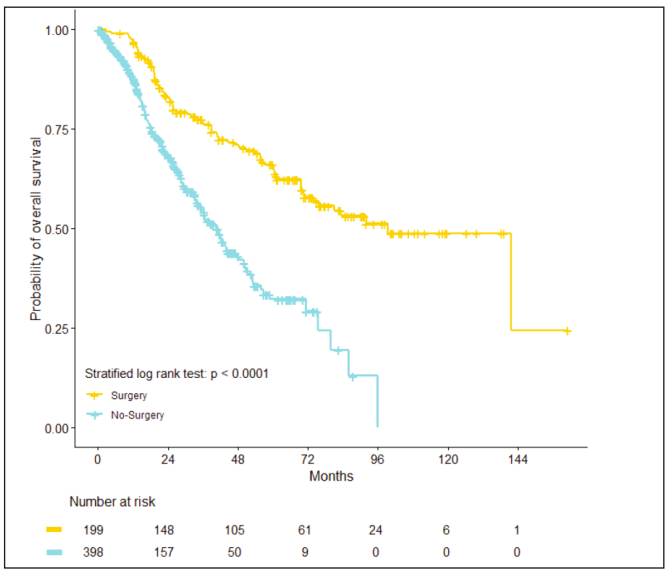

Figure 1. Kaplan-Meier Analysis of Overall Survival Between Propensity-Score Matched Surgery versus No Surgery Cohorts

P102

Axillary Management in Clinically Node-Positive Estrogen Receptor Positive Breast Cancer

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INTRODUCTION: Axillary management in breast cancer continues to de-escalate, with landmark trials showing similar long-term outcomes between sentinel lymph node biopsy (SLNB) and axillary lymph node dissection (ALND) in clinically node-negative (cN0) patients with 1-2 positive nodes. However, equivalence has not been demonstrated in estrogen receptor (ER) positive, palpable clinically node-positive (cN1) patients. We hypothesize that there is no significant difference in overall survival (OS) or local recurrence (LR) between SLNB and ALND among patients with cN1, ER+ breast cancer. **METHODS:** Using the TriNetX Network, a real-world federated research database of de-identified electronic records from multiple healthcare organizations, we identified women aged ≥18 years with cN1, ER+ breast cancer who underwent axillary surgery. Patients with stage IV disease were excluded. The index event was defined as the date of first axillary surgery after diagnosis, categorized as either SLNB or ALND. Propensity score matching (1:1) was performed between both groups, balancing for age, stage, HER2 and progesterone receptor status, tumor size, receipt of chemotherapy, radiation therapy, endocrine therapy, comorbidities (including diabetes, ischemic heart disease, obesity, and substance use), other cancers, and type of breast surgery. Outcomes included OS and LR (categorized as breast or axillary recurrence), assessed from one to ten years after the index event. Hazard ratios (HRs) with 95% confidence intervals (CIs) were calculated using Cox proportional hazards models. **RESULTS:** A total of 1,162 women met inclusion criteria (SLNB = 641, ALND = 521). After matching, 435 patients remained in each cohort. At up to 10 years of follow-up, overall survival was 77% in the SLNB group and 76% in the ALND group (HR 0.9, 95% CI 0.66–1.27). Local breast recurrence occurred in 5% of SLNB versus 7% of ALND patients (HR 0.82, 95% CI 0.47–1.4). Axillary recurrence occurred in 21% of SLNB versus 24% of ALND patients (HR 0.9, 95% CI 0.69–1.2). None of these differences reached statistical significance. **CONCLUSIONS:** Among women with ER+, cN1 breast cancer, SLNB was not associated with inferior overall survival or increased risk of local or axillary recurrence compared with ALND. These real-world findings suggest that in the context of modern multidisciplinary therapy, limited axillary surgery may offer comparable oncologic outcomes to ALND in select cN1 patients. This study supports the continued investigation and refinement of axillary de-escalation guidelines for clinically node-positive disease.

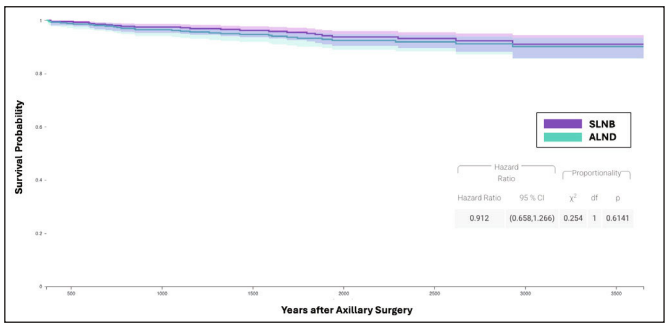

Figure. Kaplan-Meier Survival Curve of Propensity Score Matched SLNB Patients versus ALND Patients

P103

Utilization of Oncotype DX Testing in Male Breast Cancer: A Single Institutional Analysis

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INTRODUCTION: Oncotype DX is a multigene assay that determines the risk of recurrence and chemotherapy benefit in patients with early-stage HR+/HER2- breast cancer. While it is a validated prognostic tool in female breast cancer, its role in male breast cancer (MBC) remains poorly understood. This study aims to determine the utilization of Oncotype testing in MBC at our institution. **METHODS:** All male patients diagnosed with stage I-III breast cancer treated at our institution from 2004 to 2025 were included. Those who underwent Oncotype testing were stratified by risk of recurrence using the TAILORx criteria: low/intermediate (recurrence score [RS] 0-25) and high (RS ≥ 26). We analyzed differences in demographics, clinicopathologic features, and treatment patterns across all cohorts. **RESULTS:** Of the 170 MBC patients, 42.4% underwent Oncotype testing. 80.6% were classified as low/intermediate risk, and 19.4% were high risk. Median follow-up time was 65 months for both low/intermediate (IQR 44-96) and untested cohorts (IQR 39-119), compared to 52.5 months (IQR 23-94) for the high-risk cohort (p = 0.43). Clinicopathologic features and treatment are summarized in Table 1. Median RS was 12 (IQR 7-17) for the low/intermediate-risk cohort and 34 (IQR 27-41) for the high-risk cohort (p< 0.001). Patients in the high-risk group were more likely to present with positive nodes, PR negativity, and AJCC stage II cancers (all p< 0.05). Of the 22 patients with BRCA germline pathogenic variants (BRCA+), 13 (59.1%) underwent Oncotype testing. 53.8%

of BRCA+ patients had high RS vs only 13.5% of BRCA- patients (p=0.002). Median RS was 27 (IQR 20-34) for BRCA+ patients and 11 (IQR 6-15) for BRCA- patients (p< 0.001). Chemotherapy was administered in 17.2% of low/intermediate-risk and 78.6% of high-risk cases (p< 0.001). Of the 98 untested patients, 44.9% received chemotherapy. Distant recurrence occurred in 3.4% of low/intermediate-risk patients, 14.3% of high-risk, and 16.3% of untested patients (p = 0.023). 10.3% of low/intermediate-risk patients have died vs. 14.3% of high-risk and 31.6% of untested patients. **CONCLUSIONS:** High RS is associated with more aggressive features among men with breast cancer. BRCA+ patients were more likely to have high RS than BRCA- patients, thus Oncotype testing may be especially important for these patients. Untested patients had worse survival than high risk groups but had had lower rates of chemotherapy than high-risk patients, suggesting missed opportunities for risk stratification and treatment personalization via omission of Oncotype testing.

Table. Clinicopathologic features and management of male patients with early stage, HR+/HER2- cancer

	Underwent Oncotype Testing				
	Low/Intermediate (RS 0-25) N = 58[1]	High (RS ≥26) N = 14[1]	No Testing N = 98[1]	Total N = 170[1]	p-value[2]
Race/Ethnicity					0.76
NH White	39 (67.2%)	12 (85.7%)	71 (72.4%)	122 (71.8%)	
NH Black	13 (22.4%)	2 (14.3%)	18 (18.4%)	33 (19.4%)	
Other	6 (10.3%)	0 (0.0%)	9 (9.2%)	15 (8.8%)	
Median Age at Diagnosis	64 (55-70)	66 (53-70)	69 (60-79)	66 (57-75)	0.007
Genetic Mutation					0.002
BRCA	6 (10.3%)	7 (50.0%)	9 (9.2%)	22 (12.9%)	
Negative/Other	32 (55.2%)	5 (35.7%)	43 (43.9%)	80 (47.1%)	
Unknown	20 (34.5%)	2 (14.3%)	46 (46.9%)	68 (40.0%)	
Histology					0.65
IDC	50 (86.2%)	14 (100.0%)	87 (88.8%)	151 (88.8%)	
Mixed Ductal-Lobular[3]	4 (6.9%)	0 (0.0%)	3 (3.1%)	7 (4.1%)	
Other	4 (6.9%)	0 (0.0%)	8 (8.2%)	12 (7.1%)	
PR Status					0.048
Positive	55 (94.8%)	10 (71.4%)	90 (91.8%)	155 (91.2%)	
Negative	3 (5.2%)	4 (28.6%)	6 (6.1%)	13 (7.6%)	
Pathologic Grade					0.22
1	4 (6.9%)	0 (0.0%)	9 (9.2%)	13 (7.6%)	
2	36 (62.1%)	5 (35.7%)	45 (45.9%)	86 (50.6%)	
3	16 (27.6%)	8 (57.1%)	35 (35.7%)	59 (34.7%)	
GX	2 (3.4%)	1 (7.1%)	9 (9.2%)	12 (7.1%)	
Pathologic AJCC Stage					<0.001
1	41 (70.7%)	7 (50.0%)	30 (30.6%)	78 (45.9%)	
2	13 (22.4%)	5 (35.7%)	32 (32.7%)	50 (29.4%)	
3	3 (5.2%)	0 (0.0%)	15 (15.3%)	18 (10.6%)	
Unknown	1 (1.7%)	2 (14.3%)	21 (21.4%)	24 (14.1%)	
Pathologic T Stage					0.17
T1	34 (58.6%)	7 (50.0%)	40 (40.8%)	81 (47.6%)	
T2	20 (34.5%)	6 (42.9%)	39 (39.8%)	65 (38.2%)	
T3	3 (5.2%)	0 (0.0%)	5 (5.1%)	8 (4.7%)	
T4	0 (0.0%)	1 (7.1%)	4 (4.1%)	5 (2.9%)	
TX	1 (1.7%)	0 (0.0%)	10 (10.2%)	11 (6.5%)	
Pathologic N Stage					0.007
N0	36 (62.1%)	6 (42.9%)	35 (35.7%)	77 (45.3%)	
N1	18 (31.0%)	8 (57.1%)	33 (33.7%)	59 (34.7%)	
N2	3 (5.2%)	0 (0.0%)	14 (14.3%)	17 (10.0%)	
N3	0 (0.0%)	0 (0.0%)	1 (1.0%)	1 (0.6%)	
NX	1 (1.7%)	0 (0.0%)	14 (14.3%)	15 (8.8%)	
Median Oncotype Score	12 (7-17)	34 (27-41)	N/A	14 (8-22)	<0.001
Breast Surgery					0.048
Mastectomy	48 (82.8%)	13 (92.9%)	79 (80.6%)	140 (82.4%)	
Lumpectomy	10 (17.2%)	1 (7.1%)	10 (10.2%)	21 (12.3%)	
None	0 (0%)	0 (0%)	9 (9.2%)	9 (5.3%)	
Chemotherapy	10 (17.2%)	11 (78.6%)	44 (44.9%)	65 (38.2%)	<0.001
Endocrine Therapy	55 (94.8%)	13 (92.9%)	82 (83.7%)	150 (88.2%)	0.31
Radiation	14 (24.1%)	4 (28.6%)	36 (36.7%)	54 (31.8%)	0.36
Recurrence					0.023
Local	5 (8.6%)	0 (0.0%)	2 (2.0%)	7 (4.1%)	
Distant	2 (3.4%)	2 (14.3%)	16 (16.3%)	20 (11.8%)	
Median Follow-up Time	65 (44-96)	52.5 (23-94)	65 (39-119)	64 (40-110)	0.43
Vital Status					0.005
Alive	52 (89.7%)	12 (85.7%)	67 (68.4%)	131 (77.1%)	
Deceased	6 (10.3%)	2 (14.3%)	31 (31.6%)	39 (22.9%)	

[1]n (%); Median (IQR)
[2]Fisher's exact test; Kruskal-Wallis rank sum test; Pearson's Chi-squared test
[3]One patient had pure lobular carcinoma
Abbreviations: NH, non-Hispanic; TNBC, triple negative breast cancer; MRM, modified radical mastectomy

P104

Outcomes of Partial Breast Irradiation for Early-Stage Breast Cancers in Elderly Women with Variable Endocrine Therapy Adherence

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INTRODUCTION: Trials testing the omission of radiotherapy in elderly patients with early-stage breast cancer rely on the consistent use of adjuvant endocrine therapy (ET), which is often limited by toxicity and reduced quality of life. Current ASTRO guidelines endorse partial breast irradiation (PBI) in patients with favorable early-stage breast cancer or ductal carcinoma in situ (DCIS); however, the efficacy of PBI alone without ET remains uncertain. We sought out to evaluate whether PBI provides adequate locoregional control in elderly women with early-stage breast cancer with variable ET adherence (ETA). **METHODS:** Patients ≥65 years old with hormone receptor-positive DCIS or early-stage breast cancer who received PBI between September 2017 and March 2022 were included for retrospective chart review. ETA was calculated as treatment duration over follow-up time up to 5 years, and was classified as high (≥80%) or low/no (< 80% or none). Clinicopathologic characteristics, treatment toxicity, and rates of locoregional failure (LRF)-free survival were compared between groups. **RESULTS:** Among 236 patients (1 bilateral cancer), 155 (65.7%) had high ETA and 81 (34.3%) had low/no ETA. Median patient age was 71 years (interquartile range ([IQR] 68-75). Factors associated with high ETA included invasive tumor histology (p< 0.01), performance of sentinel lymph node biopsy (p< 0.01), and higher pathologic stage (p=0.01). Forty (16.9%) patients stopped ET early (low ETA) due to side effects, 1 of whom developed endometrial cancer while on Tamoxifen. All patients completed PBI consisting of 30 Gy in 5 fractions; 39 (16.5%) developed grade 1 dermatitis, 27 (11.4%) experienced grade 1 fatigue, and 1 (0.4%) had grade 2 fatigue. All LRF events (n=5) occurred in the low/no ETA group; of the 4 ipsilateral breast recurrences, 2 occurred in the same quadrant while 2 occurred in a different quadrant. One patient had an ipsilateral regional failure. There were no distant recurrence or breast cancer specific-mortality events. The median time to LRF was 47 months (IQR 30-48). At a median follow-up of 51 months, 5-year LRF-free survival was 100% in the high ETA group compared to 91% in low/no ETA group (p< 0.01). **CONCLUSIONS:** Among elderly women with favorable early-stage breast cancers, PBI achieved excellent local control and minimal toxicity. While adherence to ET further improved outcomes, PBI alone provided low recurrence rates for patients unable or unwilling to tolerate ET, supporting its use as a reasonable alternative in this population.

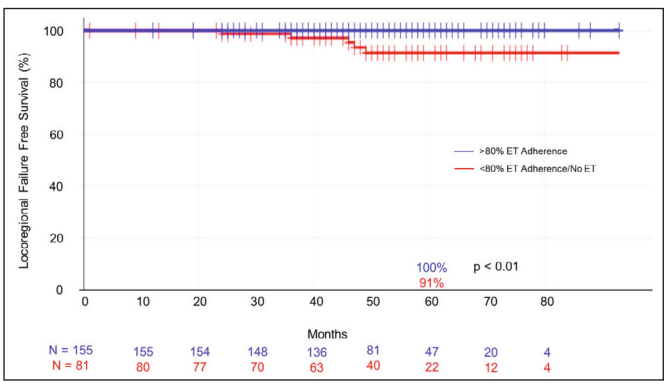

Figure. Locoregional Failure-Free Survival by Adherence to Endocrine Therapy

P105

Leveraging tumor immune features and pre-treatment histology for breast cancer chemoresponse prediction using a transfer learning pipeline

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INTRODUCTION: Neoadjuvant chemotherapy (NAC) is a cornerstone of early and locally advanced breast cancer treatment especially in HER2+

and triplenegative disease. Complete pathologic response and low residual cellularity are correlated with chemosensitivity and improved patient outcomes. Tumor immune microenvironment (TME) is associated with NAC response—higher TILs or IFNγ-skewed milieu are associated with good response; immunosuppressive Tregs and M2-macrophages with resistance. Current artificial intelligence predictions generalize poorly to new cohorts and do not provide accurate mechanistic insights needed for clinical trust and actionability. **METHODS:** We built Immune2CellNet (Fig 1A), an interpretable transfer-learning approach that maps pre-treatment H&E Whole Slide Images (WSIs) to a TME profile and then predicts chemosensitivity. Our two-stage approach first trains an attentionbased multipleinstance learning model on the TCGA cohort with matched WSI and multi-omics to map WSI features to 47 distinct TME factors. This "TME dictionary" was then applied to pre-treatment WSIs from an independent single-institution cohort of 259 breast cancer patients to predict cellularity (≤50% vs. >50%) post-NAC, while accounting for ER, PR, and HER2 status. **RESULTS:** Transferring TCGA-learned biology to the external cohort yielded accuracy of 78% (unseen test set), outperforming an end-to-end WSI baseline by 20%. Feature–outcome analysis (Fig 1B) reinforced known biology: immune-inflamed TMEs (stronger Th1/IFN-γ activity, leukocyte/lymphocyte infiltration, BCR/TCR richness, and M1-like programs) had better response; Tregs and TAM/Treg-dominant contexts were aligned with residual disease. We identified a previously underappreciated chemoresistive role for mast-cell–enriched tumors. Surprisingly, indel-neoantigen load was positively correlated with residual cellularity, suggesting that antigenicity alone does not confer chemosensitivity and may instead reflect genomic instability without effective antitumor immunity during NAC. This leveraging of immune intermediaries was robust across classification algorithms, suggesting that this pipeline will likely generalize to new cohorts. **CONCLUSIONS:** Our transfer-learning approach can reliably predict treatment response in an independent cohort with interpretable, immune-based insights. We will next map key immune factors to histological regions for deeper insights with pathologist validation and design prospective studies to improve predictive ability.

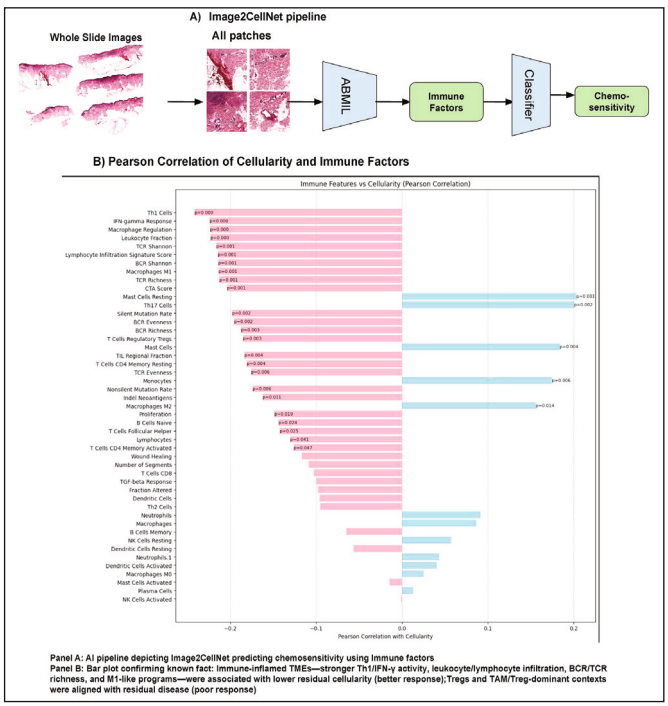

Figure. Image2CellNet pipeline predicting chemosensitivity using immune factors and Pearson correlation of cellularity and immune factors

P106

Chest Wall Perforator Flaps in Breast-Conserving Surgery: an Effective and Safe Tool to Reduce Mastectomy Rates. Updated results from the SCARABEO (SCARless Advanced Breast Extended Oncoplasty) International Multicentric Study

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INTRODUCTION: Breast-conserving surgery (BCS) with chest wall perforator flap (CWPF) based partial breast reconstruction (PBR) enables wide oncologic excisions while preserving excellent aesthetic outcomes, even in challenging clinical scenarios. The SCARABEO project aims to evaluate the surgical and oncological outcomes of these procedures in a large international cohort. **METHODS:** This retrospective multicentric international study included patients who underwent BCS with CWPF based PBR for stage 0-III breast cancer. Patients were treated between 2014-2024 in 9 Breast Units located in Italy, Brazil, USA, India, Singapore, and UK. **RESULTS:** A total of 641 women (median age 57 years) were included. All procedures were performed by general surgeons. Median tumor diameter was 26 mm (IQR 18-32) and 28.2% of the cases were multifocal. The majority of patients would have traditionally been candidates for mastectomy. PBRs were performed using LICAP (52%), AICAP (16%), MICAP (11%), LTAP (15%), TDAP (2%), and combined flaps (4%). Symmetrization surgery was required in 2.2% of cases. Median operative time was 125 minutes (IQR 105–155) and 47.9% were Day Surgery cases. Pedicle mapping with Power Color Doppler was performed in 27% of cases Median flap volume was 87.5 cm³ (IQR 60–120) and specimen volume was 81.4 cm³ (IQR 63.7–110.1), accounting for 26.3% of breast volume (IQR 18.9–36.4) with a specimen-to-ORV ratio of 1.10 (IQR 0.9–1.5). Overall positive margin rate was 14.6%, leading to re-excisions in 83.1% and completion mastectomy in 10.1% of the cases. Adjuvant radiotherapy was administered in 94.4% of patients, with no flap-related late effects observed. The overall complication rate was 21.9%, with seroma being the most common (10.4%) and flap loss occurring in 2 cases (0.3%); 83.7% were managed in an outpatient setting. Age, BMI, smoking habit, neoadjuvant chemotherapy, CWPFs type, CWPFs' and specimens' volume were associated with a higher risk of post-operative complications. At a median follow-up of 37 months (IQR 15-54), local recurrence occurred in 2.3% of patients, distant recurrence in 2.6% and breast cancer–related death in 1.1%. **CONCLUSIONS:** In this largest series to date, BCS with CWPF based PBR achieved excellent surgical outcomes and favorable short-term oncologic results, effectively expanding the boundaries of BCS in patients with high tumor-to-breast volume ratios. Longer follow-up and prospective validation are warranted to confirm these promising results.

P107

Nodal residual cancer burden on sentinel node biopsy after neoadjuvant chemotherapy for breast cancer: implication for completion dissection

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INTRODUCTION: Optimal axillary management after neoadjuvant chemotherapy (NACT) in patients with a positive sentinel lymph node remains uncertain, pending results of the Alliance A011202 trial. Most guidelines recommend completion dissection, though reports suggest risk-adapted approaches. We evaluated whether Nodal Residual Cancer Burden (N-RCB) can estimate further nodal disease on completion lymph node dissection (cLND). **METHODS:** Retrospective analysis of breast cancer patients from a single institution treated between 2014 and 2022, who received NACT, had pathologically positive nodes (ypN+), and underwent cLND. Number of positive and total lymph nodes, and size of nodal deposits on the initial SLNB and completion dissection (cLND) was evaluated. N-RCB was calculated using the nodal component of the MD Anderson RCB formula (4*(1-0.7^LN)*dmet)^0.17). **RESULTS:** Sixty six patients had positive SLNB followed by cLND; 39% (26/66) had additional positive lymph nodes on cLND, with median 1.1 involved (range 1-10), and median metastasis size of 3.5 mm (range 1–17 mm). Mean N-RCB was 1.37 ± 0.28 (range 0.68–1.96). Patients with negative cLND had a lower mean N-RCB (1.29 ± 0.24) compared with those with residual nodal disease (1.50 ± 0.29; p = 0.003). Increasing N-RCB correlated with residual nodal involvement (Spearman ρ = 0.40, p = 0.002), number of positive nodes (ρ = 0.41, p = 0.0006), and metastasis size (ρ = 0.39, p = 0.06) At an N-RCB threshold of 1.2, sensitivity was 84.6 % and specificity 30 % (PPV 44 %, NPV 75 %), identifying nearly all patients with residual nodal disease, but with reduced discrimination compared to the Youden-optimal threshold of 1.6 (46 % and 95 %). **CONCLUSIONS:** Nodal residual cancer burden (N-RCB) quantitatively reflects the extent of residual nodal disease on completion dissection after positive SLNB, correlating with the presence, number, and size of involved lymph nodes. Lower N-RCB values were strongly associated with negative completion dissections, suggesting potential to stratify patients by risk of

further residual axillary disease. A threshold of N-RCB 1.2 achieved clinically reasonable sensitivity for identifying patients with residual nodal disease and could guide selective discussion of completion axillary dissection.

P108

Opportunities for omission of axillary surgery after preoperative systemic therapy

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INTRODUCTION: The SOUND and INSEMA trials demonstrated that in clinically node-negative (cN0) early-stage breast cancer patients undergoing upfront surgery, omission of sentinel lymph node biopsy (SLNB) is safe and does not compromise oncologic outcomes. This study was undertaken to determine if there is a population of cN0 breast cancer patients receving preoperative systemic therapy in whom SLNB could be omitted. **METHODS:** Patients receiving preoperative systemic therapy followed by surgery from January 2016 to August 2025 were identified in our institutional database. Clinicopathologic data including breast cancer subtype, presenting clinical stage, imaging performed at diagnosis, preoperative systemic therapy received, and pathologic stage were recorded. **RESULTS:** Among 2393 patients receiving preoperative systemic therapy, 1083 were cN0; subtypes were: hormone receptor (HR)+/HER2- (n=215), HR+/HER2+ (n=301), HR-/HER2+ (n=144) and HR-/HER2- (n=423). The rates of pN0 disease were: 68.8% for HR+/HER2-, 85.0% for HR+/HER2+, 95.1% for HR-/HER2+ and 90.8% for HR-/HER2- disease. If pN0i+ disease was included, the rates were: 72.1% for HR+/HER2-, 88.0% for HR+/HER2+, 96.5% for HR-/HER2+ and 92.4% for HR-/HER2- disease. Limiting analyses to patients with a negative axillary ultrasound (AxUS) (or if suspicious, biopsy negative) at the time of diagnosis did not result in higher pN0 rates (table). For patients with HER2+ or triple negative breast cancer (TNBC), finding residual disease in the breast or axilla may inform adjuvant systemic therapy decisions. We therefore looked at the frequency of ypN+ disease in the setting of ypT0/is disease. This occurred in 10 (3.3%) patients with HR+/HER2+ disease, 2 (1.4%) patients with HR-/HER2+ disease and 1 (0.2%) patient with HR-/HER2- disease. **CONCLUSIONS:** Patients with HR-negative disease receiving preoperative systemic therapy have ypN0/ypN0i+ rates >92%. In patients experiencing a complete response in the breast, missing nodal disease that would inform adjuvant therapy recommendations occurred in < 1.5%. These data support the two ongoing international trials evaluating omission of SLNB in patients with HER2+ or TNBC but question the studies' requirement for AxUS and suggest that for HER2+ patients, outcomes be evaluated by HR status.

	HR+/HER2- N=215	HR+/HER2+ N=301	HR-/HER2+ N=144	HR-/HER2- N=423
AxUS negative	89	150	67	178
ypN0	56	128	64	167
ypN0i+	3	6	0	1
rate of ypN0/ypN0i+	66.3%	89.3%	95.5%	94.4%
AxUS negative or if suspicious, biopsy negative	140	208	116	306
ypN0	99	177	109	282
ypN0i+	4	7	2	3
rate of ypN0/ypN0i+	73.6%	88.5%	95.7%	93.1%

P109

Early results from statewide surgical quality collaborative demonstrate persistent guideline discordant care

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INTRODUCTION: Since 2016, national guidelines have advised against sentinel lymph node biopsy (SLNB) in women over 70 with early-stage, hormone-receptor-positive, invasive breast cancer, citing no overall survival benefit compared to surgery and hormone therapy alone. Despite this, SLNB rates remain variable, leading to unnecessary clinical risk and healthcare costs. In 2024, the Michigan Surgical Quality Collaborative (MSQC), a Blue Cross Blue Shield-supported collaborative of 69 hospitals in Michigan, launched a quality improvement initiative to reduce SLNB rates in this population. **METHODS:** Using the sampled cases from the MSQC data registry, we assessed the rate of concurrent SLNB among women over 70 who underwent surgical resection for invasive breast cancer between 1/1/2024 and 5/31/2025. We determined the overall SLNB rate for the sampled population and for each hospital. We identified hospitals with highest and lowest SLNB rates and analyzed basic characteristics of each group. Chi-squared, Fisher's Exact, and Kruskal-Wallis tests were used to assess for statistical significance. **RESULTS:** 1,944 cases were sampled from 62 hospitals. 33% of women undergoing surgery for invasive breast cancer had concurrent SLNB. Individual hospital rates varied from 0% to 81% (Figure). Hospitals that performed fewer than 10 cases total (n=8) were excluded from subsequent analyses. Among the remaining hospitals, 11% (n=6) had SLNB rates above 70%. Of these, 100% were non-academic hospitals, 83% had < 300 beds, 17% had 300-499 beds, and between 1 and 4 (mean 2.5) unique surgeons were captured in sampled cases. 28% of hospitals (n=15) had SLNB rates below 20%. Of these, 87% were non-academic, 53% had < 300 beds, 33% had 300-499 beds, 13% had >500 beds and between 1 and 6 (mean 3) unique surgeons were captured in sampled cases. Between-group differences were not statistically significant. **CONCLUSIONS:** Nearly a decade after the Choosing Wisely campaign, SLNB rates in older women with low-risk cancers have declined, yet statewide variation persists. Notably, 11% of hospitals in our sample demonstrate minimal penetration of this recommendation with rates of SLNB greater than 70%. Further work is needed to understand why there is a lack of recommendation adoption at specific hospitals and to ensure guideline concordant care across the population. Disclosure: Blue Cross Blue Shield of Michigan and MSQC work collaboratively, however, the opinions, beliefs and viewpoints expressed by the author do not reflect the opinions, beliefs and viewpoints of BCBSM or any of its employees.

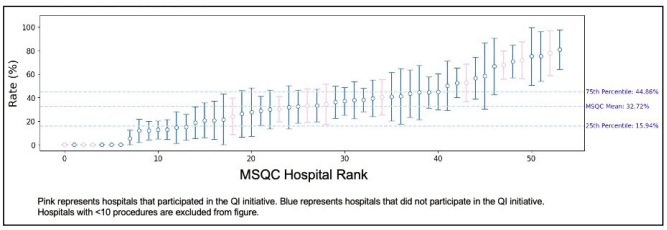

Figure 1: Rate of Sentinel Lymph Node Biopsy in Women over 70 Undergoing Surgical Resection for Breast Cancer

P110

National trends in nodal surgery for clinical T3, T4a-c breast tumors

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INTRODUCTION: Axillary management in early-stage breast cancer patients with limited nodal involvement has been well studied and has led to a paradigm shift in axillary surgery de-escalation. However, patients with clinical T3, and 4a-c tumors have historically been under-represented or excluded in landmark clinical trials. Our study aimed to examine axillary surgical management in patients with locally advanced breast cancer and whether the trials influenced de-escalation in this population. **METHODS:** The National Cancer Database was queried to identify female patients with cT3-4c non-metastatic breast cancer between 2012 and 2020. We sought to mimic ACOSOG Z0011, AMAROS, and ACOSOG Z1071 trials in the clinical T3-4c population. Patients were stratified into three cohorts: 1) cN0 patients who underwent breast conservation with a positive sentinel lymph node biopsy (SLNB), ("ACOSOG Z0011"); 2) cN0 patients who underwent mastectomy with a positive SLNB ("AMAROS"); 3) cN1-2 patients who

underwent neoadjuvant chemotherapy and were ypN0 ("ACOSOG Z1071"). Categorical variables were compared using Fisher's exact test and Chi-square analysis, and time trends were analyzed with Mann-Kendall test. **RESULTS:** A total of 153,960 patients fit inclusion criteria. There was a total of 109,278 (71.07%) patients with T3 disease and 10,827 (28.93%) with T4. Of those with T3 disease, 55.2% had upfront surgery (US) and 44.8% had neoadjuvant chemotherapy (NAC) whereas 40.98% of T4 had US and 59.02% had NAC. The nodal staging breakdown was 41.39% N0, 41.94% N1, 10.11% N2, 6.5% N3. In the "Z0011" cohort, there were 1,934 patients. The overall rate of SLNB showed a steady increase from 51.26% to 76.09% (p=0.009, Figure1A). The "AMAROS" cohort had 7,530 patients. We again found an increase in SLNB with radiotherapy alone as compared to ALND from 13.55% to 25.26% (p=0.002, Figure 1B). In the "Z1071" cohort, there were 6,987 patients. The rate of SLNB alone increased overtime from 22.24% to 46.88% (p=0.002, Figure 1C). **CONCLUSIONS:** Despite the limited generalizability of the ACOSOG Z0011, AMAROS, and ACOSOG Z1071 trials to patients with locally advanced breast cancer, we found de-escalation trends in the cT3-4c population, suggesting extrapolation of trial findings. Future trials are needed to establish the safety of omitting axillary dissection for these patients.

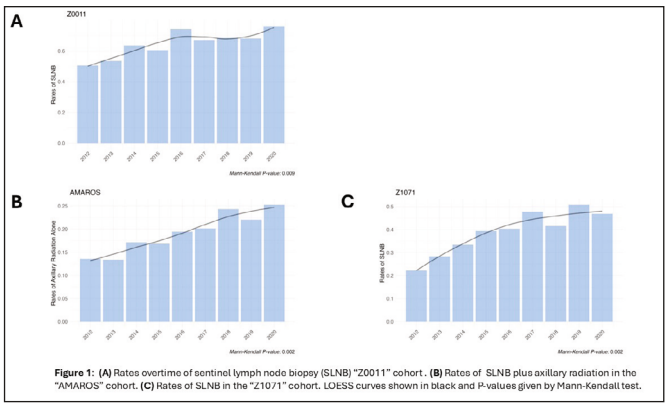

Figure 1: **(A)** Rates overtime of sentinel lymph node biopsy (SLNB) "Z0011" cohort. **(B)** Rates of SLNB plus axillary radiation in the "AMAROS" cohort. **(C)** Rates of SLNB in the "Z1071" cohort. LOESS curves shown in black and P-values given by Mann-Kendall test.

Figure. National trends in nodal surgery for clinical T3, T4a-c breast tumors

P111

Real-World Application of NSABP B-51 to Young Women with Breast Cancer

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INTRODUCTION: NSABP B-51 recently published outcomes showing that omission of adjuvant regional nodal irradiation (RT) did not result in higher rates of recurrence or death in patients with node-positive breast cancer who achieve pathologically node-negative (ypN0) status after neoadjuvant chemotherapy (NAC). Given that young women often present with more aggressive breast cancer, including triple-negative or HER2+ subtypes sensitive to NAC, we sought to explore these oncologic outcomes further in a cohort of young women treated at our institution who met inclusion criteria for NSABP B-51. **METHODS:** We performed a retrospective review of a prospectively maintained institutional database of 762 patients age < 45 undergoing breast surgery from 2010-2024. Women with clinical T1-T3, N1, M0 breast cancer who received NAC and achieved ypN0 status were included. Patient characteristics, operative techniques, pathologic results, recurrence rates, and survival outcomes were evaluated using the $\chi 2$, Mann-Whitney U, Fisher's exact, and exact Wilcoxon-Mann-Whitney tests. **RESULTS:** 122 women were identified. Of these, 97 patients (80%) received adjuvant radiation. Overall median age was 39. There were no significant demographic differences between those undergoing or omitting radiation. The majority of patients had either triple-negative or HER2+ cancer, specifically 68 (70%) who received radiation and 21 (84%) who did not. 97% (94) of patients who underwent adjuvant radiation had clinical T2 or T3 disease, compared to 80% (20) of patients who omitted radiation (p=0.01). Most patients underwent sentinel lymph node biopsy (65% RT vs 76% non-RT). Pathologic complete response occurred in 50% (61) of patients, of which 51 (83.6%) were triple-negative or HER2+. There were no significant differences in recurrence rates at a median follow-up of 61 months, with 11 patients (11%) in the radiation group and 3 patients (12%) in the no-radiation group suffering a recurrence (p=0.26). Median time to recurrence was 24 months (range 9-85) in the radiated group and 19 months (range 13-19) in the non-irradiated group. There were 6 deaths (6.2%) in the radiation cohort with a median 37.5 months (range 17-69) to death, and 2 deaths (8.0%, p=0.74) in the no-radiation cohort with a median 20 months (range 16-24) to death. **CONCLUSIONS:** Adjuvant radiation did not significantly affect recurrence or survival in this single-institution, real-world population of young women with node-positive breast cancer who reached ypN0 status after NAC. Future studies would benefit from investigation of larger cohorts and additional subgroup analysis of this high-risk population.

	Radiation (%)	No radiation (%)	Overall (%)	p value
N	97 (79.5)	25 (20.5)	122 (100)	
Median age (years)	39	38	39	0.76
Age group				0.93
≤35	34 (35.0)	9 (36.0)	43 (35.3)	
36-45	63 (65.0)	16 (64.0)	79 (64.8)	
Race				0.75
Asian	1 (1.03)	0 (0.00)	1 (0.82)	
Black	20 (20.6)	6 (24.0)	26 (21.3)	
White	75 (77.3)	19 (76.0)	94 (77.1)	
Other/Declined	1 (1.03)	0 (0.00)	1 (0.82)	
Ethnicity				0.13
Hispanic	5 (5.15)	0 (0.00)	5 (4.10)	
Non-Hispanic	86 (88.7)	21 (84.0)	107 (87.7)	
Not specified	6 (6.19)	4 (16.0)	10 (8.20)	
Receptor status				0.26
Triple-negative	32 (33.0)	12 (48.0)	44 (36.1)	
HER2+	36 (37.1)	9 (36.0)	45 (36.9)	
HR+/HER2-	29 (29.9)	4 (16.0)	33 (27.1)	
cT stage				**0.01**
T1	3 (3.09)	5 (20.0)	8 (6.56)	
T2	64 (66.0)	14 (56.0)	78 (63.9)	
T3	30 (30.9)	6 (24.0)	36 (29.5)	
ypT stage				0.57
ypT0	48 (49.5)	13 (52.0)	61 (50.0)	
Triple-negative	19 (39.6)	6 (46.2)	25 (41.0)	
HER2+	20 (41.7)	6 (46.2)	26 (42.6)	
HR+/HER2-	9 (18.8)	1 (7.69)	10 (16.4)	
ypTis	5 (5.15)	3 (12.0)	8 (6.56)	
ypT1	33 (34.0)	9 (36.0)	42 (34.4)	
ypT2	9 (9.28)	0 (0.00)	9 (7.38)	
ypT3	2 (2.06)	0 (0.00)	2 (1.64)	
ypT4	0 (0)	0 (0.00)	0 (0.00)	
Breast surgery				**0.02**
Lumpectomy	29 (29.9)	2 (8.00)	31 (25.4)	
Mastectomy	68 (70.1)	23 (92.0)	91 (74.6)	
Axillary surgery				0.29
SLNB	63 (65.0)	19 (76.0)	82 (67.2)	
ALND	34 (35.1)	6 (24.0)	40 (32.8)	
Median follow-up (months)	60	62	61	0.45
Recurrence				0.93
Yes	11 (11.3)	3 (12.0)	14 (11.5)	0.26
Locoregional recurrence	6 (54.6)	3 (100)	9 (7.38)	
Distant recurrence	5 (45.5)	0 (0.00)	5 (4.10)	
No	86 (88.7)	22 (88.0)	108 (88.5)	
Median time to recurrence (months) (range)	24 (9-85)	19 (13-19)	21.5 (9-85)	0.38
Death				0.74
Yes	6 (6.19)	2 (8.00)	8 (6.56)	
No	91 (93.8)	23 (92.0)	114 (93.4)	
Median time to death (months) (range)	37.5 (17-69)	20 (16-24)	27 (16-69)	0.29

Table 1. Patient characteristics, pathologic results, operative techniques, and effects of adjuvant radiation on recurrence and survival outcomes after neoadjuvant chemotherapy. Statistical analyses were performed using the χ^2 (categorical variables) or Mann-Whitney U tests (continuous variables), or Fisher's exact or exact Wilcoxon-Mann-Whitney tests if counts were ≤11.

P112

Clipped node pathology as a guide for limited axillary surgery in occult breast cancer

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INTRODUCTION: Contemporary evidence-based management of patients with breast cancer and axillary lymph node metastases may involve omission of axillary lymph node dissection (ALND) in some situations, e.g., following neoadjuvant chemotherapy (NACT) when targeted axillary dissection (TAD) identifies no residual disease. In contrast, current guidelines continue to recommend ALND for patients with axillary metastases from occult breast cancer (OBC). These patients have limited representation in landmark studies of axillary surgery de-escalation. **METHODS:** Using data from a single-institutional observational cohort study, we evaluated the patient and tumor characteristics, regional staging, and surgical pathology for patients with OBC. We estimated the probability of pathologic complete response (pCR) stratified by receptor subtype, the diagnostic test characteristics of clipped node pathology for evaluating axillary nodal burden, and the outcomes of patients undergoing TAD. **RESULTS:** The cohort included 102 patients with OBC diagnosed between 2010 and 2025. 99 (97%) patients underwent MRI with no finding of a primary breast tumor. 53 (52.0%) patients had cN1, 16 (15.7%) cN2, and 33 (32.4%) cN3 disease. 37 (38.9%) patients had 1-3 abnormal LNs on ultrasound, 25 (26.3%) had 4-9, and 33 (34.7%) had more than 10. Of 96 patients who underwent surgery, most (88.5%) underwent NACT followed by ALND (87.5%). pCR occurred in 12 of 36 (33.3%) with hormone receptor-positive (HR+) HER2- disease, 11 of 12 (91.7%) with HR+HER2+ disease, 4 of 6 (66.7%) with HR-HER2+ disease, and 24 of 31 (77.4%) with HR-HER2- disease. Of 46 patients who underwent NACT and had pathology results for the index clipped axillary node, 33 (71.7%) had a negative clipped node. When the clipped node was negative, the probability of no positive ALNs was 93.9% (95% CI: 79.8-99.3%). When the clipped node was positive, the probability of additional positive ALNs was 69.2% (95% CI: 38.6-90.9%). Pathologic assessment of the clipped node alone would have resulted in a false negative rate of 13.3% (95% CI: 1.7-40.5%). The false negative rate in patients with cN1/2 disease was 0% (95% CI: 0-30.8%). At median follow-up of 4.2 years, there were no recurrences or deaths in the 7 patients who underwent TAD alone. **CONCLUSIONS:** In patients with OBC, clipped index LN pathology is diagnostic of the disease burden in the remaining axillary LNs, suggesting that limited axillary surgery anchored in removal of the clipped node may allow for accurate axillary staging following systemic therapy.

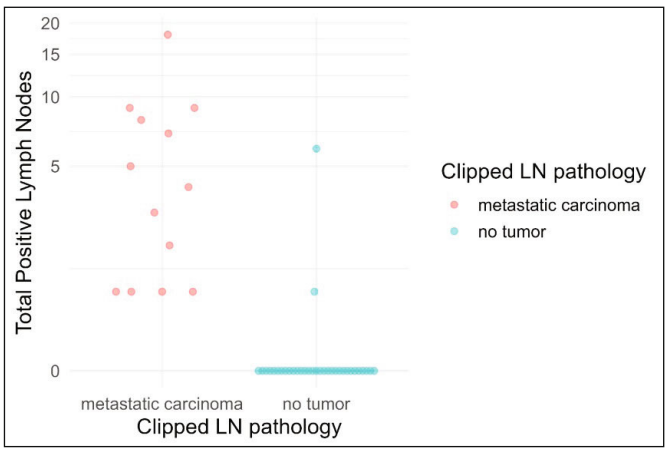

Figure. Scatter plot showing association between clipped node pathology and total number of metastatic axillary lymph nodes

P113

Neoadjuvant chemotherapy in locally advanced gastric cancer: International propensity-matched analysis reveals downstaging without survival benefit and distinct recurrence patterns.

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INTRODUCTION: The role of neoadjuvant chemotherapy (NAC) in resectable, locally advanced gastric cancer is debated, with wide variation in adoption between Asian and Western countries. The impact of these diverse practices on perioperative and long-term outcomes is not well defined. **METHODS:** We analyzed 23,805 patients who underwent resection from 10 high-volume gastric cancer centers across Asia, Europe and North America from January 3, 2005 to March 11, 2024. Patients with ≥T2 tumors undergoing radical gastrectomy with or without NAC were compared. Propensity score matching (3:1) adjusted for age, comorbidity, clinical stage, and histology. **RESULTS:** After matching 1,017 patients (353 NAC, 664 non-NAC) were evaluated. In the West FLOT was the most common regimen (56.3%), while the East had more variability but overall used a combination of taxane and platinum agent (63.5%), with SOX being most common (17.9%). NAC patients more often underwent total gastrectomy (31.2% vs 23.5%, $p < 0.001$), a more extensive lymph node dissection with D2 (62.7% vs 51.9%, $p < 0.001$), and conversion to open surgery (2.93% vs 0.7%, $p = 0.008$). NAC down staged tumors, with fewer pT4a tumors (14.0% vs 20.7%, $p < 0.001$), and more T0 tumors (4.58% vs 0%, $p < 0.001$). Despite these effects, pathologic nodal stage and margin status were similar; and the perioperative-hospital mortality (0.34% vs 0%, $p = 0.182$) and complication rates did not differ. Moreover, overall recurrence rates (19.9% vs 16.4%, $p = 0.176$) also did not differ. Interestingly, NAC patients more often recurred in the peritoneum (57.1% vs 36.4%, $p = 0.03$) and less often in distant sites (8.2% vs 25.8%, $p = 0.03$). Median follow up was 36.4 months (range 0.16 to 144.4 months). Median disease-free survival (10.1 vs 10.6 months, $p = 0.29$) and overall survival (14.5 vs 17.8 months, $p = 0.61$) were similar. **CONCLUSIONS:** In one of the largest and most ethnically diverse international propensity-matched analyses to date, NAC achieved tumor downstaging but did not improve disease-free or overall survival compared to upfront surgery. Distinct recurrence patterns after NAC highlight biological heterogeneity, underscoring the need for tailored strategies to optimize timing systemic therapy in locally advanced gastric cancer.

Table 1. Global Real-Life Oncologic Outcomes of NAC versus Non-NAC in Locally Advanced Gastric Cancer Patients at High-Volume Centers

	Non-NAC n = 664	NAC n = 353	p-value
Recurrence (n, %)	106 (16.4)	68 (19.9)	0.176
Recurrence location (n, %)			0.030
Peritoneum	24 (36.4)	28 (57.1)	
Distant	17 (25.8)	4 (8.2)	
Local	3 (4.6)	2 (4.1)	
Distant lymph node	14 (21.2)	7 (14.3)	
Multiple	5 (7.6)	8 (16.3)	
Overall survival median (months, IQR)	17.8 (11.5 - 24.4)	14.5 (8.2 - 21.4)	0.613
Disease free survival median (months, IQR)	10.6 (5.7 - 18.8)	10.1 (5.9 - 16.5)	0.286

IQR: Interquartile range, NAC: Neoadjuvant chemotherapy

P114

Endoscopic surveillance: An alternative to prophylactic total gastrectomy for germline CDH1 variants

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INTRODUCTION: Hereditary diffuse gastric cancer is commonly caused by germline CDH1 loss-of-function variants. Individuals with pathogenic or likely pathogenic (P/LP) CDH1 variants are typically advised to undergo prophylactic total gastrectomy (PTG), even though most patients harbor indolent, early-stage signet ring cell (SRC) lesions. Endoscopic surveillance has emerged as an alternative management strategy. The primary goal of this study was to evaluate the outcomes of endoscopic surveillance. **METHODS:** Patients with CDH1 P/LP variants who enrolled in a longitudinal cohort study and underwent surveillance esophagogastroduodenoscopy (EGD) were included. Non-targeted (random) mucosal biopsies were performed at all EGDs, and targeted biopsies were obtained using high-definition white light and narrow band imaging. Bivariate analyses and Kaplan–Meier survival estimates, including SRC-positive versus SRC-negative subgroups, were performed. R**ESULTS:** From January 2017 to September 2023, a total of 315 patients underwent 677 EGDs (median 2 per patient; IQR 1–3). Following initial endoscopy, 175 (55.6%) of 315 individuals elected to continue cancer surveillance with two or more endoscopies. Median follow up was 52.9 months (IQR 42.9-67). 107 (34%) proceeded to PTG, with a median time from initial EGD to PTG of 5.7 months (IQR 2.7-13.9). Targeted biopsies were performed in 72.7% of EGDs. 48% (84/175) of patients who underwent two or more endoscopies were diagnosed with SRC carcinoma. SRC yield was 25.1% for non-targeted, 1.6% for targeted, and 5.3% for combined biopsies. For patients undergoing active surveillance, the overall survival was 100% at 1 year, 99.4% at 3 years, and 97.1% at 5 years. Gastric cancer–specific survival was 100%. Survival did not differ by management strategy (p=0.77) or SRC detection (p=0.36). **CONCLUSIONS:** Endoscopic surveillance in CDH1 carriers was associated with excellent disease-specific survival, independent of SRC detection. With median follow-up approaching 5 years, these data support surveillance as a safe alternative to PTG in selected patients.

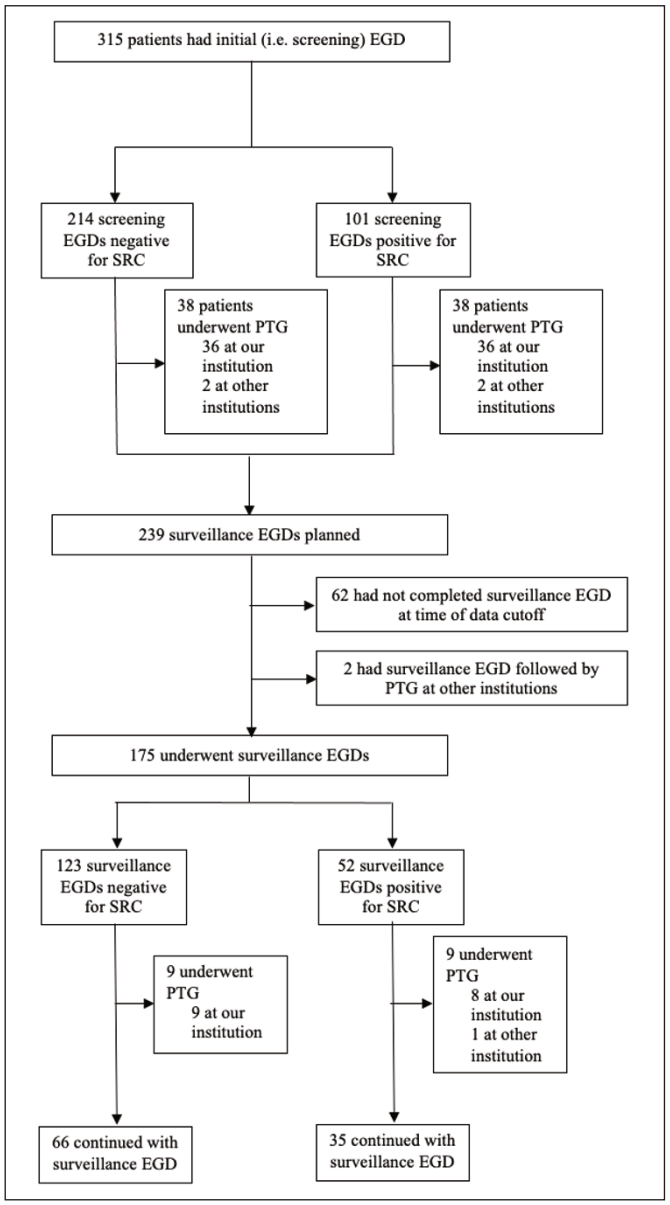

Figure 1. Flow-chart of clinical management of patients with germline CDH1 variants.

P115

Clusterin may act as a potential biomarker for tumorigenesis in CDH1-related hereditary diffuse gastric cancers

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INTRODUCTION: Occult, gastric signet ring cell (SRC) lesions are ubiquitous in patients with germline CDH1 loss-of-function variants. Though SRC lesions typically exhibit a clinically indolent behavior, the drivers of progression to

advanced diffuse gastric cancer remain unknown. We aimed to identify gene expression patterns associated with tumor cell invasion depth to determine potential biomarkers of SRC tumorigenesis. **METHODS:** We employed a spatial transcriptomics platform (10X Genomics Xenium) with subcellular resolution of both early SRC lesions (pT1a) and advanced diffuse gastric cancers (≥T2) from 18 patients with germline CDH1 variants. A customized gastric cancer panel and the 10X Genomics Multi-Tissue and Cancer panel were used to investigate transcriptomic changes in 671 genes of interest. Spatially resolved gene expression readouts were analyzed according to depth of gastric wall invasion. Immunohistochemistry was performed to correlate protein expression with mRNA markers of interest. **RESULTS:** Advanced hereditary diffuse gastric cancers exhibited three distinct transcriptomic clusters based on depth of tumor invasion into the mucosa, submucosa and muscularis propria layers and clustered distinctly from early signet ring cell lesions. Three differentially expressed genes demonstrated increased expression according to depth of tumor invasion: clusterin (CLU), eukaryotic translation initiation factor 3 (EIF3E), and annexin A2 (ANXA2). CLU, a known regulator of epithelial-to-mesenchymal transition and apoptosis, was over-expressed both in advanced SRC lesions ($p< 0.05$) compared to early SRC lesions and within SRC lesions compared to gastric epithelium ($p=0.03$). Clusterin protein expression was quantitatively increased in SRC lesions compared to unaffected gastric epithelium, with more intense staining demonstrated with deeper tumor invasion in advanced diffuse gastric cancers. **CONCLUSIONS:** Early SRC lesions are transcriptomically distinct from advanced diffuse gastric cancers, corroborating that SRC lesions are precancers. Clusterin appears to be a biomarker of SRC lesions that is correlated with cancer progression in germline CDH1 variant carriers. Thus, clusterin could be useful for early detection of SRC precancers that transform to a progressive phenotype.

P116

An anti-mucin-4-antibody conjugated to a near infrared fluorophore targets and lights up primary and metastatic human gastric cancer in nude mouse models

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INTRODUCTION: The most effective treatment for gastric cancer is complete surgical resection with negative margins and adequate lymphadenectomy. Currently, indocyanine green (ICG) is used to improve intraoperative visualization of gastric cancer, but it is nonspecific. The goal of the present study was to validate the accuracy of using an anti-MUC4 antibody for localizing primary and metastatic gastric cancers in nude mouse models. **METHODS:** To establish subcutaneous models, 106 cells of human gastric cancer cell lines SNU-16 or NCI-N87 were injected subcutaneously into nude mice. After 2 months, tumor fragments were implanted into the stomachs of nude mice to establish orthotopic gastric cancer models of SNU-16 and NCI-N87. Experimental metastasis models were established by injecting 106 SNU-16 or 106 NCI-N87 cells intraperitoneally in nude mice. Tumors were allowed to grow for 2-3 months before labeling with a mucin4 antibody conjugated to a near infrared fluorescent dye IRDye800CW (MUC4-IRDye800CW). Mice were sacrificed 72 hours after tail vein injection of 50 µg MUC4-IRDye800CW and imaged with the LI-COR Pearl Imaging System and a Stryker laparoscope. The tumor-to-background ratios (TBR) were calculated by dividing the mean fluorescence intensity of the tumors by that of the surrounding stomach. **RESULTS:** 20 mice were imaged, including 14 primary gastric cancer models and 4 intraperitoneal metastatic gastric cancer models. Primary gastric SNU-16 tumors (n = 6) had a mean TBR of 1.99 (SE ± 0.58), and primary gastric NCI-N87 tumors (n = 8) had a mean TBR of 2.81 (SE ± 1.04). Metastatic SNU-16 tumors (n = 3) had a mean TBR of 3.7 (SE ± 0.75), and metastatic NCI-N87 tumors (n = 3) had a mean TBR of 3.91 (SE ± 0.98). Tumor borders were clearly visualized with both Pearl and the Stryker laparoscope fluorescence imaging systems. **CONCLUSIONS:** Anti-MUC4-IRDye800CW can be used to accurately localize both primary and metastatic gastric cancers with fluorescence imaging and is promising for identifying both primary tumor margins and intraperitoneal metastasis intra-operatively.

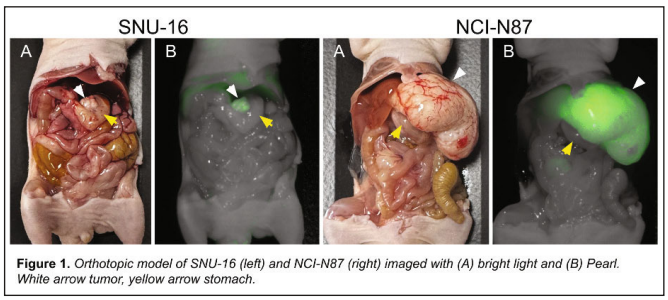

Figure 1. *Orthotopic model of SNU-16 (left) and NCI-N87 (right) imaged with (A) bright light and (B) Pearl. White arrow tumor, yellow arrow stomach.*

Figure 1

P117

Accuracy of DOTATATE-positron emission tomography for preoperative nodal staging of neuroendocrine tumors of the abdomen

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INTRODUCTION: DOTATATE-positron emission tomography (PET) scans use a radiotracer that binds somatostatin-receptor-2 on neuroendocrine cells to identify neuroendocrine tumors (NETs). Use of DOTATATE-PET during preoperative evaluation of abdominal NETs is increasing, but the accuracy of DOTATATE-PET in nodal staging of abdominal NETs is not well-documented. **METHODS:** We reviewed patients with NETs who underwent DOTATATE-PET prior to surgical resection at our institution from November 2013-November 2023. We excluded patients with primary tumors outside of the abdomen, non-avid primary tumors on DOTATATE-PET, and those who had surgery performed before their first DOTATATE-PET. Using surgical pathology reports as the gold standard, we assessed concordance between DOTATATE-PET-based clinical stage and postoperative pathologic stage. Sensitivity, specificity, negative predictive value, and positive predictive value were calculated, with $\chi 2$, Fisher's exact test, and Mann-Whitney U test used for comparisons. **RESULTS:** We identified 126 patients undergoing resection of abdominal neuroendocrine tumors who had preoperative DOTATATE-PET scans: 63 patients (50%) had resections for NETs of the GI tract, and 63 patients (50%) underwent pancreas resections. Overall, 83 patients (65.8%) had pathologic nodal involvement, and DOTATATE-PET correctly detected 67 of these. For the 43 patients who were pathologic node-negative, DOTATATE-PET was negative in 39. This yielded 39 true negatives, 67 true positives, 16 false negatives, and 4 false positives, resulting in a sensitivity of 80.7%, specificity of 90.7%, negative predictive value of 70.9%, positive predictive value of 94.4%, and overall accuracy of 84.1%. When comparing clinical characteristics of patients with accurate and inaccurate DOTATATE-PET scans, including age, sex, radiotracer type (Ga68 or Cu64), radiotracer dose, time between scan and resection, primary tumor size, number of nodes examined, grade of differentiation, or type of resection, there were no significant differences (Table 1). **CONCLUSIONS:** DOTATATE-PET performed well in detecting nodal disease in patients with abdominal NETs. In fact, we found DOTATATE-PET was much more sensitive for lymph node involvement in these tumors compared to previously reported results for DOTATATE-PET for lung carcinoids (20% sensitivity) and 68Ga-PSMA-11-PET for pelvic nodal metastasis in prostate cancer (40% sensitivity). This data underscores that DOTATATE-PET is a valuable adjunct for evaluating regional lymph node involvement in abdominal NETs.

Table 1: Clinical and pathologic characteristics of patients undergoing resection of abdominal neuroendocrine tumors, stratified by accuracy of DOTATATE-PET in predicting nodal involvement.

True Negative α, True Positive β, False Positive γ, False Negative δ

	Accurate Dotatate (n=106)	Inaccurate Dotatate (n=20)	*p-value*
Age median (IQR)	59.9 (51.3-70.2)	64.8 (53.4-71.3)	.73
Sex n (%)			
Male	53 (50)	14 (70)	.1
Female	53 (50)	6 (30)	
Radiotracer n (%)			
Ga68	76 (71.7)	15 (75)	.76
Cu64	30 (28.3)	5 (35)	
Injected dose of tracer, mCi median (IQR)	4.9 (4-5.6)	4.7 (4.0-5.4)	.45
Time from DOTATATE to resection, days median (IQR)	54 (21.5-97)	28.5 (11.3-52.8)	.41
Tumor Size, cm median (IQR)	2.3 (1.5-3.8)	2.5 (1.4-3.3)	.70
Number of nodes examined median (IQR)	18 (9-26.5)	15.5 (7.8-25.3)	.44
pN Status n			
N0	39[α]	4[γ]	.15
N+	67[β]	16[δ]	
Histology n (%)			
G1	75 (70.8)	11 (55)	.2
G2	28 (26.4)	7 (35)	
G3	3 (2.8)	2 (10)	
Extent of Resection n (%)			
Small Bowel Resection	30 (28.3)	6 (30)	.05
Colectomy	13 (12.3)	1 (5)	
Ileocolic Resection	7 (6.6)	2 (10)	
Gastrectomy	4 (3.8)	0 (0)	
Distal Pancreatectomy	36 (34)	2 (15)	
Whipple/Proximal Resection	12 (11.3)	7 (35)	
Total Pancreatectomy	4 (3.8)	2 (10)	

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Dissecting the role of ARID1A in gastric cancer immune surveillance

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INTRODUCTION: ARID1A is one of the most frequently mutated genes in human cancer. The impact of ARID1A loss on tumor immunity is controversial, with reports of both enhanced and impaired immune activation. We aimed to define the role of ARID1A in immune surveillance of gastric cancer. **METHODS:** We used an autochthonous mouse model of gastric cancer (Atp4b-Cre; Trp53fl/fl; Cdh1fl/fl ("APC")) to generate tumors that were Arid1a+/+ (WT), Arid1afl/+ (Het), or Arid1afl/fl (KO). We compared survival and tumor-infiltrating CD8 T cells across genotypes. We used 3-dimensional tumor organoids (tumoroids) derived from APC mice for further characterization. We assessed immune-mediated tumor elimination by comparing engraftment of APC Arid1a WT and KO tumoroids injected into flanks of immunodeficient (NSG), immunocompetent (C57BL/6), and T cell-deficient (nude) mice. We cocultured CD8 T cells with tumoroids to assess tumor-immune interactions. Finally, we characterized tumors with RNA sequencing, Western blots, and flow cytometry. **RESULTS:** APC mice had progressively shorter survival with loss of each Arid1a allele ($P < 0.001$, Fig 1A), consistent with Arid1a being a tumor suppressor. There was a stepwise decrease in tumor CD8 T cells with loss of each Arid1a allele ($P < 0.01$, Fig 1B), suggesting Arid1a loss results in a pro-tumor immune environment. In NSG mice, both Arid1a WT and KO tumors engrafted robustly (Fig 1C); however, in C57BL/6, KO tumors engrafted more than WT ($P < 0.001$, Fig 1D), indicating Arid1a loss supports immune evasion. In nude mice, Arid1a WT and KO tumors engrafted at comparable rates (Fig 1E), confirming the necessity of T cells for immune clearance of tumors with retained Arid1a expression. In our coculture system, Arid1a KO tumoroids had reduced T cell interactions ($P < 0.001$, Fig 1F). RNA sequencing showed Arid1a KO tumoroids had decreased expression of interferon response pathway genes, including Ifngr1, which encodes a key component of the interferon gamma (IFNγ) receptor. Western blots confirmed Arid1a KO tumoroids had markedly reduced IFNGR1 (Fig 1G). Finally, Arid1a KO tumoroids demonstrated blunted response to IFNγ, evidenced by lower cell surface MHC-I expression upon exposure to exogenous IFNγ ($P < 0.001$, Fig 1H). **CONCLUSIONS:** Arid1a is a key regulator of T cell-mediated immune surveillance in gastric cancer. Tumor Arid1a loss results in decreased survival, diminished CD8 T cell infiltration, and impaired antitumor immunity. Mechanistically, this occurs through blunted type II interferon signaling. Clinically, tumor ARID1A mutation status may serve as a biomarker to predict response to immunotherapy in gastric cancer.

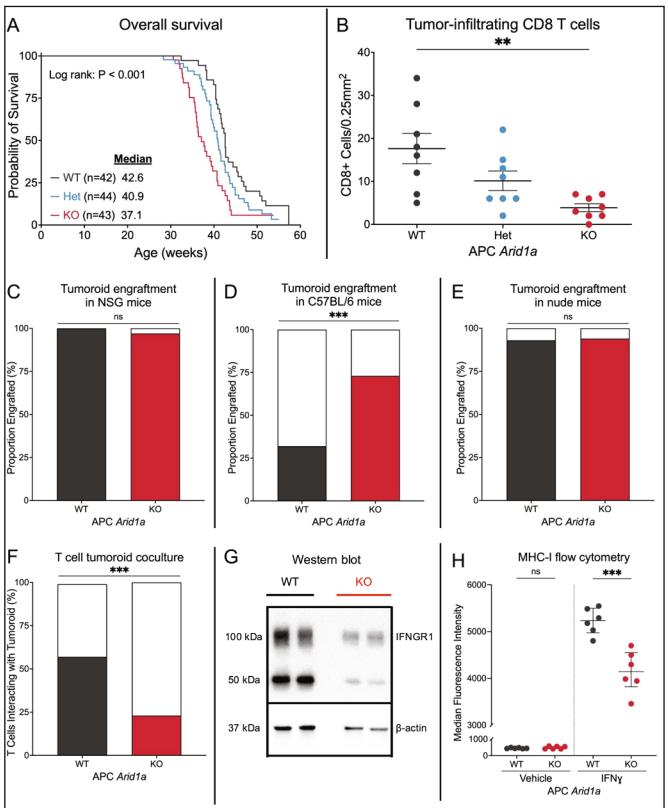

Figure 1. Tumor *Arid1a* loss impairs T cell-mediated immune surveillance in gastric cancer. (**A**) Kaplan-Meier survival analysis of *Atp4b-Cre; Trp53*$^{fl/fl}$*; Cdh1*$^{fl/fl}$ ("APC") *Arid1a*$^{+/+}$ (WT), *Arid1a*$^{fl/+}$ (Het), and *Arid1a*$^{fl/fl}$ (KO) mice. (**B**) Quantification of CD8+ T cells in gastric tumors of APC *Arid1a* WT, Het, and KO mice, measured by immunohistochemistry. (**C–E**) Engraftment of APC *Arid1a* WT and KO tumoroids in (C) immunodeficient (NSG), (D) immunocompetent (C57BL/6), and (E) T cell-deficient (nude) mice. (**F**) Coculture of CD8+ T cells with APC *Arid1a* WT and KO tumoroids. (**G**) Western blot for interferon gamma receptor 1 (IFNGR1) expression. (**H**) Flow cytometry for cell surface MHC-I expression in vehicle and interferon gamma (IFNγ)-treated APC *Arid1a* WT and KO tumoroids. (mm, millimeters; kDa, kilodaltons; ns, not significant; **, $P < 0.01$; ***, $P < 0.001$)

P119

Analysis of circulating tumor DNA to predict risk of recurrence in patients with esophageal and gastric cancers

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INTRODUCTION: Presence of circulating tumor DNA (ctDNA) postoperatively is associated with increased risk of recurrence in breast, bladder, lung, and colorectal cancers. Use of ctDNA to identify patients at risk

for recurrence in gastroesophageal adenocarcinoma (GEC) has been limited and inconsistent. Our purpose was to assess the utility of ctDNA in detecting recurrence in patients with GEC. **METHODS:** This is a retrospective institutional study of patients undergoing curative intent resection of GEC with at least one postoperative ctDNA level. ctDNA was evaluated using commercially available personalized, tumor-informed, multiplex-polymerase chain reaction next-generation sequencing assay. Sensitivity and specificity of ctDNA for recurrence detection was assessed. We evaluated recurrence free survival (RFS) by ctDNA positivity. Lead time was calculated from first ctDNA detection to recurrence. **RESULTS:** Forty-five patients with curatively resected GEC were included (Gastric: 35, GEJ: 9, Esophageal: 1). Nine of 45 patients had recurrence. Six patients had initially negative postoperative ctDNA and converted to positive before recurrence. With median follow up 604 days (IQR: 361, 891), ctDNA detected recurrence at any point postoperatively with sensitivity of 88.9% and specificity of 86.1%. ctDNA predicted recurrence earlier than radiographic recurrence by a median of 181 days (131, 215). ctDNA detection after 90 days postoperatively was associated with statistically significant poorer RFS [(90 days: median RFS, 186 days vs not reached (NR); HR 5.847 p< 0.05), (6 months: 333 days vs NR; 9.763 p< 0.001), (1 year: 375 days vs NR; 11.454 p< 0.001), (any postoperative: 445 days vs NR; 30.917 p< 0.001)], but not significantly different prior to (60 days: 186 days vs NR; 3.596 p=0.109). **CONCLUSIONS:** This is one of the largest institutional studies demonstrating postoperative ctDNA detection is a prognostic marker of recurrence in GEC after curative intent surgery. Recurrence may occur despite an initial negative ctDNA. Furthermore, serial monitoring of postoperative ctDNA identifies positive conversion which precedes recurrence by 6 months and provides better prognostic discrimination than single point testing after surgery.

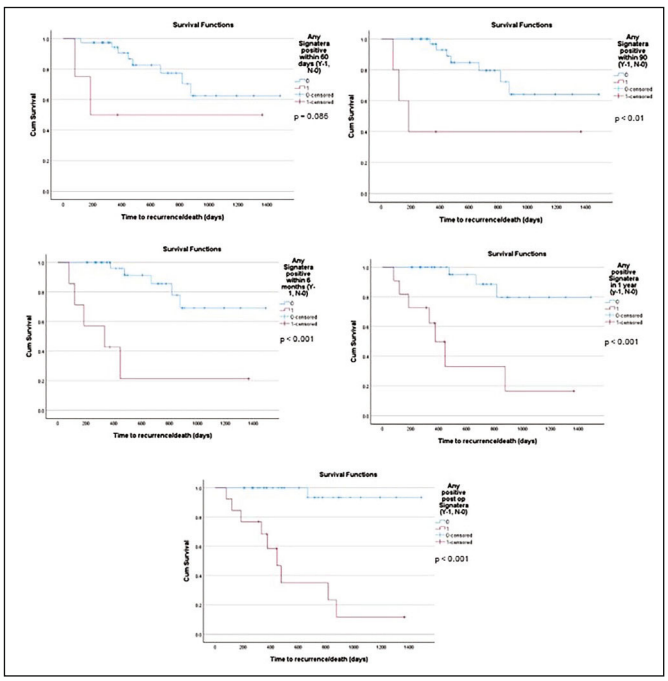

Figure. Recurrence free survival Kaplan Meier Curves with positive ctDNA at 60 days, 90 days, 6 months, 1 year, and any time postoperatively

P120

Adjuvant Immunotherapy for Esophageal Cancer in the CheckMate 577 Era: A National Cohort Analysis of Uptake and Overall Survival

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INTRODUCTION: The CheckMate 577 trial demonstrated improved disease-free survival in patients with esophageal cancer who received adjuvant nivolumab after completing neoadjuvant chemoradiotherapy. Notably, no significant overall survival (OS) benefit was demonstrated in the initial and follow-up trial reports. We therefore aimed to characterize uptake of adjuvant immunotherapy (Adj-IO) and assess OS in this patient population using a large national cohort. **METHODS:** We used the National Cancer Database to identify patients with esophageal adenocarcinoma/squamous cell carcinoma who received preoperative chemoradiotherapy and underwent R0 resection from 2018-2022. We categorized patients recommended for consideration of Adj-IO per current National Comprehensive Cancer Network guidelines (ypT+/ypN+) for analysis. Proportion receiving Adj-IO, factors associated with receipt of Adj-IO, and 3-yr OS were analyzed using univariable and multivariable analyses. **RESULTS:** Of 8796 eligible patients, 1431 (16%) received Adj-IO. This proportion increased significantly after 2020, coinciding with the publication of CheckMate 577 in 2021 (6% from 2018-2020 vs. 34% from 2021-2022, p< 0.001). Among patients with ypT+/ypN+ disease (6657, 75%), 45% received Adj-IO in 2022. Factors associated with receipt of Adj-IO included ypT+N+ (adjusted odds ratio[aOR]: 2.20, p< 0.001), adenocarcinoma histology (aOR: 1.37, p=0.006) and minimally invasive surgery (aOR: 1.23, p=0.006). Length of stay >10 days (aOR: 0.78, p< 0.001) and increasing age (per yr aOR: 0.99, p=0.044) were negatively associated with receiving Adj-IO. On unadjusted Kaplan-Meier analysis with a median follow-up time of 24.1 months (IQR 12.6–38.9) after surgery, Adj-IO was associated with improved 3-yr OS in ypN+ (51 vs 41%, p< 0.001) and ypT+ (58 vs 54%, p=0.003) patients vs. no Adj-IO. On multivariable Cox proportional hazards analysis, Adj-IO was associated with improved 3-yr OS in ypN+ (aHR: 0.71, p< 0.001) and ypT+ (aHR: 0.83, p=0.007) patients. **CONCLUSIONS:** In this large real-world national cohort analysis, receipt of Adj-IO after preoperative chemoradiotherapy and R0 resection of esophageal cancer was associated with improved 3-yr OS. These results support the findings of CheckMate 577 and can potentially translate to other perioperative systemic/immunotherapy regimens currently under investigation. Importantly, despite OS benefit in ypT+/ypN+ patients, only 45% of this subset received Adj-IO in the most recent year of data, suggesting an area for improvement in uptake and guideline concordance.

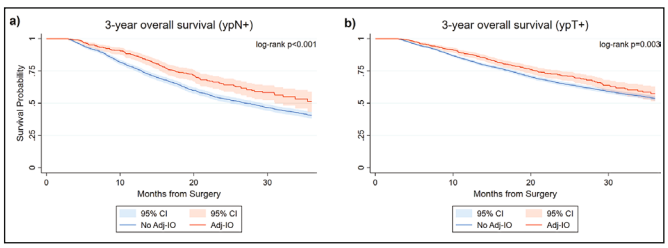

Figure. 3-year overall survival stratified by receipt of Adj-IO for a) ypN+ and b) ypT+ patients.

P121

Feasibility of Wedge Resection and Selective Lymph Node Dissection as Compared to Formal Gastrectomy with lymphadenectomy in Patients with Type 3 Gastric Neuroendocrine Tumor

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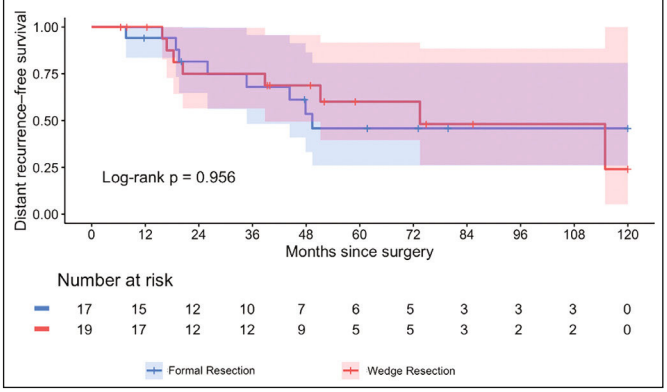
INTRODUCTION: Type 3 gastric neuroendocrine tumors (NET) represent a rare, sporadic type of tumor for which formal gastrectomy (total/subtotal/distal) and lymphadenectomy has been traditionally performed. At our institution, gastric wedge resection with selective lymph node dissection has been employed more recently to limit surgical morbidity. We aimed to evaluate long-term surgical and survival outcomes in patients with type 3 gastric NET. **METHODS:** A retrospective cohort study was performed of patients who underwent surgical management for type 3 gastric NET without distant metastases at a single referral tertiary care center between 2000-2024. Type 3 gastric NET patients were defined as patients who developed a pathologically confirmed sporadic neuroendocrine tumor without a history of atrophic gastritis, hypergastrinemia, or Zollinger-Ellison syndrome. Patients were categorized into formal (total, subtotal, distal gastrectomy) and wedge resection. For wedge resection patients, selective nodal dissection was performed of abnormal lymph nodes seen on preoperative imaging. Outcomes evaluated included local recurrence (LRFS), distant recurrence (DRFS), and overall survival (OS). **RESULTS:** Among 36 patients who underwent resection for type 3 gastric NET, 17 and 19 patients underwent formal and wedge resection, respectively. Median follow-up was 61 (IQR 38-99) months for the cohort. Patient and tumor characteristics were not significantly different between cohorts including tumor size, tumor location, proportion of ulcerated tumors, TNM stage, and depth of invasion. Among patients with evaluable lymph nodes, positive lymph nodes were identified in 64% of wedge gastrectomy patients and 54% of formal gastrectomy patients (p=0.64) with a lymph node positivity ratio of 0.18 and 0.19 (p=0.88), respectively. Median number of total lymph nodes was 8 (IQR 5-14) for wedge and 16 (IQR 8-28) for formal resection (p< 0.05). Outcomes including 10-year LRFS (p=0.74), DRFS (p=0.95), and OS (p=0.67) were not significantly different. Over the study period, distant recurrence (Figure 1) occurred in 42% wedge and 47% formal resection patients with a median time to recurrence of 30 (IQR 18-57) and 35 (IQR 20-48) months, respectively. **CONCLUSIONS:** In this analysis of patients with type 3 gastric NET, wedge gastrectomy with selective lymph node dissection demonstrated comparable oncologic outcomes to formal gastrectomy. In this series, no significant differences in nodal metastasis, local/distant recurrence, or survival were observed. These findings support the feasibility of a limited resection approach as a potential strategy to reduce surgical morbidity without compromising oncologic efficacy.

Figure 1: Kaplan-Meier Analysis of Distant Recurrence Free Survival Based on Surgical Treatment Selected



P122

Developing CAR T-Cell Technology to Target Solid Tumor Cells

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INTRODUCTION: Lung and bronchus carcinomas represent the most common and deadliest form of solid tumor. Chimeric Antigen Receptor (CAR) T-cell technology utilizes highly specific engineered immune receptors that can be transduced onto T cells to allow T-cell activation upon cancer antigen-binding. CAR T-cell therapy is approved for the treatment of specific lymphomas and leukemias, as well as multiple myeloma. However, CAR T-cell utility in solid tumors has been limited due to the complexity of the tumor microenvironment (TME) leading to poor CAR-T cell penetration and exhaustion. Regulatory T cells (Tregs) are a subset of suppressive T cells that accumulate in the TME and thus pose a potential strategy to infiltrate solid tumors and investigate the anti-solid tumor potential of CAR T-cell technology. **METHODS:** To establish the anti-tumor potential of CAR T-cells and Tregs, we first constructed anti-murine CD19 CAR T-cells and CAR-Tregs and performed a cytotoxicity assay consisting of co-incubation with A20 lymphoma cells at two different ratios (1:1 and 2:1). **RESULTS:** Strikingly, we discovered that CAR Tregs were more effective at causing lymphoma cell death than conventional CAR T cells; 2:1; 77.38% ± 4.84 vs. 48.35% ± 15.11; p=0.1266 and 1:1; 63.27% ± 8.32 vs. 29.56% ± 5.69; p=0.0136. With a successful model in place, we next tested the utility of CAR T cells recognizing murine Tyrosinase Related Protein 1 (TRP1) and Mesothelin (MSLN) against B16F10 melanoma and Lewis Lung Carcinoma (LLC), respectively. 5x104 MSLN CAR T cells successfully caused cell death in B16F10 melanoma tumors compared to control alone; 27.72% ± 1.88 vs. 1.58% ± 1.01, respectively; p< 0.0001. Similarly, 5x104 TRP1 CAR T-cells successfully caused cell death in LLC lung tumors; 40.94% ± 7.28 vs. 15.64% ± 1.18, respectively; p=0.0074. Moreover, we observed that TRP1 CAR T-cells expressed the activation marker CD71 in the presence of B16 melanoma compared to control T cells; 32.03% ± 1.46% vs. 0.00% ± 0.0%; p< 0.0001. **CONCLUSIONS:** This study provided evidence that CAR T cells can recognize solid tumor cells in vitro and induce cell death. Future experiments will evaluate the mechanisms of CAR T-cell and CAR-Treg cytotoxic and inflammatory functions in the presence of syngeneic murine B16F10 and LLC tumor models in vitro and in vivo, as well as their impact on macrophages, an abundant immune cell type in the TME. These assays will answer the question of whether CAR T cells and/or CAR Tregs are able to induce cell death in solid tumors and remodel the TME. This work has the potential to open a new avenue towards novel immune cell therapies in the treatment of solid tumors.

P123

Patient-Derived Lung Tumor Organoids as a Platform to Assess Novel Multi-Targeted Kinase Inhibitors

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INTRODUCTION: Despite advances in targeted therapies, single-agent approaches and their combinations have shown limited efficacy in relapsed/refractory lung cancer. To overcome this, we developed novel multi-kinase inhibitors (MKIs) via in silico design that target multiple tumor-promoting pathways. LCI133 inhibits AURKA/B, CDK4/6, and CDK9, while LCI139 targets AURKA/B, PI3K, CDK4/6, and CDK9 kinases that regulate mitogenic signaling, cell cycle progression, and transcription. This study evaluates their efficacy in patient-derived lung tumor organoids. **METHODS:** Lung cancer specimens were collected under an approved IRB protocol. PTOs were created from unsorted tumor cell suspensions cultured in PEPGEL matrix (n = 7 patients). Organoids were treated with LCI133, LCI139, single-agent inhibitors - Alisertib (AURKAi), Barasertib (AURKBi), Buparlisib (PI3Ki), Ribociclib

(CDK4/6i), and AZD4573 (CDK9i) for 72 hours at 37oC. Cell viability was assessed using Promega 3DATP reagent and apoptosis by Annexin V binding and caspase-3/7 and caspase-8 activity assays. Target engagement and pathway modulation were assessed by immunoblotting for phospho-Akt, phospho-Rb, phospho-RNA polymerase II, MCL-1, and p53. Statistical analyses were done via Student T test and One Way Anowa, with $p< 0.05$ considered significant. **RESULTS:** LCI 133 reduced PTO viability by 51.4% at 1 μM ($p< 0012$), while lower concentrations (0.25 and 0.5 μM) showed no significant effect. In contrast, LCI 139 had superior dose-dependent efficacy: 49% reduction at 0.25 μM (($p< 0.0018$), 62% at 0.5 μM, and 78.4% at 1 μM ($p< 0.0001$). Comparing LCI139 (1 μM) to equimolar concentrations of single-agent inhibitors after 72 hours of treatment showed that LCI139 reduced by 80% $p< 0.0001$ compared to single agents: 34% (AURKAi) $p< 0.0001$, 24% (AURKBi) $p< 0.0001$, 29% (PI3Ki) $p< 0.0001$, 6.9% (CDK4/6i) $p< 0.43$, and 50.9% (CDK9i) $p< 0.0001$. Both LCI 133 and LCI 139 (1 μM) significantly increased caspase-3/7 (LCI 139 $p< 0.0001$, LCI 133 $p< 0.05$) and caspase-8 activity , indicating caspase-dependent apoptosis. Annexin V staining confirmed apoptosis in treated PTOs. Immunoblotting showed decreased pAkt and pRb expression and reduced p-RNA polymerase II, MCL-1, and p53, suggesting cell cycle arrest causing apoptosis. **CONCLUSIONS:** LCI133 and LCI139 demonstrate potent anti-tumor activity in patient-derived lung cancer organoids, with LCI139 showing superior dose-dependent efficacy and outperforming single-agent kinase inhibitors. These findings support further preclinical development and evaluation of MKIs for relapsed and refractory lung cancer.

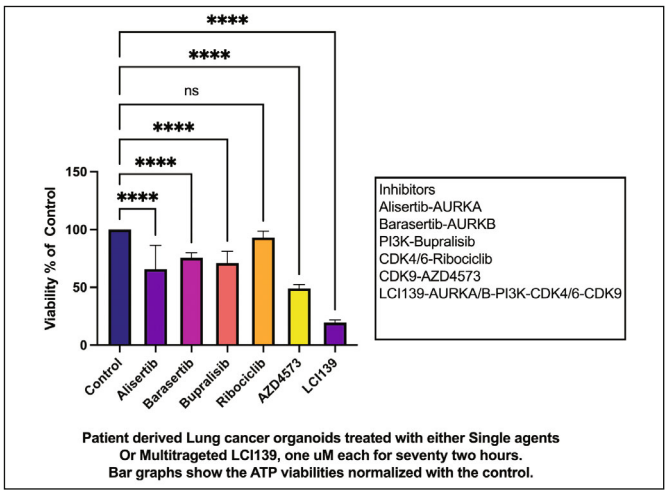

Figure. Patient-Derived Lung Cancer Organoid Treatment with Single Agents vs. Multi-targeted LCI139

ABSTRACTS

RESIDENT AND FELLOW PODIUM ABSTRACTS

SSO 2026 ANNUAL MEETING

Society of Surgical Oncology

March 5-7, 2026

RFP1

Evaluating the Survival Benefit of Early Postoperative Chemotherapy Following HIPEC in High-Grade Appendiceal Neoplasms: A Propensity-Matched Study.

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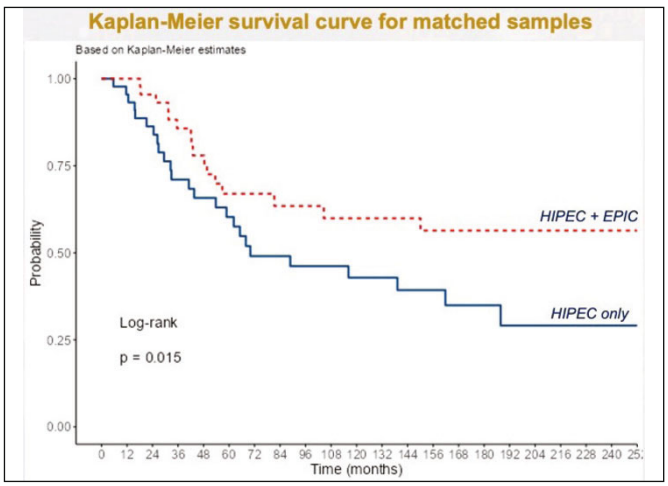
INTRODUCTION: High-grade appendiceal cancers (HGAC) are rare malignancies, which are more aggressive and generally have a poorer prognosis than their low-grade counterparts. Despite these differences, both low-grade and HGAC are managed similarly with combined cytoreductive surgery (CRS) and heated intraoperative peritoneal chemotherapy (HIPEC). In some instances, early postoperative intraperitoneal chemotherapy (EPIC) is also offered, however literature describing morbidity and survival outcomes in patients with HGA cancers is limited. This study evaluates whether the addition of EPIC to CRS and HIPEC confers a survival advantage compared to CRS and HIPEC alone, in patients with HGA cancers. **METHODS:** This single-centre retrospective study (2010–2024) compared patients with HGAC treated with CRS-HIPEC only with those who received CRS-HIPEC and EPIC. Regression analysis was performed for multiple variables including age at time of operation, ASA, PCI, CC score and cancer type. Propensity score matching using age, ASA, PCI, CC score, HIPEC agent, and signet cell pathology was then used to create a matched control group. Regression was again performed on the matched samples. Kaplan–Meier survival curves were generated to compare both groups pre- and post-matching. **RESULTS:** Among 218 patients, 53 (24.3%) received EPIC in addition to CRS-HIPEC. Mean survival in the EPIC group was 279.9 months compared with 185.8 months in the CRS-HIPEC only group. Median survival was 105.7 months without EPIC and not reached in the EPIC group. Multivariate Cox regression showed EPIC use was associated with improved survival in both unmatched (HR 0.47 (95% CI 0.26 – 0.84, p=0.01) and matched cohorts (HR 0.47, 95% CI 0.25–0.88, p=0.018). In the matched cohort, EPIC use was the only factor that remained statistically significant in the multivariable analysis (HR 0.48, 95% CI 0.25-0.94, p=0.032). **CONCLUSIONS:** EPIC in addition to CRS-HIPEC conferred a significant survival advantage in patients with HGAC, with hazard ratios consistently below 0.5 in both unmatched and matched analyses. In multivariable regression on matched samples, EPIC remained the only independent factor associated with improved survival, supporting its role as a valuable adjunct to CRS-HIPEC in this population.



RFP2

Comprehensive molecular profiling predicts survival among North American patients with mesothelioma.

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INTRODUCTION: Mesothelioma is a rare but highly aggressive cancer with limited data on the prognostic impact of somatic mutational profiles. This study evaluated a large patient cohort with mesothelioma to investigate mutational profile differences among pleural and peritoneal subtypes and to identify key somatic mutations associated with survival. **METHODS:** Patients with pleural or peritoneal mesothelioma (n=199) at a large tertiary institution from 2010-2022 who had somatic mutation testing were included in the study. Manual chart review collected patient demographics, treatment, pathologic, and survival data. Patient groups underwent analysis with Kaplan-Meier (KM) survival curves, oncoplots, and bivariate analysis followed by multivariable Cox regression to evaluate impact of somatic mutations and treatment modalities on survival. **RESULTS:** KM analysis identified somatic mutations significantly associated with worse overall survival (OS) including CDKN2A, NF2, and TERT. Pleural mesothelioma patients had significantly worse OS for somatic mutations in either CDKN2A (log-rank p< 0.001), NF2 (log-rank p=0.024), or TERT (log-rank p=0.001) compared to wildtype. Multivariable Cox regression confirmed independent association of worse survival with NF2 mutation (HR: 1.91 [95% CI=1.12-3.26], p=0.018) and TERT mutation (HR: 2.67 [95%CI=1.26-5.69], p=0.011). KM analysis also showed peritoneal mesothelioma patients with CDKN2A mutation had significantly worse OS (log-rank p=0.036) but no significant differences were seen for NF2 or TERT mutations in the peritoneal cohort. Oncoplots revealed the mutational patterns in patients with extended survival (> 5-year OS) versus shortened survival (< 1-year OS) (Figure 1). Patients with shortened survival were significantly more likely to have CDKN2A mutation (67% vs 5%, p< 0.001) or NF2 mutation (43% vs 10%, p=0.018) compared to patients with extended survival. Furthermore, among patients with < 1-year OS, 83% of CDKN2A mutations in pleural patients were large chromosomal deletions whereas 100% of CDKN2A mutations in peritoneal patients were chromosomal rearrangements. **CONCLUSIONS:** Pleural and peritoneal mesothelioma are two distinct cancer biologies which have unique somatic mutational profiles impacting survival. This large cohort study identified key prognostic mutations and specific mutational variants which influence survival. Future studies will evaluate the impact of mutational profiles on predicting treatment response and treatment resistance to allow for more personalized, targeted treatment strategies.

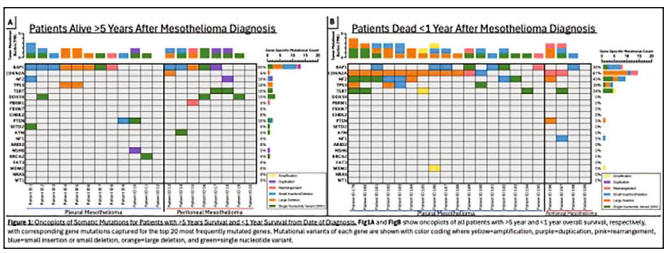

Figure. Oncoplots of Somatic Mutations for Patients with >5 years Survival and <1 Year Survival from Date of Diagnosis

RFP3

Accuracy of Melanoma Institute of Australia and Memorial Sloan Kettering Cancer Center Sentinel Node Metastasis Risk Prediction Tools applied to a single-institution cohort.

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INTRODUCTION: Sentinel lymph node (SLN) status is the most important prognostic factor in patients with primary cutaneous melanoma. Rates of

SLN positivity vary greatly and risk prediction tools have been developed to guide clinical decision-making. In this study, we use our single-institution population to validate and compare two SLN risk calculators for melanoma developed by the Melanoma Institute of Australia (MIA) and Memorial Sloan Kettering Cancer Center (MSKCC). **METHODS:** Patients older than 18 years of age undergoing a SLN biopsy for cutaneous melanoma between January 1, 2018 and December 31, 2022 were reviewed. Patients were excluded if they had evidence of metastasis or clinically positive lymph nodes. Missing imputation of variables was not performed. Decision curve analysis compared each model to one another and to treat-all and treat-none SLN biopsy strategies. Statistical analysis was performed using R. **RESULTS:** 491 patients were included in our study, of which 317 and 167 had sufficient data for MIA and MSKCC risk score calculation, respectively. Median MIA and MSKCC estimated SLN risk scores were 9.0% and 11.8%, respectively. The actual SLN positivity rate in our patient cohort is 20.6%. Established prognostic factors were increased in SLN positive patients as expected (Table 1). The MIA model had significant discriminative ability between SLN positive and negative patients, whereas the MSKCC model did not (AUC: 0.67, p = 0.01 vs. 0.60, p = 0.1). In paired samples, the MIA model trended towards better discriminative ability than MSKCC. The MIA model demonstrated good calibration across clinically relevant ranges, whereas the MSKCC model tended to underestimate probability of SLN positivity. Both models had significant over-dispersion. The net-benefit analysis suggests that beyond the 12.5% threshold, the MIA model reduced the number of unnecessary SLN biopsies without missing additional SLN positive patients compared to performing a SLN biopsy on all patients. The MSKCC model only did so beyond 17.5%. The MIA model demonstrated greatest net-benefit over the MSKCC model at the 20% threshold. Using this threshold, the MIA model would avoid 28.6% of unnecessary SLN biopsies without missing SLN positive patients, compared to 9.2% with the MSKCC model. **CONCLUSIONS:** In our patient cohort, the MIA model outperforms the MSKCC model, with the latter tending to underestimate SLN positivity. Additionally, the MIA model demonstrated clinical utility at lower thresholds and had greater net-benefit compared to the MSKCC model.

TABLE 1A. Sentinel lymph node (SLN) positive and negative patients in our cohort (N=491).

Variable	All (N=491)	SLN(-) (N=390, 79%)	SLN(+) (N=101, 21%)	P-value
Median age (IQR) *	60 years (48-70)	64 years (53-71)	58 years (51-63)	<0.001
Location °				
Head and Neck	81 (36%)	65 (80%)	16 (20%)	0.8
Trunk	180 (36%)	145 (81%)	35 (19%)	
Extremity	234 (47%)	184 (79%)	50 (21%)	
Breslow depth (mm) *				
< 1	127	115 (91%)	12 (9%)	<0.001
1-2	206	165 (80%)	41 (20%)	
>2	162	114 (70%)	48 (30%)	
Tumor Ulceration Present *	148 (30%)	102 (69%)	46 (31%)	<0.001
Lymphovascular Invasion *	17 (3%)	8 (47%)	9 (53%)	0.002
Mitotic Rate (mitosis/mm^2) †				
0	71 (15%)	68 (96%)	3 (4%)	<0.001
1	103 (22%)	82 (80%)	21 (20%)	
2-3	132 (28%)	101 (77%)	31 (24%)	
4+	164 (35%)	119 (73%)	45 (27%)	
Median MIA Risk Score (IQR)	12% (7-21%)	11% (7-18%)	**21% (8-38%)**	<0.001
Median MSKCC Risk Score (IQR)	9% (6-17%)	9% (7-17%)	**13% (7-24%)**	0.02

TABLE 1B. Validity and clinical utility of SLN risk calculators using our single-institution cohort.

Variable	MIA Model (N = 317)	MSKCC Model (N = 167)	
Median risk score (IQR)	9% (6%-17%)	11.8% (7.4%-21.0%)	0.8
Area under curve (95% CI)	0.67 (0.54 – 0.80)	0.60 (0.46 – 0.73)	0.05
Paired-Samples Decision Curve Analysis (N=119)			
Net-benefit (per 100 patients) ‡			
5% threshold	0.0	-0.02	0.2
10% threshold	-0.03	-0.02	0.6
15% threshold	0.02	-0.02	0.08
20% threshold	0.07	0.02	0.03
30% threshold	0.16	0.14	0.5
Net SLN biopsies avoided (per 100 patients) £			
20% Threshold	28.6	9.2	0.03

* Included variable in both MIA and MSKCC Risk Scores
† Included variable in only MIA Risk Score
° Included variable in only MSKCC Risk Scores
‡ Net-benefit is the added number of true-positive SLN decisions without missing additional positive SLN, per 100 patients. Net-benefit was calculated in relation to treat-all SLN biopsy strategy.
£ Net SLN biopsies avoided is the number of unnecessary SLN biopsies avoided without missing additional SLN positive patients, per 100 patients. Calculated in relation to treat-all SLN biopsy strategy.

RFP4

Impact of Keynote-716 on Surgical and Systemic Therapy in Stage IIB and IIC Cutaneous Melanoma.

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INTRODUCTION: Immune checkpoint inhibitors (ICIs) have revolutionized treatment of cutaneous melanoma. The Keynote-716 trial resulted in FDA-approval for adjuvant pembrolizumab in stage IIB and IIC melanoma in December 2021, though the impact of this trial on clinical practice patterns has not been investigated. **METHODS:** The National Cancer Database Participant Use File 2023 was queried for cutaneous melanoma cases diagnosed between 2019 and 2023. Patients with clinical stage IIB and IIC melanoma were identified per AJCC 8th Edition criteria. Cases were divided into a "before" period from 2019-2020 and an "after" period from 2022-2023. Low-, moderate-, and high-volume centers were stratified. The primary outcome measure was omission of sentinel lymph node biopsy (SLNB) in the before and after time periods. Secondary outcome measures were utilization of immunotherapy for patients with pathologic stage IIB or IIC and in those patients who had omission of SLNB. **RESULTS:** There were 20,452 patients with clinical stage IIB or IIC melanoma during the study period. SLNB was performed in 16,850 (82.3%). Omission of SLNB was comparable in the before and after periods (17.5 vs 17.6%, p=0.970). Patients treated at low volume centers were more likely to have SLNB omitted compared with moderate- and high-volume centers (21.1% vs 16.9% vs. 15.7%, p< 0.001). Omission of SLNB was more common with increasing age (≤45 = 3.8%, 45-64 = 7.2%, 65-79 = 14.1%, ≥80 = 39.2%, p< 0.001). Clinical T stage and overall clinical stage were also predictive of omission of SLNB (T3b = 14.4%, T4a = 19.9%, T4b = 20.4%, p< 0.001; IIB = 16.1%, IIC = 20.5%, p< 0.001). Adjuvant immunotherapy was delivered in 34.2% in the after period, with the highest rate in 2023 at 38.9%. For patients in whom SLNB was omitted, receipt of immunotherapy increased from 10.5% to 27.2% across time periods (p< 0.001). Patients in the after period were more likely to receive immunotherapy if they underwent SLNB (36.5% vs 27.2%, p< 0.001). In patients with pathologic stage IIB or IIC disease, treatment center designation, facility volume, age, primary payor, community designation, T stage, and overall stage were associated with receipt of adjuvant immunotherapy (Table 1). **CONCLUSIONS:** The Keynote-716 trial has significantly impacted clinical practice. While SLNB rates have not been impacted in the initial period following the trial, an increasing number of patients are receiving ICIs whether or not they undergo SLNB. Future studies should investigate oncologic efficacy and cost-effectiveness of diagnostic and therapeutic options in this population.

Table 1: Receipt of Adjuvant Immunotherapy Among Pathologic Stage IIB or IIC Patients

Variable		N (%)	P value
Facility Designation	Community Cancer Program	92 (40.0%)	<0.001
	Comprehensive CCP	633 (37.2%)	
	Academic/Research Program	815 (30.5%)	
	Integrated Network Cancer Program	387 (35.0%)	
Facility Volume	Low	613 (38.2%)	<0.001
	Moderate	831 (35.4%)	
	High	568 (29.5%)	
Age	<45	147 (51.4%)	<0.001
	45-64	631 (43.0%)	
	65-79	923 (38.1%)	
	≥80	311 (18.3%)	
Sex	Male	1298 (34.7%)	0.353
	Female	714 (33.5%)	
Primary Payor	Uninsured	24 (29.3%)	<0.001
	Private insurance	700 (43.5%)	
	Medicaid	94 (39.7%)	
	Medicare	1131 (29.9%)	
Community Designation	Metro – Large	876 (32.4%)	0.016
	Metro – Small	667 (35.8%)	
	Urban – Large	157 (39.0%)	
	Urban – Small	145 (36.4%)	
	Rural	104 (37.7%)	
Income Quartile	1st	224 (33.2%)	0.411
	2nd	380 (36.1%)	
	3rd	414 (35.9%)	
	4th	644 (33.9%)	
Charlson-Deyo Score	0	1500 (34.2%)	0.445
	1	294 (35.5%)	
	2	123 (35.4%)	
	≥3	95 (30.5%)	
T stage	T3b	794 (29.6%)	<0.001
	T4a	437 (35.1%)	
	T4b	781 (40.2%)	
Overall Stage	IIB	1102 (30.8%)	<0.001
	IIC	911 (39.7%)	

RFP5

Genetic ancestry correlates with differences in somatic mutations in a real-world clinical breast cancer sequencing cohort.

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INTRODUCTION: Self-reported race and ethnicity, a sociopolitical construct reflecting social and ancestral factors, is associated with differences in breast cancer (BC) tumor characteristics and somatic mutations, as well as disparate outcomes. Ancestral origin encompasses distinct genomic architecture shaped by evolution, and accurate genetic ancestry inference is critical for identifying genetic contributors to cancer disparities. Prior studies evaluating associations between genetic ancestry and somatic mutations have included few patients of non-European ancestry, limiting generalizability and novel discovery of actionable mutations in diverse populations. This study aims to assess associations between genetic ancestry and somatic differences in a real-world BC sequencing cohort. **METHODS:** We analyzed data from 7374 patients (10,118 samples) who underwent targeted sequencing as part of routine clinical care at a tertiary cancer center. 1926 samples were excluded. ADMIXTURE sequencing software estimated proportions of AFR (African), EUR (European), EAS (East Asian), NAM (Native American), and SAS (South Asian) ancestry. We assigned ancestry labels if any ancestral fraction was ≥ 0.8 or an admixed label if all populations were < 0.8. Sequencing data were linked to clinical characteristics, and logistic regression analyzed associations between genetic ancestry, tumor characteristics, and somatic mutations. **RESULTS:** Median age was 60 years. Most patients (57.5%) had stage 1-3 BC, while 23.0% had stage 4, and 19.4% had unknown stage (Table). 60.1% of patients had ER+/HER2- disease. EUR ancestry was most prevalent (61.0%), followed by admixed (13.0%), AFR (6.8%), EAS (4.6%), SAS (2.1%), and NAM (0.4%). On multivariable analysis adjusting for BC stage and subtype, significant ancestry-associated somatic mutations were identified. AFR was associated with higher odds of TP53 and GATA3 mutations, and lower odds of ERBB2, PIK3CA, CDH1, and TBX3 mutations. EAS and NAM were associated with lower odds of CDH1 mutations. NAM was associated with higher odds of PTEN and STK11 mutations. **CONCLUSIONS:** We identified both known and novel associations between diverse, genetic ancestries and somatic mutations in a real-world BC cohort. Notably, AFR ancestry was associated with lower odds of actionable mutations (ERRB2 and PIK3CA). As precision oncology expands, ensuring equitable sequencing access across diverse populations by incorporating targeted clinical panels into routine diagnostic workflows is essential to uncover actionable mutations in diverse populations.

Table. Patient sociodemographics, tumor characteristics, and somatic mutations by genetic ancestry (ancestry category ≥ 80% or admixture)

	Overall N=8192	European (EUR)† N=4996	African (AFR)† N=559	East Asian (EAS)† N=375	Native American (NAM)† N=29	South Asian (SAS)† N=175	Admixed (ADM)† N=1067	Unknown† N=991	p-value‡
Age	60 (51, 70)	62 (53, 71)	58 (49, 66)	56 (46, 67)	57 (44,62)	55 (46, 65)	58 (48, 67)	60 (49, 70)	<0.001
Sex									<0.001
Female	7,999	4,919 (61%)	556 (7.0%)	374 (4.7%)	29 (0.4%)	171 (2.1%)	1,057 (13%)	893 (11%)	
Male	102	72 (71%)	3 (2.9%)	1 (1.0%)	0 (0%)	4 (3.9%)	8 (7.8%)	14 (14%)	
Unknown	91	5 (5.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (2.2%)	84 (92%)	
Stage									<0.001
1-3	4,713	2,949 (63%)	338 (7.2%)	232 (4.9%)	10 (0.2%)	90 (1.9%)	623 (13%)	471 (10.0%)	
4	1,887	1,096 (58%)	126 (6.7%)	89 (4.7%)	2 (0.1%)	46 (2.4%)	241 (13%)	287 (15%)	
Unknown	1,592	951 (60%)	95 (6.0%)	54 (3.4%)	17 (1.1%)	39 (2.4%)	203 (13%)	233 (15%)	
Subtype									<0.001
ER-/HER2-	1,351	721 (53%)	160 (12%)	57 (4.2%)	2 (0.1%)	39 (2.9%)	190 (14%)	182 (13%)	
ER-/HER2+	361	193 (53%)	30 (8.3%)	20 (5.5%)	3 (0.8%)	14 (3.9%)	64 (18%)	37 (10%)	
ER+/HER2-	4,921	3,153 (64%)	247 (5.0%)	229 (4.7%)	10 (0.2%)	81 (1.6%)	598 (12%)	603 (12%	
ER+/HER2+	701	417 (59%)	55 (7.8%)	34 (4.9%)	1 (0.1%)	20 (2.9%)	96 (14%)	78 (11%)	
Unknown	858	512 (60%)	67 (7.8%)	35 (4.1%)	13 (1.5%)	21 (2.4%)	119 (14%)	91 (11%)	
Significant Somatic Mutations (OR, CI, adjusted p-value)			TP53 (1.58, 1.31-1.90, p<0.001) PIK3CA, (0.54, 0.44-0.65, p<0.001) GATA3, (1.63, 1.29-2.06, p<0.001) CDH1, (0.32, 0.22-0.46, p<0.001 ERBB2, (0.39, 0.20-0.74, p=0.027) TBX3, (0.37, 0.19-0.71, 0.022)	CHD1, (0.44, (0.30-0.66, p=0.0026)	CDH1, (0.14, 0.04-0.50, p=0.033) PTEN, (3.14, 1.36-7.25, p=0.072) STK11, (11.8, 2.64-53.1, p=0.033)				-

1. Median (Q1, Q3); n (%)
2. Kruskal-Wallis rank sum test; Pearson's Chi-squared test with simulated p-value (based on 5000 replicates)
Abbreviations: ER, estrogen receptor; HER2, human epidermal growth factor receptor 2; OR, odds ratio; CI, confidence interval

RFP6

Neoadjuvant Chemo-Immunotherapy Yields Survival Comparable to Upfront Surgery in Metaplastic Breast Cancer: A National Cancer Database Analysis.

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INTRODUCTION: Metaplastic breast carcinoma (MpBC) is a rare and aggressive subtype of breast cancer, often characterized by triple-negative (TN) receptor status and a limited response to standard chemotherapy. The optimal treatment strategy remains undefined. This study evaluates overall survival (OS) in patients with TN-MpBC treated with neoadjuvant chemotherapy (NAC) or neoadjuvant chemo-immunotherapy (NACIO) compared to upfront surgery using the National Cancer Database (NCDB). **METHODS:** A retrospective cohort analysis was conducted using the NCDB to identify patients diagnosed with stage I-III TN-MpBC between 2010 and

2022 treated with NAC, NACIO, or upfront surgery. Primary endpoints included overall survival (OS), pathologic complete response (pCR), and breast conservation rates. Breast conservation and pathologic complete response were analyzed using logistic regression, and overall survival was analyzed using Cox proportional hazard model. **RESULTS:** Of 4,953 patients, 3429 (69.2%) underwent upfront surgery, 1232 (24.9%) received NAC, and 292 (5.8%) received NACIO. No significant difference in OS was observed between NACIO and surgery-first approaches (HR = 0.80, 95% CI: 0.51-1.27; p = 0.3), but NAC was associated with a 37% increased risk of mortality compared to upfront surgery (HR = 1.37, 95% CI: 1.21-1.56; p < 0.001). NACIO was associated with a 62% higher likelihood of achieving pCR compared to NAC (OR = 1.62, 95% CI: 1.11-2.38; p = 0.013). The rate of breast conservation was not significantly different between NACIO and upfront surgery (OR = 0.8, 95% CI: 0.61-1.05; p = 0.11), but patients receiving NAC were 27% less likely to undergo breast-conserving surgery compared to those undergoing surgery first (OR - 0.73, 95% CI: 0.63-0.84; p < 0.001). **CONCLUSIONS:** In patients with TN-MpBC, NACIO demonstrated comparable survival outcomes to upfront surgery and improved pCR rates compared to NAC. These findings suggest that integrating immunotherapy into neoadjuvant treatment may offer clinical benefit, warranting further prospective investigation.

RFP7

IL-13 levels are elevated in floxuridine-treated patient plasma and ex vivo cystic duct perfusates.

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INTRODUCTION: Hepatic artery infusion pump floxuridine is an increasingly employed management strategy for patients with liver-limited colorectal liver metastases. However, floxuridine results in biliary injury, which limits the amount of drug administered and thereby its efficacy in order to avoid biliary sclerosis. To mitigate the injury, dexamethasone (a potent immunosuppressant) is administered concomitantly with floxuridine, although the immune pathways activated by the injury are unstudied. **METHODS:** Serum samples were collected from 9 patients undergoing hepatic artery infusion pump therapy at baseline and following two weeks of floxuridine/dexamethasone treatment (no systemic therapy). Autologous plasma perfusate was collected following 96 hours of ex vivo perfusion of cystic ducts (n=2) treated with floxuridine. All samples were evaluated with the Olink Target 96 Immuno-Oncology panel. **RESULTS:** Following 96 hours of floxuridine treatment, a significant increase (≥100% change) in IL-13 levels was observed in perfusate of ex vivo cystic duct compared to control perfusates. IL-10 demonstrated similar elevation (≥100% change). Correlation with patient serum demonstrated significant elevation of IL-13 levels following two weeks of floxuridine/dexamethasone treatment and significantly decreased levels of IL-6. Further investigation demonstrated no correlation of IL-13 levels with liver function test levels (alkaline phosphatase, alanine aminotransferase, aspartate aminotransferase, direct and total bilirubin) during this time frame. **CONCLUSIONS:** Our data suggests that IL-13, a well-established promoter of hepatic fibrosis, may play a role in biliary injury following long-term (multiple cycles) floxuridine treatment. Further investigation of IL-13 throughout the treatment course may aid in the development of mitigating therapies.

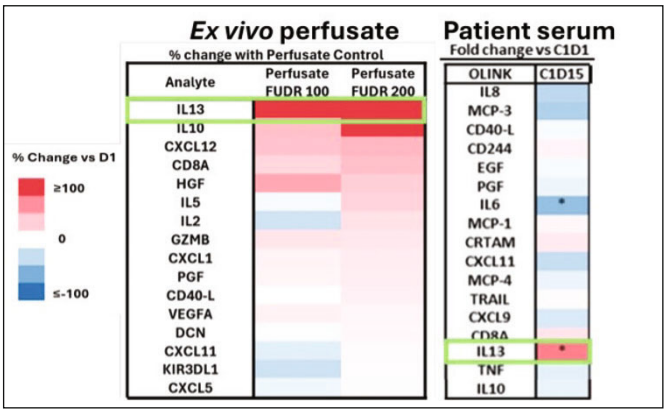

Figure. Ex vivo perfusate of floxuridine-treated cystic ducts had increased IL-13 levels compared to controls. Aggregate data of serum analytes from patients after two weeks of floxuridine hepatic artery infusion pump therapy showed similar increased IL-13 levels.

RFP8

Risk factors for anastomotic leaks in simultaneous resection of primary colon cancer with synchronous liver metastasis: A NSQIP study.

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INTRODUCTION: Anastomotic leaks (AL) are a devastating complication of simultaneous resection of primary colon cancer and liver metastases. We aimed to determine the risk factors of AL using a 10-year cohort from a nationwide database. **METHODS:** A retrospective cohort study was performed using the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) from 2014 to 2023. Patients who underwent simultaneous colectomy and liver resection were included. Multivariate analysis was performed with AL as the outcome variable and covariates with a $p < 0.1$ on univariate analysis were used. Propensity score matching (PSM) was performed on preoperative and operative covariates. Optimal cutoff point was determined by maximizing the Youden index through cubic spline smoothing. **RESULTS:** A total of 1,517 patients were included. Median age was 60 years and 834 (54%) were female. Most liver resections were minor hepatectomies (87%). There were 593 (55%) left, 464 (43%) right, and 30 (2%) total colectomies, and 80 (5.3%) patients developed AL. On univariate analysis, higher ASA score, chronic steroid use, and intra-operative blood transfusion were statistically significant risk factors for AL. Multivariate analysis showed that higher ASA score (OR_{adj} 2.55; 95% CI, 1.13-5.77), chronic steroid use (OR_{adj} 2.40; 1.10-5.24), major hepatectomy (OR_{adj} 1.93; 1.00-3.70), and blood transfusion (OR_{adj} 2.27; 1.31-3.94) were independent risk factors for AL. A 2:1 PSM cohort on demographics and operative characteristics for blood transfusions resulted in 241 blood transfusion patients and 482 controls. The rate of AL in the blood transfusion cohort was higher (9.6% vs 5.3%, $p < 0.05$). Within the minor hepatectomies, 15% required a blood transfusion, and those patients had more than double the AL rate (9.6% vs 4.2%, $p = 0.001$). The optimal cutoff for number of units transfused that increases the risk of AL is 1 unit (AUC 0.689). **CONCLUSIONS:** In this study, we found that a higher ASA score, chronic steroid use, major hepatectomies, and blood transfusions were independent predictors of AL, with the ASA score showing the strongest association (OR 2.55). In cohort matched for blood transfusions, there was also an increased risk for AL. Thus, for high-risk patient populations being evaluated for simultaneous resection of colon cancer and liver metastasis, consideration should be given for fecal diversion or staged procedures.

Characteristic **n = 1,517**	No anastomotic leak n = 1,437	Anastomotic leak n = 80	*p*-value	Multivariate OR (95% CI)	*p*-value
Age (years, median, IQR)	60.0 (51.0-68.0)	60.0 (50.0-72.0)	0.383	1.00 (0.98-1.01)	0.795
Sex (%)			0.294		
Male	776 (54.0)	48 (60.0)		1.00 (ref)	
Female	661 (46.0)	32 (40.0)		0.66 (0.40-1.11)	0.119
Body mass index (kg/m^2, %)			0.509		
< 30	946 (66.3)	55 (69.6)			
30-35	269 (18.9)	16 (20.3)			
> 35	212 (14.9)	8 (10.1)			
Race (%)			0.816		
African American	166 (11.6)	11 (13.8)			
Asian	76 (5.3)	4 (5.0)			
Other	6 (0.4)	1 (1.2)			
White	972 (67.7)	53 (66.2)			
Unknown	215 (15.0)	11 (13.8)			
ASA (%)			***0.032***		
I/II	344 (23.9)	9 (11.2)		1.00 (ref)	
III/IV	1,902 (76.0)	71 (88.8)		2.55 (1.13-5.77)	***0.025***
Hypertension (%)	602 (41.9)	37 (46.2)	0.442		
Congestive heart failure (%)	16 (1.1)	0 (0.0)	0.343		
Chronic obstructive pulmonary disorder (%)	37 (2.6)	5 (6.2)	0.051		
Diabetes mellitus (%)			0.948		
No	1,230 (85.6)	69 (86.2)			
Non-insulin dependent	142 (9.9)	8 (10.0)			
Insulin dependent	65 (4.5)	3 (3.8)			
Chronic steroids	80 (5.6)	10 (12.5)	***0.011***	2.40 (1.10-5.24)	***0.028***
Colectomy procedure (%)			0.090		
Left	558 (38.8)	26 (32.5)		1.00 (ref)	
Right	437 (30.4)	21 (26.2)		0.91 (0.47-1.78)	0.779
Total	26 (1.8)	4 (5.0)		1.98 (0.54-7.31)	0.303
Unspecified	416 (28.9)	29 (36.2)		1.30 (0.71-2.35)	0.392
Hepatectomy procedure (%)			0.266		
Minor hepatectomy	1,248 (86.8)	66 (82.5)		1.00 (ref)	
Major hepatectomy	189 (13.2)	14 (17.5)		1.93 (1.00-3.70)	***0.049***
Approach (%)			0.061		
Open	1,017 (74.7)	64 (84.2)		1.00 (ref)	
Minimally invasive	345 (25.3)	12 (15.8)		0.73 (0.37-1.41)	0.345
Operative time (minutes, SD)	306 (131)	325 (144)	0.210		
Blood transfusion	216 (15.0)	23 (28.7)	***0.001***	2.27 (1.31-3.94)	***0.003***
Mortality	12 (0.8)	5 (6.2)	***<0.001***		

ABSTRACTS

TOP-RATED
VIDEO ABSTRACTS

SSO 2026 ANNUAL MEETING

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March 5-7, 2026

V1

Robotic Intracorporeal Single-Stapled (RISS) Low Anterior Resection: Stepwise Technical Guide.

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INTRODUCTION: distal transection and secure anastomosis. Studies have demonstrated advantages of robotic surgery for rectal cancer, including improved pelvic access, better functional outcomes, and enhanced local disease control. Integrating intracorporeal single-stapled anastomosis is a natural technical evolution. RISS has been standardized through a stepwise protocol, achieving optimal endopelvic exposure and safe tumor-free transection. A robotic hand-sewn purse-string creates a uniform, well-perfused anastomotic ring, avoiding cross-stapling irregularities. Since its implementation, RISS has become the preferred reconstructive strategy routinely adopted at our institution for restorative procedures following TME. **METHODS:** This study was approved by the Institutional Research Ethics Committee. Before the abdominal procedure, a transanal intraluminal purse-string suture was applied distal to the lesion using a 2-0 suture with a permanent or disposable anoscope. The distal rectal stump was irrigated with 0.9% saline and chlorhexidine. Subsequently, the robotic platform was docked, and TME was performed according to standardized techniques. Rectal transection was completed using monopolar hook cautery and robotic scissors. A handmade plug was introduced for optimal distal exposure. Intracorporeal purse-string invagination of the rectal stump was performed, the stapler trocar inserted, and the purse-string secured with unidirectional barbed sutures. The proximal colon was prepared with a purse-string for a 29/31 mm circular stapler, enabling single-stapled anastomosis construction. **RESULTS:** RISS provides reproducible distal rectal exposure and secure single-stapled anastomosis, even in narrow pelvises or low rectal tumors. Standardization ensures symmetry and uniformity of the anastomotic ring. Key maneuvers, including plug manipulation, purse-string placement, and stapler insertion, are demonstrated, supporting safe and reproducible application and enhanced ergonomics. **CONCLUSIONS:** RISS offers a safe, reproducible, and ergonomically optimized approach for minimally invasive low anterior resection, facilitating standardized low rectal reconstruction while maintaining oncologic and functional outcomes. This stepwise video guide demonstrates the technique's applicability in complex pelvic anatomy, supporting technical precision, reproducibility, and safety.

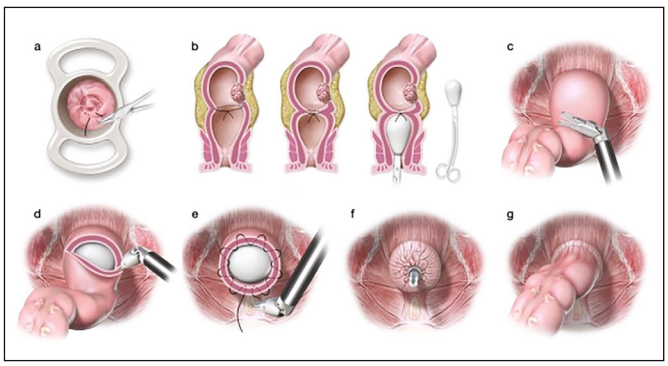

Figure. Steps of RISS.

V2

Robotic proximal gastrectomy with double tract reconstruction and distal pancreatectomy with splenectomy for gastroesophageal junction tumor.

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INTRODUCTION: Locally advanced gastroesophageal junction (GEJ) tumors require a balance between achieving R0 resection and preserving postoperative quality of life. Proximal gastrectomy with double tract reconstruction (PG-DTR) has emerged as an oncologically safe alternative to total gastrectomy, offering improved functional outcomes and reduced reflux symptoms. This video demonstrates a robotic PG-DTR with en-bloc distal pancreatectomy and splenectomy (DPS) for Siewert Type II GEJ adenocarcinoma with direct pancreatic invasion. **METHODS:** We report a single case of a 70-year-old male with locally advanced GEJ adenocarcinoma (Siewert II) who underwent robotic PG-DTR with en-bloc DPS following neoadjuvant FOLFOX chemotherapy. Operative steps included meticulous mediastinal and oncologic lymph node dissection, hand-sewn esophagojejunostomy, adequate spacing between the esophagojejunostomy and gastrojejunostomy, upright fixation of the remnant stomach, and closure of hiatal, mesenteric, and Petersen defects. **RESULTS:** The operation was completed in under six hours with 100 mL estimated blood loss. Pathology revealed a 6.3 cm moderately differentiated T4bN2 adenocarcinoma. Despite advanced stage disease and focal peritoneal deposits, the patient had an uncomplicated postoperative recovery, tolerated early diet advancement, and was discharged on postoperative day 4. At three-month follow-up, he reported good appetite, diet tolerance, and improved energy levels. Key technical considerations included careful patient selection with preoperative chemotherapy for downstaging, achievement of R0 resection with an oncologic lymph node dissection, and optimization of functional outcomes through anastomotic spacing and defect closure. **CONCLUSIONS:** Robotic PG-DTR with en-bloc DPS is technically feasible and may offer functional advantages for select patients with locally advanced GEJ tumors involving the pancreas. The robotic approach facilitates precise dissection and may enhance recovery thereby supporting timely resumption of systemic therapy.

V3

Standardized robotic gastrectomy eliminates leaks and ensures return to oncologic therapy

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INTRODUCTION: Complications after gastrectomy for gastric adenocarcinoma frequently prevent the return to intended oncologic therapy (RIOT), and RIOT is essential to optimize survival outcomes. Anastomotic leak is reported in 1.5–14.4% of cases. A robotic gastrectomy technique achieving no leaks and 100% RIOT in 35 consecutive patients is presented.

METHODS: Patients were positioned supine.

1. Trocar Placement: Robotic and assistant 8 mm trocars were placed (Fig 1). The gastrocolic omentum was divided and the distal stomach mobilized.
2. Duodenal Mobilization and Division: The proximal duodenum was mobilized off the pancreas to the right of the gastroduodenal artery. The right gastroepiploic and gastric vessels were divided, and the duodenum transected with a 60 mm blue load stapler on SeamGuard.
3. Gastric Mobilization and Lymphadenectomy: Endoscopy confirmed tumor location and extent of resection. The stomach was mobilized proximally with D2 lymphadenectomy. The left gastric vessels were divided.
4. Esophageal Division: After confirming Z-line, the esophagus was divided proximally with a 60 mm stapler; prior to division, esophageal edges were anchored to the crura to prevent retraction.
5. Jejunal Division and Reconstruction: The jejunum was divided 40–50 cm distal to the ligament of Treitz with division of the mesentery. A stapled jejunojejunostomy was constructed with Roux-limb length of 70-80 cm, and the enterotomy closed with continuous single-layer in Connell and simple running fashion. Crotch stitches were placed.
6. Esophagojejunostomy: A 25 mm Orvil anvil was introduced orally, exteriorized, and connected to the EEA stapler via a mini-gel port. The "candy-cane" was divided and the jejunojejunal mesentery was closed with 2-0 silk. Saline immersion leak test confirmed anastomotic integrity.
7. Specimen Extraction: The specimen was removed via a Pfannenstiel incision.

RESULTS: All patients underwent postoperative contrast study. Diet was advanced from bariatric clear to full liquids as bowel function returned. Median length of stay was 4 days (IQR 3–6). Among 35 patients with biopsy-proven gastric adenocarcinoma: R0 resection was achieved in 34/35, anastomotic leak in 0/35, major complications in 6/35, 30-day readmission in 5/35, and 30-day mortality in 0/35. Of 30 eligible patients, all (100%) did RIOT.

CONCLUSIONS: This video highlights a reproducible robotic technique for gastrectomy that eliminates anastomotic leak and ensures return to intended oncologic therapy. Standardization of key steps may significantly enhance postoperative recovery and optimize oncologic outcomes.

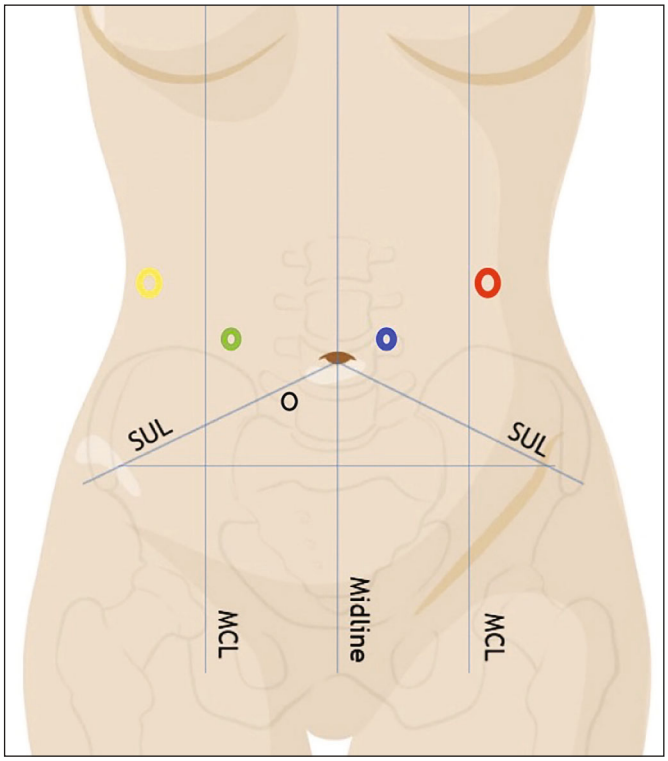

Figure 1.

V4

Preservation of the left hepatic artery originating from the left gastric artery during D2 lymphadenectomy.

Juan A. Junco-Orozco, MD, Universidad de los Andes; Andres Motta-Amar, MD, Universidad de Los Andes; Valentina Naranjo, MD, University of Los Andes; Gabriel Herrera, MD FACS FSSO, Fundacion Santa Fe De Bogota; Alberto Ricaurte, MD, Fundacion Santa Fe De Bogota

INTRODUCTION: D2 lymphadenectomy has been established as the standard extent of lymphadenectomy during radical gastrectomy for gastric cancer. However, the presence of vascular anatomic variants poses a significant challenge for the surgeon, who must balance the principles of effective oncologic resection with the preservation of essential vascular structures. We present the case of a patient undergoing D2 lymphadenectomy in whom a left hepatic artery (LHA) originating from the left gastric artery was identified and preserved with no affection on the lymphadenectomy margins. **METHODS:** This case report involved the prospective collection of intraoperative images and clinical data, with appropriate ethical approval and informed patient consent obtained for publication purposes. **RESULTS:** A 65-year-old male patient presented with epigastric pain, dyspepsia, and unquantified weight loss over a year, without improvement from symptomatic treatment. History included arthritis, diabetes, and fatty liver. Endoscopy (October 2024) revealed antral gastric adenocarcinoma. Diagnostic laparoscopy (November) identified a prepyloric lesion on the lesser curvature, 1 cm lymphadenopathy, with no serosal involvement or metastasis. Diagnosis: poorly differentiated mucinous-type antral gastric adenocarcinoma T3N1M0 (Stage III), and FLOT chemotherapy (4 cycles) was initiated. A subtotal gastrectomy with D2 lymphadenectomy was performed, identifying a replaced left hepatic artery, managed with a skeletonized technique achiving a complete preservation of the LHA without compromising the oncological resection. The replaced LHA is a challenging anatomical variation during D2 lymphadenectomy; a correct identification is essential to avoid complications. Studies show that preserving it results in less postoperative liver dysfunction (< 2%) without increasing locoregional recurrence. **CONCLUSIONS:** Anatomical variations of the left hepatic artery origin are present in 8-20% of the population, becoming a challenging situation for the surgical team. We believe that the identification and preservation of the LHA variations during laparoscopic gastrectomy with D2 lymphadenectomy as a standard technique, improves vascular safety and maintains liver function without compromising oncological margins. Further studies are needed and the the incorporation of technologies like ICG strengthens precision oncology surgery and could help in this challenging scenarios.

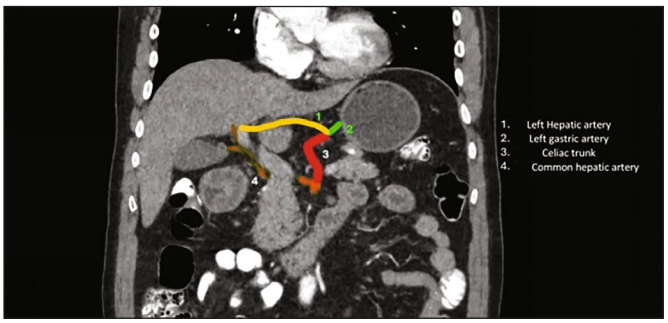

Figure. Tomography revealing an anatomical variation of the left hepatic artery.

V5

Robotic Management of Lower Abdominal Metastases in Recurrent Colorectal Cancer: A Video-based Case Series.

Ryan Lamm, MD, City of Hope; Mustafa Raoof, MD, Department of Surgery, City of Hope National Medical Center, Duarte, CA

INTRODUCTION: Patients with recurrent colorectal cancer (CRC) can present with isolated or regionally localized peritoneal or retroperitoneal metastases in the lower abdomen and pelvis. These lesions can be challenging to access and resect using conventional surgical approaches. The application of robotic surgery in this context remains underexplored. We present a video-based case series highlighting the technical feasibility and potential oncologic role of robotic resection for lower abdominal metastatic disease in recurrent CRC. **METHODS:** We retrospectively reviewed and highlighted four patients with recurrent CRC isolated to the lower abdominal peritoneum or retroperitoneum who underwent robotic resection between 2022–2024. Disease distribution was assessed by preoperative imaging and confirmed by diagnostic laparoscopy and discussed in this video. Key operative steps were captured and compiled on video for educational review. Perioperative data and postoperative outcomes were captured and reported as well. **RESULTS:** All four patients had prior colectomy as well as systemic therapy. Peritoneal cancer index (PCI) scores ranged from 2–11. All cases were completed robotically without conversion. Median operative time ranged from 3.5 to 4.4 hours. No intraoperative or postoperative complications occurred. Postoperative recovery was uneventful, and all patients were discharged within 3 days without readmission. The videos demonstrate enhanced visualization and dexterity afforded by the robotic platform in narrow pelvic and retroperitoneal spaces as well as organ-sparing techniques. **CONCLUSIONS:** Robotic resection of lower abdominal peritoneal and retroperitoneal metastases from recurrent CRC is feasible and safe in select patients. This approach may expand minimally invasive surgical options for patients with locoregionally recurrent disease, enabling precise dissection in anatomically challenging areas while minimizing morbidity. Prospective studies are warranted to further define its role within multimodality management.

Table. Case Series Summarization Table of Perioperative Characteristics and Postoperative Outcomes

Characteristics	Case 1	Case 2	Case 3	Case 4
PCI	2	4	4	11
No. of Regions Operated On	1	2	4	6
Maximum Tumor Size (cm)	1.7 cm	2 cm	2.7 cm	3.0 cm
Number of Specimens Removed	2	3	11	12
Estimated Blood Loss (mL)	10 mL	30 mL	20 mL	25 mL
OR Duration (hours)	3.7 h	4.4 h	3.5 h	4.3 h
Length of Stay (days)	0 d	3 d	1 d	0 d
90d Readmission?	N	N	N	N
90d Complication?	N	N	N	N
90d Mortality?	N	N	N	N
90d Recurrence?	N	N	N	N

V6

Robotic end-to-side hepaticojejunostomy anastomosis using running barbed suture and associated long-term biliary complications.

Nazanin Khajoueinejad, MD, Moffitt Cancer Center; Mokenge Malafa, MD, Moffitt Cancer Center; Jose M. Pimiento, MD, FACS, H. Lee Moffitt Cancer Center and Research Institute; Jason Denbo, MD, Moffitt Cancer Center; Daniel Anaya Saenz, MD, Moffitt Cancer Center; Andrew J. Sinnamon, MD, H. Lee Moffitt Cancer Center and Research Institute

INTRODUCTION: Robotic pancreaticoduodenectomy continues to emerge as a safe and feasible option for oncologic treatment of patients with malignancies of the head of the pancreas. Various approaches to creation of the hepaticojejunostomy robotically have been described but long-term data on technical and operative outcomes is lacking. **METHODS:** We demonstrate our robotic running technique for an end-to-side hepaticojejunostomy using 2 barbed sutures in two representative operative cases. Furthermore, we retrospectively reviewed our prospectively maintained database of subjects who underwent robotic pancreaticoduodenectomy at our institution between 2013-2025. Patients were excluded if the case was converted to open. All complications related to the hepaticojejunostomy were identified. **RESULTS:** Patient A is an 87-year-old female diagnosed with an ampullary adenoma not amenable to endoscopic resection identified on work up for dysphagia. Patient B is a 72-year-old female who presented with painless jaundice requiring ERCP and metal stent placement in setting of a resectable head of pancreas adenocarcinoma. Both patients underwent R0 resections and had uneventful recoveries postoperatively. Between 2013 and 2025, 163 robotic pancreaticoduodenectomies have been performed at our institution. The majority of patients (63, 39%) were diagnosed with head of pancreas intraductal papillary mucinous neoplasm meeting guideline definitions for resection based on high-risk stigmata or worrisome features. 35 (21%) patients in the cohort were diagnosed with resectable head of pancreas adenocarcinoma. Over the 12-year period, we identified 10 (6%) complications specific to the hepaticojejunostomy including 4 (2%) bile leaks, and 4 (2%) biliary strictures. Median time to stricture formation was 5 years (range 6 days - 6 years). Two (1%) patients formed secondary biliary stones at 6 and 11 years after resection. These complications were managed with a combination of endoscopic retrograde cholangiopancreatography and percutaneous transhepatic drain placement. **CONCLUSIONS:** Hepaticojejunostomy anastomosis can safely be reconstructed robotically using a running end-to-side technique with barbed suture and is associated with low rates of short-term and long-term complications.

V7

Optimizing Safety in Robotic-Assisted Right Hepatectomy: Technique for Complete Vascular Control of the Left and Middle Hepatic Veins Prior to Liver Transection.

Justin Bader, MD, Yale New Haven Hospital; David G. Su, MD, Yale New Haven Hospital; Sean Liu, BS, Yale University; Kevin Billingsley, MD, Yale New Haven Hospital

INTRODUCTION: Robotic right hepatectomy remains a challenging procedure. The risk of bleeding from middle hepatic vein branches is one of the major technical challenges. We present the case of a robotic-assisted right hepatectomy with innovative intraoperative maneuvers to gain early and complete vascular control of the left and middle hepatic veins to minimize risk of intraoperative bleeding. **METHODS:** A 71-year-old woman with colorectal adenocarcinoma presented with an isolated segment 7 hepatic metastasis involving the right hepatic vein. Following neoadjuvant chemotherapy, she underwent robotic-assisted right hepatectomy. Key operative maneuvers were employed to ensure safe vascular control including: (1) extrahepatic control of the left and middle hepatic veins, (2) intraoperative ultrasound guidance for vascular mapping, (3) indocyanine green (ICG) assessment of hepatic perfusion, and (4) intermittent Pringle maneuver application during parenchymal transection. **RESULTS:** The caudate lobe was mobilized, and a plane was developed (Fig1A) between the inferior vena cava and the hepatic veins to allow vessel loop encirclement of the left and middle hepatic veins (Fig1B). This step provided a means for intermittent occlusion of the veins during liver transection to prevent venous back-bleeding. Intraoperative ultrasound confirmed tumor location and middle hepatic vein course (Fig1C). After ligation of the right hepatic artery and right hepatic vein, ICG assessment confirmed clear-cut demarcation of the right liver (Fig1D). The porta hepatis was then encircled with a 14-Fr catheter as a Huang loop Pringle maneuver (Fig1E). Parenchymal transection was performed under intermittent Pringle control with a saline-cooled double bipolar technique and intermittent tightening of the vessel loop to ensure complete venous control (Fig1F). Estimated blood loss from the case was 100mL, and the patient did not require any blood product transfusions. No bile leak was observed, and intraoperative ultrasound confirmed intact vascular inflow and outflow to the liver after resection. **CONCLUSIONS:** Robotic right hepatectomy with secure vascular control of the left and middle hepatic veins is feasible and safe in selected patients with colorectal liver metastasis. This case highlights the ability of a robotic platform to achieve complex vascular dissection and complete control of inflow and outflow vessels to allow for successful parenchymal transection while minimizing blood loss.

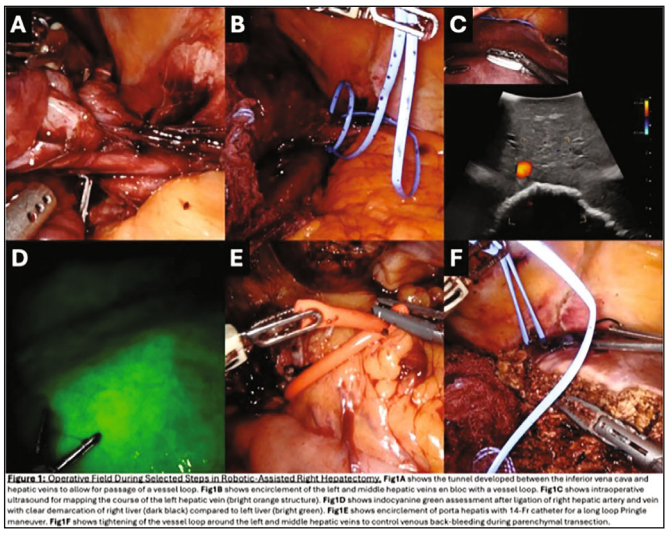

Figure 1: Operative Field During Selected Steps in Robotic-Assisted Right Hepatectomy. **Fig1A** shows the tunnel developed between the inferior vena cava and hepatic veins to allow for passage of a vessel loop. **Fig1B** shows encirclement of the left and middle hepatic veins en bloc with a vessel loop. **Fig1C** shows intraoperative ultrasound for mapping the course of the left hepatic vein (bright orange structure). **Fig1D** shows indocyanine green assessment after ligation of right hepatic artery and vein with clear demarcation of right liver (dark black) compared to left liver (bright green). **Fig1E** shows encirclement of porta hepatis with 14-Fr catheter for a long loop Pringle maneuver. **Fig1F** shows tightening of the vessel loop around the left and middle hepatic veins to control venous back-bleeding during parenchymal transection.

Figure. Operative Field During Selected Steps in Robotic-Assisted Right Hepatectomy

V8

Technical considerations during robotic pancreaticoduodenectomy for locally advanced pancreatic adenocarcinoma.

Anthony Sorrentino, MD, NYULMC; D Brock. Hewitt, MD, MPH, NYU Langone Health

INTRODUCTION: Robotic pancreaticoduodenectomy (RPD) is associated with shorter hospital length of stay and quicker return to functional recovery with comparable oncologic and major morbidity outcomes to open PD. At high-volume centers, RPD is being offered to highly selected patients with locally advanced pancreatic cancer (LAPC). Here, we report a case of a RPD in a patient with LAPC and aberrant anatomy to highlight notable technical considerations. **METHODS:** Video record of a RPD for a patient with LAPC. **RESULTS:** A 60-year-old male diagnosed with LAPC after workup for abdominal pain and unintentional weight loss. Imaging demonstrated a head of pancreas mass with encasement of the common hepatic artery and 180-degree involvement of the portal vein. Of note, he had a completely replaced right hepatic artery from the SMA and a partially replaced left hepatic artery (segment 2 and 3 branches) from the left gastric artery with termination of the common hepatic artery in the GDA and a segment 4 branch. After 12 cycles of neoadjuvant chemotherapy, he was taken for a RPD. The mass was invading the common hepatic artery, requiring en bloc resection, but was successfully dissected away from the portal confluence with negative intraoperative margins. The replaced right hepatic artery was divested from the pancreas. The segment 4 branch had pulsatile back bleeding; an arterial reconstruction was not performed. After the extended RPD, a diminutive pancreatic remnant remained. To avoid a high-risk anastomosis to a small duct and atrophic pancreas, the remnant pancreas was stapled without the creation of a pancreaticojejunostomy. The patient did not develop a pancreatic fistula and did not require a change in his diabetic medication at discharge. He remains on pancreatic enzymes. Final pathology revealed moderately to poorly differentiated PDAC, negative margins, 1/19 lymph nodes involved, and a partial neoadjuvant response score of 2. **CONCLUSIONS:** This case highlights the technical feasibility of a RPB in a patient with LAPC, including overcoming

challenges related to aberrant arterial anatomy, arterial encasement, and a small pancreatic remnant. Highly selected patients with LAPC and favorable biology can be safely managed with RPD at high volume centers.

V9

Laparoscopic Right hepatectomy by cavocaudal approach with intraglissonian Rouvieres sulcus dissection.

Osvaldo Quiroz Sandoval, M.D., Centro Medico Nacional 20 de Noviembre; Ricardo Ceron Castillo, M.D., Centro Medico Nacional 20 de Noviembre; Pamela Frigerio, Ed.D./ M.Sc.B./ M.I.M.S./ M.D., Centro Medico Nacional 20 de Noviembre; Mayerlin Calvache Muñoz, M.D., Centro Medico Nacional 20 de Noviembre; Berenice sanchez Vazquez, M.D., Centro Medico Nacional 20 de Noviembre; Diego Armando Acosta Cortes, M.D., Centro Medico Nacional 20 de Noviembre; Jaime Antonio Álvarez Gutiérrez, Centro Medico Nacional 20 de Noviembre

INTRODUCTION: Laparoscopic right hepatectomy has progressively evolved as a standard option for selected patients, offering reduced postoperative pain, faster recovery, and comparable oncologic outcomes to open surgery. However, this procedure remains technically demanding due to limited exposure and complex vascular anatomy. The cavocaudal approach, guided by Rouvière's sulcus and intraglissonian dissection, allows a precise anatomical resection with improved safety and control of inflow structures. **METHODS:** A totally laparoscopic right hepatectomy was performed with the patient in French position. Pneumoperitoneum was established at 12 mmHg, and four trocars were placed strategically to optimize right upper quadrant access. The procedure began with identification of Rouvière's sulcus as the extrahepatic anatomical landmark to expose the right Glissonian pedicle. An intraglissonian dissection was performed, allowing en bloc control of right hepatic inflow structures without prior hilar dissection. The cavocaudal approach facilitated progressive parenchymal transection using energy devices under intermittent Pringle maneuver. Operative data, hemodynamic stability, and postoperative outcomes were recorded. RESULTS**:** A 62-year-old female with a 4.5 cm GIST metastasis G1 in segment VIII VII VI, Child–Pugh A, underwent laparoscopic right hepatectomy via the cavocaudal intraglissonian approach. Total operative time was 360 minutes, with blood loss of 600 mL. The right hepatic pedicle was controlled safely through Rouvière's sulcus, and parenchymal transection followed the middle hepatic vein plane. The specimen was extracted in a retrieval bag through a suprapubic incision. Postoperative recovery was uneventful, with discharge on postoperative day five. Histopathology confirmed a well-differentiated three GIST metastasis segment VI VII VIII with negative margins (R0). **CONCLUSIONS:** The laparoscopic right hepatectomy using a cavocaudal approach with intraglissonian Rouvière's sulcus dissection is a feasible and reproducible technique in experienced hands. This approach enhances anatomic orientation, minimizes hilar manipulation, and allows safe control of vascular inflow while maintaining oncologic radicality. Mastery of Rouvière's sulcus anatomy and the intraglissonian plane is crucial to optimize safety, reduce blood loss, and shorten recovery time. Wider adoption of this technique may further expand the indications of major laparoscopic liver resections.

V10

Tracheal stenting for anaplastic thyroid cancer.

Zachary Hier, MD, University of Louisville; Thanyawat Sasanakietkul, MD, Police General Hospital; Tobias Carling, MD, PhD, Carling Adrenal Center; William Rosenblatt, MD, Yale University; Mahsa Javid, MB BChr MA Dphil, University of Louisville

INTRODUCTION: Median survival in anaplastic thyroid cancer (ATC) is less than 6 months from diagnosis. The most common causes of demise are airway obstruction and complications arising from metastases. Surgical techniques are usually reserved for palliation e.g. tracheostomy for airway obstruction. We present the technique of tracheal stenting for airway management in inoperable ATC. **METHODS:** A 73 year old woman presented with a six weeks history of progressive dysphagia, hemoptysis, weight loss, hoarse voice and a rapidly enlarging neck mass who was admitted with stridor. Work up revealed a paralyzed left vocal cord and large, pleomorphic atypical cells with epetheliod and spindle appearances on biopsy. CT revealed the mass encasing the left carotid sheath and mediastinal and retrotracheal extension with narrowing of the trachea down to 1.5 cm and lung metastases. Unresectable, metastatic ATC was diagnosed. External beam radiation therapy would, potentially, alleviate airway obstruction as well as compression of the esophagus and vasculature, however, could risk transient worsening of airway occlusion. We, therefore, opted to proceed initially with tracheal stenting to allow for palliation of symptoms and minimize the risk of acute airway occlusions due to secretions as well as for post-stenting treatment with radiation and chemotherapy. **RESULTS:** We show the placement of a tracheal stent in the operating room by an interventional pulmonologist with specialist anesthesia and nursing staff. Awake intubation was performed with a rigid tracheoscope, following which general anesthetic induced and jet ventilation initiated. The trachea was extrinsically compressed by over 50% and there was tumor infiltration of the mucosa. A flexible bronchoscope was used through the rigid to perform pulmonary toilet and to perform endobronchial biopsy of the mass at the infiltrated mucosa to secure a definitive diagnosis. A fully covered auto-expanding metallic stent was deployed using the dedicated stent deployment device. The entire mucosal infiltration was covered by the stent and the airway was fully patient along is entirety. Post-stenting palliative radiation was tolerated well and obstructive symptoms were reduced. Our patient was able to resume a regular diet and to live her last few weeks at home. **CONCLUSIONS:** Tracheal stenting can improve symptoms, quality of life and exercise tolerance in patients with locally advanced thyroid cancer. Though it has not been shown to have any impact on survival, this technique can help to alleviate the devastating symptoms of impending airway occlusion and allow a relatively more peaceful experience towards the end of life.

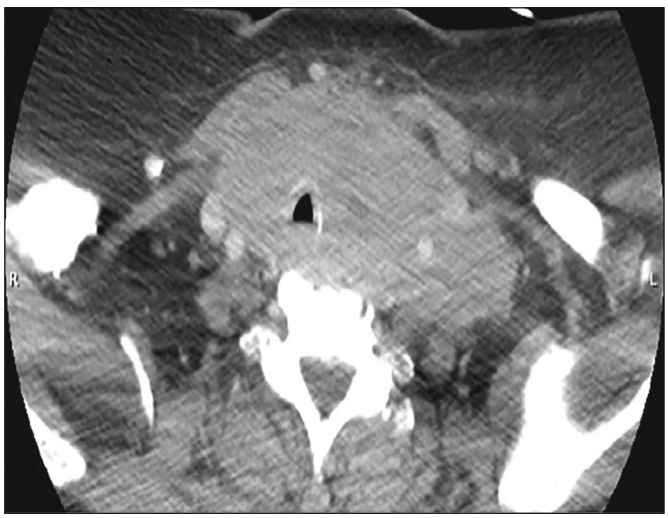

Figure. Cross-sectional view on CT of large neck mass encasing left carotid sheath with retrotracheal extension causing significant tracheal narrowing

ABSTRACTS

TRIALS IN PROGRESS & QUICK SHOTS

SSO 2026 ANNUAL MEETING

Society of Surgical Oncology

March 5-7, 2026

TIP1

IntraOperative UltraSound guided versus Wire guided versus Magnetic Seed guided breast-conserving surgery for non-palpable tumors: The MANOLA multicenter, randomized, open-label clinical trial

Massimo Ferrucci, MD, PhD, Veneto Institute of Oncology - IRCCS, Padova

BACKGROUND: Breast-conserving surgery (BCS) represents the gold standard for early breast cancer. However, positive margins remain a major concern, reported in 10–40% of cases, leading to re-excisions, increased costs, and poorer aesthetic results. Traditional wire localization (WL) remains the most widespread method for guiding the excision of non-palpable lesions, but it has notable and well known drawbacks. Newer wire-free techniques, such as magnetic seed localization, offer greater scheduling flexibility, lower migration risk, and high accuracy, although they remain costly and may cause MRI artifacts. Alternatively, intraoperative ultrasound (IOUS) allows reliable real-time visualization of the lesion and margins, improving oncologic control and cosmetic outcomes, while potentially reducing costs compared with magnetic systems. Despite encouraging evidence, robust comparative data between these localization techniques are lacking. The present study aims to compare the effectiveness, safety, and patient-centered outcomes of different localization strategies for non-palpable breast cancers. **METHODS:** This is a phase 3, multicenter, randomized, open-label superiority clinical trial enrolling 1,302 patients with non-palpable breast cancer eligible for BCS. Participants will be randomized (1:1:1) to one of three pre-surgical localization techniques: IOUS (Arm A), magnetic guidance (Arm B), or WL (control arm). Randomization will be stratified by lesion type and clinical center. The primary objective is to compare the positive margin rate between the 2 experimental arm and WL. Key secondary objective is pairwise comparisons between the two experimental arms. Additional secondary endpoints assess safety (Clavien-Dindo complications, re-excision rate), cosmetic outcomes, patient and surgeon satisfaction (BREAST-Q, Likert scales), cost-effectiveness (EQ-5D-5L), and learning curvemetrics. A difference of ≥7% in positive margin rate between WL (estimated 15%) and either experimental technique is considered clinically significant. With 434 patients per arm, the study has 80% power and a two-sided α=0.0167 to demonstrate superiority of the IOUS and magnetic guidance versus WL, in terms of proportion of positive margins. Charitable and institutional funding, already received, will support the trial. Ethics Committee approval has been obtained. The study is registered at ClinicalTrials.gov (NCT07185568) and is now ready for patient enrollment.

TIP2

Melanoma Margins Trial-II: 1cm v 2cm Wide Surgical Excision Margins for AJCC Stage II Primary Cutaneous Melanoma (MelMarT-II)

Marc Moncrieff, MD PhD FRCS(Plast.), Norfolk and Norwich University Hospitals; Joshua Mammen, MD, PhD, University of Nebraska Medical Center; Robyn Saw, MBBS, MS, FRACS, Melanoma Institute of Australia; Andrew J. Spillane, MD BMBS B Med Sci FRACS, Melanoma Institute Australia, University of Sydney; Serigne N. Lo, PhD, Melanoma Institute Australia, University of Sydney; David Gyorki, MBBS MD FRACS, Peter MacCallum Cancer Centre; Janet Dancey, MD FRCPC, Queen's University; James Van Bastelaar, INMC, Maatschap Heelkunde; Roger Oloffson, MD PhD, Sahlgrenska University Hospital; Barbara Peric, MD PhD, Institute of Oncology; Shirley Potter, MB BCh PhD FRCS(Plast.), St James's Hospital; John F. Thompson, MD, FRACS, FACS, Melanoma Institute Australia, University of Sydney, Royal Prince Alfred Hospital; Michael Henderson, MB BS MD FRACS, Peter MacCallum Cancer Centre

BACKGROUND: Wide local excision is standard treatment after diagnostic biopsy of primary cutaneous melanoma, yet the optimal margin for high-risk stage II disease remains debated. Although previous randomised trials support narrower margins in lower-risk melanoma, data for thicker tumours remain conflicting and concerns persist that wider excision may not improve oncological control yet increases morbidity and contribute to poorer patient experience and the likelihood of added reconstructive surgery. The MelMarT-1 pilot trial demonstrated the safety and feasibility of a randomised trial of excision margins resulting in the definitive phase III trial to clarify margin adequacy in stage II melanoma and address the potential excess morbidity associated with wider excision. **METHODS:** MelMarT-II is an international, multicentre, phase III randomised controlled non-inferiority trial comparing 1 cm versus 2 cm excision margins for local treatment of primary melanoma. Adults aged 18 years or older with cutaneous melanoma staged pT2b to pT4b (AJCC 8th edition) are eligible following diagnostic excision biopsy. All anatomical sites are eligible and patients are staged with sentinel node biopsy as standard of care. Participants are randomised 1:1 to a 1 cm or 2 cm radial excision margin around the primary scar. Randomisation is stratified by age, AJCC stage (IIA, IIB, IIC) and country. The primary endpoint is disease-free survival. Key secondary endpoints include melanoma specific survival, distant metastasis-free survival, surgical morbidity and reconstruction burden, and patient-centred outcomes incorporating quality-of-life assessment and health economic analysis. The sample size of 2,998 participants provides 80 percent power to demonstrate non-inferiority of the 1 cm margin. The primary analysis will follow the intention-to-treat principle. Recruitment has been completed across 9 countries in North America, Europe and Australasia and follow-up (5 years post randomisation) is ongoing. A planned a priori interim analysis is underway. The trial is coordinated by MASC Trials in Melbourne, Australia with international collaboration. Clinical trial registration: NCT03860883

TIP3

A prospective feasibility study using preoperative ctDNA to tailor neoadjuvant chemotherapy for patients with colorectal or appendiceal adenocarcinoma.

Ryan B. Morgan, MD, University of Texas MD Anderson Cancer Center; Taylor Neilson, MD, University of Texas MD Anderson Cancer Center; Y. Nancy You, MD, MHSc, University of Texas MD Anderson Cancer Center; Brian Bednarski, MD, MD Anderson Cancer Center; Ramy Behman, MD, PhD, University of Texas MD Anderson Cancer Center; Tsuyoshi Konishi, MD, PhD, University of Texas MD Anderson Cancer Center; Craig Messick, MD, University of Texas MD Anderson Cancer Center; Beth A. Helmink, MD, PhD, Department of Surgical Oncology, University of Texas MD Anderson Cancer Center; Yun Song, MD, Department of Surgical Oncology, University of Texas MD Anderson Cancer Center; Keith F. Fournier, MD, Department of Surgical Oncology, University of Texas MD Anderson Cancer Center; J. Joshua Smith, MD, PhD, Department of Colon & Rectal Surgery, University of Texas MD Anderson Cancer Center; Paula Marincola Smith, MD, PhD, Department of Colon & Rectal Surgery, University of Texas MD Anderson Cancer Center; Michael White, MD, MS, Department of Colon and Rectal Surgery, University of Texas MD Anderson Cancer Center

BACKGROUND: Treatment paradigms for patients with peritoneal metastases (PM) secondary to either colorectal cancer (CRC) or appendiceal adenocarcinoma (AA) are heterogeneous. Patients with resectable disease have improved survival following cytoreductive surgery (CRS) as part of multimodal care with the addition of peri-operative systemic chemotherapy being beneficial for patients with moderately or poorly differentiated histology. The ideal sequencing of treatment, however, remains unclear, and there are no well-established criteria for duration of neoadjuvant chemotherapy. Standard chemotherapy regimens for these patients can be poorly tolerated with cumulative toxicity affecting peri-operative outcomes. Circulating tumor DNA (ctDNA) has recently been studied as a decision tool for adjuvant treatment; however, it remains an unstudied marker for pre-operative risk-stratification. Given low ctDNA shedding with peritoneal metastases, preoperative ctDNA positivity has been previously noted to correlate with shorter disease-free survival and a higher rate of visceral metastases. While conversion to negative ctDNA during adjuvant treatment for CRC confers a similar survival benefit as compared to being seronegative immediately after surgery, the significance of a similar conversion prior to CRS to guide neoadjuvant treatment is unexplored. **METHODS:** This single-arm trial (NCT05947838) includes patients who are ≥18 years old with histologically confirmed CRC or moderately/poorly differentiated AA with resectable peritoneal disease. Patients receive 2-3 months of standard of care neoadjuvant chemotherapy, after which those with stable or improving disease on cross-sectional imaging have ctDNA levels drawn. Patients with negative ctDNA undergo laparoscopy followed by CRS +/- Hyperthermic Intraperitoneal Chemotherapy (HIPEC). Those with persistently positive ctDNA receive an additional 2-3 months of chemotherapy prior to undergoing laparoscopy and CRS +/- HIPEC, with an option to change chemotherapy agents per standard of care recommendations. The primary endpoint is median recurrence-free survival (RFS) from the time of surgery, with secondary endpoints including 1- and 2- year RFS, 2-year overall survival, best overall response, patterns of recurrence, and rates of ctDNA conversion to negative. Eleven patients

are currently enrolled with a target accrual of 48 patients over the coming 10-month period.

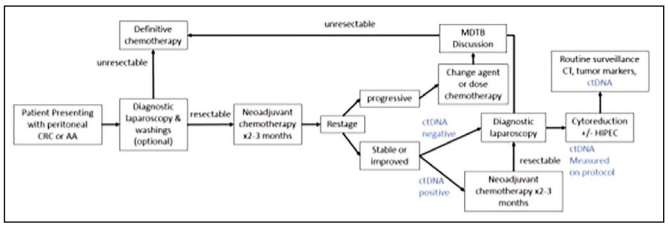

Figure 1 - Flow diagram for study enrollment and treatment.

TIP4

CHARLIE'S - 2: Randomized Phase II Trial of Laparoscopic Hyperthermic vs. Pressurized/Aerosolized Intraperitoneal Chemotherapy (HIPEC vs PIPAC) for Peritoneal Carcinomatosis.

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BACKGROUND: Peritoneal carcinomatosis (PC) is an advanced, largely incurable manifestation of gastrointestinal (GI) and gynecologic cancers that causes bowel obstruction, ascites, and malnutrition, with high morbidity and mortality. Management often combines systemic therapy, cytoreductive surgery (CRS), and intraperitoneal (IP) chemotherapy with either heated intraperitoneal chemotherapy (HIPEC) or pressurized aerosolized intra-peritoneal chemotherapy (PIPAC). In current practice, HIPEC is used in combination with CRS for patients with PC, however its contribution to disease control is controversial. PIPAC is currently investigational and offered to patients with unresectable disease ineligible for CRS for disease control or potentially convert them to resectable disease. However, there is significant variation in institutional protocols for the administration of HIPEC and PIPAC and in patient factors, such as site of primary tumor, histologic grade, and peritoneal cancer index (PCI) score. Although both HIPEC and PIPAC are increasingly utilized, to date, there has been no head to head comparison of their efficacy, tolerability, and relative safety. To address the paucity of comparative evidence, we designed the first randomized phase II trial comparing laparoscopic HIPEC against PIPAC in patients ineligible for CRS to identify a safer, more tolerable IP approach and inform standardization of care. **METHODS:** Randomized, phase II, single-center trial enrolling 200 adults between 18–80 years with biopsy-proven or clinically suspected PC persisting after ≥3 months of systemic chemotherapy and ineligible for immediate cytoreductive surgery on staging laparoscopy. Participants are randomized 1:1 to either laparoscopic HIPEC or PIPAC, both using mitomycin-C per tumor-specific standards, delivered approximately every 6 weeks for three cycles, followed by standardized restaging laparoscopy with biopsies.

TIP5

Volatile or IV Anesthesia for Cancer – A Randomized Clinical Trial Investigating the Impact of General Anesthesia on Patients with Colon and Rectal Adenocarcinoma.

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BACKGROUND: Surgery is required for cure of most solid tumors, and general anesthesia is often required for most surgery. General anesthesia can be delivered through two broad approaches: volatile inhalational anesthesia (IA) or propofol-based total intravenous anesthesia (TIVA). Of these, IA is the most common, but is associated with worse post-operative recovery, post-operative immune dysregulation, earlier cancer recurrence and worse overall survival. Multiple randomized controlled trials have demonstrated that TIVA improves short-term post-operative recovery, but few of these studies have included translational outcomes. *In vitro,* propofol is known to inhibit the formation of neutrophil extracellular traps (NETs) that increase post-operatively and are associated with tumor recurrence. In spite of a biologic rationale for improved cancer outcomes, and studies showing improved clinical outcomes, it is estimated that TIVA is used in less than 10% of eligible cases nationally. Some opposition to TIVA is that it is believed to be more difficult to administer, but to our knowledge this has never been comprehensively evaluated. **METHODS:** The VIVA trial (NCT06017141) is a prospective randomized trial in patients with primary resectable colon or upper rectal adenocarcinoma. Following exclusions for preexisting autoimmune conditions or a personal or family history of malignant hyperthermia, patients (n=80) with non-metastatic colon or upper rectal adenocarcinoma receiving upfront surgery are randomized 1:1 to TIVA or IA. Immune dysregulation is measured by changes in NET formation (the primary outcome) and changes in immune cell populations using flow cytometry. Differential RNA and protein expression are measured in resected tumor and adjuvant normal colon. Clinical recovery from surgery is measured broadly, including with patient reported outcome measures (the Quality of Recovery-40 and the Saint Louis Mental Status Exam), post-operative nausea and vomiting, opioid use, pain scores, and length of stay. In a subset of cases, anesthesia delivery will be directly observed to compare the required interventions while delivering TIVA and IA and then correlated with EHR recorded anesthetic dose adjustments for the full cohort to assess the relative difficulty of delivering TIVA vs IA. The VIVA trial (NCT06017141) has finished patient enrollment. It is anticipated the final patients will undergo surgery in October 2025 with primary data collection and patient unblinding occurring six months post-operatively.

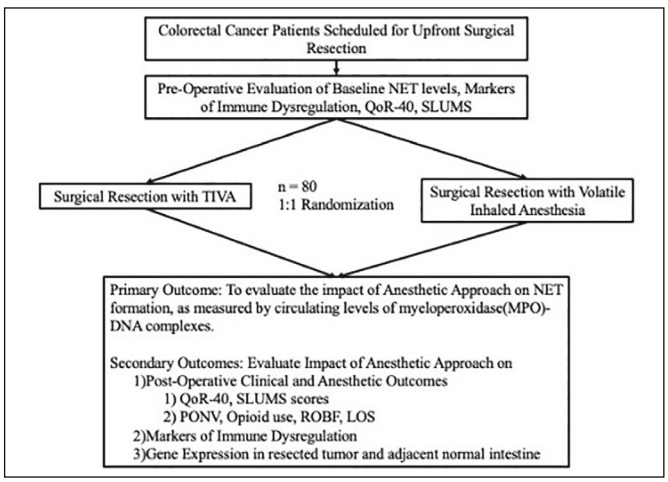

Figure. VIVA Scheme

TIP6

Metronidazole to optimize the microbiome of patients with rectal adenocarcinoma undergoing neoadjuvant therapy: protocol for the phase II MONARCH trial.

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BACKGROUND: Complete clinical response is reported in up to 50% receiving total neoadjuvant chemotherapy (TNT) including 5-fluorouracil (5-FU)-based chemotherapy and chemoradiation. Recent studies show that specific intratumoral bacteria are associated with reduced responsiveness to TNT. Importantly, these microbes are not constant or static components of tumors; their abundance and activity can be dynamically modulated by environmental stressors, chemotherapy, and antimicrobials. We aim to evaluate the efficacy of metronidazole (Flagyl), a routine antibiotic with activity against anaerobic bacteria including Fusobacterium nucleatum (F. nucleatum), to selectively target deleterious microbial populations and quantify our ability to clear F. nucleatum from rectal tumors. **METHODS:** This randomized, phase II study is enrolling treatment-naïve patients with locally advanced rectal cancers scheduled to receive TNT. Patients are randomized 1:1 to receive standard of care TNT alone or TNT in combination with metronidazole. Metronidazole will be administered as a 7-day oral course initiated within the first two weeks of TNT or between the first and second cycles. Following therapy, patients with resectable tumors will undergo post-treatment sigmoidoscopy and biopsy (standard of care; if applicable) followed by proctectomy. Patients achieving complete clinical response who opt for watch and wait management will be followed according to standard protocols. A total of 78 patients will be randomized. The primary endpoint of the study is a ≥90% reduction in intratumoral anaerobic bacterial populations. Secondary endpoints include 2-year recurrence-free and overall survival. Rates of pathologic response will be quantified. Exploratory endpoints include spatial transcriptomic profiling before and after treatment to assess immune cell infiltration and its spatial relationship with intratumoral bacteria, with a particular focus on F. nucleatum.

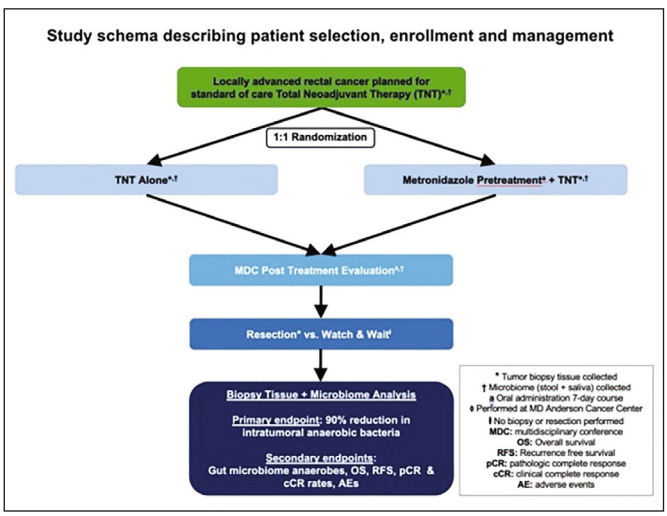

Figure. MONARCH Study Schema

TIP7

Phase I/II Study of Neoadjuvant mFOLFIRINOX with Hydroxychloroquine (FHQ) for Peri-operative Neutrophil Traps Inhibition in Pancreatic Adenocarcinoma.

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BACKGROUND: Poor outcomes in pancreatic adenocarcinoma (PDAC) are driven by a uniquely fibrotic and immunosuppressive tumor microenvironment (TME) that promotes treatment resistance. Novel therapies that target the PDAC TME and augment treatment response are desperately needed. Neutrophil extracellular traps (NETs) are a network of DNA, histones, and reactive oxygen species released by neutrophils upon activation. NETs have emerged as ubiquitous mediators of sterile inflammation and are increased in patients with PDAC and in response to pancreatectomy. NETs are critical in the PDAC TME, as they increase fibrosis by activating pancreatic stellate cells,[1] drive immunosuppression[2] and mediate cancer metastases.[3-6] As a result, targeting NETs holds significant promise for improving outcomes in PDAC. Hydroxychloroquine (HCQ) is an inexpensive, orally available drug that blocks NETs through inhibition of PAD4, an enzyme required for citrullination of histones that allows for unwinding of DNA and subsequent expulsion during NET formation[7-9]. HCQ improves response to preoperative gemcitabine/nab-paclitaxel in PDAC.[10-12] The current trial builds on this framework to evaluate the novel combination of neoadjuvant mFOLFIRINOX and perioperative HCQ (FHQ). Because we have shown that NETs are induced after pancreatic surgery, we also extend HCQ dosing through the 2 week post-operative period. **METHODS:** This phase I/II trial (NCT04911816) utilizes an accelerated dose escalation algorithm to determine the primary endpoint of dose-limiting toxicity (DLT) of FHQ. HCQ begins with mFOLFIRINOX (4 cycles) and continues through two weeks post-operatively. In the absence of a DLT, one patient is treated from each dose cohort (400, 800, and 1200mg/day PO divided BID). If a DLT is encountered, the study reverts to a traditional 3+3 dose escalation plan. This design maximizes the number of subjects treated at a pharmacologically relevant dose. Treatment response as assessed by Evans Grade IIB or better histopathologic response and Ca19-9 response are secondary endpoints. Evaluating this regimen in the neoadjuvant setting ensures that nearly all treated tumors will be assessed for biological activity (NET inhibition). Eligible subjects include those with resectable disease and absence of UGT1A1 or DPYD mutations on pharmacogenomic testing, as these mutations increase the risk of side effects to FOLFIRINOX that could confound assessment for HCQ toxicity. To date, this trial has enrolled 14 of 35 subjects.

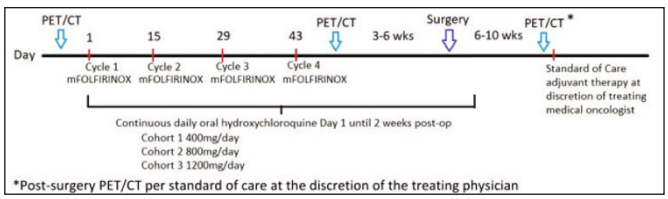

Figure. Study Schema

TIP8

A Single-Arm Phase II Clinical Trial of Gemcitabine, Cisplatin, and Nab-Paclitaxel as Neoadjuvant Therapy for Pancreatic Ductal Adenocarcinoma

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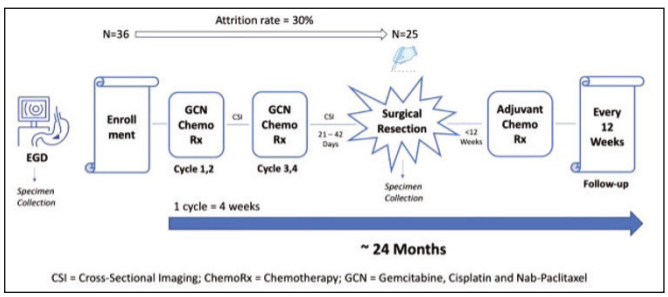
BACKGROUND: Multimodal therapy combining surgical resection and chemotherapy is the standard for resectable and borderline resectable pancreatic ductal adenocarcinoma (PDAC). Only 58% of patients with resectable or borderline resectable receive adjuvant therapy after upfront surgery, whereas neoadjuvant therapy enables approximately 75% to proceed to surgery and complete multimodal therapy. Current standard neoadjuvant chemotherapy regimens {i.e., modified Folinic acid, Fluorouracil, Irinotecan, Oxaliplatin (FOLFIRINOX) and gemcitabine nab-paclitaxel (GN)} achieve a major pathological response rate in 33% patients [SWOG S1505]. A phase Ib/II trial adding cisplatin to GN (GCN) in advanced PDAC noted a 71% objective response rate, including 8% complete responses. Another phase II study in advanced biliary tract cancer using the GCN regimen demonstrated improved median overall survival (19.2 months) and progression-free survival (11.8 months). We aim to evaluate GCN in the neoadjuvant setting for resectable and borderline resectable PDAC. **METHODS:** This single-arm phase II trial (NCT06423326) evaluates the feasibility (completion of 4 cycles), safety and clinical response of neoadjuvant GCN in patients with resectable and borderline resectable PDAC. Patients receive gemcitabine 800 mg/m² IV (30 min), cisplatin 25 mg/m² IV (60 min), and nab-paclitaxel 100 mg/m² IV (30 min) on days 1 and 15 of each 28-day cycle for 4 cycles (8 total doses), followed by restaging and surgery if resectable. Eligibility criteria include age ≥18 years, ECOG 0–1, biopsy-confirmed PDAC (resectable/borderline resectable per NCCN) and adequate organ function. The primary endpoint is clinical response (biochemical, radiographic, pathologic or stable disease without progression to unresectability). Secondary endpoints include R0 resection rate, nodal status, recurrence-free and overall survival and changes in tumor immune infiltration via multiplex immunohistochemistry on pre- and post-neoadjuvant specimens. Sample size (n=36) was determined using a single-stage design, with success defined as ≥75% of patients achieving clinical response, providing 80% power to detect a 20% improvement over historical rates (α=0.05). Enrollment began in July 2024 with 14 patients until October 10, 2025.



QS1

The impact of polyurethane coated implants on the risk of capsular contracture after immediate prepectoral breast reconstruction in the setting of postmastectomy radiotherapy: The OPBC-09 PRExRT study.

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INTRODUCTION: Patients with breast cancer undergoing mastectomy with implant-based breast reconstruction (IBBR), who are at high risk of locoregional recurrence, often require postmastectomy radiotherapy (PMRT), which increases the risk of capsular contracture (CC). The present study assessed the association between use of polyurethane coated (PUc) versus non-PUc implants and the need for surgical revision due to CC in the setting of PMRT. **METHODS:** This international multicenter retrospective real-world study included patients with breast cancer who underwent nipple- (NSM) or skin-sparing mastectomy (SSM) with prepectoral IBBR with or without PUc implants followed by PMRT. Primary endpoint was surgical revision due to CC and was analyzed using Cox regression models. **RESULTS:** 1183 women treated between 2016 to 2022 at 19 sites in 13 countries (4 continents) were included. Of them, 773 (65.3%) underwent non-PUc IBBR and 410 (34.7%) PUc IBBR. Median age was 47 years (IQR 41-54) and median BMI was 24.4 kg/m2 (IQR 22-27.6). Median follow-up was 30.8 months (IQR 18.4-45.4) in the non-PUc group and 37.4 months (IQR 30-46.2) in the PUc group ($p< 0.001$). Of 1183 patients, 863 (73%) had invasive ductal carcinoma and 654 (55.3%) hormone receptor–positive/HER2 negative disease, with a median Ki-67 of 25% (IQR 12-44%). Compared to PUc IBBR, use of non-PUc implants was associated with less frequent NSM (32.5% vs. 73.7%, $p < 0.001$), more frequent use of synthetic mesh (20.3% vs. 1%, $p < 0.001$) or acellular dermal matrix (20.3% vs. 1.2%, $p < 0.001$), and with one-stage IBBR (76.6% vs. 92.2%, $p < 0.001$). Compared to PUc IBBR, use of non-PUc implants was associated with a higher rate of surgical revision due to CC (35.7% vs. 10.1%; hazard ratio [HR] 3.7, 95%CI 2.6-5.4, $p < 0.001$). The rate of any CC was also significantly higher in the non-PUc compared to the PUc group (58.7% vs. 33.3%; HR 1.9, 95%CI 1.5-2.4, $p < 0.001$). The likelihood of major infection (OR 3.9, 95%CI 2.2-7.6, $p< 0.001$), implant loss (OR 11, 95%CI 6.7-19.1, $p< 0.001$), reoperation (OR 3.3, 95%CI 2.4-4.6, $p < 0.001$) and implant exposure (OR 7.9, 95%CI 2.6-35,$p=0.001$) was also higher in the non-PUc group. **CONCLUSIONS:** This study showed a strong association between use of non-PUc vs. PUc implants and higher likelihood of surgical revision due to CC, as well as higher risk of complications, in the setting of PMRT. These findings may inform implant selection and reconstructive planning for irradiated patients.

QS2

Evaluating Nodal Burden in T1–T2 HR+HER2– Breast Cancer: Implications for SLNB Omission in Patients ≥50 Years

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INTRODUCTION: The recent INSEMA and SOUND randomized trials support sentinel lymph node biopsy (SLNB) omission in postmenopausal patients ≥50 years with clinically node-negative T1-T2 hormone receptor-positive (HR+) HER2– breast cancer and negative axillary ultrasound. We used real-world data to evaluate pathologic nodal positivity rates by tumor size for HR+HER2– breast cancer to assess the appropriateness of SLNB omission. **METHODS:** We performed a population-based retrospective cohort study using ICES Ontario databases. Patients diagnosed with T1–T2 HR+HER2– invasive breast cancer from 2000–2019 in Ontario, Canada were identified through the Ontario Cancer Registry. Nodal positivity rates were determined for each T stage and stratified by age group (< 50, 50-69, ≥70). Multivariable logistic regression adjusting for age, T stage, and hormone receptor subtype was performed using SAS®. **RESULTS:** There were 30,969 HR+HER2– tumors, including 4895 (16%) patients < 50 yrs, 16,987 (55%) 50–69 yrs, and 9087 (29%) ≥70 yrs. SLNB was omitted in 288 (3%) patients ≥70 yrs. Nodal positivity rates reached 40% in patients < 50 yrs, and was lower in patients ≥50 yrs (50–69 yrs: 28%, ≥70 yrs: 25%; P< 0.01) (Table 1a-c). Across all age groups, 82% of node-positive patients had N1 disease. Most N2-N3 disease occurred in T2 tumors (< 50 yrs: 76% N2, 79% N3. 50–69 yrs: 73% N2, 77% N3. ≥70 yrs: 73% N2, 86% N3). On multivariable logistic regression, tumor size was the strongest predictor of nodal positivity. Compared with T1a tumors, the odds of nodal involvement were higher for T1b (OR 1.9, P< 0.01), T1c (OR 6.0, P< 0.01), and T2 (OR 17.0, P< 0.01) tumors. Age was inversely associated with nodal positivity. Compared with patients < 50 years, the odds were significantly lower for those ≥50 years (OR 0.7, P< 0.01) and ≥70 years (OR 0.6, P< 0.01). Hormone receptor subtype was also associated with nodal positivity. Compared with ER+PR+ tumors, the odds were significantly lower for ER+PR– (OR 0.9, P=0.01) and ER–PR+ (OR 0.7, P< 0.01). **CONCLUSIONS**: Rates of nodal positivity are not insignificant for T1-T2 HR+ HER2- breast cancer. In women ≥50 yrs, rates of nodal positivity increased from 5% for pT1a to 25% for pT1c lesions, but most nodal burden was N1 disease. This suggests that SLNB omission would not have impacted systemic therapy decisions, as these patients would receive genomic assay testing However, radiotherapy decisions would be impacted as identification of nodal disease is an indication for locoregional radiation. These findings need to be considered in the era of surgical and radiotherapy de-escalation.

Table. Nodal burden among patients

Table 1a. Nodal burden among patients **<50 years old**, reported as frequency and proportion (%)

	Total	Node-Negative	Node-Positive	N1	N2	N3
	N = 4895	*N* = 2951	*N* = 1944	*N* = 1590	*N* = 278	*N* = 76
T1a	210	189 (90)	21 (10)	20 (95)	1 (5)	0 (0)
T1b	530	455 (86)	75 (14)	69 (92)	5 (7)	1 (1)
T1c	1840	1258 (68)	582 (32)	507 (87)	60 (10)	15 (3)
T2	2314	1049 (45)	1266 (55)	994 (79)	212 (17)	60 (5)

Table 1b. Nodal burden among patients **50–69 years old**, reported as frequency and proportion (%)

	Total	Node-Negative	Node-Positive	N1	N2	N3
	N = 16,987	*N* = 12,231	*N* = 4756	*N* = 3905	*N* = 634	*N* = 217
T1a	916	871 (95)	45 (5)	40 (89)	3 (7)	2 (4)
T1b	3226	2920 (91)	306 (9)	281 (92)	17 (6)	8 (3)
T1c	7369	5594 (76)	1775 (24)	1585 (89)	151 (9)	39 (2)
T2	5479	2846 (52)	2630 (48)	1999 (76)	463 (18)	168 (6)

Table 1c. Nodal burden among patients **≥70 years old**, reported as frequency and proportion (%)

	Total	Node-Negative	Node-Positive	N1	N2	N3
	N = 9087	*N* = 6792	*N* = 2295	*N* = 1890	*N* = 298	*N* = 107
T1a	373	363 (97)	10 (3)	8 (80)	1 (10)	1 (10)
T1b	1529	1429 (93)	100 (7)	93 (93)	6 (6)	1 (1)
T1c	3716	2961 (80)	755 (20)	667 (88)	75 (10)	13 (2)
T2	3469	2039 (59)	1430 (41)	1122 (78)	216 (15)	92 (6)

QS3

Endocrine therapy omission in estrogen receptor-low early-stage breast cancer: an updated analysis of the NCDB database

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INTRODUCTION: Endocrine therapy (ET) is recommended for patients (pts) with estrogen receptor (ER) positive breast cancer (BC); however its role in ER-low (1-10%) disease is uncertain. Using the National Cancer Database (NCDB) from 2018-2020, we previously found that ET omission was associated with worse survival in 7018 pts with ER-low BC treated with (neo)adjuvant chemotherapy with 586 deaths (Choong et al. JCO 2025). The objective of this study was to examine the frequency and impact of ET omission in an expanded cohort of NCDB pts with ER-low BC. **METHODS:** Female pts with stage I-III ER-low BC diagnosed 2018-2023 and treated with neoadjuvant (NAC) and/or adjuvant chemo were identified. Practice trends in ET use were evaluated 2018-2023, and overall survival (OS) was analyzed in those diagnosed 2018-2022. Kaplan-Meier curves estimated 3- and 5-year OS for ER-low BC by ET omission vs receipt; multivariable analysis was performed using Cox proportional hazards regression. **RESULTS:** A total of 12,983 pts with ER-low breast cancer treated with chemo (8658 NAC [53% with total pathologic complete response (pCR), 47% with residual disease (RD)] and 4325 adjuvant) were included. Overall, ET use decreased during the study period (62% 2018 vs. 33% 2023, p< 0.001). The decline was more pronounced in pts treated with NAC (62% to 28% with pCR; 53% to 28% with RD), versus those receiving adjuvant chemo (68% to 45%, each p< 0.001). OS was assessed in 11,136 pts with ER-low BC in 2018-2022 (median follow-up 3.4 years; 1,137 deaths). ET omission was associated with higher mortality (aHR 1.24, p< 0.001). Stratified by chemotherapy response, ET omission was associated with worse OS in pts treated with NAC with RD (aHR 1.23, 95% CI 1.05-1.45, p=0.01) but not in those treated with NAC with pCR (aHR 1.09, p=0.61) nor in those who received adjuvant chemotherapy (aHR 1.14, p=0.24). Examining the impact of ER expression, survival was worse in pts with both ER 1-5% (aHR 1.21, 95% CI 1.02-1.43, p=0.03) and ER 6-10% (aHR 1.33, 95% CI 1.04-1.70, p=0.03). **CONCLUSIONS:** Evaluating an expanded NCDB with nearly double the number of deaths than our prior report, ET omission in ER-low BC is associated with a nearly 25% increase in death. For pts treated with NAC, this effect was restricted to those with RD after NAC. Despite this, ET use in ER-low disease has decreased substantially over time. These underscore the importance of administering ET to pts with low disease.

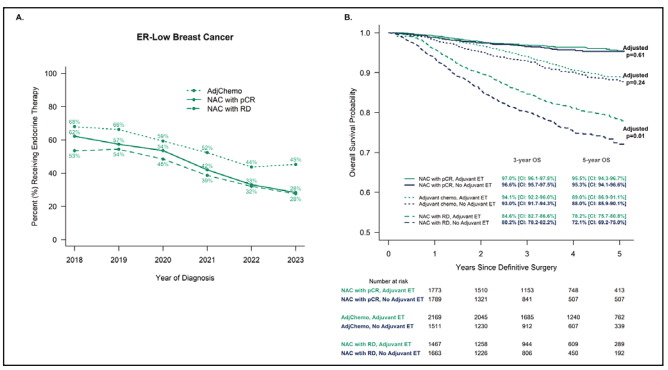

Figure 1. (A) Trend in the use of ET among patients with ER-low BC by chemotherapy setting and response. (B) Kaplan-Meier Survival Curves to estimate 3-year and 5-year OS in patients with ER-low BC after NAC with and without ET.

QS4

Validation of ASCO guideline for omission of sentinel lymph node biopsy in postmenopausal women with early-stage breast cancer and negative preoperative axillary ultrasound: a two-year, single-institution retrospective review

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INTRODUCTION: ASCO no longer recommends routine sentinel lymph node biopsy (SLNB) in select patients who are postmenopausal, ≥50 years old with negative preoperative axillary ultrasound (AUS) for grade 1-2, ≤2 cm, hormone receptor (HR) positive, HER2-negative invasive breast cancers undergoing breast-conservation (BCT). To validate this new guideline, we assessed the rate of SLNB positivity, and the impact nodal staging may have on recommended adjuvant therapies. **METHODS:** Single-institution, retrospective review of patients from January 1, 2023 to December 31, 2024. Inclusion criteria: age ≥50 years, T1N0 unifocal invasive carcinoma, grade 1-2, HR +, HER2-negative, negative AUS, and underwent BCT. Multivariable logistic regression was used to evaluate 1) the association between tumor characteristics, patient demographics, and SLN positivity; 2) the association between SLN positivity and adjuvant therapies. Odds ratio and its 95% CI was estimated for each covariate in the model. P< 0.05 was considered statistically significant. **RESULTS:** 260 women were included for analysis: mean age 62.3 years and mean tumor size was 12.6 mm. Figure 1 includes patient demographic and tumor characteristics as well as multivariable analysis results. 21 (8.1%) patients had a positive SLN. One patient (0.4%) had 4 positive SLNs. Three patients underwent axillary lymph node dissection. Multivariable analysis showed larger tumor size [OR 1.19 (1.09-1.30), p< 0.001] and younger age [OR 0.90, (0.83-0.98), p=0.015] were significantly associated SLN positivity. On separate multivariable analysis, SLN positivity was statistically predictive of adjuvant regional nodal irradiation (RNI) [OR 157178 (41.6-5.9E8), P=0.004] but no other adjuvant therapies. Univariable regression analysis showed a higher Oncotype score to be significantly associated with adjuvant CDK 4/6 inhibitor (CDKi) [OR 1.19 (1.03-1.36), p=0.012] and chemotherapy use [OR 1.9 (1.3-2.75) p=0.004]. **CONCLUSIONS:** Applying the ASCO guideline retrospectively, 8.1% of patients who met criteria for omission were found to have node positive disease. SLN positivity was predictive of adjuvant RNI only and no systemic therapies. Genomic profiling via Oncotype was predictive of adjuvant CDKi and chemotherapy use despite nodal staging. These findings support the new ASCO guideline as there was no change to systemic therapy recommendations with positive SLNB.

Table 1. Multivariable analysis of patient demographic information, tumor characteristics, and sentinel lymph node positivity as a predictor of adjuvant therapies

		Positive Lymph Node Status as Outcome N= 21/260 (8.08%)	
Variable	**N**	**Odds Ratio (95% CI)**	**P-Value**
Race			
Asian	7 (2.7%)	5.63 (0.80-39.73)	0.083
Black	43 (16.5%)	1.05 (0.21-5.15)	0.95
Native American	1 (0.4%)	0.00	0.99
Other	4 (1.5%)	0.00	0.98
White or Caucasian	205 (78.8%)	-	-
Histology			
Invasive Lobular Carcinoma	28 (10.8%)	0.23 (0.03-2.12)	0.20
Mixed Subtypes	33 (12.7%)	0.23 (0.03-1.91)	0.18
Invasive Ductal Carcinoma	199 (76.5%)	-	-
Histologic Grade			
2	111 (42.7%)	0.44 (0.14-1.36)	0.156
1	149 (57.3%)	-	-
Tumor Size	260 (Mean 12.6 mm, SD 6.6 mm)	1.19 (1.09-1.30)	**<0.001**
Age	260 (Mean 62.3, SD 6.0)	0.90 (0.83-0.98)	**0.015**
BMI	260 (Mean 30.7, SD 7.1)	1.01 (0.94-1.08)	0.86
Oncotype*	184 * (Mean 14.7, SD 7.3)	1.05 (0.97-1.14)*	0.21*
		Positive Lymph Node Status as a Predictor N= 21/260 (8.08%)**	
Outcome**	**N**	**Odds Ratio (95% CI)**	**P-Value**
Lymph Node Dissection	3 (1.2%)	7.4E21 (0.00-3.4E52)	0.16
CDK 4/6 inhibitor use	2 (0.8%)	1.97 (0.03-134.97)	0.75
Adjuvant RNI	17 (6.5%)	157178.3 (41.60-5.9383E8)	**0.004**
Adjuvant WBRT	234 (90.0%)	-	-
Adjuvant Chemotherapy	13 (5.0%)	0.26 (0.02-4.18)	0.34
Adjuvant Endocrine therapy	212 (81.5%)	0.94 (0.22-4.05)	0.93

*Oncotype testing was performed on 184 of the 260 patients in this study. Statistical analysis was performed using this available data.

**The following covariates were adjusted in the multivariable model: race, age, BMI, Histology, Histologic grade, ER Intensity

QS5

Functional Oncology Mapping (FuncOmap): checkpoint-interaction maps as functional biomarkers to guide neoadjuvant immunotherapy in melanoma

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INTRODUCTION: Neoadjuvant immune checkpoint blockade (ICB) is increasingly used in melanoma, yet biomarkers such as PD-L1 expression poorly predict response. Surgeons need tools that identify non-responders early to enable timely surgical rescue and avoid delays from ineffective therapy. **METHODS:** FuncOmap, the first automated platform for functional digital spatial profiling uses immune Förster Resonance Energy Transfer (iFRET) as a "chemical ruler" to directly quantify millions of checkpoint interactions (e.g., PD-1:PD-L1) in tumors at < 10 nm distances. High Ef indicates strong checkpoint interaction; low Ef indicates weak interaction. We upgraded FuncOmap to integrate cyclic multiplex immunofluorescence (mIF) immune maps, generating functional immune maps of the tumor microenvironment. Paired pre- and post-treatment melanoma specimens from patients receiving neoadjuvant ICB were analyzed; FFPE compatibility was maintained. We use supervised (tumor associated macrophages, M1-like vs M2-like) and unsupervised (all PD-1/PD-L1 cells) machine learning to distinguish critical patterns of checkpoint interactions in the tumor-immune microenvironment. **RESULTS:** In the first 10 patients analyzed (40 total in training set), loss of PD-1:PD-L1 interactions was associated with favorable pathologic response, whereas gainwas observed with non-response. Importantly, FuncOmap distinguished patients with similar partial pathologic responses, where loss of interaction predicted superior survival compared with gain of interaction. Integrated cell-specific analyses showed immunostimulatory tumor-associated macrophages were enriched in pre-ICB samples of responders within regions of high interaction. These findings demonstrate that checkpoint-interaction change patterns stratify outcomes more effectively than PD-L1 scores. **CONCLUSIONS:** FuncOmap establishes a new class of functional immune biomarkers by quantifying checkpoint interactions in situ. Preliminary results suggest predictive capacity superior to PD-L1. In completion of our training data, we aim to i) develop biomarker-driven decision-making. including identifying opportunity for early surgical rescue and tailored operations for responders and ii) further.. FuncOmap is also optimized for additional checkpoint and targeted receptor:ligand pairs (e.g., CTLA4:CD80, LAG3:MHCII, AXL:Gas6), broadening translational potential.

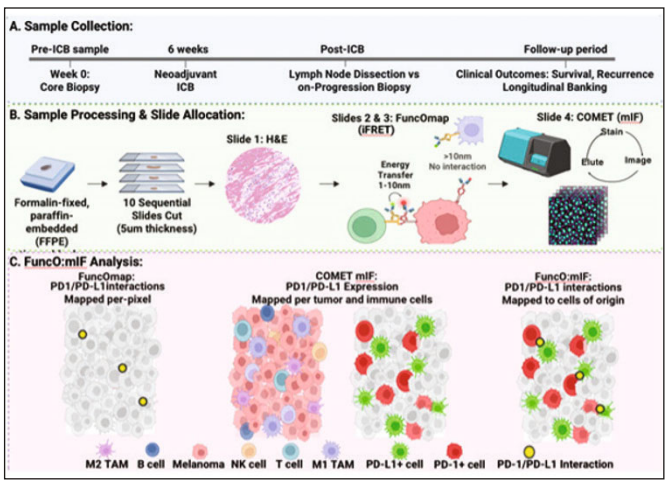

Figure 1. Functional Oncology Mapping (FuncOmap) of the Tumor-immune Microenvironment. To quantify cell-specific checkpoint interactions in melanoma immune checkpoint blockade (ICB) responses, we integrate two digital spatial maps: iFRET-based interactions (by FuncOmap) and multiplex immunofluorescence (mIF, by Lunaphore COMET). A) Prospective sampling pre- and post- ICB in Stage III patients. B) newly validated FuncOmap performs automated iFRET mapping. mIF performs 40-analyte tumor-immune microenvironment spatial mapping. C) FuncO:mIF integrated maps resolve cell-specific checkpoint interactions.

QS6

An evaluation of out-of-pocket costs for long course chemoradiation and short course radiation therapy for rectal cancer

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INTRODUCTION: Neoadjuvant short course radiation and long course chemoradiation are standard treatments for locally advanced rectal cancer. Regimens balance local control rates, pathologic complete response rates, toxicity, and patient preference. In patients eligible for both, cost may be a neglected consideration. We aimed to (1) compare out-of-pocket costs (OOPC) between short course radiation and long course chemoradiation; and (2) determine if specific insurance plan types were associated with regimen selection. **METHODS:** Locally advanced rectal cancer patients were identified from Merative MarketScan (2016-2023). Encounters and billing codes were used to categorize neoadjuvant regimens into long course chemoradiation (≥25 episodes), short course radiation (≤5), or other (6-24). OOPC were the sum of patient deductibles, copayments, and coinsurance for radiation and chemosensitizers. Patient and insurance plan characteristics were compared. OOPC were estimated with a two-part model: logistic regression for any OOPC, then a log-link gamma model for positive OOPC; estimates adjusted for patient factors. Plans were categorized as: high deductible (HD), preferred provider organization (PPO), comprehensive, exclusive provider/health maintenance organization (EPO/HMO), point of service (PS). A separate logistic regression evaluated the association between plan type and receipt of long course therapy. **RESULTS:** Between 2016-2023, 7,542 patients were identified with rectal cancer: 3,426 (45%) underwent radiation therapy with 2,285 (67%) completing long course chemoradiation, 861 (25%) short course radiation, and 280 (8%) other. After adjustment, the estimated mean OOPC were $1,136 for long course (95% CI $1,070-$1,212) and $896 for short course (95% CI $774-$1,021). When compared to HD insurance plans, patients with comprehensive plans were more likely to undergo long course chemoradiation (RR 1.17, 95% CI 1.06-1.29, p=0.001). Patients were less likely to undergo long course chemoradiation if they had a PPO plan (RR 0.88, 95% CI 0.83-0.93, p< 0.001) or an EPO/HMO (RR 0.9, 95% CI 0.83-0.98, p=0.017) plan. No difference was found for PS plans. (Table 1). **CONCLUSIONS**: Long course chemoradiation had higher costs (26% more) for patients when compared to short course radiation. Radiation course type was significantly associated with patient insurance type, with comprehensive plans more likely to undergo long course therapy. In patients who are candidates for both neoadjuvant regimens, costs may be an additional consideration guiding treatment selection.

Table 1. Likelihood of long course radiation compared to short course radiation, adjusted for age at diagnoses, year of diagnoses, sex, region and plan type. Abbreviations: CI = Confidence Interval, IRR = Incidence Rate Ratio, Risk ratios with robust standard errors

Characteristic	RR	95% CI	p-value
Plan Type			
High Deductible	—	—	
Preferred Provider Organization (PPO)	0.88	0.83, 0.93	<0.001
Comprehensive	1.17	1.06, 1.29	0.001
Exclusive Provider/Health Maintenance Organization (EPO/HMO)	0.9	0.83, 0.98	0.017
Point of Service (POS)	1.07	0.99, 1.15	0.079
Sex			
F	—	—	
M	0.99	0.94, 1.04	0.6
U.S. Geographic Region			
North central	—	—	
Northeast	0.99	0.92, 1.06	0.8
South	0.89	0.84, 0.94	<0.001
West	0.97	0.90, 1.05	0.5

QS7

Impact of Financial Navigation on Financial Catastrophe and Distress for Cancer Patients in Nigeria: Interim Results from the COST-FIN TRIAL

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INTRODUCTION: Cancer care presents a huge financial burden globally, with patients in low- and middle-income countries (LMICs) facing particularly high risks of catastrophic health expenditure. Financial Navigation Programs (FNPs) have been shown to mitigate financial toxicity in cancer care and improve treatment adherence, but there is a paucity of high-quality data on this intervention in resource-constrained settings. **METHODS:** We designed the COST-FIN trial, a multi-site single-blinded randomized controlled trial of newly diagnosed (< 6 weeks from diagnosis) adults (≥18 years) with breast, colorectal, or prostate cancer at two tertiary cancer centers in Nigeria. Participants were randomized (1:1) to either the intervention (FNP) or a control arm. Data on individual, treatment, and financial parameters were collected via structured interviews and chart abstraction at baseline, 3, 6, and 12-month follow-up. Here, we present 6-month follow-up interim results. Primary outcomes were financial catastrophe (FC), defined as out-of-pocket expenditure >40% of non-subsistence household expenditure, and financial distress (FD), measured by COST-FACIT scores. Treatment adherence was also assessed as a secondary outcome. Analyses employed linear and logistic mixed-effects models, adjusting for demographic, clinical, and socioeconomic covariates. **RESULTS:** A total of 156 participants have been enrolled across both study sites, with 51% in the FNP arm and 49% in the control arm (RC). The median age was 56 years (range: 24–87), most participants were female (65%), nearly half were employed (47%), and 52% reported being the head of household. The most common diagnosis was breast cancer (62%), followed by prostate (20%) and colorectal (18%) cancers. FC rates were similar between both study arms at baseline; however, at 6-month follow-up, patients in the

financial navigation arm had 90% lower odds of FC relative to controls (OR = 0.096, 95% CI: 0.01–0.91, p = 0.042). For all study participants, mean FD scores improved significantly at 6 months compared to 3 months (β = 3.84, SE = 1.88, p = 0.043), with no differential effect by treatment arm. Strikingly, 16% of patients in the control arm reported cost-related treatment abandonment at 6 months, while all patients in the FNP arm continued treatment (p = 0.048, Fisher's exact test). **CONCLUSIONS:** Interim results from this first-of-its-kind study in sub-Saharan Africa indicate that a pragmatic financial navigation program significantly reduces the risk of FC and cost-related treatment abandonment in Nigerian cancer patients.

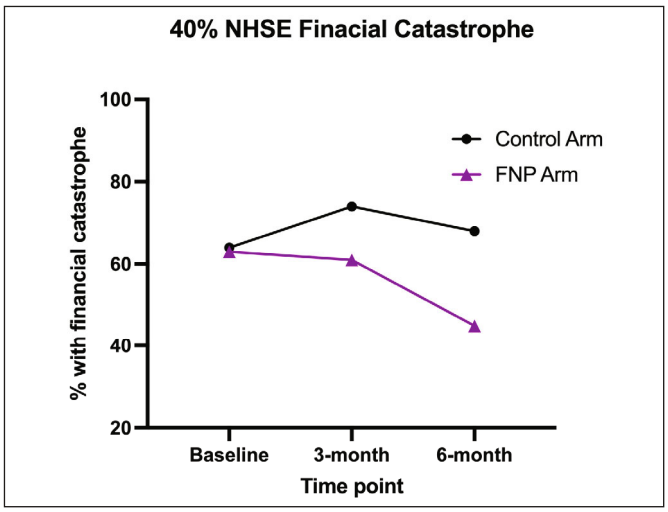

Figure. Financial catastrophe between control and FNP patients

QS8

High State-Level Social Vulnerability is Associated with Decreased Receipt of CRS/HIPEC in Non-White Appendiceal Adenocarcinoma Patients

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INTRODUCTION: Disparities in access to cancer treatment persist, often exacerbated by socioeconomic factors. Due to the rarity of appendiceal adenocarcinoma (AA), treatments such as cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) are not widely available. Our study aimed to examine if minoritized patient populations residing in resource-low states experienced differences in receipt of treatment for AA with peritoneal carcinomatosis (PC). **METHODS:** AA/PC patients from 2010-2020 were analyzed in the Surveillance, Epidemiology, and End Results (SEER) database. Patients were categorized as White versus Non-White (Non-Hispanic (NH) Black, NH Asian/Pacific Islander, and Hispanic patients). Aggregated state level population-weighted median percentile rankings were calculated for Social Vulnerability Index (SVI) for SEER U.S. counties. Scores were stratified into tertiles, where the third tertile (TR3) represents the most vulnerable. **RESULTS:** 1195 AA/PC patients were identified. 775 (59.3%) were female, and 67.9% were White. Non-White AA/PC patients were less likely to receive chemotherapy compared to White patients (68.6% vs. 74.1%, p=0.04) and were also less likely to receive CRS/HIPEC (11.0% vs. 17.7%, p=0.002). On subgroup analysis, Non-White patients residing in the most vulnerable SVI Tertile (T3) were less likely to receive any chemotherapy (65.6% vs. 75.0%, p=0.03) or CRS/HIPEC (13.7% vs. 23.1%, p=0.01), while there was no difference in less vulnerable SVI tertiles (all p >0.05). **CONCLUSIONS:** Non-White patients were less likely to receive CRS/HIPEC in the highest vulnerability tertile compared to White patients. Further investigation is warranted to guide state-level public health policy to increase treatment access for minoritized populations residing in vulnerable areas.

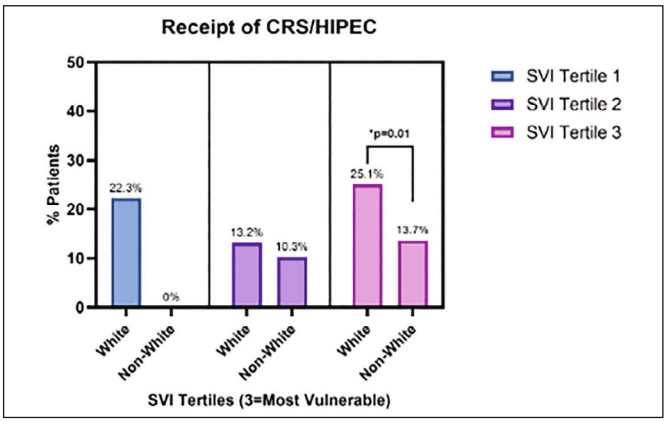

Figure. AA/PC patients receiving chemotherapy or cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) stratified by race and state-level social vulnerability tertile

QS9

Single-Cell Profiling of the Pancreatic Adaptive Immune Microenvironment with Inducible KRAS Activation: Understanding Therapeutic Vulnerabilities

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INTRODUCTION: Over 50 clinical trials are testing KRAS-inhibitors in pancreatic cancer treatment; however, early clinical data suggests that therapeutic resistance is common. Durable long-term response will likely depend on multimodal therapy, including immunotherapy. As such, there is a critical need to understand how KRAS-inhibition alters the tumor immune microenvironment. Utilizing a unique genetic mouse model of inducible KRAS that allows temporal control of KRAS activation and inactivation, we sought to uncover therapeutic vulnerabilities in the immune microenvironment. **METHODS:** We generated a doxycycline inducible mouse: Tet-Cre-KRASG12D/R26-EGFPrtTa/rtTA (iKRAS), where pancreas specific mutant KRAS can be turned ON or OFF, mimicking KRAS inhibition. We created 3 cohorts: KRASNULL, KRASON, and KRASON->OFF. Mice pancreata were subjected to single-cell RNA sequencing at the University of Michigan Genomics Core on the 10x Genomics Platform. Data were normalized and scaled for cell cluster identification (n = 63,787 cells , 8 mice) using PCA and UMAP algorithms on Seurat v5.3, R Studio. **RESULTS:** iKRAS mice harbor pancreatic neoplasia within 16 weeks of KRAS induction. At this timepoint, iKRAS activation produces distinct changes in the immune microenvironment including expansion of the myeloid cell compartment, increasing from 3% in KRASNULL to 16% in KRASON. After 1 week of KRAS inactivation (KRASON- >OFF cohort) the myeloid compartment reverts back to the KRASNULL state. In contrast, the T and NK cell populations only expand when KRAS is inactivated, with an accumulation of T cells in the KRASON- >OFF cohort (40% in KRASON- >OFF vs. 23% in KRASON). Mutant KRAS suppression resulted in enhanced T cell recruitment and expression of cell adhesion/extravasation molecules including Pecam1 and genes involved in mitochondrial oxidative phosphorylation such as Lars2 (Figure 1). Differential pathway analysis of KRASON vs. KRASON- >OFF cohorts show preferential up-regulation of genes involved in protein translation, RNA splicing, T cell receptor signaling and antigen recognition upon KRAS inactivation (FDR < 0.05). **CONCLUSIONS:** KRAS inactivation significantly alters the pancreatic cancer T cell population resulting in accumulation of metabolically active cells with enhanced T cell receptor signaling. These findings suggest a role for combinatorial immunotherapy post-KRAS inhibition as a means of durable long-term tumor control.

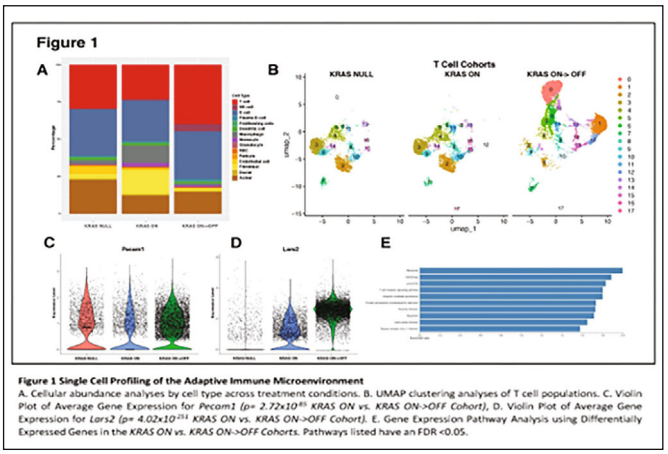

Figure 1: Single-Cell Profiling of Early Pancreatic Immune Microenvironment

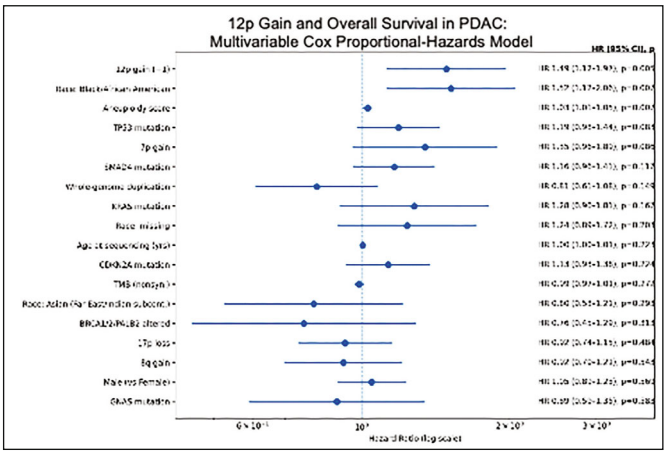

Figure. 12p Gain and Overall Survival in PDAC: Multivariable Cox Proportional-Hazards Model

QS10

Gain of chromosome 12p serves as an independent biomarker for aggressive disease in pancreatic ductal adenocarcinoma.

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INTRODUCTION: KRAS-dosage gains, thought to be largely due to focal amplifications of the KRAS locus (12p12.1), are associated with worse clinical outcomes in pancreatic ductal adenocarcinoma (PDAC). The effects of chromosomal 12p gains are less established and have received limited investigation in the context of other molecular drivers. As chromosomal instability and aneuploidy events are common in PDAC, this study sought to establish the clinicogenomic effects of 12p gain. **METHODS:** Genomic and patient data of primary PDAC tumors were queried from the MSK-MET tumor sequencing cohort. Clinical associations including overall survival (OS) were analyzed. A multivariable Cox proportional-hazards model accounting for clinical data and known PDAC drivers (whole genome duplication (WGD), tumor mutational burden (TMB), mutations: KRAS, TP53, CDKN2A, SMAD4, GNAS, BRCA1, BRCA2, PALB2, aneuploidy score, aneuploidy events: 7p gain, 8q gain, 17p loss) was constructed. Categorical variables were compared by Fisher's exact test, continuous by the Mann–Whitney U test, survival by the log-rank test, and coefficient p-values by Wald tests. **RESULTS:** A total of 1071 primary tumors were analyzed and stratified by 12p status (12p gain (8.2%, n=88) and 12p loss/neutral (91.8%, n=983)). Within the entire cohort, 12p gains were more frequent than focal KRAS amplifications (0.9%, n=10; p< 0.001). The overall incidence of KRAS mutations and variant distribution were similar between groups. Compared to 12p loss/neutral tumors, 12p gain tumors were noted to have higher frequencies of WGD (31.8% vs. 11.4%, p< 0.001), higher aneuploidy score (median (IQR): 9 (5-13) vs. 4 (0-7), p< 0.001), and more frequent TP53 mutations (86.0% vs. 73.1%, p=0.007). 12p gains were associated with worse OS with a median survival of 14.2 months compared to 19.9 months in 12p loss/neutral tumors (p< 0.001). 60.2% of 12p gain patients died within the first year of diagnosis compared to 44.4% of 12p loss/neutral patients (p=0.004). On multivariable Cox proportional hazards analysis adjusting for clinical and genomic covariates, 12p gains were associated with worse overall survival (HR 1.49, 95% CI: [1.12-1.97], p=0.005). **CONCLUSIONS:** 12p gains are frequent and independently associated with poor overall survival even when accounting for large-scale chromosomal instability (WGD, high aneuploidy burden). 12p gains may serve as a potential clinically actionable biomarker in both disease prognostication and may identify patients most likely to benefit for emerging KRAS-targeted therapies.

QS11

Evaluation of a Home-Based Infusion Model for Hepatic Artery Infusion Pump Therapy– A Feasibility Study

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INTRODUCTION: Hepatic artery infusion (HAI) therapy is increasingly used in the treatment of unresectable colorectal liver metastases or cholangiocarcinoma. A limitation of HAI therapy is the requirement for patients to travel to centers for pump fills, adding both time and financial burdens, as they may not have a center nearby that performs pump refills. Home-based infusion eliminates the need for travel and grants access to more patients to receive HAI therapy. We report the initial outcomes from a home-based infusion model of HAI therapy. **METHODS:** Patients who underwent HAI pump placement between December 2024 to September 2025 at a single institution were evaluated for home infusion based on insurance coverage. All patients required their first floxuridine (FUDR) pump fill at the central infusion center. Subsequent fills with FUDR and heparin, on an alternating two-week schedule, were performed by Pentec Health, a home-based infusion company. The primary endpoint was the mean number of pump fills, including dose adjustments as necessary, between home infusion (Pentec) and center fill (center) groups. Secondary endpoints included the distance traveled to the pump refill center and the number of missed doses. All data was extracted from the electronic health record and maintained in a local database. **RESULTS:** Eleven HAI pumps were inserted in our center during the study (5 males, 6 females; mean age 60.6 years (range 38-72 years), of which 7 patients were in the Pentec group and 4 patients in the center group. Pathologies included colorectal liver metastases (n=10), and cholangiocarcinoma (n=1). Seven patients (6 Pentec, 1 center) are receiving active HAI therapy. The mean distance from the patients' home to the pump refill center was 72.7 miles (range: 11.6-143 miles) for the Pentec group and 9.95 (range: 4.6-21.3) miles for the center group (Figure 1). Pentec and center groups had a mean of 3.7 (range: 2-5) and 3.8 (range: 2-5) doses of FUDR administered, respectively. Three patients in both the Pentec group and center group required dose reductions/ treatment holds during therapy due to elevated liver enzymes. There were no missed doses in either group. **CONCLUSIONS:** Home-based infusion for HAI therapy is feasible across a range of distances from the primary treatment center without affecting number of pump fills or increasing the number of missed doses. This increases convenience and decreases the distance traveled for patients undergoing HAI therapy. Continued use of home-based infusion programs will allow for increased utilization of HAI therapy without previous geographic and logistical hurdles.

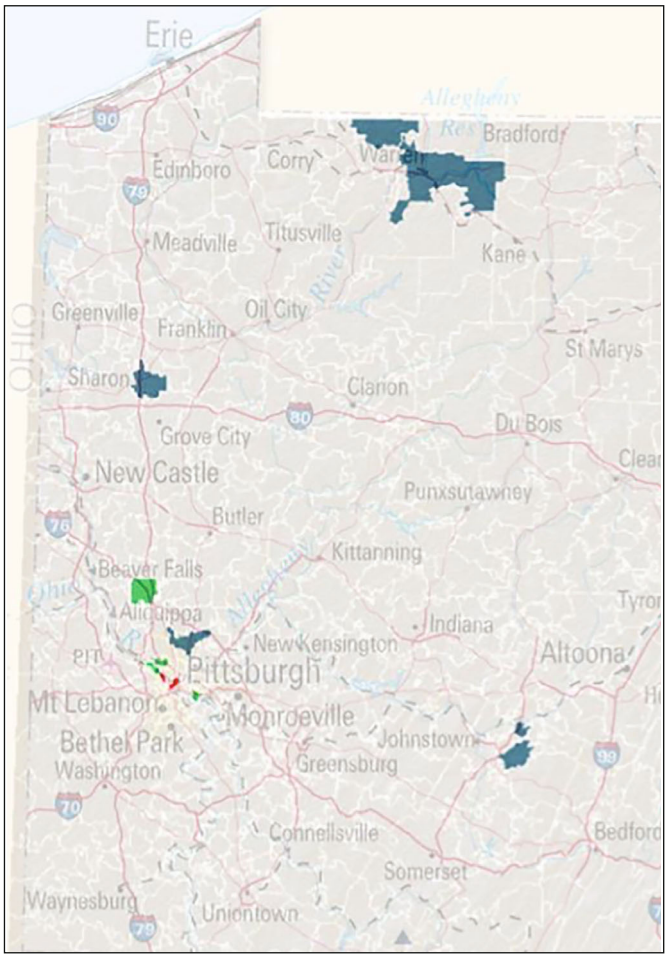

Figure 1. Location of home-based HAI infusion (blue), hospital-based HAI infusion (green) as compared to the location of our primary hospital-based infusion center (red) by ZIP code.

QS12

Clinical outcomes of extended neoadjuvant FLOT for resectable gastroesophageal cancer

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INTRODUCTION: FLOT4 and ESOPEC established 4 preoperative/4 postoperative cycles of FLOT as the standard of care for nonmetastatic gastroesophageal adenocarcinomas, but < 50% of patients are able to complete the full chemotherapeutic regimen, particularly the postoperative portion. It is unclear if failing to receive adequate systemic therapy has any bearing on disease-free and overall survival for these patients. In this study, we aimed to assess if delivering more preoperative doses (≥6) of chemotherapy has any drawbacks and whether outcomes are more favorable than the standard approach. **METHODS:** Review of Moffitt's IRB-approved esophagectomy (1994-2025) and gastrectomy (2000-2025) databases identified 19 esophageal and 77 gastric cancer patients receiving perioperative chemotherapy without radiation. Demographics, clinical characteristics, and survival were compared between patients planned to receive 4 preoperative cycles (cohort A) and those planned for ≥6 (cohort B) using Chi-Square, Wilcoxon rank-sum, two-sample t-test, and Kaplan-Meier survival analyses. **RESULTS:** Of the total 96 patients, 33 (34.4%) received ≤4 preoperative cycles while 63 (65.6%) received ≥6. Median age, gender, race, Charlson Comorbidity Index score, smoking status, and primary tumor type were similar between groups (all p >0.05). Clinical T stage was more advanced in cohort B compared to A (p=0.05). Six patients in cohort B were de-escalated from FLOT to FOLFOX (9.5% vs 0%; p=0.07). There were no differences in postoperative complication rates (31.7% vs 21.2%; p=0.28), length of stay (6 vs 7 days; p=0.93), and negative surgical margin rates (96.8% vs 100%; p=0.30). Patients receiving more preoperative chemotherapy were more likely to complete the treatment course (58.7% vs 30.3%; p=0.008) and received a greater total number of cycles overall (8 vs 6; p≤0.001). The groups had similar recurrence rates (7.9% vs 9.1%; p=0.85), overall survival (HR = 1.13, 95% CI: 0.31, 4.05; p=0.9), and disease-free survival (HR = 0.99, 95% CI: 0.31, 3.15; p >0.9), despite a trend toward a higher pathological complete response (pCR) rate for cohort B (26.7% vs 13.8%; p=0.10). **CONCLUSIONS:** In our analysis, extended neoadjuvant chemotherapy increased treatment completion without worsening postsurgical outcomes. Although pCR rates were approximately doubled in the extended neoadjuvant group, the cohort size was insufficient for statistical significance. It is unclear if de-escalation of chemotherapy negates some benefits of FLOT administered for limited doses.

QS13

Enhanced Colorectal and Gastric Carcinoma Viability Due to Omental Fibroblasts is Reversed by IL-10 Blockade

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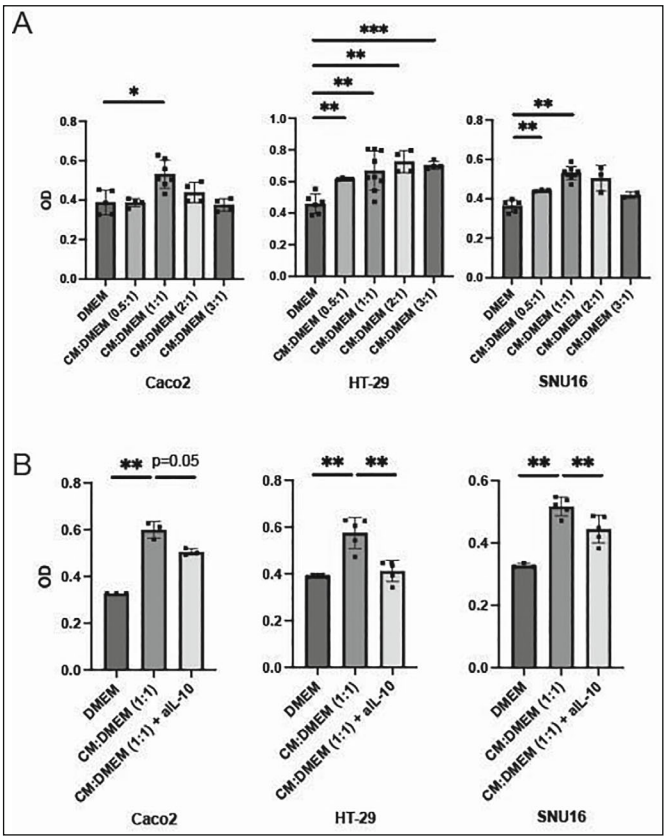
INTRODUCTION: Introduction: Peritoneal metastases from colorectal cancer (CRC) and gastric cancer (GC) commonly occur in the omentum and have poor prognosis with limited therapeutic options. The role of non-immune stromal cells, particularly fibroblasts, in tumorigenesis remains underexplored in the tumor microenvironment. This study investigates the role of fibroblasts isolated from human omental tissues in promoting tumorigenicity. In addition, literature indicates that IL-10 is secreted by peritoneal fibroblasts, and we investigated whether IL-10 blockade reverses the tumorigenicity. **METHODS:** Methods: Patient derived stromal cells (PDSCs) were isolated from human omental tissues and established as a stable cell culture (n=9). PDSCs are characterized phenotypically with immunofluorescence. Conditioned media (CM) from the PDSC cultures was added to CRC cell lines (Caco2 and HT-29) and GC cell lines (SNU16) containing standard DMEM media. Carcinoma cell viability was measured via MTT assay after 36 hours in culture with CM. Finally, an IL-10 blocking antibody was added to the PDSC culture to create a CM with IL-10 blockade, which was similarly cultured with carcinoma cell lines to evaluate the effect on viability after 36 hours. **RESULTS:** Results: Immunofluorescence showed positive expression for fibroblast activated protein (FAP) and negative expression for EpCAM, confirming that omental derived stromal cells were fibroblasts. Cell viability by MTT assay of GC and CRC cell lines increased by 37-46% when PDSC CM was added at a 1:1 ratio, compared to standard media alone (all p < 0.05, Fig.1A). Lower ratios of CM had less of an increase in carcinoma viability across all cell lines, and greater ratios of CM also did not increase carcinoma viability. When PDSC CM that included IL-10 blockade was added to the carcinoma cell lines, carcinoma cell viability was reduced by 14-28% (all p ≤ 0.05, Fig 1B). **CONCLUSIONS:** Conclusion: CM from PDSCs increased carcinoma cell viability in an approximately dose dependent manner until a 1:1 ratio was reached, indicating a secreted signal was tumorigenic. Blockade of IL-10 blunted the improved viability of carcinoma cell lines in culture with PDSC CM in a non-immunologic fashion. Our findings highlight a novel role of stromal cells as modulators of GC and CRC development and in fostering a pro-tumoral environment in which peritoneal metastases could become established. Targeting fibroblast-tumor interactions via secreted factors including IL-10 could be a potential target for locoregional therapy.



QS14

Abdominal Cavity Reconstruction from Laparoscopic PIPAC Video: Toward Quantitative and Quantitative Assessment of Peritoneal Surface Disease

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INTRODUCTION: Qualitative and quantitative assessment during peritoneal inspection is a surgeon dependent visual skill which sometimes lacks ability to ensure complete cavity visualization, document lesion characteristics consistently, and compare findings across procedures or techniques. To address these limitations, we developed a clinical framework that reconstructs the abdominal cavity from laparoscopic Pressurized Intraperitoneal Aerosolized Chemotherapy (PIPAC) video, quantifies survey coverage, and provides the basis for standardized documentation and longitudinal lesion tracking. This system provides an objective foundation for follow-up evaluation and comparative analysis of surgical and therapeutic techniques. **METHODS:** Retrospective analysis of laparoscopic PIPAC videos. Patient-specific 3D cavity models were generated using visual SLAM-based (Simultaneous Localization And Mapping based) dense surface with surface fusion to compute coverage of a full cavity map. Anatomical correctness was verified by an attending surgeon who reviewed region partitions and mesh structures on keyframes to ensure accuracy of the reconstructed anatomy. **RESULTS:** The framework successfully reconstructed patient-specific 3D models of the peritoneal cavity from laparoscopic PIPAC videos using visual SLAM. The resulting reconstructions enabled visualization of the internal abdominal wall, delineating major peritoneal regions and anatomical landmarks. Quantitative coverage maps were generated to illustrate the extent and uniformity of visual exploration during the procedure. The system also enables comparison of coverage patterns across procedures and facilitates spatial localization of lesions within the reconstructed cavity. **CONCLUSIONS:** From laparoscopic PIPAC videos, we achieved automated abdominal cavity reconstruction with complete surface coverage and longitudinal alignment on a common anatomical model. This clinically applicable framework provides surgeons with a reliable method to verify completeness of peritoneal inspection, which will be the basis for future standardization of lesion documentation across procedures, and objectively track disease evolution over time, enhancing consistency in patient follow-up and comparative evaluation of treatment techniques.

QS15

Tumor-responsive natural killer cells infiltrate peritoneal metastasis from appendiceal adenocarcinoma

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INTRODUCTION: Peritoneal metastasis from appendiceal adenocarcinoma (PMAA) portends poor prognosis. PMAA is heavily infiltrated by several populations of adaptive immune cells, but the role of anti-tumor innate immunity in PMAA remains incompletely understood. Natural killer (NK) cells are innate cytotoxic lymphocytes which mediate robust anti-metastatic immunity in several cancer subtypes and have demonstrated prognostic relevance in human gastrointestinal cancers. We sought to investigate the role of NK cells in the human PMAA immune microenvironment. **METHODS:** To assess the response of NK cells to PMAA, we compared NK cells isolated from grade 1 and grade 2 PMAA in 4 human patients with NK cells isolated from tumor-naïve colorectal specimens using single-cell RNA sequencing (scRNA-seq). Differential gene expression analysis was performed using Seurat v5. **RESULTS:** NK cells are found in abundance in PMAA (Fig. 1A) and display several transcriptionally-distinct phenotypes (Fig. 1B). NK cells which express markers of terminal maturity and cytotoxic function, including NKp80 and IL2Rb, are enriched in PMAA relative to tumor-naïve colorectal mucosa (Fig. 1C). These enriched tumor-responsive NK cells co-express inhibitory NK cell markers, including CD94, KLRB1, and TGF-b—suggesting functional restriction which may limit NK cell-mediated anti-metastatic immunity in the peritoneum. **CONCLUSIONS:** PMAA is associated with an NK cell response which may have therapeutic relevance. Tumor-infiltrating NK cells in PMAA express markers of functional activation and cytotoxicity, as well as inhibitory NK cell receptors—suggesting a nuanced role for infiltrating NK cells in the microenvironment of PMAA. Further investigation in this area will seek to uncover strategies for unleashing NK cell immunity in PMAA to potentially enhance metastatic control.

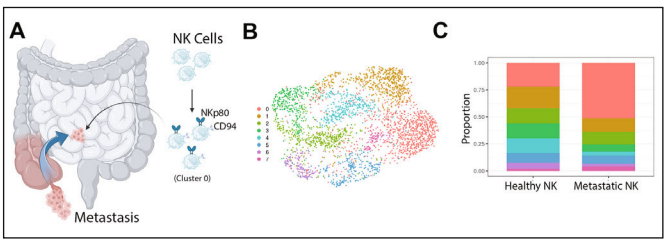

Figure 1 (A) metastasis of carcinoma of the appendix (B) co-clustering of NK cells isolated from healthy colon and PMAA (C) cluster frequency by condition (healthy control vs. PMAA)

QS16

Outcomes in patients with pelvic anastomosis during cytoreductive surgery and hyperthermic intraperitoneal chemotherapy with and without diverting ostomy

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INTRODUCTION: The need for diverting ostomy in patients undergoing pelvic anastomosis during CRS+HIPEC remains debated. This study compares patient characteristics and postoperative outcomes between those with and without protective ostomies to clarify the role of diversion in this population. **METHODS:** We conducted a retrospective chart review of patients who underwent CRS+HIPEC with pelvic anastomosis at a single academic institution. Preoperative and intraoperative variables were analyzed using descriptive statistics to compare outcomes between patients with and without ostomies. **RESULTS:** From January 2012 to June 2025, 95 of 490 patients who underwent CRS+HIPEC had a pelvic anastomosis (19.4%). Of these, 74 (78%) received a protective loop ileostomy or colostomy. There were no significant differences observed in patient demographics, comorbidities, or disease status between those who received ostomies and those who did not. Resection status, number of anastomoses, timing of pelvic anastomosis relative to chemotherapy perfusion, and leak test results were also similar. However, patients with ostomies experienced higher mean blood loss (1117.9 vs 753.6 mL, p=0.025) and longer operative times (629.3 vs 553.3 minutes, p=0.078). Patients without ostomies had higher rates of hand-sewn pelvic anastomosis (29% vs 8%, p=0.023), reoperation prior to discharge (24% vs 3%, p=0.0053), and pelvic anastomotic leak (20% vs 2%, p=0.011). Both patients with and without ostomies experienced comparable rates of Clavien-Dindo grade III/IV complications (21% vs 29%, p=0.55) and similar median overall survival (27.7 vs 35.5 months, p=0.68). Although the difference in 30-day mortality did not reach statistical significance, a higher rate was observed in patients without diversion (10% vs 4%, p=0.30). **CONCLUSIONS:** The use of a protective ostomy in patients undergoing pelvic anastomosis during CRS+HIPEC was associated with decreased rates of pelvic anastomotic leak and reoperation. Improved 30-day mortality was also observed with diversion. These findings support the continued use of diverting ostomy to reduce postoperative morbidity and mortality in this high-risk population.

QS17

Variant Lobular Carcinoma In-Situ of the Breast: A Single Institution Review of Management & Outcomes

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INTRODUCTION: Lobular carcinoma in situ (LCIS) is a risk marker for the development of invasive carcinoma (IC) in either breast. LCIS includes classic (c-LCIS) and variant LCIS (v-LCIS, i.e. pleomorphic + florid LCIS). Data to guide the clinical management of v-LCIS are scant and outcomes are uncertain; we conducted a retrospective review of experience at Northwestern Medicine (NM). **METHODS:** The NM Enterprise Data Warehouse was queried for adult patients diagnosed with v-LCIS on core needle biopsy (CNB) from January 2000 – December 2023. Patients diagnosed with IC or DCIS <4cm from the v-LCIS within the previous year were excluded, as were those with concurrent lesions who underwent mastectomy. Clinical, radiological, and pathological variables and ipsilateral recurrences were studied. Positive margins were defined as v-LCIS, IC, or DCIS <2mm of ink. Ipsilateral recurrences were defined as v-LCIS, DCIS, or IC during the follow-up period. **RESULTS:** 102 patients with pure v-LCIS on CNB met inclusion criteria (median age 58 years, IQR: 48-66). All underwent mammography, 41/102 (40.2%) patients had ultrasonography, and 24/102 (23.5%) had MRI. Imaging showed calcifications (78/92, 84.7%); ultrasound mass (16/41, 39.0%); and MRI non-mass enhancement (13/24, 54.2%). Of 102, 93 underwent excision and 9 opted for mastectomy. Excision showed no residual v-LCIS in 25/102 (24.5%), v-LCIS in 48/102 (47.1%), DCIS in 6/102 (5.9%), and IC in 23/102 (22.5%) cases. Negative margins were achieved at first excision in 54/93 (58.1%) of surgical excision cases. Re-excision for positive margins of v-LCIS or upgrade was performed in 8/39 (20.5%) cases; an additional 5/39 (12.8%) opted for mastectomy. Postoperative radiotherapy was used in 6/73 (8.2%) patients without upgrade and 13/29 (44.8%) with upgrade. Median follow up was 45 months, with 17/93 ipsilateral recurrences (10 invasive, 7 v-LCIS), for an overall rate of 18.3%. Ten-year Ipsilateral recurrence-free survival was 75% (95%CI: 61%-91%) in patients without upgrade and 62% (95% CI: 28%-100%) if upgraded. Dense breasts were associated with recurrence [HR 12.2 [CI 2.06, 72.8]). Negative margins were protective against recurrence (HR 0.4 [CI 0.14-1.17]). **CONCLUSIONS:** In this large experience of pure v-LCIS, upgrades to IC or DCIS occurred in 28% of patients; 18.3% recurred. Negative margins were protective against recurrence, and breast density was associated with recurrence. Our findings support the concept that v-LCIS functions as a precursor lesion like DCIS, rather than a risk marker. Similar local management approaches should be considered.

QS18

Patient and Hospital-Level Disparities in Access to Genetic Testing and Counseling in Underserved Communities

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INTRODUCTION: The American Society of Clinical Oncology and the Society of Surgical Oncology recently expanded criteria for genetic testing to include all newly diagnosed patients with breast cancer age ≤ 65 years; however, studies have shown that only one third of patients undergo testing. The objective of this study was to evaluate baseline genetic testing rates and patient and hospital-level barriers to testing at accredited breast and cancer centers. **METHODS:** We conducted a quality improvement pilot study called the GAP (Genetic Access Pilot) study to evaluate patient and hospital-level barriers to expanding genetic testing. GAP enrolled 27 diverse accredited hospitals across the United States from January to July 2025. All hospitals submitted data on facility characteristics and testing rates of newly diagnosed breast cancer. Multivariable logistic regression models investigated associations with patient-level non-receipt of genetic testing. **RESULTS:** Of 27 hospitals participating in GAP, 20 (74%) were community-based hospitals, 16 (59%) served populations that were ≥20% Medicaid-insured, and 11 (41%) were safety net hospitals. In terms of access to genetic counselors or geneticists, 33% of hospitals had at least one on staff, 41% contracted with an external company, and 26% did not have any access. At baseline, hospital-level genetic testing rates were 71% for patients ≤ 65 years and 72% in April 2025 prior to any interventions (Table). These hospitals submitted data on 1,544 patients with newly diagnosed breast cancer, of whom mean age was 60 years (STD 13 years), 80% were White, and 74% were offered genetic testing. At the patient level, Black race (OR 1.83; 95% CI 1.13-2.97), and Hispanic ethnicity (OR 2.60; 95% CI 1.57-4.30) were associated with non-receipt of genetic testing. The most common barriers to genetic testing at the hospital-level included lack of insurance coverage for testing (50%), challenges related to patient adherence to scheduled appointments (33%), a shortage of genetic counselors or geneticists (25%), inability to complete testing prior to neoadjuvant therapy or surgery (25%), and surgeon disagreement with offering genetic testing to all newly diagnosed breast cancer patients (25%). **CONCLUSIONS:** Accredited breast and cancer hospitals are currently offering genetic testing to 72% of their patients with newly diagnosed breast cancer ≤ 65 years. Hospital and patient-level barriers to genetic testing will inform ongoing efforts to develop an implementation toolkit to increase equitable genetics care.

Table. Hospital-level testing rates by patient group at baseline and in April prior to any interventions.

Patient Group	Baseline Rate (mean %)	April Rate (mean %)
≤ 50 years	81	91
≤ 65 years	71	72
> 65 years	57	64
Triple Negative Breast Cancer	76	85

QS19

ADH or DCIS? This is the question. Insights from a national multicenter study

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INTRODUCTION: Atypical ductal hyperplasia (ADH) is classified as a B3 lesion with uncertain malignant potential, sharing histological and architectural features with low-grade ductal carcinoma in situ (DCIS) but measuring less than 2 mm in extent. Surgical excision is recommended due to the risk of upgrade to DCIS or invasive carcinoma (IC). However, reliable predictors of upgrade have not been clearly identified due to the limited size and heterogeneity of published series. We gathered the first large multicentric cohort to evaluate predictive factors for upgrade and oncologic outcomes. **METHODS:** Data were collected from 6 Italian centers. Patients with a preoperative diagnosis of ADH on biopsy were included. Cases showing associated DCIS and/or IC were excluded. **RESULTS:** Data from 855 patients treated between January 2010 and July 2025 were collected. Median age was 51 years (IQR 46-61) and 13 patients were male. Most cases (681/855, 77%) were screen-detected. Mammographic calcifications represented the most common radiologic finding (505/839, 60.2%), while non–mass-like enhancement was observed in 44/150 (29.3%) of cases undergoing contrast-enhanced mammography or magnetic resonance imaging. Breast conserving surgery was the predominant surgical approach: lumpectomy was performed in 524/855 cases (61.3%), while 284/855 (33.2%) underwent surgical biopsy. Mastectomy was performed in 42/855 (4.9%) cases and vacuum-assisted excision in only 5/855 cases (0.6%). Following surgery, the pre-operative diagnosis of ADH was confirmed in 579/855 (67.7%) cases, while 276/855 (32.3%) were upgraded to IC (102) or DCIS (174). Tumor size > 2 cm on imaging, apocrine differentiation, necrosis, presence of calcifications, and a time interval > 80 days between preoperative biopsy and surgery were significantly associated with upgrade. After a median follow-up of 58 months, 13/855 (1.5%) patients experienced an invasive ipsilateral recurrence and 9/855 (1%) a DCIS ipsilateral recurrence. Four patients died during follow-up, one due to breast cancer. **CONCLUSIONS:** The 32.3% upgrade rate strongly supports surgical excision, both to exclude an associated malignancy and to confirm the histologic diagnosis. Tumor size, time interval between biopsy and surgery, and specific pathologic and imaging features were identified as predictive factors for upgrade. ADH excision should not be delayed, as is commonly done for other B3 lesions, and cases showing predictive factors of upgrade should be surgically removed within two months to minimize the risk of an evolving underlying malignancy.

QS20

The melanocytic transcriptomic state is independently associated with poor overall survival in long term follow up of patients with metastatic melanoma

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INTRODUCTION: Melanomas display distinct transcriptomic states, but it remains unclear how they associate with clinical outcomes. We performed digital spatial RNA profiling (DSP-RNA) of metastatic tumors from patients to investigate how transcriptomic states correlate with OS and acral melanoma (AM) status. **METHODS:** We performed DSP-RNA across a tissue microarray constructed from 111 patients with in-transit metastatic melanoma (ITM) diagnosed from 1990-2020. Data quality control, noise correction, and normalization yielded high quality profiles from 105 patients, including 30 (36%) who received immune checkpoint inhibitors, and 20 (24%) with AM. **RESULTS:** We performed principal component analysis (PCA) and correlated the results with published gene signatures: the PC1 axis differentiated transitory from undifferentiated melanoma, PC2 reflected immune cell infiltration, PC3 corresponded to stromal cells and neural crest-like melanoma, and PC4 associated with melanocytic melanoma. Across a cohort of treatment-naïve ITM, high expression of the melanocytic state conferred a median overall survival difference of 7.59 years (melanocytic 'high'=5.16 years vs 'low'=12.75 years, log-rank p=0.0024) and independently associated with poor survival in multivariate analysis. AMs showed higher melanocytic state gene expression compared to non-acral cases. These findings were validated in external datasets, supporting that the melanocytic state predicts poor prognosis. **CONCLUSIONS:** The melanocytic state is associated with poor prognosis and may be enriched in AM, implying that identifying patients with melanocytic melanoma may be important for therapeutic decisions. Unlike other gene expression predictors proposed for prognostic stratification, the melanocytic state characterizes a biological subtype, suggesting that it may have specific therapeutic vulnerabilities.

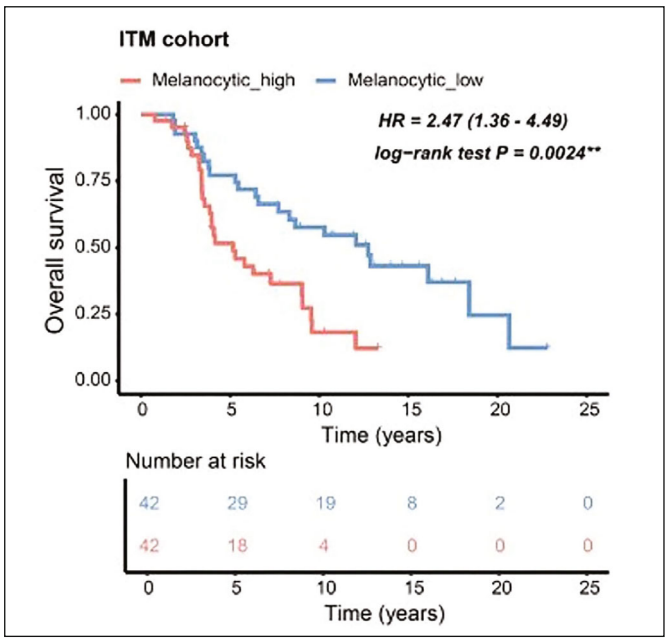


Figure. Kaplan - Meier survival plot comparing the overall survival between "Melanocytic high" and "Melanocytic low" group. **P < 0.01

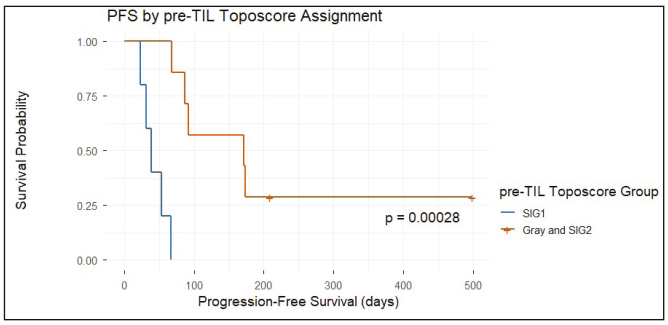
QS21

Impact of Gut Microbiome on Survival in Metastatic Melanoma Treated With TIL Therapy

Camille Briskin, MD, Massachusetts General Hospital; Derek Effiom, MBBS, Massachusetts General Hospital; Tanya Sharova, N/A, Massachusetts General Hospital; Aleigha Lawless, n/a, Massachusetts General Hospital; Genevieve Boland, MD, PhD, Massachusetts General Hospital; Francesca Gazzaniga, PhD, Massachusetts General Hospital; Sonia Cohen, MD, PhD, Massachusetts General Hospital

INTRODUCTION: Recent studies have shown that the gut microbiome topography score (Toposcore)—a quantitative metric reflecting the ecological organization of gut microbial communities—is associated with immunotherapy response and survival in melanoma. Building on these findings, this study investigates the association between Toposcore and clinical outcomes in patients with metastatic melanoma treated with tumor-infiltrating lymphocyte (TIL) therapy. **METHODS:** We performed a retrospective analysis of 18 patients with metastatic melanoma who received TIL therapy and provided stool samples at predefined timepoints. The pre–TIL timepoint had the highest sample availability, with stool from 12 patients analyzed and assigned a Toposcore. Based on microbial composition, patients were categorized into three gut community signatures: SIG1 (dysbiotic), SIG2 (eubiotic), and a gray zone intermediate group. Pearson correlation coefficients and p values were calculated to assess associations between Toposcore and both progression-free survival (PFS) and overall survival (OS). Kaplan–Meier analysis compared PFS between microbial signature groups. **RESULTS:** Higher Toposcores

demonstrated moderate positive correlations with both PFS (r = 0.47, p = 0.12) and OS (r = 0.50, p = 0.10). Kaplan–Meier analysis revealed significantly longer PFS in patients with Gray/SIG2 microbial signatures compared to those with SIG1 (p = 0.00028). Although correlation analyses did not reach statistical significance, these trends collectively suggest that a more eubiotic microbiome, reflected by higher Toposcore and Gray/SIG2 classification, is associated with improved clinical outcomes. **CONCLUSIONS:** Toposcore and microbial signature classification were positively associated with PFS and OS in patients with metastatic melanoma treated with TIL therapy. These findings support emerging evidence that gut microbiome ecology influences antitumor immunity. Larger studies are warranted to validate Toposcore and microbial signatures as predictive biomarkers and to elucidate their mechanistic role in melanoma immunotherapy.



QS22

Survival and recurrence outcomes for stage IIB/IIC melanoma: risk stratification for immunotherapy and surveillance

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INTRODUCTION: Stage IIB/IIC cutaneous melanoma (CM) has a poor prognosis. Adjuvant immunotherapy (IO) is offered to these patients (pts); however, it benefits only a small subset. Current benchmarks of the AJCC and German national registries (CMMR) vary significantly in survival estimates for this important group. This study provides an additional, international assessment of this group and identifies factors associated with increased risk of recurrence to guide adjuvant IO and surveillance. **METHODS:** This multi-institutional, international retrospective cohort study analyzed the Sentinel Lymph Node (SLN) Working Group database on pts with pathologic (p) tumor category T3b/T4a/T4b and pN0 disease who underwent surgical resection and SLN biopsy from 1994- 2025. Clinicopathologic and demographics variables were correlated with recurrence risk, recurrence location and survival. **RESULTS:** We identified 2514 pts (1648 stage IIB CM (65.6%) and 866 stage IIC (34.4%)) from 19 sites in 4 countries. Median age was 66.9 years (IQR 57, 76) and 1579 (62.8%) were male. Median Breslow thickness was 4.5 mm (IQR 3.1,6.0). 136 pts (5.4%) received adjuvant IO. 679 pts recurred (92 (14%) local, 238 (35%) regional and 345 (51%) distant as initial site). Median follow-up was 53.2 and 49.7 months for stage IIB and IIC respectively. On Kaplan-Meier analysis, stage IIB pts demonstrated improved recurrence free survival (RFS; 58% vs 43%, p< 0.0001), disease-specific survival (DSS; 86% vs 79%, p< 0.0001) and overall survival (OS; 74% vs 63%) at 5 years. On multivariable analysis, OS (HR 0.81) and RFS (HR 0.83) were higher for female pts. Lymphovascular invasion (LVI) and ulceration were associated with worse OS (HR 1.84, 1.43), DSS (HR 2.07, 1.49) and RFS (HR 1.54, 1.43). Increasing Breslow thickness was associated with a higher risk of recurrence and worse survival outcomes, with tumors >4mm RFS, DSS, and OS (HR 1.70, 1.98, 1.62) and tumors 3-4mm RFS and DSS (HR 1.69,1.30). Mitotic rate, tumor regression, preexisting lesions and presence of tumor infiltrating lymphocytes were not significant. **CONCLUSIONS:** In this large, international cohort; LVI, ulceration, male sex and thickness >3mm were independent predictors of worse survival and higher risk of recurrence. This supports using these factors to better stratify pts for consideration of adjuvant IO and increased surveillance. Additionally, survival outcomes were consistent with previous benchmarks, particularly for stage IIB pts. Five year DSS for stage IIC fell between AJCC (82%) and CMMR (76.6%) which may indicate that the true outcome is intermediate to these.

QS23

Oxaliplatin Concentration and Penetration in Peritoneum Administered by a Novel Drug Delivery System, Electrostatic Hyperthermic Pressurized Intraperitoneal Aerosol Chemotherapy (eHPIPAC) in Swine Model

Mira Yoo, n/a, Seoul National University Bundang Hospital

INTRODUCTION: Peritoneal metastasis is a dominant failure pattern in gastric cancer and responds poorly to systemic chemotherapy because of limited peritoneal drug penetration across the plasma–peritoneal barrier. Regional aerosolized intraperitoneal delivery may improve local exposure while limiting systemic toxicity. To compare peritoneal tissue distribution and penetration of oxaliplatin delivered by three methods—intravenous (IV) infusion, electrostatic PIPAC (ePIPAC), and electrostatic hyperthermic PIPAC (eHPIPAC)—in a swine model. **METHODS:** Thirteen pigs received 10 mg/kg oxaliplatin via IV (n=3), ePIPAC (n=5), and eHPIPAC (n=5). Sixty minutes after administration, peritoneal biopsies (lateral and medial) and plasma samples were collected. Oxaliplatin concentrations in tissue and plasma were measured by liquid chromatography-tandem mass spectrometry, and tissue-to-plasma ratios (Kp) were calculated. Depth of drug penetration into the peritoneum was visualized using matrix-assisted laser desorption/ionization mass spectrometry imaging (MALDI-MSI). **RESULTS:** Peritoneal drug levels were markedly higher with aerosol delivery than IV. Lateral peritoneum concentrations averaged 60.47 ± 16.07 μg/g (IV), 494.00 ± 304.97 μg/g (ePIPAC), and 934.38 ± 1,163.83 μg/g (eHPIPAC; p = 0.128). Medial values were 14.40 ± 10.92 μg/g, 118.09 ± 312.22 μg/g, and 500.78 ± 183.06 μg/g, respectively (p = 0.079). Kp increased from 0.80 ± 0.42 (IV) to 5.97 ± 3.01 (ePIPAC) and 8.80 ± 5.80 (eHPIPAC) laterally (p = 0.024), and from 0.23 ± 0.25 to 5.19 ± 5.93 and 5.33 ± 3.69 medially (p = 0.067). MALDI-MS images demonstrated greater tissue distribution with eHPIPAC (3.12 ± 0.44 mm) versus ePIPAC (2.32 ± 0.86 mm) (p = 0.112). **CONCLUSIONS:** Aerosolized delivery dramatically enhances peritoneal oxaliplatin uptake and penetration compared to systemic infusion, with eHPIPAC achieving the greatest and most consistent exposure—yielding peritoneal concentrations approximately 15-fold higher laterally and 35-fold higher medially versus IV—and an average tissue penetration depth of 3.12 mm. Further evaluation in tumor-bearing models is warranted to support clinical translation.

QS24

Results of a Phase II Randomized Comparison of Flat vs Weight based Mitomycin C Intraperitoneal Chemotherapy for Patients Undergoing Cytoreductive Surgery and Heated Intraperitoneal Chemotherapy

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INTRODUCTION: Cytoreductive surgery (CRS) ± heated intraperitoneal chemotherapy (HIPEC) has demonstrated increased survival in patients with peritoneal carcinomatosis (PC) from advanced gastrointestinal (GI) malignancies. Mitomycin C (MMC) is historically the most common drug utilized worldwide with highly variable dosing and is associated with neutropenia and increased morbidity. Two dominant dosing strategies: flat dose (FD) and weight-based (WB) have never been compared, and lack of consensus in dosing prevents standardization of HIPEC technique. **METHODS:** A single institution investigator-initiated phase II trial compared FD and WB MMC in patients undergoing CRS+HIPEC for advanced GI cancer. Eligible patients were randomized to MMC FD 40 mg vs WB 12.5 mg/m2 utilizing 1:1 allocation. Plasma (PLA) and peritoneal (PER) fluid samples were collected (at 0, 15, 30, 60, 90 min) in addition to PLA postoperatively (2, 4, 12 hr) for pharmacokinetic (PK) analysis including Cmax (ng/mL) and area under the curve (AUC) (hr*ng/mL). Clinicopathologic data and rate of neutropenia (treatment) between the two arms were compared. Recurrence data was evaluated for all patients with ≥ 1 year follow-up, excluding those with LAMN and completeness of cytoreduction (CC) score = 2. **RESULTS:** Of patients enrolled, 60 patients have undergone CRS and HIPEC and PK data has been analyzed for 54 of these, including 24 who received FD and 30 who received WB. MMC exposure was significantly higher in both PLA and PER for FD vs WB. Mean PLA Cmax was 675.2 (FD) vs 442.6 (WB), p = 0.0039. Mean PER Cmax was 13663 (FD) vs 9436 (WB), p = 0.023 (Figure 1A-B). Mean PLA AUC was 1385 hr*ng/mL (FD) vs 878.8 hr*ng/mL (WB), p = 0.0023. Mean PER AUC was 13044 hr*ng/mL (FD) vs 8464 hr*ng/mL for WB, p < 0.0001 (Figure 1C-D). No correlation existed between PER and PLA Cmax. The 2-week WBC nadir was higher in the FD arm; 4.78*103/µL (FD) vs 5.51*103/µL (WB), p = 0.09. Neutropenia treatment was required for a significantly greater proportion of patients in the FD arm; 17.8% (FD) vs 0% (WB), p = 0.006. There was no difference in 1-year disease free survival or overall survival between arms. **CONCLUSIONS:** The significantly higher MMC exposure in the FD group is associated with higher rates of neutropenia and no known survival benefit. Future directions include the creation of a population PK model from these analyses.

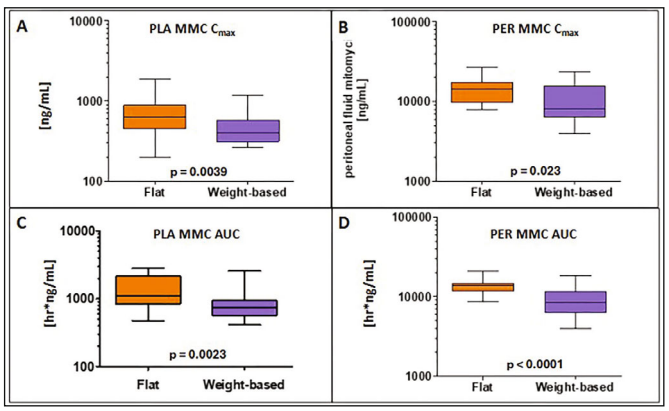

Figure 1.

QS25

Assessing the risk of non-colorectal aerodigestive malignancy in patients with a "false positive" stool multitarget DNA test

Kaniala Aragon, MD Candidate, University of Wisconsin-Madison; Jennifer Weiss, MD, University of Wisconsin-Madison; Patrick Pfau, MD, University of Wisconsin-Madison; Deepak Gopal, MD, University of Wisconsin-Madison; Mark Benson, MD, University of Wisconsin-Madison; Kaitlyn Kelly, MD, MAS, University of Wisconsin-Madison

INTRODUCTION: It has been suggested with limited data that a "false positive" result on a stool multi-target DNA (mtDNA) test, defined as a positive result without a colorectal cancer or advanced precancerous polyp found on colonoscopy, is not clinically significant and warrants no further diagnostic evaluation. We aimed to compare the incidence of non-colorectal aerodigestive malignancy (NCAM) in patients who had a false positive versus negative result by stool mtDNA. **METHODS:** All patients who underwent colorectal cancer screening by mtDNA at our institution from 2014 to 2024 were identified. Patients with a positive result who did not have a colonoscopy and those who had a true positive finding (colorectal cancer or advanced precancerous polyp) were excluded. We compared baseline demographics, incidence of NCAM, NCAM-free survival, and overall survival (OS) in those who had a negative result versus those who had a false positive result. **RESULTS:** We identified 48,921 patients who had stool mtDNA testing, 3,352 (6.9%) of whom had a false positive result and 45,567 (93.1%) of whom had a negative result. The median follow-up was slightly longer for the false positive group at 36.0 months (interquartile range (IQR) 18.0-58.0 months) versus 33.0 months (IQR 16.0-51.0 months) for the negative group. Patients with a false positive result had a statistically-significantly higher incidence of NCAM than those with a negative result (4.3% vs 1.5%, p< 0.001), including head and neck (0.6% vs 0.4%, p=0.018), lung and bronchus (1.5% vs 0.5%, p< 0.001), and non-colorectal gastrointestinal malignancies (2.2% vs 0.6%, p< 0.001). Patients with a false positive result had a shorter NCAM-free survival than those with a negative result. The 3-year NCAM-free survival was 87.0% (95% Confidence Interval (CI) 84.9-89.2) for false positive patients versus 92.0% (95%CI 91.4-92.5); p< 0.001. OS was also shorter in the false positive group with 3-year estimate of 93.7% (95%CI 92.2-95.2) versus 94.9% (95% CI 94.5-95.3); p=0.008 (Figure 1). When adjusting for variables that were different between the two groups, false positive stool mtDNA was an independent predictor of NCAM-free survival (HR 1.49, 95% CI 1.23-1.72) but not OS (HR 1.09; 95% CI 0.89 – 13.4) (p=0.400). **CONCLUSIONS:** These data suggest that a false positive finding on a stool mtDNA test is clinically relevant and does warrant further diagnostic work-up to evaluate for other, non-colorectal aerodigestive malignancy.

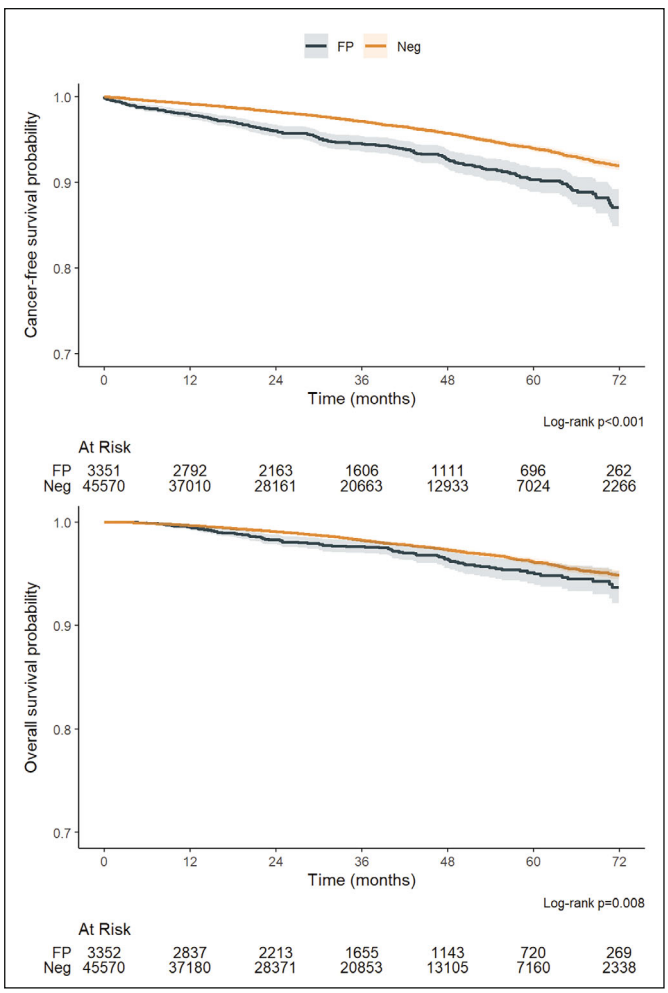

Figure 1. NCAM-free and Overall survival in patients with false positive or negative stool mtDNA result

QS26

Disaggregated analysis of cervical cancer outcomes among Hispanic subgroups in the United States

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INTRODUCTION: Hispanic individuals are the largest U.S. ethnic minority, yet aggregation of this diverse population masks subgroup differences in cervical cancer presentation and survival. This study evaluated disparities in outcomes among distinct Hispanic subgroups. **METHODS:** We conducted a retrospective analysis of the National Cancer Database (2009–2020). Patients with stage I–IV cervical cancer were included; those with incomplete race or stage data were excluded. Cases staged under FIGO 2009 were converted to FIGO 2018. Multivariable logistic regression assessed the odds of advanced-stage disease, while Cox proportional hazards models estimated three-year overall survival, adjusting for demographic, socioeconomic, and clinical covariates, including interactions between ethnicity, insurance, and income to examine access-related effects. **RESULTS:** Among 45,751 patients, 2,554 were Hispanic: Mexican (n=1,383), South/Central American (n=655), Puerto Rican (n=290), Cuban (n=114), and Dominican (n=112), compared with 37,704 Non-Hispanic White (NHW) patients. Pooled Hispanic patients had similar odds of advanced-stage disease (OR 1.03; p< 0.05) relative to NHWs. When evaluated by subgroup, Puerto Rican patients had higher odds of advanced disease (OR 1.31; p< 0.05), while other subgroups showed no significant differences. At three years, pooled Hispanic patients had improved survival compared with NHWs (HR 0.69; p< 0.001). Subgroup analysis showed the greatest survival among South/Central American (HR 0.53; p< 0.001) and Dominican (HR 0.48; p< 0.001) patients, with moderate improvement among Mexicans (HR 0.67; p< 0.001). Socioeconomic and treatment patterns varied across subgroups. South/Central Americans had the highest uninsured rates (27.0%) and Dominicans were most reliant on public insurance (66.7%). South/Central Americans were most represented in the highest income quartile (37.1%), while Dominicans (42.9%) and Puerto Ricans (33.4%) were concentrated in the lowest. Initiation of chemotherapy within 30 days of diagnosis was lowest for Dominicans (14.7%) and Mexicans (14.7%) compared to NHWs (25.9%). **CONCLUSIONS:** Disaggregating Hispanic subgroups uncovered distinct survival patterns and diagnostic disparities that are obscured in aggregate analyses. These findings emphasize the need for culturally informed outreach, equitable access to guideline-concordant care, and survivorship programs tailored to subgroup-specific needs. Incorporating disaggregated data into outcomes research is critical to advancing equity and improving cervical cancer care.

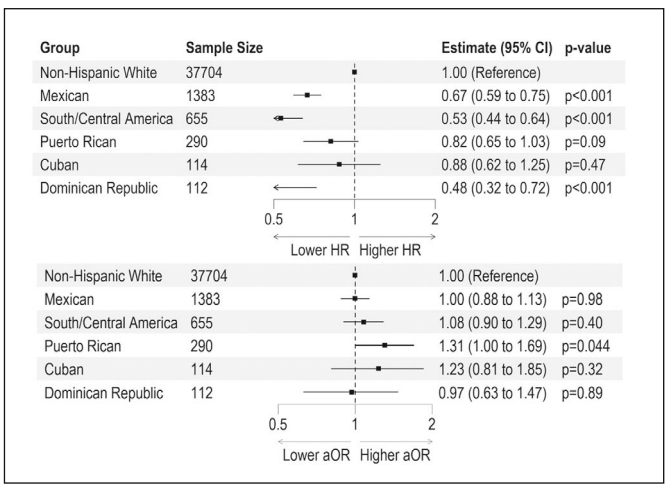

Figure. Adjusted hazard and odds ratios for cervical cancer outcomes among Hispanic subgroups compared with Non-Hispanic White patients

QS27

Evaluating Mammogram Accessibility for Wheelchair Users in the NYC Metro Area: A Secret Shopper Study

Lucy Frucht, BA, NYU Grossman School of Medicine; Pranav Kumar, BS, NYU Grossman School of Medicine; JohnRoss Rizzo, M.D., M.S.C.I., F.A.C.R.M, NYU Langone Health; Megan A. Morris, PhD, MPH, New York University Grossman School of Medicine; Connie Lam, MS, NYU Langone; Kathie-Ann Joseph, MD, MPH, Departments of Surgery and Population Health, New York University Grossman School of Medicine

INTRODUCTION: People with disabilities experience lower rates of screening mammograms and higher breast cancer-related mortality. Prior research has shown disparities in mammography access even within specialized disability-focused care settings. This study assessed the reported capacity of imaging centers in the NYC metro area to accommodate wheelchair users undergoing mammography, identified barriers to access, and evaluated procedures involved in requesting such appointments. **METHODS:** A secret shopper methodology was used to emulate real-world conditions and minimize bias. Using a standardized script, 3 researchers called imaging sites inquiring about a screening mammogram on behalf of a hypothetical patient using a wheelchair, assessing whether sites could accommodate the patient in their own chair or offer appropriate alternatives. 259 imaging sites within a 25-mile radius of NYC were identified from a list accredited by the American College of Radiology: 200 sites in New York, 58 in New Jersey, and 1 in Connecticut. Sites that did not answer a first call were re-contacted once. Duplicate phone numbers and centralized call centers were contacted once. **RESULTS:** 136 imaging sites were successfully reached (see Figure 1 for geographic breakdown). 47 (34.6%) initially stated they could accommodate a wheelchair user, 36 (26.5%) explicitly reported they could not, and 53 (38.9%) were unsure or stated that accessibility depended on other factors. During follow-up questioning, only 66 sites (48.5%) ultimately stated that they would be able to provide care for the patient. 9 sites that initially stated "yes" were actually unable to provide access; 26 that gave noncommittal responses did not have accommodations. The most common barriers included non–height-adjustable machines (n=39); structural features preventing wheelchair use, such as interference of armrests (n=36); lack of trained staff to assist with transfers (n=22); and inaccessible facilities (n=6). 13 sites (9.5%) were able to provide a designated representative to address accessibility inquiries. **CONCLUSIONS:** Mammography sites in the NYC metro area do not adequately accommodate patients with mobility impairments: the majority of surveilled sites were unable to guarantee appointments or provide suitable screening options for wheelchair users. Further research is necessary to examine disparities based on neighborhood socioeconomic status and institution type, and to guide institutional and legislative changes to enhance breast cancer screening for this population.

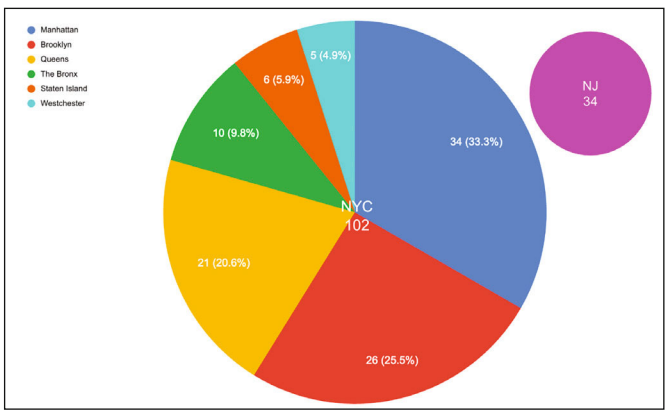

Figure 1: Geographic breakdown of sites successfully contacted.

QS28

International expert consensus on perioperative management of carcinoid crisis

Julie Hallet, MD MSc FRCSC FSSO, University of Toronto; Fahad Alam, MD MHSc FRCPC, University of Toronto; Stefano Partelli, MD PhD, Vita-Salute San Raffaele University; Jonathan Koea, MD, University of Auckland; Flavio Rocha, MD, FACS, FSSO, Oregon Health & Science University (OHSU), Knight

Cancer Institute; Stephanie Ladowski, MD, University of Toronto; Jaydira Del Rivero, MD, NCI; Chadi Saliba, MD MSc, University of Toronto; Jessica Armah, MSc, Sunnybrook Research Institute; Rodney Pommier, MD, OHSU

INTRODUCTION: Carcinoid crisis is a critical concern for patients with neuroendocrine tumors (NETs) undergoing invasive procedures. Guidance is needed to standardize and optimize perioperative care for patients at risk of carcinoid crisis. We aimed to develop consensus based expert recommendations for the perioperative management of carcinoid crisis. **METHODS:** We used a modified Delphi approach with 4 rounds of voting to reach expert consensus on statements about perioperative management of carcinoid crisis. A multidisciplinary international panel of 44 experts was formed, and 3 patient partners were engaged. An initial survey round identified items to cover in the statements. Statements addressing preoperative, intraoperative, and post-operative considerations were created. Panelists rated statements on a Likert scale (1 to 7). Three additional rounds of iterative rating and feedback were completed anonymously. Consensus was defined with median score between 5-7 and <13 panelists rating outside the score category containing the median. Dissent analyses (bipolarity and stakeholder-group comparison) were conducted to understand the robustness of the consensus results. The level of evidence and grade of recommendation was based on the Oxford Centre for Evidence-Based Medicine. Open community feedback was obtained over 2 weeks via an online survey. **RESULTS**: Final consensus was reached on 41 statements. Of these, 12 focused on preoperative work-up and optimization, 27 on intraoperative management including monitoring, prophylaxis and treatment of crisis, and 2 on postoperative management. Statements stated that somatostatin analogs are not necessary for prophylaxis prior to operation or on the day of operation, and treatment in case of carcinoid crisis should start with vasopressors with short-acting somatostatin analogs used as an adjunct. No dissent was identified. Open feedback was provided by 43 participants and 80% agreed with the statements presented. **CONCLUSIONS:** Using modified Delphi methodology, we developed recommendations to guide the perioperative management of carcinoid crisis. Considering the importance of carcinoid crisis on the management and outcomes of patients undergoing surgical resection for NETs, this guidance can help standardize care and optimize outcomes. Future work should focus on implementation in clinical practice, monitoring of outcomes, and furthering understanding of carcinoid crisis to update recommendations.

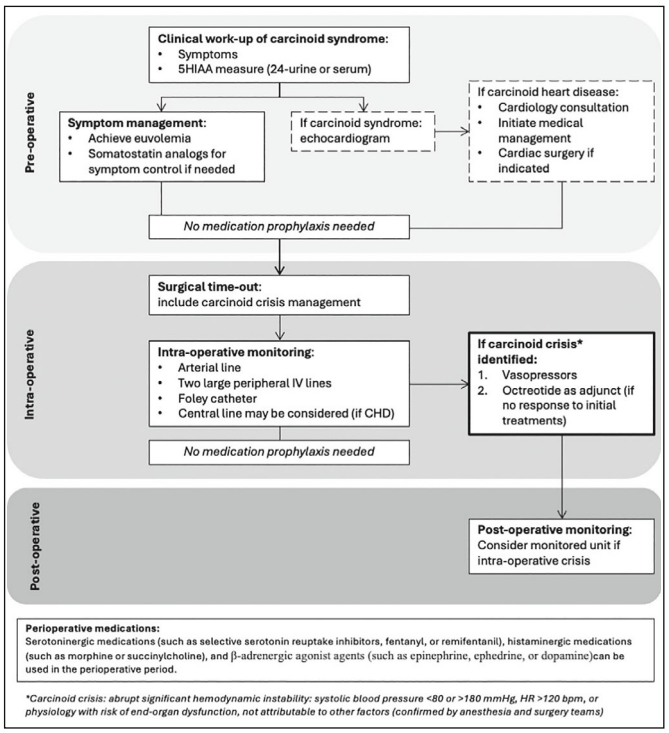

Figure 1. Workflow illustration of major expert panel consensus statements for the perioperative management of carcinoid crisis. CHD, carcinoid heart disease; IV, intravenous; sBP, systolic blood pressure; HR, heart rate; bpm, beats per minute

ABSTRACTS

POSTER PARK

SSO 2026 ANNUAL MEETING

Society of Surgical Oncology

March 5-7, 2026

LBA 2

Employment and Compensation Among Early-Career Surgical Oncologists: Results of the SSO Junior Faculty Survey

Christopher P. Childers, MD, PhD, U of Washington; HIdeo Takahashi, MD, Mount Sinai; Kelly Koch, MD, Lakeland Regional Hospital; Natalie Bath, MD, USA Health; Luke V. Selby, MD, MS, FACS, Department of Surgery, University of Kansas Medical Center

INTRODUCTION: Upon completing breast or surgical oncology fellowship, trainees face the unfamiliar challenge of securing their first faculty position. Time constraints and limited knowledge of contracts, compensation models, and practice economics place trainees at a disadvantage. Recognizing this gap, the SSO Fellows & Young Attendings Committee surveyed junior faculty to: 1) describe the employment landscape, particularly compensation structures, and 2) identify topics for future educational initiatives. **METHODS:** The committee developed a survey addressing demographics, practice characteristics, and compensation (subjective and objective measures). After iterative refinement and pilot testing with junior SSO members, a voluntary, deidentified, IRB-approved survey was distributed to SSO members self-identifying as within their first 8 years of practice from October 13 to November 12, 2025. **RESULTS:** Of 221 respondents from 37 states, 53% were female and 72% were white, with a median of 3 years in practice. Nearly 30% practiced in non-academic settings (e.g., community, private practice, integrated health systems). Median clinical FTE was 0.8. Of those reporting significant research responsibilities, median FTE committed to research was 0.2. Two-thirds (69%) attempted to negotiate aspects of their first contract, with 79% succeeding—most commonly on salary and signing bonuses. Although 66% had RVU targets, take-home pay varied substantially based on compensation models ranging from salaried to pure productivity-based. Productivity-emphasizing models were associated with higher reports of hostile work environments (OR 1.82, p=0.02). One quarter (25%) were considering job changes within the next year, which correlated strongly with perceived compensation fairness (Figure). **CONCLUSIONS:** Most junior SSO faculty hold predominantly clinical positions, even those with research responsibilities. While RVU targets are common, incentive structures vary considerably across employment types. Compensation models and their perceived fairness may be associated with workplace hostility and surgeon retention. These findings will inform SSO educational initiatives and future research, particularly regarding workplace issues, and will be made available as a public resource for fellows and junior faculty.

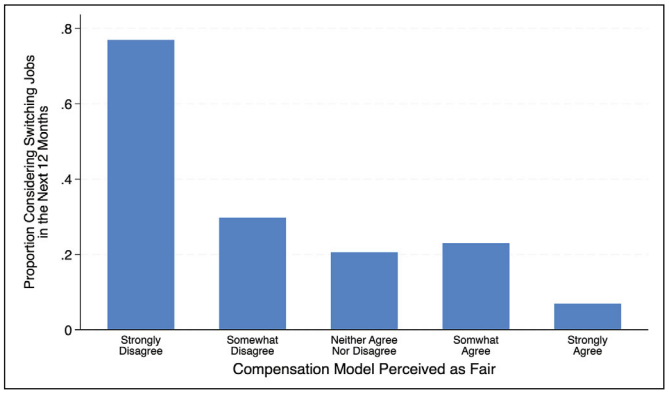

Figure. Association of Perceived Compensation Model Fairness with Desire to Change Jobs

PPS1

Lost in transition: Identifying cancer screening gaps in transgender patients

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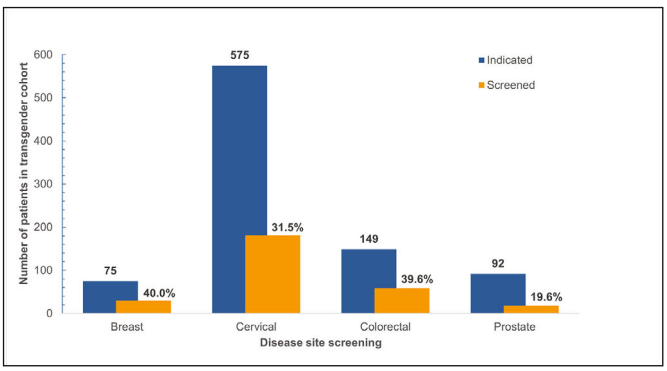
INTRODUCTION: Over 2 million Americans identify as transgender (TG), and while they have known cancer disparities, limited data exist on cancer screening in this population. This study examines uptake rates of recommended breast, cervical, colorectal, and prostate cancer screening in transgender men and women and defines rates of organ inventory use. **METHODS:** A cross-sectional single-institution retrospective cohort study was conducted. Adult patients self-identifying as transgender in their medical record with a healthcare encounter from January 2023-May 2025 were identified in our Data Warehouse. Demographic, clinical, and screening data for breast, cervical, colorectal, and prostate cancers were collected. The American Cancer Society, National Comprehensive Cancer Network, and UCSF TG breast cancer screening guidelines were used for screening indications. Accuracy of the organ inventory in the electronic medical record was also assessed. Multivariate analysis was performed to identify factors predictive of screening. **RESULTS:** We identified 1606 transgender patients (820 transgender men (TGM) and 786 transgender women (TGW)). Ages ranged from 18-86 years, with 14.3% 40 or older (n=231) and 6.4% 50 or older (n=103). 73% of patients were treated at the dedicated LGBTQ+ health clinic within our health system. The rate of breast cancer screening uptake in patients for whom screening was indicated was 40%, with similar uptake in TGW (40.8%) and TGM (38.5%). Colorectal cancer screening uptake was 39.6% overall, 41.7% in TGW, and 31.0% in TGM (p=0.3). Prostate cancer screening uptake was 19.6% in TGW while cervical cancer screening uptake was 31.5% in TGM. On multivariate analyses, treatment at the LGBTQ+ clinic was a significant predictor for cervical cancer screening uptake (OR 2.23, 95% CI 1.38-3.72, p< 0.001). Other statistically and clinically significant predictors were not identified. The organ inventory was evaluated in 61.4% of patient records (n=985) and was correct in 84.6% (n=834). TG patients seen in the LGBTQ+ clinic more often had a completed organ inventory versus those not seen in the clinic (75% vs 23.8%, p< 0.01), and treatment at the LGBTQ+ clinic was a predictor for organ inventory use (OR 9.57, 95% CI 7.41-12.4). **CONCLUSIONS:** Gender-specific medical care is valuable for promoting cancer screening uptake and use of the organ inventory. We showed poor rates of recommended screening uptake in transgender patients, demonstrating opportunities to improve gender-specific screening protocols, even in specialized LGBTQ+ clinics.



PPS2

Anti-claudin-1 antibody conjugated to a near infrared dye accurately co-localizes fluorescence and tumor luciferase in an orthotopic colon cancer mouse model

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INTRODUCTION: Claudin-1, a tight junction protein overexpressed in colorectal cancer (CRC), represents a promising molecular target for antibody-based near-infrared (NIR) imaging. The present study shows that an anti-claudin-1 antibody conjugated to the near infrared fluorophore IRDye800CW accurately colocalizes with luciferase expression in an orthotopic nude mouse model of colon cancer. **METHODS:** Human LS174T colon cancer cells expressing luciferase were implanted in athymic mice to establish primary orthotopic colon tumors (n = 10) and liver implantation models (n = 9). Mice received 50 µg of Claudin-1 antibody conjugated to IRDye800CW via intravenous injection 48 hours prior to imaging. In vivo imaging was performed using the Pearl Trilogy Small Animal Imaging System and the Arthrex Synergy Vision System with 800 nm fluorescence capabilities. Tumor-to-background ratio (TBR) and tumor-to-liver ratio (TLR) were calculated from mean fluorescence intensities (mFI). Luciferase imaging was performed to assess spatial co-localization with NIR fluorescence. Necropsy and ex vivo imaging was performed to confirm biodistribution and tumor-specific labeling. **RESULTS:** In the orthotopic primary tumor model, Claudin-1 fluorescence produced a mean TBR of 3.92, enabling clear delineation of tumor margins. Small peritoneal metastases (< 1 mm) were also detected, demonstrating a mean TBR of 2.9. In the liver implantation model, the mean TLR was 3.42, confirming strong tumor contrast relative to hepatic tissue. Ex vivo necropsy imaging showed even higher resolution, with a mean TBR of 16.4 in primary tumors and TLR of 4.78 in liver tumor models. Anti-claudin-1 IRDye800CW fluorescence co-localized with luciferase tumor expression in both models, confirming the high accuracy of the probe. Both the Pearl Imager and Arthrex systems provided high-resolution detection, and the Arthrex laparoscopic platform successfully visualized fluorescence in real time under clinically relevant conditions. **CONCLUSIONS:** Anti-claudin-1 IRDye800CW accurately targets primary and metastatic colon tumors as demonstrated by co-localization to luciferase-expressing lesions. The strong signal contrast achieved in both small-animal and clinical laparoscopic imaging systems demonstrates the potential of Claudin-1 antibody conjugates for clinical translation for immediate clinical staging and fluorescence guided surgery.

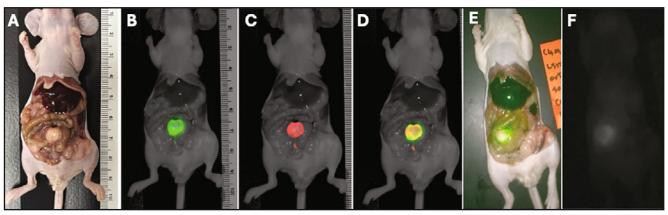

Figure 1. LSIT47-luciferase expressing colon primary tumor model demonstrates accurate co-localization using anti-claudin-1-IRDye800CW. A) Bright light, B) Pearl NIR 800nm wavelength channel, C) Pearl luciferase channel, D) Pearl colocalization of fluorescence and luciferase, E) Arthrex NIR 800nm wavelength channel, F) Arthrex NIR black and white contrast channel.

PPS3

Pelvic exenteration and multivisceral resection for locally advanced rectal and pelvic malignancies (Pelv-ITA Study Group): short-term outcomes of two tertiary referral centers.

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INTRODUCTION: Pelvic exenteration (PE) and multivisceral resection are surgical procedures indicated for highly selected patients with locally advanced primary and recurrent pelvic malignancies. These procedures are highly complex and demolitive, associated with considerable morbidity and mortality, and may require en bloc resection of pelvic organs to achieve oncologic radicality. The aim of this study was to evaluate the actual short-term outcomes of patients undergoing pelvic exenteration in two tertiary referral centers for pelvic malignancies, which are coordinating centers for the Pelv-ITA project. **METHODS:** Patients who underwent curative-intent PE for locally advanced pelvic malignancies at the Istituto Nazionale Tumori Fondazione G. Pascale (Napoli) and Azienda Ospedale Università di Padova between January 2018 and December 2024 were included in the study. Short-term outcomes were assessed, including major postoperative complications (Clavien–Dindo grade ≥ III), length of hospital stay, 30-day readmission, 30-day mortality, and 2-year oncologic outcomes such as overall survival (OS), local recurrence-free survival (LRFS), and distant recurrence-free survival (DRFS). Descriptive statistics were reported as median with interquartile range (IQR) for continuous variables and as frequency (%) for categorical variables. Survival analyses were performed using the Kaplan–Meier method. **RESULTS:** A total of 81 patients underwent PE. The median age was 62.0 years (56.0–72.0), with a male majority (n=51, 63.0%). Primary tumors accounted for most cases (n=47, 58.0%), with the colorectum being the most frequent site of origin (n=53.0,82.8%). An open surgical approach was used in 93.8% of cases, achieving R0 resection in 59 patients (78.7%). Major postoperative complications occurred in 20 patients (24.7%). The median length of stay was 16 days (11.0-22.0). Within 30 days from surgery 11 patients (13.6%) were readmitted, while no deaths were reported. The 2-year OS rate was 89% (95% CI: 0.81-0.98). The 2-year LRFS rate was 57% (95% CI 44.7-72.6) , and the 2-year DRFS rate was 68.6% (95% CI 0.57-0.83). **CONCLUSIONS:** PE is a surgical option for selected locally advanced pelvic malignancies. The complication rate, although considerable, is acceptable given the extent of surgery and underscores the importance of performing these procedures in experienced centers. The establishment of a national network such as Pelv-ITA supports the centralization of care and facilitates standardized decision-making.

PPS4

Locoregional Control from Complete Peritoneal Cytoreduction for Colorectal Cancer in Patients with Extraperitoneal Metastases

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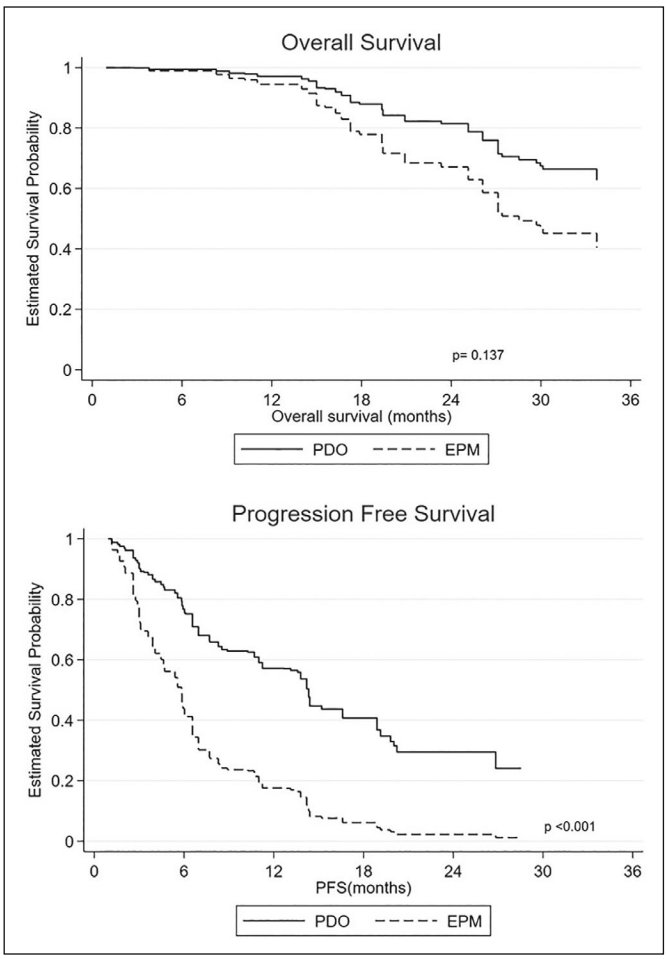
INTRODUCTION: In peritoneum-limited disease cytoreductive surgery (CRS) is the accepted standard-of-care for the management of colorectal cancer peritoneal metastases (CRC-PM). The benefit of CRS in patients with

concomitant extraperitoneal disease remains uncertain. **METHODS:** We identified patients who had complete (CC-0/1) CRS for CRC-PM at an NCI-designated Cancer Center using a prospectively maintained database from 2010-2024. The study compared patients with peritoneal disease only (PDO) to those with both peritoneal and extraperitoneal metastases (EPM). The primary outcome was overall survival (OS). Secondary outcomes included progression free survival (PFS), and peritoneal Progression free survival (pPFS). Covariate imbalance was addressed using entropy balancing. Survival was analyzed using the Kaplan-Meier method and weighted Cox proportional hazards. Model-based curves were plotted. **RESULTS:** A total of 85 patients were included (mean age 56.2 years, 50% males). Of these, 51 (60%) patients had PDO. Baseline characteristics were comparable between groups. EPM were most commonly hepatic (71%), lung (18%) and other sites (11%). Within the EPM group, 62% received treatment for extraperitoneal disease at the time of CRS, 21% had been treated previously, and 17% remained untreated. The median follow-up for the entire cohort was 28.7 months (95% CI 21.7-66.1). Unadjusted analyses showed no significant differences in OS (PDO: 39.4 months, 95% CI 29.7–86.1; EPM: 26.1 months, 95% CI 19.3–72.9; p = 0.23) or pPFS (PDO: 17.3 months, 95% CI 10.2–27.5; EPM: 14 months, 95% CI 8.3–17.5; p = 0.156). However, PFS was significantly shorter in the EPM group (5.4 months, 95% CI, 3.0–8.3) compared with PDO patients (14.2 months, 95% CI, 7.3–20.2; log-rank p < 0.001). Using Cox proportional hazards for the balanced population, the EPM group was not significantly associated with inferior overall survival compared with PDO (HR 1.94, 95% CI 0.80–4.65, p = 0.137). Similarly, pPFS did not differ significantly between groups (EPM HR 1.4; 95% CI, 0.76–2.72; p = 0.263). In contrast, PFS remained statistically significant with earlier progression seen in the EPM group (HR 3.10, 95% CI 1.8–5.3, p < 0.001). **CONCLUSIONS:** CRS offers effective locoregional control even in patients with EPM. However, EPM patients are at a much higher risk of extraperitoneal progression soon after CRS, underscoring the need for systemic disease control and careful patient selection.



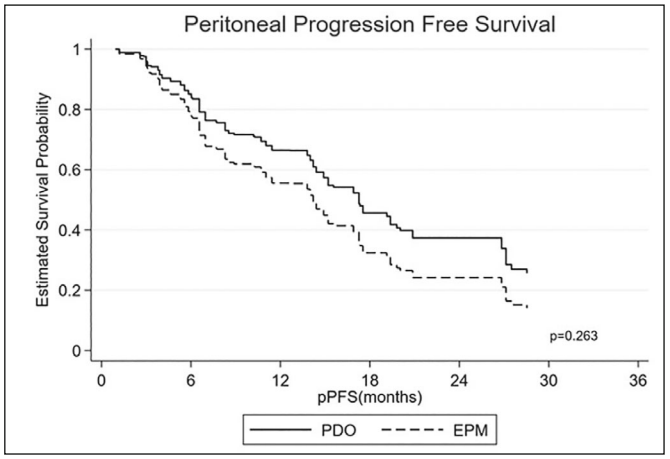


Figure. OS, PFS, pPFS Cox Model Survival Curves.

PPS5

Endoscopic Resection Is Associated with Comparable Long-Term Outcomes to Surgical Resection for Small Colonic Neuroendocrine Tumors

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INTRODUCTION: Although current guidelines recommend endoscopic resection (ER) for small rectal neuroendocrine tumors (NETs), colonic NETs have traditionally been considered more aggressive and the evidence to support ER for these neoplasms remains insufficient. We sought to compare long-term outcomes among patients who underwent ER versus surgical resection (SR) for colonic NETs using a nationwide cohort. **METHODS:** Data from the National Cancer Database (NCDB) were analyzed to identify patients who underwent ER or SR for colonic NET less than 2 cm between 2004-2019 and long-term overall survival (OS) was compared. **RESULTS:** Among 5,529 patients who were treated for colonic NET, 308 (5.6%) underwent ER and 5,221 (94.4%) received SR. Patients who underwent ER were older (median age: 55 vs 50 years, p< 0.001), more likely to be African American (27.3% vs 9.6%, p< 0.001), and had similar Charlson-Deyo score compared to individuals who underwent SR (Charlson score> 2: 2.9% vs 3.7%, p=0.48). Median tumor size was slightly higher among patients who underwent SR versus ER (8 mm, IQR:4-12 vs 5 mm, IQR:3-7, p< 0.001), whereas incomplete resection was more common among individuals who underwent ER vs SR (11.4% vs 2.3%, p< 0.001). The 5- and 10-year OS among patients with colonic NET < 20mm was comparable following ER versus SR (5-year OS:90.9% vs 89.0%; 10-year OS:82.3% vs 77.3% , p=0.061, Figure), an association that remained consistent after adjusting for relevant clinicopathologic characteristics, including tumor size, lymph node status and surgical margins (aHR=0.90, 95%CI 0.89-1.25). **CONCLUSIONS:** Among patients with colonic NETs < 2 cm, ER was associated with comparable long-term outcomes to SR. An endoscopic approach to small colonic NETs should be considered an acceptable approach, similar to current management of rectal NETs, when feasible.

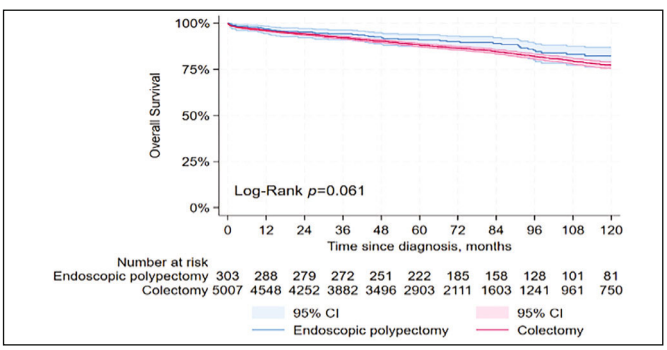

Figure. KM curve demonstrating differences in OS after ER vs SR for small colonic NETs

PPS6

Invisible risk factors: the impact of mental health comorbidities on colectomy outcomes

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INTRODUCTION: Mental health (MH) has been shown to directly impact both surgical recovery and cancer outcomes. We aimed to evaluate whether comorbid mental health conditions affect short-term surgical outcomes for patients undergoing colectomy for colon cancer. **METHODS:** The national claims-based Merative Marketscan database was queried for all patients undergoing colectomy for colon cancer between 2011 and 2021. Surgeries were categorized based on surgical approach (minimally invasive (MIS) or open) and creation of ostomy. We stratified patients based on the presence of a comorbid MH diagnosis and evaluated outcomes following surgery including readmission rates, Emergency Department (ED) visits, and complication rates. We used Cox proportional hazard models to calculate the effect of MH comorbidities on likelihood of 30-day and 90-day events post-surgery. **RESULTS:** A total of 18,379 patients underwent colectomy for colon cancer with a median age of 61 (IQR 53-72) and median Charlson Comorbidity Index (CCI) of 3 (IQR 2-5). Of these, 39% (n=7122) had a comorbid MH condition, most frequently anxiety (n=5063, 28%) and depression (n=3053, 16%). Overall, the most common type of surgery was MIS colectomy without ostomy (n=10842, 59%) followed by open colectomy without ostomy (n=6687, 37%). A greater proportion of patients with a MH condition were female (59% vs. 44%, $p < 0.001$) and had a CCI of > 4 (50% vs. 38%, $p > 0.001$). Patients with an MH condition had significantly higher rates of 30-day readmissions (8% vs. 6%, $p< 0.001$), ED visits (9% vs. 7%, $p< 0.001$), and complications (4% vs. 3%, $p = 0.007$). This trend sustained at 90 days with the MH cohort having greater readmissions (14% vs. 10%, $p< 0.001$), ED visits (19% vs. 13%, $p< 0.001$) and complications (7% vs. 5%, $p< 0.001$), Figure 1. On multivariate analysis, a MH condition was associated with a 1.236 hazard ratio (HR) for readmission, 1.37 HR for ED visit, and 1.16 HR for a complication at 90 days when controlling for age, sex, surgical approach, presence of ostomy, and CCI score. **CONCLUSIONS:** Presence of a MH comorbidity is an independent risk factor for 30- and 90-day readmissions as well as complications. Future work to minimize the effects of this risk factor and optimize care for these patients is warranted.

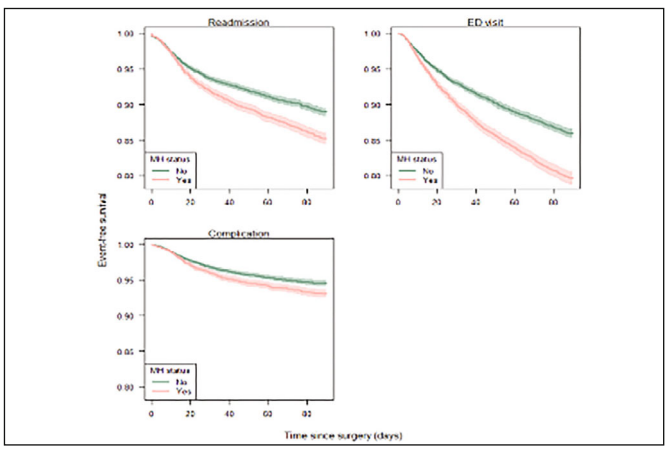

Figure 1. Kaplan-Meier curves for 90-day survival of readmission, ED visits, or complication stratified by patient MH status

PPS7

Patient-reported disparities in early- versus later-onset colorectal cancer from All of Us

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INTRODUCTION: Early-onset colorectal cancer (EOCRC) incidence continues to rise and is associated with a substantial psychological burden. Most patient-reported evidence is limited in sample size and lacks comparison to later-onset CRC (LOCRC). We aimed to quantify differences in patient-reported social support, discrimination, self-related health, and healthcare access/utilization between EOCRC and LOCRC. **METHODS:** We conducted a cross-sectional study using the All of Us Research Program, a nationwide prospective cohort. The database was queried for participants with CRC who completed relevant survey items. EOCRC was defined as diagnosis < 50 years. Outcomes included low social support, perceived discrimination, fair/poor self-related health, healthcare access barriers, and inadequate utilization, each dichotomized per survey definitions. Multivariable logistic regression estimated odds ratios (OR) with 95% confidence intervals (CI) for EOCRC versus LOCRC, adjusting for demographics, socioeconomic status, insurance, marital status, year of diagnosis, and area-level deprivation. **RESULTS:** Of 13,655 CRC participants, 11,068 (EOCRC n=1,373; LOCRC n=9,695) completed all survey items. EOCRC participants were more often female (64% vs 53.1%), privately insured (71.2% vs 45.7%), employed (68.1% vs 36%), and had higher education and income (all $p < 0.001$). EOCRC participants reported greater cost-related barriers, including inability to afford follow-up care (5.7% vs 3.1%), mental health services (8.6% vs. 2.7%), prescription medications (12.1% vs 6.4%), and specialist visits (8.6% vs 3.9%; all $p < 0.001$). Logistic barriers were also higher, such as delays due to copays (8.1% vs 2.8%) and time off work (11.5% vs 2.8%). EOCRC respondents also reported more frequent day-to-day discrimination, including being treated with less respect at the doctor's office (all $p < 0.001$). In adjusted models, EOCRC was associated with higher odds of low social support (OR 2.00, 95% CI 1.74-2.28), perceived discrimination (OR 1.45, 95% CI 1.27-1.65), and fair/poor health (OR 1.88, 95% CI 1.59-2.21) compared to LOCRC (Figure 1). Differences in healthcare access/utilization attenuated with adjustment but remained evident at the item level. **CONCLUSIONS:** Compared with LOCRC, EOCRC survivors face greater psychosocial strain and more frequent financial and logistical barriers to care, even after adjustment. National patient-reported outcomes reveal gaps in care not captured in traditional registries, emphasizing the urgency of integrating supportive care and resource navigation into EOCRC management.

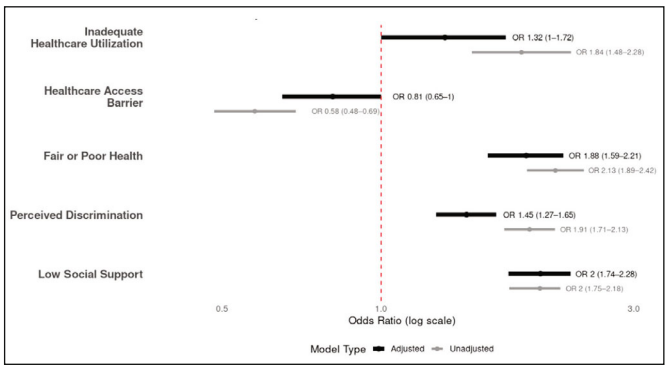

Figure 1. Forest Plot of Adjusted and Unadjusted Associations between Early-Onset Colorectal Cancer and Social and Health-Related Patient-Reported Outcomes.

PPS8

Advanced clinical T category and high tumor grade independently predict worse survival among rectal cancer patients undergoing organ preservation

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INTRODUCTION: For patients with rectal cancer who achieve a complete response to neoadjuvant treatment, organ preservation (OP) with watch and wait (W&W) has become an increasingly common treatment strategy. Despite excellent treatment response, some patients will develop disease recurrence, and without surgery, pathologic TNM information is not available to inform prognosis. Our objective was to examine the prognostic impact of baseline clinical factors on survival among patients undergoing guideline-driven OP following neoadjuvant therapy. **METHODS:** Patients with stage II–III rectal adenocarcinoma diagnosed 2006-2022 who received neoadjuvant chemoradiation without surgery were identified from the National Cancer Database, in a retrospective design. Clinical predictors of overall survival were identified using multivariable Cox regression for risk stratification modeling. Harrell's C-index compared model discrimination based on clinically relevant predictors. **RESULTS:** Among 22,195 patients identified, high-grade tumors (poorly differentiated: hazard ratio [HR] 1.54; 95% Confidence Interval [CI] 1.39–1.70; undifferentiated: [HR, 1.86; CI, 1.39–2.50]) and clinical T4 category [HR, 1.60; CI, 1.34–1.91] independently predicted worse survival (interaction p=0.237). Clinical N2 category, but not N1, was also associated with inferior survival [N1: HR, 1.01; CI, 0.97- 1.06; N2: HR, 1.09; CI, 1.01–1.16]. High-grade tumors were present in 18.62% of patients (poorly and undifferentiated combined), T4 category in 21.41%, and N2 category in 16.80%. A four-tier risk stratification model combining T category and grade demonstrated good discrimination (C-index 0.704). N category was excluded as it failed to improve discrimination. Compared to low-risk patients (T1-3, well/moderately differentiated), hazard ratios for death were [HR, 1.94; CI, 1.71–2.20] for T1-3 high-grade, [HR, 1.83, CI, 1.64–2.04] for T4 low-grade, and [HR, 2.78; CI, 2.36–3.28] for T4 high-grade tumors. **CONCLUSIONS:** Clinical T4 category and high tumor grade but not clinical N status were independent predictors of worse survival among patients undergoing OP for locoregional rectal cancer. Lack of prognostic discrimination by N category likely reflects poor underlying accuracy of clinical nodal assessment. Clinical T category and histologic differentiation offer meaningful prognostic value without reliance on surgical pathology and warrant consideration in future refinements of rectal cancer staging to better reflect the growing role of OP.

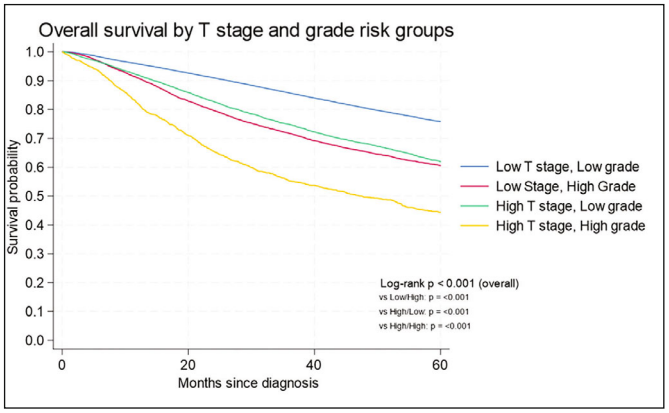

Figure 1. Overall survival stratified by T stage (cT1-3 vs cT4) and histologic grade (Well/Moderately differentiated vs Poorly differentiated/Undifferentiated). All pairwise comparisons versus Low T stage/Low grade were statistically significant (p < 0.001).

PPS9

Survival and Predictors of a Liver-First Surgical Approach in Colorectal Liver Metastases

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INTRODUCTION: The optimal sequencing of resection of primary and liver metastases in stage IV colorectal cancer remains debated. We aimed to evaluate real-world outcomes of the liver-first approach. **METHODS:** A retrospective analysis was performed using the National Cancer Database (2010-2021) for patients diagnosed with stage IV colorectal cancer with isolated liver metastases who underwent surgical resection of both primary and liver tumors. To limit confounding of patients requiring urgent surgical intervention, patients who underwent surgery within the first three days of diagnosis were excluded. The NCDB coding structure allowed us to identify two types of cohorts – those who underwent Liver Resection prior to Colorectal Resection (LRCR) and those Colorectal Resection synchronous or prior to Liver Resection (CRLR). The overall survival was evaluated using Cox proportional hazard models while logistic regression was utilized for binary outcomes. **RESULTS:** Among 10,959 patients, 1,178 underwent LRCR and 9,781 underwent CRLR. LRCR patients were associated with higher proportion of rectal primaries (52% vs 19%, p< 0.01) and those receiving neoadjuvant chemotherapy (54.1% vs 26.9%, p< 0.01). The 90-day mortality (1.1% vs 4.5%, p< 0.01) and 30-day readmissions (3.7% vs 5.8%, p< 0.01) after the surgery for the primary site were lower in those who underwent LRCR. The time to first operation was significantly longer for LRCR cases (158.5 days vs 98.9 days, p< 0.01) and the interval between staged LRCR operations averaged 131 days. The LRCR was associated with improved overall survival when compared to CRLR (HR 0.87, 95% CI: 0.77-0.99). Predictors of a LRCR approach included rectal primary sites (OR 5.88, 95% CI: 4.55-7.60) and academic facilities (OR 2.74, 95% CI: 1.25-6.00). **CONCLUSIONS:** LRCR was associated with improved survival and reduced perioperative morbidity and mortality compared to CRLR. Rectum and rectosigmoid primary sites, and treatment facility types were associated with LRCR approach.

Table. Univariable and Multivariable Cox Regression of Factors Associated with Survival of Colorectal Liver Metastasis

		Univariable HR (95% CI)	Multivariable HR (95% CI)
Sex			
	Females	Ref	
	Males	**1.07 (1.01-1.14)**	**1.08 (1.02-1.16)**
Age-Years			
	<65	Ref	Ref
	65–69	**1.25 (1.16-1.35)**	**1.13 (1.00-1.27)**
	70–74	**1.57 (1.44 -1.71)**	**1.28 (1.12-1.46)**
	75–79	**1.93 (1.75-2.13)**	**1.50 (1.30-1.74)**
	80+	**3.20 (2.91-3.50)**	**1.87 (1.61-2.18)**
Insurance			
	Uninsured	Ref	Ref
	Private	**0.79 (0.67-0.92)**	0.83 (0.68-1.02)
	Medicaid	**0.90 (0.75-1.08)**	0.89 (0.71-1.11)
	Medicare	**1.34 (1.14-1.58)**	0.93 (0.75-1.15)
	Other Govt	**0.81 (0.66-1.06)**	0.82 (0.59-1.13)
Charlson Comorbidity Index			
	Charlson-Deyo 0	Ref	Ref
	Charlson-Deyo 1	**1.27 (1.19-1.35)**	**1.10 (1.01-1.19)**
	Charlson-Deyo 2	**1.52 (1.35-1.71)**	**1.17 (1.00-1.36)**
	Charlson-Deyo 3	**1.82 (1.55-2.13)**	**1.50 (1.22-1.84)**
Facility Type			
	Community	Ref	Ref
	Comprehensive Community	**0.98 (0.86-1.11)**	1.04 (0.89-1.20)
	Academic	**0.68 (0.60-0.77)**	**0.76 (0.65-0.87)**
	Integrated Network	**0.85 (0.74-0.97)**	0.93 (0.80-1.08)
Median Income in Area of Residence			
	1st, highest, quartile	Ref	Ref
	2nd quartile	**0.86 (0.79-0.93)**	**0.86 (0.77-0.95)**
	3rd quartile	**0.85 (0.78-0.92)**	**0.85 (0.77-0.94)**
	4th, lowest, quartile	**0.72 (0.67-0.78)**	**0.78 (0.71-0.86)**
Chemotherapy			
	No Therapy	Ref	Ref
	Neoadjuvant	**0.30 (0.27-0.34)**	**0.44 (0.39-0.51)**
	Adjuvant	**0.35 (0.31-0.39)**	**0.40 (0.36-0.45)**
	Perioperative	**0.24 (0.21-0.27)**	**0.37 (0.32-0.43)**
Location of Primary Site			
	Colon	Ref	Ref
	Rectosigmoid	**0.77 (0.71-0.84)**	**0.86 (0.76-0.95)**
	Rectum	**0.75 (0.71-0.80)**	**0.89 (0.82-0.98)**
Mucinous Histology		1.07 (0.96-1.19)	—
Margins-Primary Tumor Resection			
	Negative, R0	Ref	Ref
	Microscopic, R1	**1.89 (1.72-2.15)**	**1.78 (1.57-2.02)**
	Macroscopic, R2	**2.85 (2.31-3.53)**	**2.91 (2.19-3.85)**
Grade			
	Well Differentiated	Ref	Ref
	Moderately Differentiated	**1.18 (1.03-1.34)**	**1.20 (1.03-1.40)**
	Poorly Differentiated	**1.78 (1.54-2.05)**	**1.69 (1.43-1.99)**
	Undifferentiated	**1.86 (1.52-2.30)**	**1.50 (1.17-1.91)**
Surgical Approach			
	Colorectal Resection Synchronous or Prior to Liver Resection	Ref	Ref
	Liver Resection Prior to Colorectal Resection	**0.69 (0.62-0.76)**	**0.87 (0.77-0.99)**

PPS10

Assessing the Utility of Large Language Model-Based Artificial Intelligence in Augmenting the Preoperative Testing Process for Patients Undergoing Colorectal Resection

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INTRODUCTION: The pre-operative testing process for oncologic procedures often suffers from inefficiencies leading to unnecessary costs, workflow disruptions, and surgical delays or cancellations. With the advent of large language models (LLM), there is a growing interest in leveraging this technology to streamline healthcare delivery and enhance patient care. This study aims to evaluate the inefficiencies in current preoperative testing practices and explore the potential utility of LLM-based AI in augmenting this process. **METHODS:** Adult patients undergoing colorectal cancer surgery between 01/01/2024 and 12/31/2024 at an integrated cancer network were identified using CPT and ICD-10 codes. Patients' histories and current institutional preoperative testing guidelines were fed into a novel HIPAA-compliant LLM-based AI platform. The LLM-generated preoperative testing recommendations were then compared with the actual tests performed by care providing teams to assess discordance rates, instances of over- and under-testing, and potential cost savings. **RESULTS:** Among a cohort of 100 patients, mean age was 69.2 ± 12.8 years, 60.0% (n=60) were female, and 84.0% (n=84) were White. For the overall cohort, the most performed tests were complete blood count (CBC) for 100 (100.0%) patients, electrocardiogram (EKG) for 100 (100.0%) patients, and basic metabolic panel (BMP) for 66 (66.0%) patients. A majority (65.0%, n=65) of the preoperative tests ordered before surgery were guideline discordant. Of which, over-testing was identified in 22.0% (n=22) of the cases, while under-testing occurred in 56.0% (n=56). The most frequent instances of over-testing were noted for chest X-ray (14.0%, n=14 and prothrombin time (5.0%, n=5). However, 85.0% (n=85) of the LLM-generated preoperative testing recommendations were guideline concordant. Utilizing standardized Medicare reimbursement rates, we estimated that 16.8% of the preoperative testing costs in 2024 were unnecessary. (Figure) **CONCLUSIONS:** In this retrospective analysis of patients undergoing colorectal cancer surgery, we observed significant over-testing and potential for cost savings. Our LLM-based AI tool offers a potential solution to these challenges, demonstrating guideline concordance and cost-effectiveness.

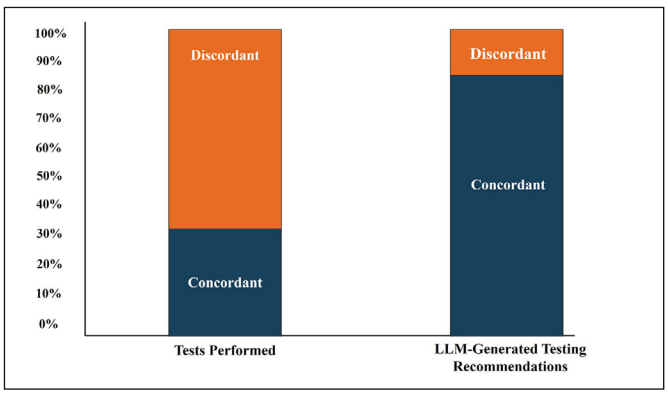

Figure. Guideline Concordance between LLM-Generated Preoperative Testing Recommendations and Tests Performed

PPS11

Empty Pelvis Syndrome After Beyond Total Mesorectal Excision (bTME) for Rectal Cancer: Impact of Surgical Complexity and Flap Reconstruction

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INTRODUCTION: Extended pelvic resections beyond total mesorectal excision (bTME) are increasingly performed for locally advanced or recurrent rectal cancer to achieve margin-negative resection. These operations carry a high risk of pelvic morbidity, including the constellation of complications known as Empty Pelvis Syndrome (EPS). The incidence and risk factors for EPS following bTME remain poorly defined, particularly across the spectrum of surgical complexity and reconstructive approaches. **METHODS:** A retrospective review of a prospectively maintained database identified all patients who underwent bTME for rectal adenocarcinoma at a tertiary cancer center (2006–2023). bTME was defined as resection extending beyond standard TME planes with enbloc organ or vascular resection. Patients with sphincter preservation surgery were excluded. Surgical complexity was categorized using the UK Pelvic Exenteration Lexicon, with high complexity defined by resection of bony structures or the pelvic sidewall. The primary outcome was UK Pelvic Exenteration Network's EPS-related complications (pelvic abscess, small bowel obstruction, enteroperineal fistula, chronic perineal sinus). Univariable and multivariable analyses identified predictors of EPS. **RESULTS:** Among 478 patients (mean age 58 years; 45.0% female; 40.8% recurrent disease), 176 (36.8%) underwent high-complexity resections. Flap reconstruction was performed in 96.7% (25.1% omental, 59.2% abdominal-based, 11.9% extremity-based, 0.4% both extremity and abdominal-based). Overall, 117 (24.5%) patients had an EPS event of whom 32 (27.3%) required reoperation including late reoperations. EPS events occurred more frequently after high- vs. low-complexity surgery (36.4% vs. 17.6%, p<0.001) and varied by flap type (12.2% none, 28.3% omental, 20.1% abdominal-based, 42.1% extremity-based; p=0.004). On multivariable analysis, high complexity (adjusted OR 2.70, 95% CI 1.69–4.31, p<0.001) and extremity-based flaps (aOR 5.67, 95% CI 1.12–28.7, p=0.040) were independently associated with increased EPS risk. **CONCLUSIONS:** EPS events occur in over one-fifth of patients undergoing bTME and is strongly associated with extent of resection and type of reconstruction. These findings highlight the morbidity of aggressive pelvic surgery and emphasize the need for tailored reconstruction and multidisciplinary planning to optimize outcomes and patient counseling.

Table 1. Complications by Surgical Complexity

Variable	Overall N=478	Low Complexity N=302	High Complexity N=176	P-value
Empty Pelvis Syndrome-Related Complication				
Any EPS	117 (24.5%)	53 (17.5%)	64 (36.4%)	<0.001
Pelvic Abscess	99 (20.7%)	45 (14.9%)	54 (30.7%)	<0.001
SBO	15 (3.1%)	9 (3.0%)	6 (3.4%)	0.795
Enteroperineal Fistula	6 (1.3%)	1 (0.3%)	5 (2.8%)	0.017
Chronic Perineal Sinus	44 (24.0%)	23 (22.8%)	21 (25.6%)	0.655
Minor Perineal Wound Dehiscence	61 (12.8%)	39 (12.9%)	22 (12.5%)	0.896
Major Perineal Wound Dehiscence	27 (5.6%)	15 (5.0%)	12 (6.8%)	0.398
30-Day Readmission	113 (23.6%)	56 (18.5%)	57 (32.4%)	<0.001
30-Day Mortality	4 (0.8%)	4 (1.3%)	0 (0.0%)	0.126

PPS12

Relevance of Total Lymph Nodal Yield in Clinically Node-Positive Melanoma in Modern Immunotherapy Era

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INTRODUCTION: Therapeutic lymphadenectomy (TLND) remains an important operation in patients with clinically node-positive (cN+) melanoma and those with nodal recurrences after prior negative lymph node biopsy. While nodal status is a critical prognostic factor in melanoma, it is unclear whether the efficacy of neoadjuvant immunotherapy (IO) has lessened the importance of the extent of lymphadenectomy. This study evaluates the impact of nodal status, lymph node ratio and total lymph node yield in cN+ Stage III melanoma patients in the modern era of neoadjuvant IO. **METHODS:** Using the National Cancer Database, we identified patients diagnosed with cN+ melanoma who underwent surgery. Patients with distant metastases, clinically node negative disease, and no lymph node surgery were

excluded. Patients were stratified by primary site including head & neck (HN), upper extremity (UE), and lower extremity (LE), as well as receipt of neoadjuvant IO. Kaplan–Meier method was used to estimate overall survival (OS). Multivariable Cox proportional hazards was performed to identified predictors of OS. **RESULTS:** A total of 11,468 melanoma patients were identified to have cN+ disease. The median lymph node yield was higher in HN compared to UE and LE. Higher lymph node ratio (LNR) was associated with worse OS in HN LNR ≥0.2 (median 29.57 vs 77.27 mo), UE LNR ≥0.3 (37.03 vs 111.77 mo), and LE LNR ≥0.2 (42.51 vs 155.17 mo). Cut-point analysis demonstrated that harvesting at least 3 LN for HN and 15 LN for UE resulted in the greatest survival difference (P< 0.001). Those treated with neoadjuvant IO were predominantly at academic centers (P< 0.001), had T4 disease (P< 0.001), and nodular and acral lentiginous histology (P=0.045). Neoadjuvant IO was associated with lower positive nodal rates after TLND (84.8% vs. 96.7%, P< 0.001). LNR showed a significant survival difference for all the sites, but not total lymph node count yield. Of the patients who underwent neoadjuvant IO, 14% had pathologic downstaging. Multivariable analysis showed that LNR remains a significant prognostic factor in patients with cN+ disease (HR 2.05, 95% CI 1.82–2.31). **CONCLUSIONS:** LNR and nodal yield are important prognostic factors in clinically node-positive melanoma. Interestingly, neoadjuvant IO results in lower lymph node yield but higher rates of downstaging to pathologic node negative. In patients receiving neoadjuvant IO, LNR remains prognostic, but the effect of total lymph node count is diminished, suggesting a potential shift in the role of extensive nodal surgery in contemporary melanoma management.

PPS13

Assessing the Clinical Impact of 1 cm vs 2 cm Melanoma Excision Margins

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INTRODUCTION: Recommended margin size for invasive melanomas > 1 mm Breslow depth (BD) is currently being evaluated in the MelMarT trial, with a primary focus on melanoma recurrence outcomes. Our study seeks to better delineate the impact of surgical margin size on patient morbidity in Malignant Melanoma (MM). We hypothesize that patients treated with 2.0 cm margins at wide local excision (WLE) will have more frequent primary wound complications, more skin flaps or skin grafts, and more post-operative care requirements than patients undergoing 1.0 cm margin WLE. **METHODS:** Subjects were selected from a registry of invasive MM in patients over 18 years of age. Analysis was limited to patients who underwent WLE with exactly 1.0 or 2.0 cm margins as per the MelMarT trial protocol. Exclusion criteria included patients with melanoma in situ, recurrent MM, acral MM, and patients requiring amputation. Primary endpoint was overall wound complication rate, defined as a summation of wound dehiscence, infection, or epidermolysis at the primary wound site. Secondary endpoints included post-operative visits required, incidence of complex closure techniques (skin graft, rotational flap), and length of wound closure. **RESULTS:** Patients treated from 2019-2025 (n=255) met inclusion criteria, including 203 (79.6%) that underwent 1.0 cm margins and 52 (30.4%) with 2.0 cm margins. Patients were comparable based on sex, ethnicity, BMI, smoking status, and diabetes between groups. The 2.0 cm group had a higher mean age (68.1 vs 62.8, p = 0.018), greater BD (3.27 mm vs. 0.99 mm, p < 0.0001), and more nodular melanomas (44.2% vs. 8.4%, p < 0.0001) than the 1.0 cm group. There was a greater frequency of wound complications with wider margins (15.4%; 2.0 cm group vs 4.9%; 1.0 cm group, p = 0.015), increased number of post-operative visits (2.5 visits; 2.0 cm group vs 1.7 visits; 1.0 cm group, p < 0.0001), and more frequent necessity of complex closures in melanoma extremity cases (30%; 2.0 cm group vs 7.4%; 1.0 cm group p = 0.012); with these differences largely seen in distal extremity cases only (Table 1). Average closure length was 17.7 cm in the 2.0 cm group vs 11.1 cm in the 1.0 cm group (p < 0.0001). **CONCLUSIONS:** Our results highlight that patients undergoing 2.0 cm margin WLE experience more frequent wound complications, require more complex wound closures, and experience more post-operative visits than patients receiving 1.0 cm margin WLE. While these results may seem intuitive, we propose that quantification of magnitude of increased morbidity may add valuable context to the debate between 1.0 cm vs 2.0 cm margins while awaiting oncologic outcomes of the MelMarT clinical trial.

Table 1: Comparison of Surgical Outcomes

		1.0 cm (n=203)	2.0 cm (n=52)	p value
Wound Complications	*Summative Incidence*	4.9% (10)	15.4% (8)	0.0147
	Dehiscence	1.5% (3)	5.8% (3)	0.1264
	Infection	3.0% (6)	11.5% (6)	0.038
	Epidermolysis	0.5% (1)	1.9% (1)	0.3511
Post-Operative Visits	*Mean visits for WLE + SLNB*	1.7	2.5	<.0001
Total Length of Incision	*Mean length (cm)*	11.1	17.7	<.0001
Incidence of Complex Closures	*Trunk* (n=79 ; 1.0 cm. n=31 ; 2.0 cm)	0% (0)	3.2% (1)	0.2818
	Extremity (n=81 ; 1.0 cm. n=20 ; 2.0 cm)	7.4% (6)	30.0% (6)	0.0124
Complex Closures by Extremity Sublocation	*Thigh* (n=11 ; 1.0 cm. n=4 ; 2.0 cm)	0% (0)	0% (0)	N/A
	Lower Leg (n=33 ; 1.0 cm. n=8 ; 2.0 cm)	9.1% (3)	37.5% (3)	0.0766
	Upper Arm (n=17 ; 1.0 cm. n=6 ; 2.0 cm)	0% (0)	16.7% (1)	0.2609
	Forearm (n=16 ; 1.0 cm. n=2 ; 2.0 cm)	12.5% (2)	100% (2)	0.0392

PPS14

Identifying a Subgroup of Melanoma Patients Who May Benefit from Completion Lymph Node Dissection: A Causal Inference Analysis of MSLT-II Data

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INTRODUCTION: The therapeutic value of immediate completion lymph node dissection (iCLND) in melanoma patients with sentinel lymph node (SLN) metastases remains debated. While randomized trials show no overall survival (OS) benefit, outcomes may depend on SLN tumor burden. We applied causal inference methods to identify patients most likely to benefit from iCLND and determine clinicopathologic factors that modify this effect. **METHODS:** Patient-level MSLT-II data were analyzed using a causal forest model to estimate individualized treatment effects of iCLND on survival. Counterfactual predictions identified patients with the greatest predicted benefit. Kaplan–Meier analyses compared disease-free survival (DFS), distant disease-free survival (DDFS), and OS between iCLND and observation across SLN metastasis size strata (< 0.5 mm, 0.5–1.1 mm, >1.1 mm). Multivariable Cox subgroup analyses and forest plots summarized hazard ratios (HRs) with 95% CIs for Breslow depth, ulceration, lymphovascular invasion (LVI), and primary site. **RESULTS:** Among 1,600 patients (706 iCLND [44%], 894 observation [56%]), median follow-up was 71.6 months (range 4.1–165) for iCLND and 70.1 (range 4.0–161) for observation. Five-year OS was 73.3% (SE 1.7%) vs 73.0% (SE 1.6%). Counterfactual density data identified SLN metastasis 0.5–1.1 mm as the range with the greatest predicted benefit. Kaplan–Meier analyses confirmed improved DFS (p = 0.0067), DDFS (p = 0.022), and OS (p = 0.02) in this subgroup, with no benefit outside this range. For 0.5–1.0 mm metastases, 5-year DFS, DDFS, and OS were 61.5% (SE 4.0%), 67.8% (SE 3.9%), and 73.8% (SE 3.6%) with iCLND vs 43.9% (SE 3.7%), 56.7% (SE 3.7%), and 68.7% (SE 3.5%) with observation. Breslow 1–4 mm, no ulceration, and no LVI predicted the greatest benefit; DFS benefit persisted with or without LVI and in ulcerated lesions, particularly for head/neck and extremity primaries. **CONCLUSIONS:** Causal inference and subgroup modeling identified a narrow SLN metastasis size window (0.5–1.1 mm) in which iCLND confers measurable survival benefit. Within this range, outcomes were most favorable for tumors with intermediate Breslow depth, absent ulceration, and no LVI for DFS and DDFS, and for ulcerated or head/neck/extremity primaries for DFS. These findings suggest iCLND's therapeutic effect is context-dependent and warrants external validation, particularly in the modern immunotherapy era.

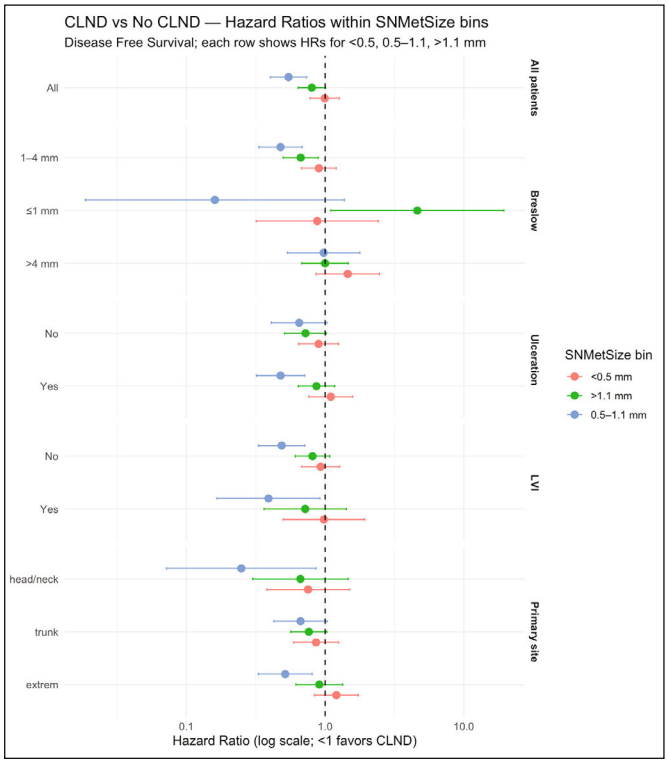

Figure. Forest Plot of Disease Free Survival Hazard Ratios for Completion Lymph Node Dissection (CLND) versus Observation, Stratified by Sentinel Node Metastasis Size

PPS15

Bilateral Tumor Divergence under Anti–PD-1 Therapy Reveals Changes in Immune Composition in Melanoma Models

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INTRODUCTION: Anti–PD-1 therapy has transformed melanoma treatment, yet not all metastatic sites respond to immune therapy. Divergent tumor behavior in identical genetic and immunologic contexts suggests that microenvironmental factors may shape outcomes. We developed a bilateral murine model to investigate intrahost variability in anti–PD-1 response and to establish correlations with human samples. **METHODS:** C57BL/6 mice were implanted with B16-OVA tumors on bilateral flanks, and established measurable tumors were treated with anti–PD-1 and measured three times weekly for two weeks. Mice were stratified into three groups: those with similar tumor growth, differing kinetics of response, or unilateral complete response (CR). At endpoint, tumors and draining lymph nodes (dLN) were analyzed by flow cytometry for T-cell, antigen-presenting cell (APC), and myeloid subsets. Selected samples underwent multiplex immunofluorescence (MIF) for CD4, CD8, CD11c and FoxP3 to assess the tumor microenvironment (TME), particularly in CR tumors not amenable to flow cytometry. Ongoing analyses are examining relationships among immune cells in the TME. **RESULTS:** With systemic PD-1 blockade, 53% of mice showed similar tumor growth, 47% displayed differing kinetics, and 10% achieved unilateral CR while the contralateral tumor progressed (PD) despite identical therapy. Flow cytometric profiling of T-cell and non-T-cell subsets in tumors and corresponding dLN that progressed or responded at comparable rates revealed no discernible differences in immune composition. MIF comparison of CR scars to contralateral progressing tumors showed a higher mean CD8/Treg ratio on the CR side (3.45) versus PD (1.1). The TME of progressing tumors exhibited numerous CD4+FoxP3+ immunosuppressive cells adjacent to CD8+ and CD11c+ cells (A), whereas responding tumors were enriched for CD8+ and CD11c+ populations (B). **CONCLUSIONS:** This bilateral tumor model with discordant tumor growth despite identical therapy underscores the limits of bulk immune profiling and highlights the need to define how specific immune cell associations—including interactions of specific T-cell subsets and antigen-presenting cells—contribute to therapeutic efficacy. Further analysis of tumors in mice is ongoing with correlative studies in nine patients with divergent responses to checkpoint blockade.

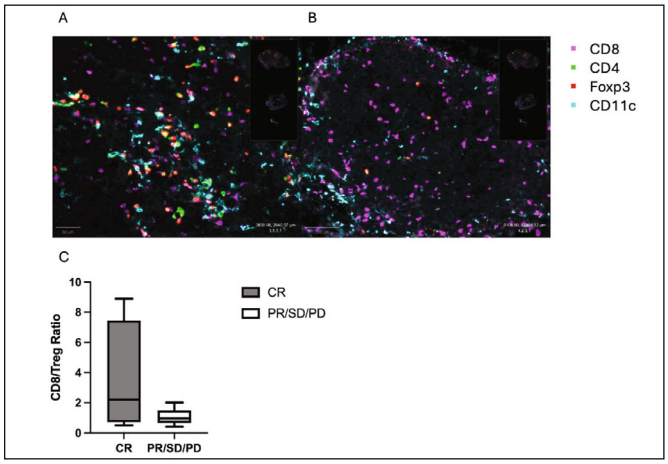

Figure 1: Multiplex IF staining of CD8+ (magenta), CD11c+ (cyan) and CD4+Foxp3+ (green and red) cells in a progressing tumor (A) compared with contralateral tumor with complete clinical response (CR) (B). (C) Plot representing CD8+/Treg ratios in mice with unilateral complete response (CR) vs mice with PR/SD/PD.

PPS16

Risk of Ovarian Metastasis in Colorectal Cancer-Related Carcinomatosis

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INTRODUCTION: In patients with colorectal cancer (CRC)-related carcinomatosis, ovarian metastases are common and are often resistant to systemic chemotherapy. As a result, many surgeons advocate bilateral oophorectomy during cytoreductive surgery (CRS), even in the absence of gross abnormalities. Defining this risk of metastasis is critical for

counseling patients on the necessity of routine oophorectomy during CRS. **METHODS:** We performed a retrospective analysis of female patients with CRC-related carcinomatosis undergoing curative intent CRS with or without Hyperthermic Intraperitoneal Chemotherapy (HIPEC) at a single high-volume tertiary referral center from 2008-2024. Descriptive statistics were used to summarize patient demographics, the presence of ovarian metastases, and clinical outcomes. **RESULTS:** Seventy-four patients were identified over the study period. Patients were majority white (n = 62, 84%) and non-Hispanic (58, 78%) with a median age of 49 [IQR 40-57]. Forty-nine (66%) were post-menopausal at the time of CRS. Patients had a median peritoneal cancer index (PCI) of 7.5 [IQR 4-9.25], and all patients had a complete cytoreduction (CCR 0/1). Right-sided primary tumors were most common (58%), and histology was most commonly non-mucinous (51, 69%), moderately or poorly differentiated (72, 97%), and microsatellite stable (67, 96%). Neoadjuvant therapy was common (58, 78%), and 25 (34%) patients underwent HIPEC. Four patients (5%) had undergone bilateral salpingo-oophorectomy (BSO) prior to the diagnosis of peritoneal disease. Of the 70 remaining patients with at least one ovary in situ at the time of carcinomatosis diagnosis, 51 (73%) had grossly abnormal appearing ovaries. Sixty-five (93%) had a completion- or bilateral-salpingo-oophorectomy, and 2 (3%) had one ovary left in situ. Overall, 55 (79%) had pathologically confirmed ovarian metastases. Of the 16 patients with grossly normal appearing ovaries who underwent oophorectomy, 4 (25%) had microscopic ovarian metastasis. Two of the 5 patients (40%) who had at least one normal-appearing ovary left in situ during CRS experienced ovarian recurrence within 16 months. **CONCLUSIONS:** Most female patients undergoing CRS for CRC-related carcinomatosis were found to have ovarian metastases on final pathology, including 25% of patients with grossly normal appearing ovaries. Short-interval recurrence was observed with ovarian preservation. Routine BSO should be strongly considered in patients undergoing CRS with curative intent.

PPS17

Predicting regional lymph node metastasis in goblet cell adenocarcinoma of the appendix using an internally validated model: can a right hemicolectomy be omitted?

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INTRODUCTION: Goblet cell adenocarcinoma (GCA) of the appendix is rare; thus, our understanding of its behavior and optimal management has been limited. The goal of this study was to evaluate the risk of regional lymph node (LN) metastasis (LNM) in GCA to inform surgical decision-making. **METHODS:** Using the National Cancer Database, we identified patients who were diagnosed with GCA (2010−2022) and underwent a right hemicolectomy (RHC) with ≥12 LNs evaluated. The primary outcome was the rate of LNM. Multivariable logistic regression was used to assess the associations between baseline clinicopathologic characteristics and LNM. The model was internally validated using a bootstrap method with 200 samples. From this model, a three-tier risk classification was created. The secondary outcome was overall survival (OS) according to LN status. **RESULTS:** Of 3,404 patients, 816 (24.0%) had LNM. Most patients had pT3 (1,907, 56.0%) or pT4 (1,307, 30.5%) disease. When histologic grade was available (2,348, 69.0%), 723 (30.8%) patients had G2 and 730 (31.0%) had G3 tumors. A RHC was performed in the setting of distant metastatic disease in 429 (12.6%) patients. On multivariable analysis, age ³64 years (OR 1.34, p=0.005), Black race (OR 1.77, p< 0.001), Hispanic ethnicity (OR 1.89, p=0.033), increasing T stage (T3 OR 2.25, p=0.085; T4 OR 10.9, p< 0.001), increasing grade (G2 OR 1.31, p=0.100; G3 OR 3.98, p< 0.001), and presence of lymphovascular invasion (OR 5.82, p< 0.001) were significantly associated with LNM. The optimism-corrected area under the curve for the model was 0.856. Based on the model, 196 (5.8%) patients were considered low risk (£5% LNM rate), 1,225 (36.0%) intermediate risk (5-10% LNM rate), and 1,983 (58.3%) high risk (>10% LNM rate). The actual and predicted rates of LNM were: 2.0% and 2.0% (95% CI 1.9-2.0%) for low-risk, 6.2% and 6.5% (95% CI 6.2-6.8%) for intermediate-risk, and 37.1% and 36.9% (95% CI 35.8-38.1%) for high-risk patients. Of 2,861 patients with follow-up data, LNM was associated with decreased 5-year OS rate (44.2% vs. 88.9%, log-rank p< 0.001), even in the presence of distant metastasis (16.2% vs 31.5%, log-rank p=0.002). **CONCLUSIONS:** Regional LNM occurs in nearly one-quarter of patients with GCA, and only 6% of patients in a national cohort can be considered low risk. Accurate histopathologic assessment by an experienced gastrointestinal pathologist is crucial to defining risk. More evidence is needed before completion RHC can be omitted in a subset of patients with GCA.

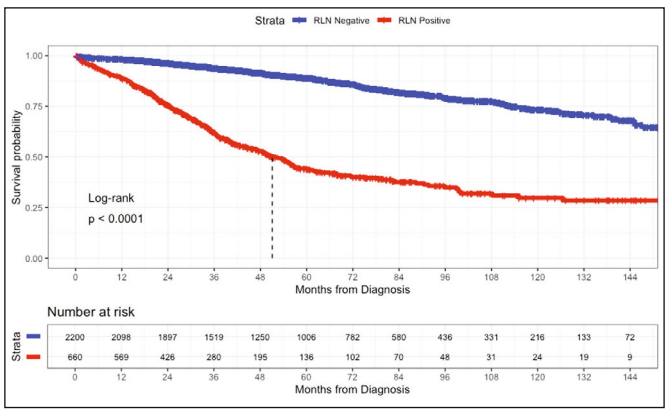

Figure. Kaplan-Meier estimates of overall survival, according to regional lymph node (RLN) status

PPS18

Evaluating Peritoneal Washing Supernatant NGS Integration to Inform Staging of Peritoneal Metastases

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INTRODUCTION: Gastric cancer commonly metastasizes to the peritoneum, and guideline-directed staging includes diagnostic laparoscopy and cytology from peritoneal washings to identify stage IV disease. Cytology sensitivity, however, is limited even in the setting of gross metastatic disease. False negatives limit the utility of peritoneal washings, underscoring the need for more sensitive methods to detect occult peritoneal spread. **METHODS:** We studied 24 patients with gastric cancer at a tertiary center who underwent diagnostic laparoscopy for gross inspection for peritoneal disease and washings. Peritoneal cell free DNA (pcfDNA) was extracted from peritoneal washing supernatant. Next generation sequencing (NGS) libraries were prepared with ThermoFisher Cancer Hotspot Panel v2 and analyzed using OncoSeek. Mutant alleles were identified based on the following criteria: minimum coverage of 250X, mutant allele frequency >5%, exclusion of silent and non-exonic variants, and removal of variants with < 25 supporting reads. **RESULTS:** Of the 24 patients, 79.2% had poorly differentiated gastric cancer, 45.8% with signet ring histology, and all had localized disease on preoperative imaging. At time of the diagnostic laparoscopy 6/24 (25%) patients had gross disease, and 4/6 (66.7%) had positive cytology. Peritoneal disease developed in 2 patients not detected on laparoscopy, total 8/24 (33.3%) with peritoneal dissemination. pcfDNA was successfully extracted from all peritoneal washing supernatant samples. Variants were detected in 4 (100%) supernatant samples from patients with positive cytology, in 5 of 6 patients (83%) with gross peritoneal disease, and in 13 of 16 patients (81.3%) without peritoneal disease. Reported variants most frequently involved TP53, PTEN, APC, and CDKN2A. Although not statistically significant, pcfDNA improved the sensitivity of cytology in patients with positive peritoneal dissemination (4/8 vs 7/8, p=0.282). **CONCLUSIONS:** We re-demonstrated the limitations of peritoneal cytology in defining peritoneal metastatic gastric cancer and successfully extracted pcfDNA for sequencing in all 24 patients. Interestingly, in this pilot cohort, patients with gross peritoneal disease had improved sensitivity of washings with NGS (although not statistically significant), and there was concordance between NGS and positive cytology. The clinical implications of a positive pcfDNA in patients with negative cytology and appropriate clinical cutoffs defining pcfDNA positivity in patients without gross disease requires further prospective study.

PPS19

Appraising the role of laparoscopy for peritoneal surface malignancy assessment: a retrospective cohort study

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INTRODUCTION: Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) can improve long term survival in selected patients with peritoneal surface malignancies. Due to tumor biology and potential surgical morbidity, patient selection is pivotal. The Peritoneal Cancer Index (PCI) combines tumor distribution and size scores to estimate burden of disease. A staging laparoscopy (SL) provides an opportunity for PCI assessment to guide eligibility for CRS/HIPEC. Here, PCI scores of patients during SL and subsequent CRS/HIPEC were evaluated. **METHODS:** A retrospective review from July 2017 to July 2025 of patients who underwent SL and CRS/HIPEC at our institution was performed. Outcomes of interest included PCI scores at both procedures and overall survival (OS). **RESULTS:** A total of 152 patients were identified who underwent staging laparoscopy and exploration with intent of CRS/HIPEC. Of these, 118 patients had available data from both procedures and were included for analysis. The median age of the cohort was 58 years old and 50% of patients were male. Most patients had undergone prior abdominal operations (n=106) with more than half performed minimally invasively (69/106, 65%). 43% of patients had appendiceal cancer, 57% of these patients had low grade and 43% high grade disease. Of the remainder patients, 41% of patients had colon adenocarcinoma and 6% had either gastric cancer or mesothelioma . The median PCI at SL was 6 (IQR 3-12) and no adverse events were noted following the procedure. The median time to planned CRS/HIPEC was 43 days with a median PCI of 14 (IQR 7-23). Majority of patients experienced an increase in PCI (n=109, 90%) with a median change of 7 (IQR 3-11). The most commons anatomical sites with a PCI increase were the right flank and lower ileum (55%, 50%), by a median of 1 point increase. In patients with high grade appendiceal cancer or colon adenocarcinoma, a greater than the median change in PCI was not associated with worse survival (p=0.85, p=0.25). In 15% of patients the CRS/HIPEC was aborted due to extensive disease (n=18). Most commonly, small bowel disease was the limiting factor (n=11, 61%). There was a significant increase in overall survival in patients who completed CRS/HIPEC regardless of histology (p=0.03). **CONCLUSIONS:** SL underestimated PCI by a median of 7 points with the R flank and distal ileum as the most common sites increased after CRS/HIPEC. While underestimation of PCI at SL did not affect OS, these data are pivotal for preoperative planning and informed decision making with patients.

Table. Comparison of peritoneal cancer index at staging laparoscopy and CRS/HIPEC by histology

	Number of patients (% of total)	Lap PCI Score, median (25th–75th %ile)	HIPEC PCI Score, median (25th–75th %ile)	PCI Score change, median (25th–75th %ile)
All Histology	118	6 (3-12)	15 (7-22)	7 (3-11)
Low Grade Appendiceal	29 (25)	6.0 (3.5-9.0)	11.0 (8.5-18.0)	6.0 (2.5-9.0)
High Grade Appendiceal	22 (19)	6.0 (3.0-13.3)	18.5 (11.8-25.5)	9.0 (4.0-16)
Colon	50 (43)	6.0 (2.0-13.0)	15.5 (7.0-14.0)	7.0 (3.0-14.0)
Gastric	6 (5)	0 (0-1)	2.0 (0.8-3.5)	1.5 (0.5-3.5)
Mesothelioma	6 (5)	12.0 (9.0-14.75)	21.5 (17.5-27.5)	10 (4.0-14.0)
Small Bowel	3 (3)	6.0 (6.0-10.0)	19.0 (7.0-25.0)	9.0 (1.0-19.0)

PPS20

Outcomes of cytoreductive surgery in unfavorable appendix cancer histologies: Meaningful survival with complete cytoreduction despite high peritoneal cancer index

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INTRODUCTION: Using a peritoneal cancer index (PCI) cutoff is a common practice in selecting candidates for cytoreductive surgery, particularly among patients with unfavorable histologic subtypes such as high-grade mucinous carcinoma peritonei with signet ring cells (HGMCP-S) and goblet cell adenocarcinoma (GCA). As a result, many patients are often denied surgery due to a high PCI. We hypothesized that complete CRS/HIPEC, when achievable, may still provide favorable survival outcomes in these patients. **METHODS:** We conducted a retrospective cohort study using a single-center prospective database (2004-2024), including patients with HGMCP-S and GCA who underwent CRS/HIPEC. Perioperative characteristics were described. Kaplan-Meier overall survival (OS) was performed. OS was compared between complete cytoreduction (CC-0/1) and incomplete cytoreduction (CC-2/3) groups using Cox regression analysis, adjusting for age, PCI, and lymph node status. **RESULTS:** Overall, 54 patients had HGMCP-S and 51 had GCA. For HGMCP-S, median age was 55 years, median PCI was 33, and 41 (77.4%) had PCI≥20. For GCA, median age was 56 years, median PCI was 26, and 34 (66.7%) had PCI≥20. CC-0/1 was achieved in 77.8% (n=42) and 88.2% (n=45), respectively. Fourteen (25.9%) HGMCP-S and 13 (25.5%) GCA patients experienced major postoperative complications (Clavien-Dindo III-IV). CC-0/1 patients had significantly longer median OS compared to CC-2/3 (HGMCP-S: 35 vs 8 months, adjusted p< 0.001; GCA: 54 vs 21 months, adjusted p< 0.001). Among patients with PCI≥20, a similar survival benefit was observed (median OS: HGMCP-S 25 vs 8 months, p< 0.001; GCA 47 vs 21 months, p=0.003) (Figure 1). **CONCLUSIONS:** Complete CRS/HIPEC can lead to long-term survival in patients with HGMCP-S and GCA, even with high tumor burden. These findings support aggressive surgery with complete cytoreduction for high-grade appendix cancer. Seeking second opinions at specialized peritoneal surface malignancy centers might be beneficial for patients.

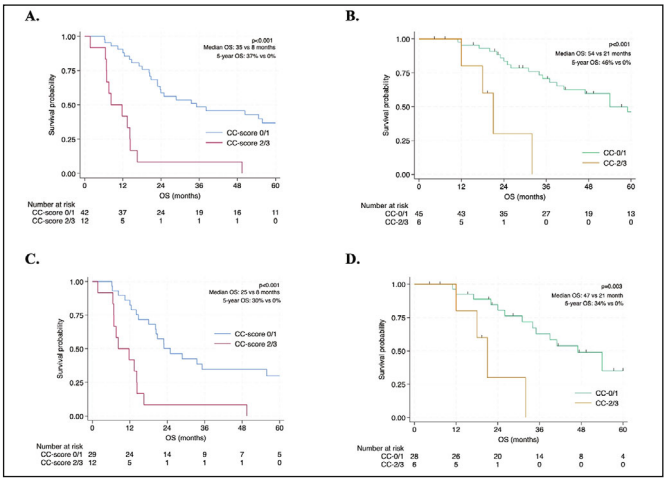

Figure 1. Kaplan-Meier overall survival (OS) after CRS/HIPEC by CC-score (CC-0/1 vs CC-2/3) for (A, C) HGMCP-S and (B, D) GCA. Analysis for parts A and B are adjusted for age, PCI, and lymph node status. Parts C and D demonstrate a subgroup analysis of patients with high PCI (≥20).

PPS21

Clonality analysis reveals a right upper quadrant origin of malignant peritoneal mesothelioma

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INTRODUCTION: Malignant peritoneal mesothelioma (MPeM) is staged using the Peritoneal Carcinomatosis Index (PCI) to quantify tumor burden and guide resectability. Although the PCI assigns equal weight to all abdominopelvic regions, it remains unclear whether MPeM in specific regions reflects early or late disease. We investigated peritoneal clonality to delineate spatiotemporal progression of MPeM and refine staging. **METHODS:** Peritoneal samples were studied from patients with epithelioid MPeM who underwent cytoreductive surgery on trial NCT04847063 from 2021-2024. Representative tissue sections were selected for laser capture microdissection and whole exome sequencing with matched normal peripheral blood (PBMCs) (Figure A). Somatic single-nucleotide variants (SNVs) were jointly called across multiple samples from each patient. Copy number-neutral SNVs were grouped to form mutational clusters or "subclones". Subclones were mapped to phylogenetic trees using combinatorial optimization to minimize frequency discrepancies. Spatial migration history was inferred from subclone prevalences implied by the optimized trees. **RESULTS:** Of 52 MPeM samples sequenced from 12 patients (median age 46 years), 67% (8/12) were male and 75% (9/12) received neoadjuvant therapy. Median PCI at time of cytoreductive surgery was 24 (IQR 20-30), and 58% (7/12) had germline mutations (n=6 BAP1, n=1 MUTYH). Clonal mutations were identified for all samples and organized into clusters of mutations that tended to co-occur. Heat maps demonstrated the relative abundance of subclones of mutations in each tumor sample (Figures B-C). Stepwise, conserved mutational patterns were observed across upper abdominal regions, with distinct new subclones emerging at higher prevalence in pelvic sites (Figure D). These findings were independent of germline status and suggest direct local extension within the upper abdomen, as well as potential peritoneal seeding to the pelvis along the typical clockwise peritoneal fluid currents; evidence of 'backflow' of subclones further indicates bidirectional tumor migration. (Figure F). **CONCLUSIONS:** MPeM originates from an initial clone, most often localizable to the right upper quadrant parietal peritoneum, with subsequent migration to other peritoneal regions. This pattern is particularly evident in BAP1 germline-mutant MPeM, as its indolent disease course enables clearer delineation of clonal phylogeny and migratory trajectories over time. Such insights may inform MPeM-specific disease staging and resectability decisions.

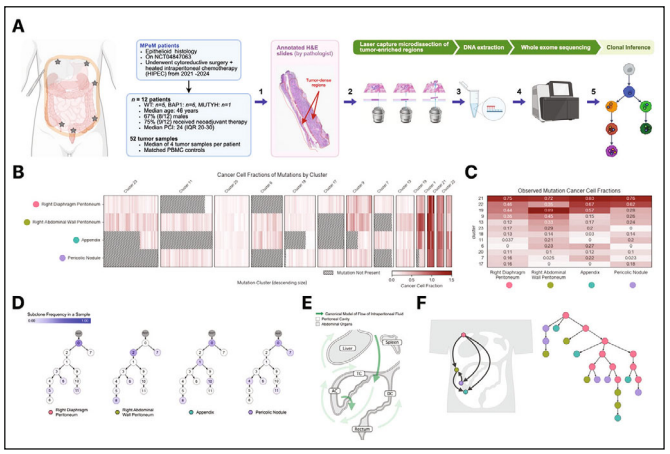

Figure: A. Study design; B. cancer cell fraction (CCF) of each somatic, copy-number neutral single nucleotide variant (SNV) in a sample (0 to 1, indicating proportion of its prevalence in cancer cells). SNVs have been assigned to mutational clusters; C. average observed CCF of clusters for each sample; D. the inferred tumor phylogeny with the smallest reconstruction error (based on minimizing difference between observed and inferred CCFs). Each tree shows the same phylogeny with nodes (labeled by an arbitrary 'vertex ID' index) colored by subclone frequency at the corresponding sampling location; E. canonical model of flow of intraperitoneal fluid (AC: ascending colon, TC: transverse colon, DC: descending colon); F. migration map derived from inferred subclone frequencies of mutational clusters, with corresponding illustration of inferred tumor migration pattern; (B-F represents data from a single representative MPeM patient).

PPS22

What factors contribute to interhospital variability in one-year mortality after pancreatic cancer surgery?

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INTRODUCTION: Hospital operative volume (HOV) is often used as a surrogate for hospital surgical quality in pancreatic cancer but may overlook other factors contributing to outcomes. The relative contributions of case complexity, hospital characteristics, HOV, and social determinants of health (SDoH) to interhospital variability to one-year mortality after pancreatic cancer surgery are unknown. This study aims to comprehensively investigate factors that contribute to interhospital variability in one-year mortality after pancreatectomy. **METHODS:** Patients undergoing a pancreatectomy for stage I-III pancreatic adenocarcinoma (PDAC) from 2010 to 2019 were identified using the Medicare-linked Surveillance, Epidemiology, and End Results database. Multilevel logistic regression models measured the proportion of interhospital variability on one-year mortality explained by case complexity, hospital characteristics, HOV, and SDoH. Case complexity included patient age, sex, race, Charlson Comorbidity Index, stage of cancer, tumor grade, lymph nodes examined, and positive nodes. Hospital characteristics included

region, facility type, teaching status, medical school affiliation, bed count, physician and nurse full time equivalents per bed, services offered, and cancer center accreditation. SDoH was determined by the Yost Index, income, and residential area. **RESULTS:** A total of 2,786 patients undergoing surgery for PDAC across 517 hospitals were included. One-year mortality in our cohort was 37.5%. HOV contributed most to interhospital variability in one-year mortality (53.7%, p< 0.001; Figure) followed by SDoH (19.7%), driven by income. Hospital characteristics contributed 4.7%, driven by hospital region, medical school affiliation, and National Cancer Institute designation. Case complexity had no contribution to interhospital variability in one-year mortality, though older age (OR 1.56, 95% CI 1.31-1.85, p< 0.001), higher tumor grade (G3/G4 vs. G1/G2: OR 1.57, 95% CI 1.26-1.85, p< 0.001), and advanced stage (3 vs. 1: OR 2.75, 95% CI 1.53-5.91, p< 0.001) were still associated with one-year mortality at the individual patient level. **CONCLUSIONS:** HOV accounts for most of the observed interhospital variability in one-year mortality after pancreatectomy for PDAC, although SDoH also contributes significantly. While centralizing care at high-volume centers may reduce inter-hospital variation in outcomes, it has to be weighed against potentially widening disparities given SDoH's impact as well.

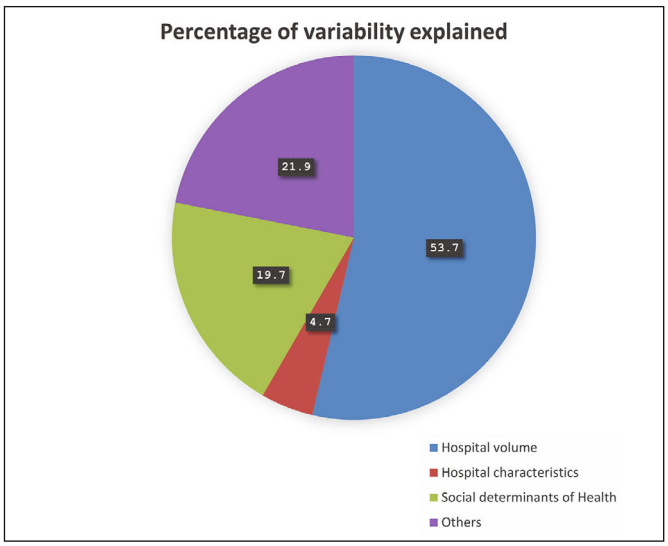

Figure. Distribution of attributable variability in one-year mortality after pancreatic cancer surgery.

PPS23

Does Cytoreductive Surgery and HIPEC Improve Quality of Life?

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INTRODUCTION: Cytoreductive surgery (CRS) with hyperthermic intraperitoneal chemotherapy (HIPEC) is increasingly used for peritoneal surface malignancies, but its long-term effect on quality of life (QoL) remains unclear. This cross-sectional study aims to evaluate QoL metrics for CRS+HIPEC based on patient feedback via validated survey tools to better inform clinicians and patients when weighing treatment options. **METHODS:** An IRB-approved, anonymous Qualtrics survey was distributed via an online support group for patients who underwent CRS+HIPEC. The survey included the SF-36 and EORTC QLQ-C30 instruments, scored on 0–100 scales. Demographic and clinical variables (age, sex, race, diagnosis, stage, months since surgery, treatment history) were collected. Analyses used descriptive statistics and one-sample t-tests to compare cohort means with reference norms: the SF-36 midscale of 50 and QLQ-C30 US population norms (Rogge 2024). **RESULTS:** Forty-five patients responded (mean age 52.5 ± 11.3 years, range 29.5–70.0; 36 female, 9 male). Racial distribution was 96% White, 2% Black/African American, 2% Hispanic/Latino. Diagnoses included low-grade appendiceal mucinous neoplasm/pseudomyxoma peritonei (LAMN/PMP, 58%), appendiceal adenocarcinoma (16%), goblet cell adenocarcinoma (13%), high-grade appendiceal mucinous neoplasm (HAMN, 4%), mucinous adenocarcinoma (4%), combined HAMN/LAMN (2%), and peritoneal sarcomatoid mesothelioma (2%). Median time since surgery was 32 months (IQR 6–65, range 1–341). Compared with the SF-36 reference midscale of 50, CRS+HIPEC patients reported significantly higher scores in physical functioning (68.2, p< 0.01), emotional well-being (72.5, p< 0.01), social functioning (70.4, p< 0.01), pain control (65.7, p< 0.05), and general health (66.1, p< 0.05). On QLQ-C30, compared with US norms (Rogge 2024), patients reported higher global QoL (72.6 vs 63.9, p< 0.05), less fatigue (23.2 vs 31.9, p< 0.01), less pain (21.9 vs 27.5, p≈0.05), and less insomnia (26.7 vs 30.8, p< 0.05). Nausea/vomiting, constipation, diarrhea, and dyspnea were similar to norms. Appetite loss was significantly worse (47.4 vs 14.1, p< 0.001). Overall, long-term survivors reported QoL comparable to the general US population in most domains, with appetite loss the major exception. **CONCLUSIONS:** Long-term QoL is preserved or improved after CRS+HIPEC, with higher global health status and reduced fatigue, pain, and insomnia compared with US norms. These findings provide reassurance for patients and clinicians overall, while appetite loss remains an area for targeted supportive intervention.

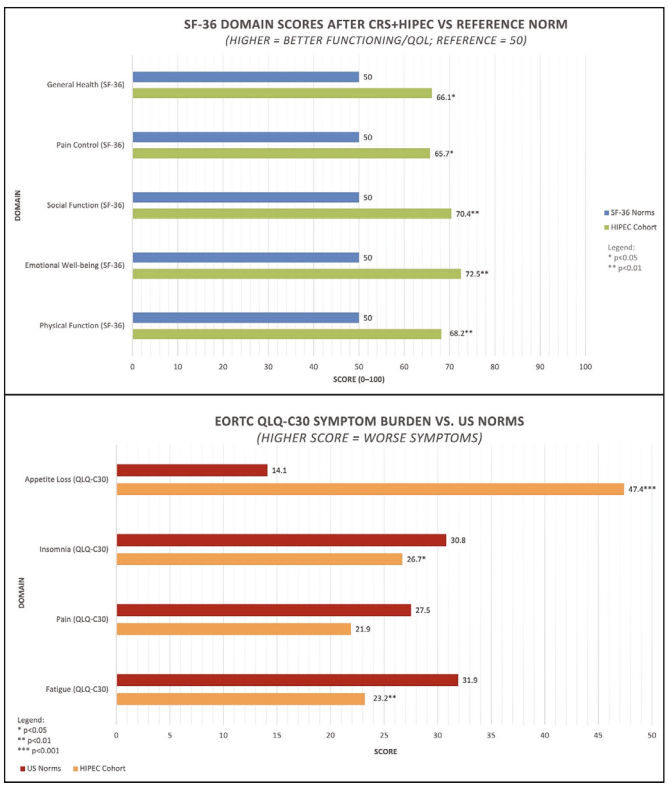

Figure 1: Graphic of CRS+HIPEC cohort quality of life SF-36 domains and EORTC QLQ-C30 symptom burden compared to reference norm and US norms, respectively

PPS24

Accelerating Care: Enterprise Clinical Improvement of Breast Cancer Time to Surgery

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INTRODUCTION: Timely surgical intervention following a breast cancer diagnosis is critical to improving outcomes, reducing psychological distress,

and ensuring system efficiency. Delays greater than 57 days from diagnosis to breast cancer surgery are associated with poorer survival and decreased patient satisfaction. In January 2023, the average interval across our health system was 60 days. To address this, we implemented an enterprise goal targeting surgery within 45 days of biopsy. **METHODS:** A multidisciplinary task force was established to identify barriers contributing to surgical delays. Only patients whose initial treatment was surgery were included; those requiring neoadjuvant chemotherapy or radiation were excluded. Chart review identified delays related to genetic counseling, diagnostic imaging, and surgical scheduling. We analyzed processes from efficient campuses to model workflows across the system. Interventions included implementation of an electronic health record (EHR) timer to track biopsy-to-surgery intervals, development of real time reporting, quality scorecards, and process optimization through multidisciplinary collaboration. **RESULTS:** Before execution, the mean time from biopsy to surgery was 60 days. We established a compliance goal of 60–64% of patients undergoing surgery within 45 days. Within the first fiscal year, this benchmark was achieved, with 64% of 817 eligible patients meeting the target timeframe. **CONCLUSIONS:** A structured, system-wide improvement effort coupled with technology integration and multidisciplinary teamwork successfully reduced surgical wait times for breast cancer patients across a large, integrated health system. This initiative highlights the impact of coordinated workflows on both clinical outcomes and patient experience, while fostering accountability, and continuous improvement in cancer care delivery.

PPS25

Reassessing volume-based regionalization for complex cancer surgery in the modern era

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INTRODUCTION: Minimum annual case volumes have been used as a surrogate for quality in complex cancer surgery and form the basis for the policy of regionalization. However, postoperative mortality has declined over the past two decades, and it is unclear how case volumes relate to quality in current practice. Our aim was to use contemporary mortality data to identify case volume thresholds for quality improvement. **METHODS:** Patients undergoing elective resection for localized (Stage I–III) colorectal, esophageal, liver, lung pancreatic, and stomach cancers were identified from the National Cancer Database (2017–2021). Hospital-level mean annual case volume was plotted against unadjusted 30-day mortality to generate volume-outcome curves with 95% CI. Adjusted median 30-day mortality rates (controlling for demographics, comorbidity, and insurance status) were used to establish benchmark (Q1 25th centile, median 50th centile, Q3 75th centile) mortality thresholds. The corresponding case volumes required to achieve these benchmarks were then determined at the intersect of the volume-outcome curves. **RESULTS:** A total of 399,165 patients were included in the study, with the largest proportion of patients diagnosed with colon (48%) and lung cancer (29%). The median number of cases for each hospital was 4 (IQR 3-7) for liver, 9 (IQR 5-17) for esophageal, 12 (IQR 6-22) for stomach, 15 (IQR 8-24) for rectal, 16 (IQR 8-28) for pancreatic, 39 (IQR 22-68) for lung, and 42 (IQR 27-66) for colon resections. Median adjusted 30-day mortality ranged from 0.47% for proctectomy to 3.29% for major hepatectomy. The annual case volume needed to meet median 30-day mortality, as well as for Q1 and Q3 for each cancer, is depicted in the figure as the intersect of the respective volume-outcome curve. To go from Q3 to Q1 for 30-day mortality, the increase in annual case volume needed was 329 for colon, 175 for lung, 70 for rectal, 45 for pancreatic, 39 for stomach, 30 for esophageal, and 24 for liver resections - ranging from 3-8 times current median case volumes. **CONCLUSIONS:** Regionalization, a policy based on improving 30-day operative mortality by increasing case volumes, requires a large shift in case numbers for a meaningful reduction in absolute risk. Given declining postoperative mortality, the relatively low incidence of some cancers, and current median number of cases per hospital, volume-based regionalization may not be a viable strategy to improve complex surgical outcomes in the United States.

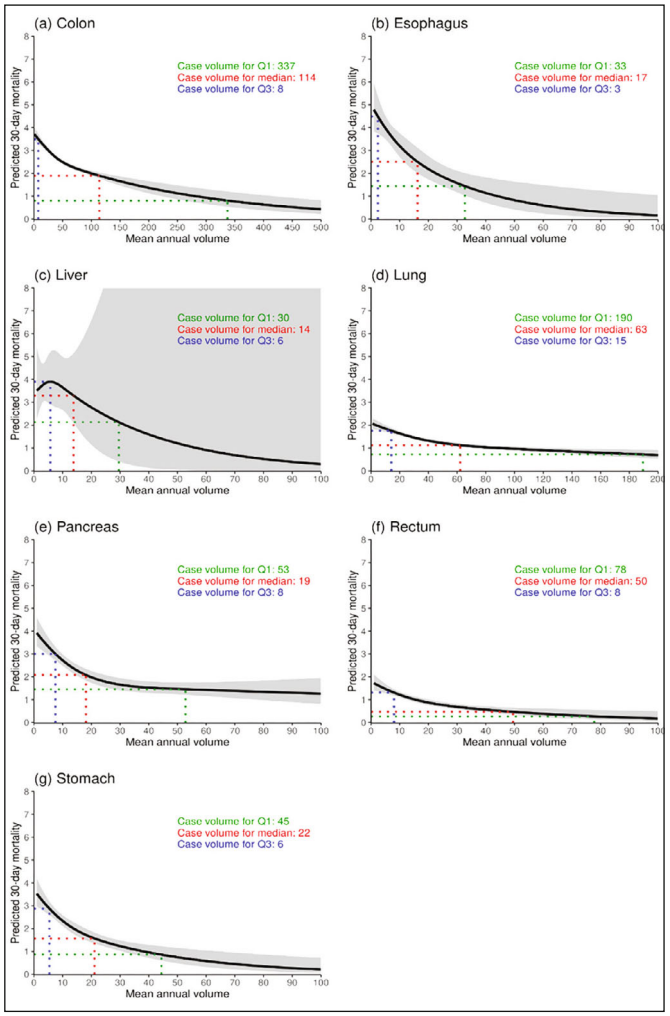

Figure. Volume-outcome curves representing unadjusted 30-day mortality for each cancer with superimposed adjusted median 30-day mortality with Q1-Q3 ranges.

PPS26

Multidisciplinary tumor board documentation: assessing its frequency, quality, and impact

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INTRODUCTION: Tumor board (TB) meetings facilitate multidisciplinary cancer discussions and are a fundamental aspect of contemporary cancer care, yet no standards currently exist for documenting the results of TB meetings. Since lack of documentation could contribute to nonadherence to TB recommendations, this study aimed to characterize TB documentation practices at a single institution. **METHODS:** A retrospective review of patients discussed at sixTBs at an NCI-designated comprehensive cancer center from 1/2024-6/2024 was conducted. The presence and quality of TB documentation in the medical record were measured. Associations with clinicodemographic variables and patient outcomes were assessed. **RESULTS:** Among 991 patients (307 liver, 235 breast, 166 colorectal,

153 pancreas, 110 cutaneous, 20 gastroesophageal), the median age was 63 years (IQR: 51 – 71 years), most were white (84%), female (52%), and had locoregional cancer staging (66%). Overall, TB documentation was present only half the time (512 patients, 52%). Documentation varied significantly by disease site (e.g. 6% breast to 97.0% colorectal). Among patients with documentation, 45% of notes were unstructured, and their content was highly variable: 99% documented the final consensus recommendations, 58% listed what information was reviewed, 29% listed the specialty of all attendees, 11% documented the reason for discussion, and 16.0% documented if clinical trial eligibility was discussed. Only 53% of notes documented if patients were notified of the TB recommendations, most commonly via phone (69%) less often electronically (15%) or in-person (14%). At a median follow-up of 40 months, the quality of documentation was associated with patient outcomes: after excluding breast cancer patients, both TB documentation (Fig 1a) and the use of structured notes (among those with documentation, Fig 1b) were associated with improved overall survival. **CONCLUSIONS:** Following multidisciplinary TB meetings, documentation was highly variable and may be linked to patient outcomes. Developing standards for TB documentation may improve the accurate and timely dissemination of consensus recommendations and improve the delivery of complex personalized cancer care.

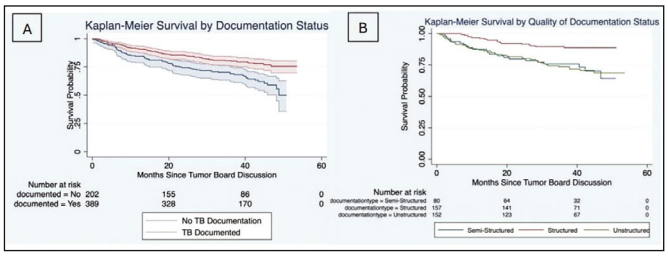

Figure 1. Overall survival by TB documentation (a) and quality of TB documentation, among those with documentation (b)

PPS27

Clinical and Prognostic Implications of Circulating Cell-Free DNA Concentration in Lung Cancer

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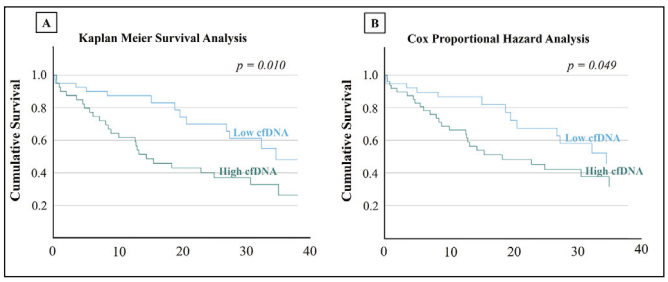
INTRODUCTION: We analyzed the independent effect of circulating cell-free DNA (cfDNA) concentration on disease stage and survival in lung malignancies. **METHODS:** We utilized a prospectively maintained biorepository of patients presenting with oncologic diagnoses, which includes blood draws collected prior to and during treatment. This biorepository was assessed for concordance between cfDNA and paired tumor samples in the overall cohort. Patients diagnosed with lung malignancies were then selected for focused cfDNA analysis. Patients were categorized into low and high cfDNA categories based on the median of their raw cfDNA concentration values. Multivariate regression models were utilized to assess the independent association between cfDNA concentration and clinical outcomes including stage and survival. **RESULTS:** Among our cohort of 1000 patients spanning 26 disease sites, high concordance was demonstrated between matched tumor and blood samples (coding mutations: 97%, clinical oncogenic mutations: 88%). Of these, 80 lung cancer patients were identified, they were 70.3 ± 7.8 years old and 55.0% (n=44) male. Diagnoses included 76.5% non-small cell (NSCLC) and 23.5% small cell lung carcinoma. 55.5% (n=44) presented with non-metastatic disease (stage I-III). The median cfDNA concentration was 6.5 (4.7-12.0) ng/mL. The high cfDNA cohort had a greater percentage of patients with metastatic (60.0% high cfDNA vs. 30.0% low cfDNA, p=0.007) disease. There was no difference in histology (NSCLC: 75.0% vs. 77.8%, p=0.788) between groups. Median overall survival (OS) was significantly shorter in the high cfDNA cohort (14.43 [6.13-Not reached] vs. 34.63 [20.67-Not reached] months). On multivariate analysis, high cfDNA was associated with higher odds of metastatic disease (OR: 3.66, 95%CI: 1.42-9.43, p=0.007). On cox proportional hazard analysis, high cfDNA was an independent predictor of mortality (HR: 2.49, 95%CI: 1.23-5.07, p=0.012). **CONCLUSIONS:** We demonstrate high concordance between serum cfDNA and solid tumor genomic profiles. High cfDNA concentration was independently associated with advanced-stage disease and a higher risk of mortality in patients with lung malignancies.



PPS28

Unraveling Sexual Dimorphisms in Gastric Cancer

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INTRODUCTION: Gastric cancer is a sexually dimorphic disease. Male patients have twice the incidence, are diagnosed at an older age, and have worse survival outcomes than females. Whether there are molecular mechanisms that underlie these sex-based differences is unclear. **METHODS:** We utilized genetically engineered mice on C57BL/6 backgrounds with parietal cell-specific conditional deletions of Trp53 and Cdh1 (Atp4b-Cre; Trp53flox/flox; Cdh1flox/flox, "APC" mice). Tumoroid growth was quantified with live cell imaging. Cytokine levels were measured with multiplex ELISA. Hormone deprivation was performed by surgical castration. Tumor immune cell composition was delineated by single-cell RNA sequencing and flow cytometry. **RESULTS:** Female APC mice had longer median overall survival than males (48 vs 44 weeks, $p < 0.001$, Figure 1A). In vitro studies demonstrated female-derived APC tumoroids grew slower than male-derived APC tumoroids ($p < 0.001$; Figure 1B). At death, female mice had higher levels of circulating IFN-γ ($p = 0.02$) and CCL4 ($p = 0.001$; Figure 1C). Conditioned medium of cultured tumoroids corroborated that female-derived tumoroids secreted more IFN-γ and CCL4 (all $p < 0.001$; Figure 1D) compared to male-derived tumoroids. Single cell RNA-sequencing demonstrated that female cancer cells expressed gene sets associated with type I and II interferon responses. In addition, female tumors were comprised of more B cells and T cells while male tumors were infiltrated with more macrophages, neutrophils, and myeloid-derived suppressor cells (Figure 1E). Flow cytometry revealed female tumors had more activated $CD8^+$ T cells ($p < 0.001$), more dendritic cells ($p = 0.05$, Figure 1F), and female cancer cells expressed more MHC-I compared to males ($p < 0.001$; Figure 1G). Surgical castration was performed to test the role of sex hormones. Female mice who underwent oophorectomy had shorter overall survival (45 weeks, N = 13) compared to females who underwent sham operations (48 weeks, N = 12, $p < 0.001$, Figure 1H). In contrast, overall survival did not differ in male mice that underwent sham operations (44.3 weeks, N = 12) and orchiectomy (44.7 weeks, N = 13; p=0.8, Figure 1I). **CONCLUSIONS:** Our autochthonous genetic engineered mouse model recapitulated the sex-associated survival difference seen in human gastric cancer patients. We found that there were sex-associated cell autonomous and non-cell autonomous factors regulating gastric cancer growth. We identified a sexually dimorphic immune response with female tumors demonstrating more robust anti-tumor immunity in gastric cancer. Finally, sex hormones influenced the survival of female mice, but not male mice.

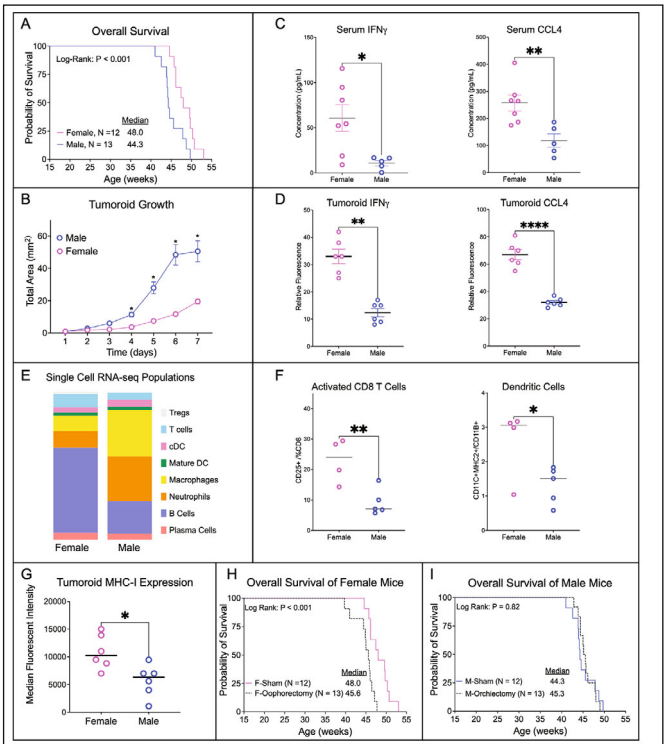

Figure 1. Sex as a biologic factor drives molecular differences in gastric cancer (**A**) Kaplan-Meier survival analysis of *Atp4b-Cre; Trp53*$^{fl/fl}$; *Cdh1*$^{fl/fl}$ (APC) male and female mice. (**B**) Serum concentrations of IFNγ and CCL4 in APC mice at the time of death. (**C**) APC tumoroid growth curves (**D**) APC Tumoroid medium concentrations of IFNγ and CCL4. (**E**) Single cell RNA-sequencing populations from male and female APC mice. (**F**) Flow cytometry for activated T cells or dendritic cells from tumors derived from male or female APC mice (**G**) APC tumoroid expression of MHC-I on flow cytometry. (**H**) Overall survival of female APC mice who underwent oophorectomy or sham operations. (**I**) Overall survival of male APC mice who underwent oophorectomy or sham operations.

PPS29

Obesity-driven reprogramming of gastric cancer via adipocyte extracellular vesicles: Insights from metabolomic and transcriptomic profiling

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INTRODUCTION: Metabolic reprogramming is a hallmark of cancer, with adipocytes playing a key role through the release of bioactive cargo—especially under inflammatory conditions such as obesity. These factors are linked to metabolic syndrome and cancer progression, but the underlying mechanisms remain unclear. This study employs a multi-omics approach to characterize the transcriptome of adipocyte-derived extracellular vesicles (EVs) from the omentum of obese and lean gastric cancer (GC) patients, and to assess their impact on metabolic and transcriptomic reprogramming in GC cells. **METHODS:** Adipocyte-derived EVs (Ad-EVs) were isolated from the omentum of lean and obese GC patients and characterized by size, morphology, and protein marker expression. Ad-EVs were co-cultured with GC cells for functional assays, metabolomic analysis, and bulk RNA sequencing, while their microRNA cargo was profiled separately. A murine peritoneal metastasis model was used, involving peritoneal injection of GC-luciferase cells with either lean or obese Ad-EVs. **RESULTS:** Both lean and obese Ad-EVs enhanced GC cell proliferation, with obese Ad-EVs significantly increasing migration and invasion. We identified 30 differentially expressed microRNAs between lean and obese Ad-EVs. GC cells stimulated with Ad-EVs exhibited significant transcriptomic changes involving key biological pathways associated with tumor progression. In addition, treatment of GC cells with Ad-EVs increased glycolytic activity, with a more pronounced effect observed in cells treated with obese Ad-EVs. In immunocompromised mice, obese Ad-EVs led to higher metastatic rates compared to lean Ad-EVs. **CONCLUSIONS:** Integrated metabolomic and transcriptomic analysis revealed distinct metabolic and regulatory signatures linked to obesity-driven gastric cancer progression. This comparative approach highlights potential therapeutic targets, EV-derived biomarkers for intra-abdominal metastasis, and offers new insights into the biological links between obesity and cancer, supporting the development of more personalized interventions.

PPS30

Expanding the utilization of upfront sentinel lymph node biopsy in clinically node positive patients with estrogen receptor positive breast cancer

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INTRODUCTION: Patients who present with clinically node-positive ER+/HER2- breast cancers may have low volume nodal disease. While NCCN guidelines endorse upfront sentinel lymph node biopsy (SLNB) for patients with expected limited nodal disease diagnosed by imaging, many patients still undergo upfront axillary lymph node dissection (ALND). We hypothesize that some patients could be spared ALND by performing upfront SLNB. **METHODS:** Patients ≥18 years of age with ER+/HER2-, cT1-3 cN1 M0 breast cancer, undergoing upfront surgery from 2012-2021 were selected from the National Cancer Database. Logistic regression identified factors associated with change in nodal category and Cox proportional hazards models estimated adjusted overall survival (OS). **RESULTS:** There were 54,404 patients included. Of these patients, axillary staging with SLNB alone was performed in 17.3% (975/5642) in 2012 compared to 31.8% (1765/5554) in 2021. Adjusted OS did not differ significantly by type of breast surgery (p=0.26) or axillary surgery (p=0.29). Patients receiving SLNB alone had lower grade, lower clinical and pathologic T-category (Table 1). Patients undergoing SLNB alone were more likely to downstage to pN0 (18.8%) or remain pN1 (75.5%) as opposed to upstage to pN2-3 (5.7%), whereas 39.2% of patients undergoing ALND upstaged to pN2-3. In the SLNB group, a median of 3 nodes were examined, with 44.2% having 4+ nodes examined. In the ALND group, 67.2% had ALND as the initial staging procedure without a preceding SLNB. 44.1% of patients who underwent ALND had only 1-2 positive nodes. Characteristics associated with higher odds of pathologic nodal upstaging included lobular carcinoma vs. ductal (OR 1.82, p< 0.001), higher cT category (cT3 vs. cT1 OR 2.14, p< 0.001), or higher grade (grade 3 vs. 1 OR 1.74, p< 0.001). **CONCLUSIONS:** This study demonstrates increasing use of upfront SLNB in ER+/HER2- cN1 disease over time. Many patients undergoing ALND have limited nodal involvement suggesting that ALND may have been safely avoided. These findings suggest that select cN1 patients with limited nodal disease likely derive little benefit from ALND and it may be reasonable to consider upfront SLNB.

Table 1. Clinicopathologic Characteristics of patients undergoing axillary surgery using the NCDB from 2012-2021

	ALND (N=42,297) N (Row %)	SLNB Alone (N=12,107) N (Row %)	P-Value*
Sex			<0.001
Female	41,386 (77.6%)	11,952 (22.4%)	
Male	911 (85.5%)	155 (14.5%)	
Histology			<0.001
Ductal	31,793 (77.1%)	9,452 (22.9%)	
Lobular	9,278 (79.9%)	2,334 (20.1%)	
Other	1,226 (79.3%)	321 (20.7%)	
Grade			<0.001
1	4,963 (69.3%)	2,196 (30.7%)	
2	23,553 (77.2%)	6,966 (22.8%)	
3	13,781 (82.4%)	2,945 (17.6%)	
Clinical T-Category			<0.001
T1	16,193 (72.4%)	6,169 (27.6%)	
T2	21,565 (80.6%)	5,206 (19.4%)	
T3	4,539 (86.1%)	732 (13.9%)	
Pathologic T-Category			<0.001
T0/IS	91 (70.5%)	38 (29.5%)	
T1	13,319 (70.0%)	5,718 (30.0%)	
T2	22,215 (80.3%)	5,458 (19.7%)	
T3	6,042 (87.9%)	833 (12.1%)	
T4	630 (91.3%)	60 (8.7%)	
Number of Lymph Nodes Examined – Median (IQR)	13 (9-19)	3 (2-5)	<0.001
Number of Positive Lymph Nodes – Median (IQR)	3 (1-6)	1 (1-2)	<0.001
Pathologic N-Category			<0.001
N0	1,243 (35.3%)	2,278 (64.7%)	
N1	24,455 (72.8%)	9,136 (27.2%)	
N2	10,878 (95.0%)	572 (5.0%)	
N3	5,721 (97.9%)	121 (2.1%)	

*P-values were estimated from chi-square tests for categorical variables and t-tests for continuous variables

PPS31

Unmet social needs are associated with higher postoperative complications and hospital readmissions in patients with breast cancer: a prospective cohort study

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INTRODUCTION: Many patients have unmet social needs that may affect their health care utilization and postoperative outcomes. We sought to prospectively examine the association between unmet social needs and postoperative complications or hospital readmissions within 30 days of surgery in patients with breast cancer. **METHODS:** From 2019-2025, patients were prospectively enrolled at an NCI-designated cancer center and a sister safety-net hospital. Women with stage I-III BCa who underwent surgery were included in the analysis. Patients completed the Health Leads Social Needs Screening Toolkit, a national screening approach to gathering information regarding prevalent social needs domains affecting patient health. Patients were grouped into two categories: no unmet social needs and unmet social needs. Univariable and multivariable logistic regression were utilized to evaluate the association between unmet social needs and postoperative complications or readmission. **RESULTS:** 422 patients completed the Health Leads Social Needs Screening Toolkit. 232 (55%) had no unmet social needs, and 190 (45%) had unmet social needs. On univariable logistic regression, patients with unmet social needs were more likely to have a postoperative complication or readmission (OR 2.00 95% CI 1.13-3.61, p = 0.019). On multivariable logistic regression, controlling for age, insurance status (private vs public), body mass index, diabetes (yes/no), smoking status (current vs. never/former), receipt of neoadjuvant chemotherapy (yes/no), surgery type (lumpectomy vs mastectomy), and reconstruction (yes/no), patients presenting with any unmet social needs had higher odds of postoperative complications or readmission (OR 2.20 95% Cl 1.10-4.49; p= 0.027). **CONCLUSIONS:** In this prospective cohort study, patients presenting with unmet social needs had higher odds of postoperative complications or readmission compared to patients with no unmet social needs, independent of known comorbidities associated with postoperative complications and readmission. These findings demonstrate the importance of considering unmet social needs as a modifiable comorbidity associated with worse postoperative outcomes and readmission rates to improve healthcare utilization.

Table. Patient and survey characteristics by postoperative complications or readmission

	Yes, Postoperative complications or Readmission n=68 (11.7%)	No, Postoperative complications or Readmission n=514 (88.3%)
Age	62.9 ±11.6	61.6 ±11.6
Insurance		
Public	26 (38.2)	134 (26.1)
Private	35 (51.5)	308 (60.0)
Body Mass Index	27.7 ±6.6	28.0 ±5.8
Diabetes Status		
Yes	12 (17.6)	60 (11.7)
No	56 (82.4)	454 (88.3)
Smoking Status		
Current Smoker	4 (5.9)	20 (3.9)
Non/Former Smoker	60 (88.2)	433 (84.2)
Neoadjuvant Chemotherapy		
Yes	46 (67.6)	279 (54.3)
No	22 (32.4)	235 (45.7)
Surgery		
Lumpectomy	16 (23.5)	280 (54.5)
Mastectomy	51 (75.0)	233 (45.3)
Reconstruction after Mastectomy		
Yes	12 (17.6)	62 (12.1)
No	37 (54.4)	161 (31.3)
Health Leads Survey		
Yes, Unmet Social Needs	33 (48.5)	157 (30.5)
No, Unmet Social Needs	22 (32.3)	210 (40.9)

PPS32

Impact of genetic testing on surgical management in breast cancer: Results from a universal genetic testing program

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INTRODUCTION: Inherited germline pathogenic variants (GPVs) are identified in 5-10% of breast cancer cases. The American Society of Breast Surgeons recommends universal genetic testing for breast cancer, but the impact of testing on surgical management remains understudied. **METHODS:** A retrospective chart review was performed for women who received a diagnosis of a first primary invasive breast cancer and underwent multigene testing as part of a multicentered, prospective universal genetic testing study between September 2019 and April 2022. Multivariable analysis was performed to identify factors associated with choice of surgical management, including breast conserving surgery, unilateral mastectomy, or bilateral mastectomy. **RESULTS:** Of 805 patients with breast cancer who were eligible and offered genetic testing, 729 (90.6%) underwent testing and 688 (94.4% of those tested) had operable breast cancer. The median age at breast cancer diagnosis was 53 years (range = 23-91 years), and 65.4% were White and of European

ancestry. A total of 54 GPVs were identified in 53 (7.3%) of 729 patients tested. With respect to surgical management, 438 (63.7%) underwent breast conserving surgery, 171 (24.9%) underwent unilateral mastectomy, and 79 (11.5%) underwent bilateral mastectomy. In 36 carriers of BRCA1/2 or PALB2 GPVs who had operable breast cancer, 29 (80.6%) had a change in surgical management after undergoing genetic testing. In contrast, among 15 carriers of moderate penetrance GPVs including ATM, CHEK2, and others, only 1 (6.7%) altered surgical management. Bilateral mastectomy rates were 69.4% in BRCA1/2 and PALB2 carriers, 6.7% in moderate penetrance carriers, and 8.3% in non-carriers ($p < 0.001$). On age-adjusted multivariable analysis, clinical factors independently associated with bilateral mastectomy included BRCA1/2 or PALB2 carrier status (odds ratio [OR] 27.3; 95% CI 10.5-70.6), bilateral breast cancer (OR 3.63; 95% CI 2.14-6.15) and invasive lobular/mixed carcinoma (2.77; 95% CI 1.42-5.41). Moderate penetrance GPVs were not associated with increased bilateral mastectomy receipt (OR 0.58; 95% CI 0.07-5.15). **CONCLUSIONS:** In women with invasive breast cancer, genetic testing at diagnosis was associated with a change in surgical management in over 80% of BRCA1/2 and PALB2 GPV carriers. High penetrance but not moderate penetrance GPVs were independently associated with increased bilateral mastectomy receipt.

Table. Multivariable analysis of factors associated with bilateral mastectomy in women with newly diagnosed operable breast cancer who underwent genetic testing (n=688).

Characteristic	Adjusted OR (95% CI)	
Age Group –		
<40 years	*Ref*	
40-49 years	0.62	(0.28-1.40)
50-59 years	0.67	(0.30-1.50)
60-69 years	**0.14**	**(0.04-0.45)**
70+ years	**0.20**	**(0.05-0.74)**
Genetics – *n*, (%)		
Negative genetics	*Ref*	
BRCA1/2 or *PALB2* carrier	**27.3**	**(10.5-70.6)**
Moderate penetrance carrier	0.58	(0.07-5.15)
Family History – *n*, (%)		
No known family history of cancer	*Ref*	
Ovarian cancer (+/- breast cancer)	1.08	(0.31-3.81)
Breast cancer	1.64	(0.76-3.54)
Any non-breast/ovarian cancer	1.21	(0.52-2.80)
Laterality – *n*, (%)		
Unilateral	*Ref*	
Bilateral	**3.63**	**(2.14-6.15)**
Histology – *n*, (%)		
Invasive ductal carcinoma	*Ref*	
Invasive lobular carcinoma/Mixed/Other	**2.77**	**(1.42-5.41)**
Grade – *n*, (%)		
Grade I-II	*Ref*	
Grade III	1.76	(0.84-3.70)
Biologic Subtype – *n*, (%)		
ER+HER2-	*Ref*	
HER2+	0.96	(0.43-2.15)
TNBC	1.06	(0.43-2.61)
Clinical Tumor Size – *n*, (%)		
cT1	*Ref*	
cT2	1.06	(0.56-2.01)
cT3-T4	0.82	(0.29-2.37)
Clinical Nodal Status – *n*, (%)		
cN0	*Ref*	
cN1	**0.40**	**(0.20-0.78)**
cN2-N3	0.36	(0.06-2.20)

PPS33

Comparison of health-related quality of life outcomes in breast cancer patients undergoing breast-conserving surgery, medically necessary mastectomy, and patient preference mastectomy: a prospective study

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INTRODUCTION: Guidelines support both breast-conserving surgery (BCS) with radiation and mastectomy for treatment of early breast cancer, but emerging evidence favoring BCS challenges the practice of universally offering both options to patients. There is currently no comparative study assessing health-related quality of life outcomes (HRQoL) across BCS, medically necessary (Mast-MN), and patient preference mastectomy (Mast-PP). This study compared the preoperative and six-month postoperative change in HRQoL in aspects of mental, physical health, and satisfaction between these surgical approaches. **METHODS:** This prospective cohort study enrolled breast cancer surgery patients between 2021 – 2024 at our provincial referral centre. Mastectomy indication was coded preoperatively: Mast-MN for contraindications to BCS, and Mast-PP for patient preference when BCS was feasible. Participants completed surveys measuring mental and physical health preoperatively and six-months postoperatively. The BREAST-Q questionnaire was used to assess breast cancer specific outcomes including breast satisfaction, psychosocial, sexual, and chest physical well-being. General patient-reported outcomes were categorized in depression, anxiety, pain, and perceived health. **RESULTS:** A total of 494 patients meeting inclusion/exclusion criteria completed both pre- and six-month postoperative surveys. Of these, 343 underwent BCS, 104 Mast-MN, and 47 Mast-PP. On average, BCS was associated with a clinically significant increase in breast satisfaction (+4.3) and physical-chest well-being (+7.5). Mast-PP showed a decline in physical-chest well-being (−5.6), while Mast-MN showed reductions in breast satisfaction (−6.2), psychosocial (−5.4), and sexual well-being (−12.2). In multivariable regression, both Mast-PP ($\beta = -7.91$, 95% CI: −15.2 to −0.63, $p = 0.033$) and Mast-MN ($\beta = -12.3$, 95% CI: −17.4 to −7.13, $p < 0.001$) were associated with significantly lower postoperative breast satisfaction compared to BCS. There was no significant difference in depression, anxiety, pain, or perceived health scores within and across the surgical modalities. **CONCLUSIONS:** BCS was associated with significantly greater breast satisfaction postoperatively, and trends toward improved chest physical well-being compared to both medically necessary and patient preference mastectomy. When deciding surgical approach, patients should be counseled on these quality-of-life considerations when BCS is feasible.

Figure 1: Change in Preoperative to 6-Month Postoperative Core BREAST-Q Scores

PPS34

Neighborhood disadvantage and pathologic complete response to neoadjuvant chemotherapy in breast cancer patients

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INTRODUCTION: Breast cancer specific survival (BCSS) is decreased for women living in disadvantaged neighborhoods. Barriers to completing guideline-concordant therapy are a major contributing factor. Recent studies have shown that ADI is associated with more aggressive tumor biology (e.g., high grade, triple negative breast cancer). Although these tumor characteristics have been associated with higher pathologic complete response (pCR) rates, the shorter BCSS seen with highly disadvantaged neighborhoods, led us to hypothesize that pCR is less frequent among women living in disadvantaged compared to advantaged neighborhoods after completing guideline-concordant neoadjuvant chemotherapy (NAC). **METHODS:** Women with stage I–III BCa undergoing neoadjuvant chemotherapy between 2014-2023 were identified from Memorial Sloan Kettering Cancer Center's prospectively maintained breast database. Patient demographics, tumor characteristics, treatment details, and final pathology were abstracted from the medical record and institutional cancer registry. Residential addresses were geocoded to census block groups and linked to the national ADI, categorized as low/medium (ADI 1-6) vs. high disadvantage (ADI 7-10). The primary outcome was pCR (ypT0/Tis ypN0). Associations between ADI and pCR were evaluated using multivariable regression models adjusting for age, race, insurance, subtype, clinical stage, and at least 80% NAC completion. **RESULTS:** Among 2,537 women with complete data, 36% achieved a pCR. The median age was 51 years. The cohort was comprised of 67% White, 18% Black, and 15% Asian patients; 60% had high-grade tumors, 69% had stage II disease, and 29% had TNBC. On multivariable analysis including completion of ≥80% of planned NAC, patients from highly disadvantaged neighborhoods had lower odds of pCR compared with those from low/intermediate-disadvantaged areas (OR 0.74, 95% CI 0.54–0.99, p = 0.045). Completing ≥80% of NAC was independently associated with higher odds of pCR (OR 1.66, 95% CI 1.26–2.21, p < 0.001). Higher grade (OR 6.22, 95% CI 4.97–7.84, p < 0.001), biologically aggressive subtypes [(HER2+: OR 6.15, 95% CI 4.79–7.93; TNBC: OR 2.38, 95% CI 1.83–3.11; p < 0.001)], and lower stage (Stage III vs II: OR 0.69, 95% CI 0.54–0.88, p < 0.001) were also significant predictors of pCR. **CONCLUSIONS:** In addition to receptor status, grade, and lack of treatment completion, ADI was also an independent predictor of lower odds of a pCR after NAC. These findings merit further inquiry into potential mechanisms of treatment resistance among those living in disadvantaged areas.

Table. Neighborhood and Individual-level, Tumor, and Treatment Characteristics by pCR

Variable	Category	Overall N=2,537	No pCR N=1,625	Yes pCR N=912
Age				
	<50	1,186 (47%)	741 (46%)	445 (49%)
	50-70	1,180 (47%)	766 (47%)	414 (45%)
	Over 70	171 (6.7%)	118 (7.3%)	53 (5.8%)
Insurance				
	Private	1,679 (66%)	1,032 (64%)	647 (71%)
	Medicare	569 (22%)	387 (24%)	182 (20%)
	Medicaid	289 (11%)	206 (13%)	83 (9.1%)
BMI				
	Normal (18.5-24.9)	110 (4.3%)	72 (4.4%)	38 (4.2%)
	Overweight (25-29.9)	1,154 (45%)	716 (44%)	438 (48%)
	Obese (>30)	1,273 (50%)	837 (52%)	436 (48%)
Smoking History				
	Never/Former	1,752 (69%)	1,125 (69%)	627 (69%)
	Current	785 (31%)	500 (31%)	285 (31%)
Race				
	White	1,697 (67%)	1,077 (66%)	620 (68%)
	Black	451 (18%)	293 (18%)	158 (17%)
	Asian	389 (15%)	255 (16%)	134 (15%)
ADI				
	Low/Medium	2,253 (89%)	1,431 (88%)	822 (90%)
	High	284 (11%)	194 (12%)	90 (9.9%)
Grade				
	Low/Medium	1,006 (40%)	868 (53%)	138 (15%)
	High	1,531 (60%)	757 (47%)	774 (85%)
Stage				
	2	1,745 (69%)	1,093 (67%)	652 (71%)
	1	234 (9.2%)	135 (8.3%)	99 (11%)
	3	558 (22%)	397 (24%)	161 (18%)
Subtype				
	ER+/HER2-	874 (34%)	757 (47%)	117 (13%)
	HER2+	937 (37%)	430 (26%)	507 (56%)
	TNBC	726 (29%)	438 (27%)	288 (32%)
Completed 80%	Yes	2,143 (84%)	1,327 (82%)	816 (89%)

PPS35

Utility of 21-gene Recurrence Score in Male Breast Cancer

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INTRODUCTION: The recurrence score (RS) is a 21-gene analysis (OncotypeDX) used to assess the risk of breast cancer recurrence and benefit from chemotherapy, guiding chemotherapy treatment recommendations. The TAILORx trial (published in 2018) established RS ≥ 26 as the cutpoint for high recurrence risk. While extensively validated in females, RS has not been as well-studied in males. **METHODS:** Using the National Cancer Database (NCDB) we identified patients with pT1-2, N0-1 ER+ HER2- invasive breast cancer between 2010 and 2023 to assess usage and prognostic implications of RS in men. 2019-2023 were considered as the post-TAILORx period. Patients treated with neoadjuvant therapy or M1 disease were excluded. Groups were compared using chi-square tests for univariate analysis and logistic regression for multivariable analysis while adjusting for confounders including year of diagnosis, age, comorbidity score, race/ethnicity, grade, histology, PR status, pT, pN, surgery/radiation and adjuvant endocrine therapy receipt. Overall survival (OS) was analyzed using multivariable Cox proportional hazard regression. **RESULTS:** We identified 9,908 male and 1,111,898 female patients. While rate of RS testing was slightly lower in males (42%) compared to females (46%) overall, use of RS increased markedly for both sexes between 2010 and 2023 (18% to 66% in males and 28% to 62% in females), and in 2023 the rate was slightly higher for males (p=0.04). Among those tested, males were more likely to have RS ≥ 31(11% vs 8%, p< 0.001) and more likely to have RS ≥ 26 (19% vs 14%, p< 0.001). Use of adjuvant chemotherapy 2019-2023 in patients with RS ≥ 26 was lower in males than in females overall (68% vs 77%, p< 0.001) and stratified by pN status (Figure 1). This difference persisted on multivariable analysis with an adjusted odds ratio for chemotherapy omission of 1.44 (95% CI: 1.09-1.90, p=0.01) for males versus females. Male breast cancer patients (2010-2022) with RS ≥ 26 had significantly poorer OS if chemotherapy was omitted by multivariable Cox proportional hazards regression (adjusted hazard ratio 1.54, 95% CI: 1.06-2.23, p=0.02), which was similar to the chemotherapy omission effect in females with RS ≥ 26 (p=0.81). **CONCLUSIONS:** The use of RS testing increased between 2010 and 2023 for both sexes, and RS influenced receipt of adjuvant therapy. Overall, males had higher RS but were less likely to receive chemotherapy when RS > 26, and the males who did not receive chemotherapy had worse overall survival. This study reveals the importance of chemotherapy treatment on overall survival among males with high RS.

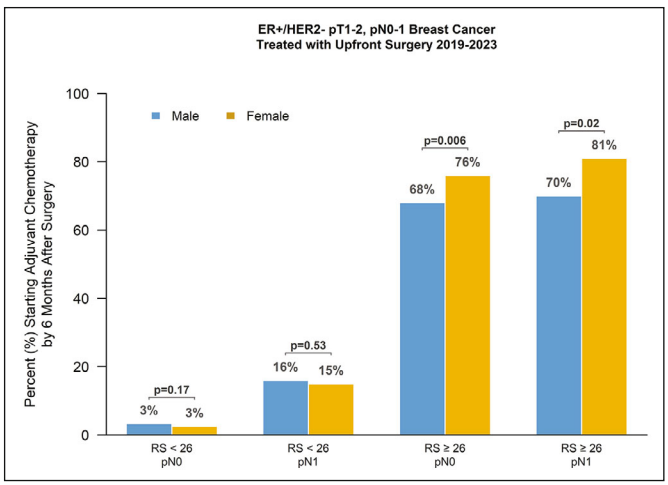

Figure 1: Use of chemotherapy between males and females with breast cancer from 2019 to 2023, stratified by RS=26 and pN0 vs pN1. High-risk (RS>=26) males were less likely to receive chemotherapy than high-risk (RS>=26) females regardless of their pN status (pN0, p=0.006; pN1, p=0.02).

PPS36

Characterizing peripheral immune changes after Precision Breast IORT in early-stage breast cancer

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INTRODUCTION: Intraoperative radiation therapy (IORT) is an alternative to whole breast irradiation (WBI) for patients undergoing breast-conserving surgery. We developed Precision Breast IORT (PB-IORT), a novel technique delivering a single fraction of high-dose-rate brachytherapy to the lumpectomy bed. Radiation therapy (RT) can mediate immunostimulatory and immunosuppressive effects, a balance influenced by timing, dose and fractionation schedules. While radiation-induced lymphopenia after adjuvant WBI is well-described, the immunologic impact of IORT remains largely unexplored. This study characterized peripheral immune changes after PB-IORT and WBI, hypothesizing that PB-IORT results in less immune suppression. **METHODS:** Women with early-stage breast cancer treated with WBI (NCT03567044) and a subset of PB-IORT patients from the larger PB-IORT trial (NCT02400658) were included. Peripheral blood was collected prior to RT and at defined intervals through 24 weeks after RT initiation for complete blood count (CBC) and peripheral blood mononuclear cell (PBMC) analysis. Absolute white blood cell counts were obtained from CBCs. T-cell function was assessed ex vivo in PBMCs by IFNγ ELISpot assay using a common viral antigens (CEF) pool. Changes in lymphocyte counts over time from baseline were modeled using repeated measures analysis. Trends in the CEF response as a proportion of baseline were also evaluated. **RESULTS:** A total of 102 patients were evaluable, (70 PB-IORT, 32 WBI). The median age was 63 years (range, 56–70). Most (72%) had invasive carcinoma, all node-negative. Nearly all tumors (93%) were ER+. The majority of tumors (54%) measured < 1 cm, 36% were 1–2 cm, and only 10% were > 2 cm. Baseline characteristics were balanced between RT groups. Both groups showed a decline in absolute lymphocyte count (ALC) from baseline. Mean ALC remained within normal limits in both groups; however, WBI produced a significantly greater reduction that persisted through week 24 (Figure 1A). Among the 77 patients with baseline CEF reactivity, WBI patients showed greater decline in T-cell response as a proportion of baseline that trended through week 24 (Figure 1B). **CONCLUSIONS:** Treatment with PB-IORT was associated with smaller reductions in ALC and T-cell function compared with WBI, suggesting less immune suppression. Further characterization of additional immune cell subsets following PB-IORT is warranted. Understanding how different RT regimens modulate circulating immune cell populations that contribute to anti-tumor immunity may inform future immunotherapeutic strategies for breast cancer.

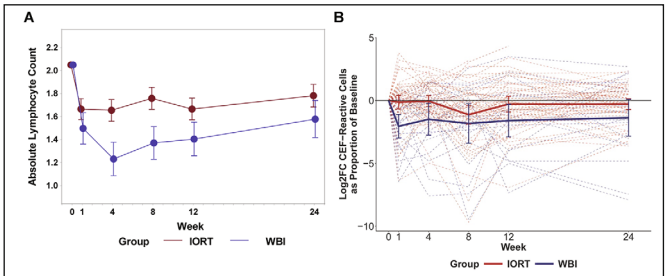

Figure 1. Changes in immune cell frequency and function after radiotherapy. (A) Repeated measures analysis of changes in absolute lymphocyte count over time adjusting for baseline by RT group (IORT n=68; WBI=32). Model estimates at the mean baseline value with 95% CIs are shown. (B) Log2 fold-change (Log2FC) in CEF-reactive T cells over negative control as a proportion of baseline response by RT group (IORT n=54; WBI n=23). Dashed lines represent each patient. Solid lines represent the mean values for each group with 95% CI.

PPS37

Racial Disparities in Receipt of Anti-HER2 Therapy and Overall Survival for Nonmetastatic HER2-Positive Breast Cancer

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INTRODUCTION: Since the introduction of trastuzumab two decades ago, anti-HER2 therapies have revolutionized treatment for HER2-positive breast cancer and significantly improved outcomes. Over this time, there has been growing awareness of racial disparities in breast cancer impacting treatment received and oncologic outcomes. The objective of this study was to determine the presence and extent of race-based disparities in the receipt of anti-HER2 therapy and whether treatment with anti-HER2 therapy reduces the difference in overall survival (OS) for nonmetastatic HER2-positive breast cancer. **METHODS:** This was a retrospective analysis of the 2014-2022 National Cancer Database of patients with stage I-III HER2-positive breast cancer. The analytic cohort included 248,288 patients, stratified by (1) race/ethnicity: White (81.0%), Black (13.3%), Asian American/Pacific Islander (AAPI, 5.7%) and (2) receipt of anti-HER2 therapy. OS was assessed via the Kaplan-Meier method and multivariable Cox proportional hazard models. Treatment effects by race were evaluated through interaction modeling. **RESULTS:** Anti-HER2 therapy receipt varied by race (AAPI 65.6%, Black 63.9%, White 62.6%, P< 0.001), with treated patients being younger (57 [48-66] vs. 65 [54-74] years, P< 0.001) and having more advanced tumor characteristics (tumor size 2.2 [1.4-3.4] vs 1.6 cm [1.0-2.7], P< 0.001; lymphovascular invasion present 23.8 vs 18.4%, P< 0.001). Non-receipt most frequently reflected omission of anti-HER2 therapy from the planned first course of treatment (94%). Following risk-adjustment, Anti-HER2 therapy was associated with significant survival benefits in all racial groups, though substantial racial disparities in treatment efficacy were identified. AAPI patients experienced the greatest mortality reduction (HR 0.48, 95% CI 0.39-0.61), followed by White patients (HR 0.57, 95% CI 0.54-0.60). Black patients showed the most modest benefit (HR 0.64, 95% CI 0.58-0.71), with the race-by-treatment interaction term demonstrating a statistically significant 12% attenuation in treatment effect compared to White patients. **CONCLUSIONS:** Receipt of anti-HER2 therapy varied by race, and among those who received anti-HER2 therapy, racial disparities in OS continued to persist. While efforts to improve equitable care delivery of anti-HER2 therapy should continue, these findings warrant further investigation into biological, social and healthcare-related determinants of differential treatment response across racial groups.

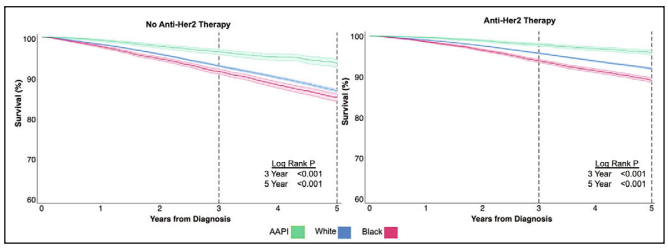

Figure. Overall Survival by Race and Anti-HER2 Therapy Receipt in Stage I-III HER2-Positive Breast Cancer

PPS38

Circulating tumor DNA dynamics in neoadjuvant therapy response: a prospective study in inflammatory breast cancer patients

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INTRODUCTION: Inflammatory breast cancer (IBC) is an aggressive disease with high tumor burden and poor prognosis. We examined the dynamics of serial circulating tumor DNA (ctDNA) measurements and their associations with pathologic complete response (pCR) in IBC patients receiving neoadjuvant systemic therapy (NST). **METHODS:** This was a prospective study of IBC patients receiving NST prior to surgery. Serial plasma samples were collected at baseline and throughout NST (range: q3 weeks-3 months). ctDNA was quantified using a tumor-informed ctDNA assay (Signatera) as mean tumor molecules per milliliter (MTM/ml). Analysis was performed using RStudio. **RESULTS:** In total, 34 IBC patients with ctDNA measurements at baseline, during NST, and pre-surgery timepoints, and available pathologic response data were included. Median age was 46 years (IQR 38-59). 65% had clinical stage III (17/34 50% IIIB, 5/34 15% IIIC) and 35% (12/34) had stage IV disease. Receptor subtype consisted of 29% (10/34) ER+,PR+,HER2-, 21% (7/34) ER-,PR-,HER2+, 21% (7/34) triple negative, 15% (5/34) ER+, PR+, HER2+, 12% (4/34) ER+,PR-,HER2+, and 2.9% (1/34) ER+,PR-,HER2-. Among 34 patients with baseline ctDNA assessments, 73.5% (25/34) cleared their ctDNA prior to surgery. pCR rate was 38% (13/34). Likelihood of pCR was greater in patients who cleared their ctDNA (12/25, 48%) compared to patients who did not clear their ctDNA prior to surgery (1/8, 12.5%) OR: 6.46 [CI 0.63 - 314.4], p = 0.108. Patients who achieved pCR cleared their ctDNA at a median of 84 days compared to 117 days for those who did not achieve pCR (p = 0.039). Table 1 shows the distribution of pCR according to age, race/ethnicity, stage, grade, and receptor subtype. Notably, the HER2+/HR- was associated with higher pCR, while HR+/HER2- was associated with lower pCR (p = 0.024). At a median post-surgery follow-up of 3.5 months two patients have had relapse, and neither of them cleared their ctDNA pre-surgery. Seven patients had progression of disease while on NST. Twenty-three patients are currently pending surgery with pathologic assessment. **CONCLUSIONS:** Half of the IBC patients who cleared their ctDNA prior to surgery had pCR compared to 12% of those who did not clear ctDNA, though this did not reach statistical significance. Patients who cleared their ctDNA earlier were significantly more likely to achieve pCR. Timing of ctDNA clearance in the neoadjuvant setting might be useful for identifying pCR and warrants further study.

Table. Characteristics by pCR (yes vs no)

Characteristic	no N = 21	yes N = 13	Overall	p-value
AGE	43 (37–55)	53 (42–65)	46 (38–59)	0.2
RACE				0.12
Asian	0 (0%)	1 (7.7%)	1 (2.9%)	
Black	3 (14%)	0 (0%)	3 (8.8%)	
Other	0 (0%)	1 (7.7%)	1 (2.9%)	
White	18 (86%)	11 (85%)	29 (85%)	
ETHNICITY				>0.9
Hispanic	3 (14%)	2 (15%)	5 (15%)	
Non-Hispanic	18 (86%)	11 (85%)	29 (85%)	
STAGE				>0.9
3b	10 (48%)	7 (54%)	17 (50%)	
3c	3 (14%)	2 (15%)	5 (15%)	
4	8 (38%)	4 (31%)	12 (35%)	
MARKERS				0.024
ER-, PR-, HER2+	1 (4.8%)	6 (46%)	7 (21%)	
ER+, PR-, HER2-	0 (0%)	1 (7.7%)	1 (2.9%)	
ER+, PR-, HER2+	3 (14%)	1 (7.7%)	4 (12%)	
ER+, PR+, HER2-	9 (43%)	1 (7.7%)	10 (29%)	
ER+, PR+, HER2+	3 (14%)	2 (15%)	5 (15%)	
TNBC	5 (24%)	2 (15%)	7 (21%)	
GRADE				0.4
2	7 (33%)	2 (15%)	9 (26%)	
3	14 (67%)	11 (85%)	25 (74%)	

PPS39

Associations between neighborhood disadvantage, neighborhood perceptions, and tumor grade in breast cancer: a prospective cohort study

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INTRODUCTION: Living in neighborhood disadvantage (objective ND) has been associated with more aggressive breast cancer (BCa) biology and shorter recurrence-free survival through upregulation of one's "fight or flight" sympathetic nervous system (SNS). While the neighborhood in which one lives may be challenging to modify, perceptions that people have of their neighborhood (subjective ND) may be amenable to psychosocial intervention, thus buffering the effect of one's ND on tumor biology. This study examines the association between objective and modifiable subjective measures of ND and tumor grade. **METHODS:** From 2019-2025, women diagnosed with stage I-III BCa were prospectively enrolled at an NCI-designated cancer center and sister safety-net hospital. Patients completed surveys which captured sociodemographic data and subjective ND (Neighborhood Social Environment Adversity Survey [NSEAS]). Objective ND was measured using the Area Deprivation Index (ADI) from residential addresses (1=most advantaged, 10=most disadvantaged). Clinical pathologic data was obtained from the electronic medical record. Logistic regression analyzed the association between ND (NSEAS, ADI) and tumor grade (low [well/moderately differentiated] vs. high [poorly differentiated]), controlling for age, race/ethnicity, insurance, and prognostic stage. **RESULTS:** 632 women were included with a mean age of 57. Among those with high-grade disease, 13.1% were non-Hispanic White, 20.7% non-Hispanic Black, and 63.1% Hispanic. Extreme neighborhood disadvantage (ADI ≥90th percentile) was observed in 9.3% of patients with low-grade and 16.0% with high-grade disease. On multivariable analysis, both extreme objective ND and poorer perceived neighborhood safety (crime, violence) were associated with increased odds of poorly differentiated BCa (OR 2.26, 95% CI 1.10–4.63, p = 0.026; OR 1.22, 95% CI 1.03–1.45, p = 0.024, respectively). **CONCLUSIONS:** This prospective cohort study demonstrates that both objective and subjective measures of ND relate to BCa tumor biology. These findings lay the foundation for future studies that evaluate how one's perception of their neighborhood can serve as a potential modifiable target for future interventions that reduce SNS activity and reverse aggressive biology amongst those living in ND.

Table. Neighborhood and Individual-level Sociodemographic, Survey, and Stage Characteristics by Tumor Grade

		Low and moderately differentiated tumors (448)	Poorly differentiated tumors (208)	Total (632)
		n (%)	n (%)	n (%)
Age	<50	98 (22.7%)	83 (41.9%)	181(28.6%)
	50-70	256 (59.4%)	95 (48.0%)	353 (55.9%)
	≥70	77 (17.9%)	20 (10.1%)	97 (15.3%)
Race and Ethnicity	Non-Hispanic White	86 (19.9%)	26 (13.1%)	113 (17.9%)
	Non-Hispanic Black	70 (16.2%)	41 (20.7%)	111 (17.6%)
	Hispanic	268 (62.0%)	125 (63.1%)	394 (62.3%)
	Other/Not reported/Unknown	8 (1.9%)	6 (3.0%)	14 (2.2%)
Insurance Status	Private	194 (45.5%)	77 (39.9%)	272 (43.0%)
	Medicare	94 (22.1%)	34 (17.6%)	128 (20.3%)
	Medicaid or Other Government Insurance	131 (30.8%)	78 (40.4%)	210 (33.2%)
	Uninsured/Self Pay	7 (1.6%)	4 (2.1%)	11 (1.7%)
ADI	<90th Percentile (1-7)	390 (90.7%)	163 (84.0%)	555 (87.8%)
	≥90th Percentile (8-10)	40 (9.3%)	31 (16.0%)	71 (11.2%)
NSEAS Social Cohesion (n= 507)	-0.11 (2.79)	-0.08 (2.78)	0.18 (2.56)	0 (2.71)
NSEAS Safety (n= 507)	-0.10 (s1.63)	-0.11 (1.63)	0.26 (1.78)	0 (1.68)
NSEAS Aesthetic Quality (n= 506)	-0.07 (1.64)	-0.06 (1.64)	0.15 (1.82)	0 (1.70)
NSEAS Walkability (n= 506)	0.02 (1.64)	0.01 (1.63)	-0.03 (1.45)	0 (1.58)
NSEAS Composite Score (n= 507)	-0.25 (5.46)	-0.23 (5.47)	0.56 (1.45)	0 (5.46)
Prognostic Stage	1	330 (76.4%)	48 (24.2%)	379 (60.0%)
	2	80 (18.5%)	85 (42.9%)	165 (26.1%)
	3	22 (5.1%)	65 (32.8%)	88 (13.9%)

PPS40

Does axillary ultrasound decrease nodal recurrence in women age 70 years and over treated without SLNB?

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INTRODUCTION: Eligibility criteria for the SOUND and INSEMA trials of sentinel lymph node biopsy (SLNB) omission included a normal axillary ultrasound (US). However, the clinical benefit of US among cN0 patients is unclear. We investigated whether US is associated with differences in nodal or invasive disease recurrence among breast cancer patients age ≥ 70 years who did not have SLNB. **METHODS:** Single-institution retrospective cohort study of women age ≥ 70 years with cT1-2N0, HR+/HER2- breast cancer who underwent definitive surgery without SLNB from 2016-2022. US was not required, but was performed in some patients, usually prior to coming to our center. Nodal and invasive disease recurrence were evaluated using Cox proportional hazard models. **RESULTS:** 392 patients met inclusion criteria, with 389 (99.2%) undergoing partial mastectomy. Median patient age was 77 years (IQR, 73-81) and 90.8% of tumors were cT1. The most common histologies were invasive ductal carcinoma (n = 290, 74.0%) and lobular carcinoma (n = 53, 13.5%) (Table). US was performed in 205 (52.3%) patients; 194 (94.6%) were normal. In the 11 patients with indeterminate or abnormal findings, 4 underwent FNA (0 malignant), 3 had non-worrisome repeat imaging, and 4 had no further workup based on clinical discretion. 94 (24.0%) patients had postoperative radiation therapy and 312 (79.6%) initiated adjuvant endocrine therapy. At a median follow-up of 4.3 years there were only 3 (0.8%) nodal recurrences; 1 isolated nodal failure, 1 simultaneous with ipsilateral breast recurrence, and 1 simultaneous local, nodal, and distant recurrence. 2 nodal recurrences were in the no-US group and 1 in the US group. Any invasive breast cancer (recurrence or second primary) occurred in 15 (3.8%) patients. On unadjusted Cox analysis, patients with axillary US had no difference in nodal recurrence compared to those without US (HR 0.47, 95% CI 0.04-5.20) and no difference in any invasive recurrence (HR 0.62, 95%CI 0.22-1.73). Age, clinical T stage, and receipt of postoperative radiation were not significantly associated with nodal or any invasive recurrence, and no adjusted analysis was performed. **CONCLUSIONS:** Nodal recurrence was rare among our cohort of cT1-2 N0 HR+/HER2- breast cancer patients age ≥70 years in the absence of SLNB, and was not associated with the use of preoperative US, in spite of the fact that only a quarter of patients received RT. Our results suggest that the necessity of US in younger postmenopausal cN0 patients omitting SLNB is worthy of study.

Table. Characteristics of Patients With and Without Axillary Ultrasound

Characteristic	Without Axillary Ultrasound	With Axillary Ultrasound	*P* value
Number, n	187	205	
Age in years, median (IQR)	77 (73-80)	77 (74-81)	0.5
Clinical T stage, n (%)			
cT1	175 (93.6)	181 (88.3)	0.07
cT2	12 (6.4)	24 (11.7)	
Surgery, n (%)			
Partial mastectomy	186 (99.5)	203 (99.0)	> 0.9
Total mastectomy	1 (0.5)	2 (1.0)	
Histology, n (%)			
Invasive ductal carcinoma	143 (76.5)	147 (71.7)	
Invasive lobular carcinoma	23 (12.3)	30 (14.6)	0.6
Mixed ductal and lobular	9 (4.8)	15 (7.3)	
Other*	12 (6.4)	13 (6.3)	
Tumor grade, n (%)			
I	55 (29.4)	53 (25.9)	
II	117 (62.6)	126 (61.5)	0.2
III	14 (7.5)	26 (12.7)	
Unknown	1 (0.5)	0	
Radiation therapy, n (%)	39 (20.9)	55 (26.8)	0.2
Endocrine therapy, n (%)	144 (77.0)	168 (82.0)	0.2
Nodal recurrence, n (%)	2 (1.1%)	1 (0.5%)	0.6
Any invasive recurrence, n (%)	9 (4.8%)	6 (2.9%)	0.3
Median follow-up, years	4.4	4.3	

*Other histologies included adenocarcinoma, mucinous carcinoma, and papillary carcinoma
Abbreviations: IQR, interquartile range

PPS41

Postoperative venous thromboembolism risk after neoadjuvant pembrolizumab for patients with triple-negative breast cancer

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INTRODUCTION: The addition of pembrolizumab to neoadjuvant chemotherapy improves event free survival and pathologic complete response for patients with triple-negative breast cancer (TNBC) when compared to chemotherapy alone. Some studies have demonstrated that immunotherapy may increase the risk of venous thromboembolism (VTE), however whether the addition of immunotherapy in this setting increases the rate of postoperative VTE remains unknown. **METHODS:** We performed a retrospective database study using TriNetx, a multinational deidentified dataset, for patients with TNBC who underwent neoadjuvant therapy followed by definitive resection from 2010-2025. This platform captures data from over 250 million international patients from over 200 electronic data sources. Cohorts were stratified by regimen: chemotherapy alone or chemotherapy with pembrolizumab. The primary outcome was postoperative VTE within 90 days of surgery. Propensity score matching was performed and adjusted for age, BMI, stage, comorbidities,

history of thrombophilia, and preoperative anticoagulant use. Adjusted odds ratios (aOR) were determined via multivariable logistic regression. **RESULTS:** We identified a total of 2,365 patients who were propensity matched with 753 receiving neoadjuvant chemotherapy and pembrolizumab and 753 who received only neoadjuvant chemotherapy. In the pre-propensity matched cohort, patients in the pembrolizumab group were more likely to be, younger, mean age 54.5.9 vs 55.9 (p = 0.01) and of a lower BMI 28.7 vs 30 (p = 0.0001). The incidences of postoperative VTE within 90 days were 8.37% and 7.30% in the neoadjuvant pembrolizumab with chemotherapy chort and the chemotherapy alone cohort respectively (aOR = 1.16, 95% CI 0.795-1.689, p = 0.443). Subgroup analysis of patients who in the neoadjuvant pembrolizumab with chemotherapy group who received an axillary lymph node dissection revealed no statistically significant difference in postoperative VTE rates (7.93% vs 6.71%, p = 0.672). **CONCLUSIONS:** Although other studies have found that immunotherapy may increase the risk of VTE, the addition of pembrolizumab to neoadjuvant chemotherapy did not result in a statistically significant difference in the rate of postoperative VTE within 90 days in our cohort of patients receiving neoadjuvant therapy for TNBC. Further study is needed to better identify subgroups of patients at risk of thrombotic events in the setting of immunotherapy.

PPS42

Evaluating ChatGPT-5 for predicting completion axillary dissection and residual nodal disease after neoadjuvant chemotherapy

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INTRODUCTION: AI models are being explored for oncologic decision support, but calibration and diagnostic reliability are uncertain. We evaluated ChatGPT-5 for axillary management after neoadjuvant chemotherapy (NAC), focusing on accuracy, stability, and confidence calibration. **METHODS:** We analyzed 66 de-identified breast cancer cases post-NAC; each case was submitted to ChatGPT-5 100 independent times (total 6,600 entries) with a standardized prompt asking: Q1: Should completion ALND be performed? Q2: Expect residual nodal disease present (yes/no)? Q3: Estimate likelihood of residual disease (%)? Q4: Confidence in the Q2 answer. Confidence was mapped to a five-point Likert scale. Predictions were compared with surgical pathology to compute overall and per-run accuracy, cross-run consistency, variability, and confusion matrices overall and within high-confidence (Likert 4–5) subsets. **RESULTS:** Q1 had the strongest outcomes with an accuracy of 100% "yes"; per-run accuracy 100%; cross-run consistency 100%. Q2's overall accuracy was 48.9% (per-run ~47–53%); cross-run consistency 71.2%; mean variability 28.8%. Confusion matrix (n=6,600) showed TP=2,582, FP=3,354, TN=646, FN=17, yielding sensitivity 99.3% and specificity 16.1%. The model predicted "yes" in 5,936/6,600 cases (≈90%), including most true negatives, demonstrating a strong over-prediction of positivity. In high-confidence responses (Likert 4–5; n=3,840), accuracy declined to 39.2%, indicating inverse confidence–accuracy calibration (greater stated confidence, worse correctness). Q3: Mean 57.2%, median 60%, SD 21.5%. Q4: Most frequent rating "4 – Moderate." **CONCLUSIONS:** ChatGPT-5 exhibited perfect agreement with guidelines for management recommendation (Q1). It had suboptimal diagnostic prediction for residual nodal disease (Q2), driven by a strong "predict-positive" bias (low specificity) and exuberant confidence (accuracy was worse among its high-confidence outputs). These findings imply that a general-purpose LLM may reinforce intervention-leaning decisions even when incorrect and should not be used to guide discussion of axillary management after NAC without rigorous safeguards. However, given ChatGPT understanding of standard of care clinical guidelines, Q1 and more standard guideline based questions can be considered to formulate a decision tree for generalists and recommendation for specialty referral.

PPS43

Utility of Ki-67 in Axillary Surgical Planning and Prognostication after Neoadjuvant Chemotherapy for Node-Positive Breast Cancer

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INTRODUCTION: For breast cancer patients who are clinically node-positive, neoadjuvant chemotherapy (NAC) can downstage the axilla and spare axillary lymph node dissection (ALND). While tumor biomarkers help predict response to NAC and inform surgical decision-making, whether Ki-67 can predict the likelihood of axillary pathologic complete response (pCR) and recurrence has not been explored. **METHODS:** Consecutive patients with stage II/III node-positive breast cancer treated with NAC from January 2007 to July 2021 were identified from a prospective database. Patients who had NAC followed by sentinel lymph node biopsy (SLNB) were evaluated. Ki-67 category was defined as Low (≤10%), Intermediate (11-20%), High (20-40%), and Ultra-High (≥40%). Multivariable logistic regression analyses were conducted to identify predictors of nodal pCR and recurrence, and survival analysis to examine whether changes in Ki-67 pre- and post-NAC impacted recurrence-free survival for residual disease. **RESULTS:** Of 407 node-positive patients treated with NAC, 172 (42.3%) converted to ycN0. Median (IQR) age was 48 (40-56) years. Most patients had cT2 (n=90, 52.9%) and cN1 disease (n=155, 90.1%) at diagnosis. Sixty-seven patients (39.0%) had Hormone Receptor (HR)+/HER2-negative disease. Median (IQR) Ki-67 from the biopsy specimen was 43% (31%-70%); Ki-67 was highest in triple-negative disease with 78% of patients having an ultra-high Ki-67. Most patients (n=110, 64.0%) underwent mastectomy, and 95 (55.2%) underwent SLNB without ALND. Overall, 105 patients (61.0%) had a nodal pCR, and the rate of nodal pCR was significantly different among biomarker subtypes: 32.8% for HR+/HER2-, 73.3% for HR-/HER2-, 75.0% for HR+/HER2+ and 81.8% for HR-/HER2+ (p< 0.0001). There was no association between the initial Ki-67 category and nodal pCR for any receptor subtype. On multivariable analysis, Ki-67 was not predictive of nodal pCR or recurrence; however, among patients with residual disease, a decrease in the Ki-67 category from the biopsy to surgical specimen was suggestive of improved distant disease-free survival at a median follow-up of 2.5 years, which although borderline significant, was clinically relevant (HR 0.28, 95% CI 0.07 to 1.13; Wilcoxon P=0.02) [Figure]. **CONCLUSIONS:** Ki-67 was not predictive of nodal pCR for node-positive breast cancer patients undergoing NAC and is not a useful adjunct for surgical decision-making; however, a decrease in Ki-67 from biopsy to surgical specimen may predict improved distant disease-free survival.

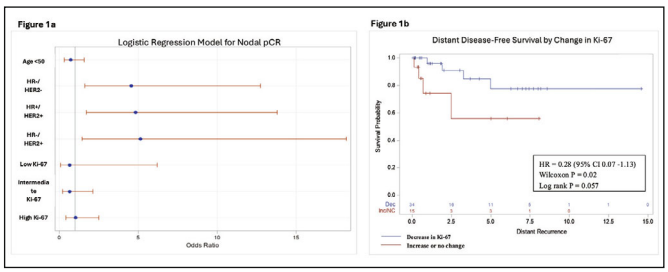

Figure. Role of Ki-67 in Nodal Pathologic Complete Response and Distant Disease-Free Survival in Patients with Residual Disease

PPS44

A window-of-opportunity trial using neoadjuvant hepatic artery chemotherapy for patients with localized pancreas cancer: Safety, feasibility, and interim oncologic outcomes

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INTRODUCTION: Recurrence rates are high among patients with pancreatic ductal adenocarcinoma (PDAC) undergoing curative-intent therapy. The liver is the most common site of recurrence and is associated with the worst survival outcomes. In localized colorectal cancer, single-dose neoadjuvant hepatic artery (HA) chemotherapy has improved liver metastasis-free (LMFS) and overall survival (OS). Since PDAC and colorectal cancer have similar recurrence patterns and use similar systemic therapies, we hypothesized this strategy would be safe, feasible, and potentially improve recurrence rates and overall survival in patients with PDAC. **METHODS:** This prospective, non-randomized trial aimed to enroll 20 patients with localized PDAC undergoing curative-intent therapy. Patients received a single HA chemotherapy dose (floxuridine 325 mg/m2 and oxaliplatin 37.5 mg/m2) one week before resection (Fig. 1A). Patients were evenly assigned to (1) upfront surgery followed by 12 cycles of mFOLFIRINOX, or (2) 4-8 cycles of neoadjuvant mFOLFIRINOX, followed by surgery and completion of therapy postoperatively. All underwent diagnostic laparoscopy and percutaneous delivery of HA chemotherapy one week before surgery. The primary endpoint was 30-day safety and feasibility. Secondary endpoints were three-year disease-free survival (DFS), LMFS, and OS. **RESULTS:** Among 36 patients screened, 20 were enrolled, ten in each arm. Median age [IQR] was 68.5 [64.5-72.5] years and 55% were female. Fifteen patients (75%) were White and three (15%) were Black. Median preoperative CA 19-9 [IQR] was 32.5 [22.5-65.8] U/mL. HA chemotherapy was successfully administered in 19 patients (95%), with delivery through the proper HA in 55%, and separately through the right and left HAs in 45%. Accessory HA ligation/embolization was required in 35%. Median tumor size was 2.9 cm and lymph node metastases were present in 58%; five patients (20%) had microscopically positive resection margins. Nine patients (45%) experienced adverse events, however, none were attributed to the experimental therapy (Fig. 1B). At a median follow up of 8.7 months, 18 patients (90%) are alive (median OS not reached). Seven (35%) recurred (median DFS 20.8 months, 95% CI 12.8-undefined), including four with liver metastases (median LMFS 20.8 months, 95% CI 12.8-undefined). **CONCLUSIONS:** Single-dose neoadjuvant HA chemotherapy is safe and feasible in patients undergoing resection of localized pancreatic cancer. Long-term follow-up is ongoing to measure three-year survival endpoints.

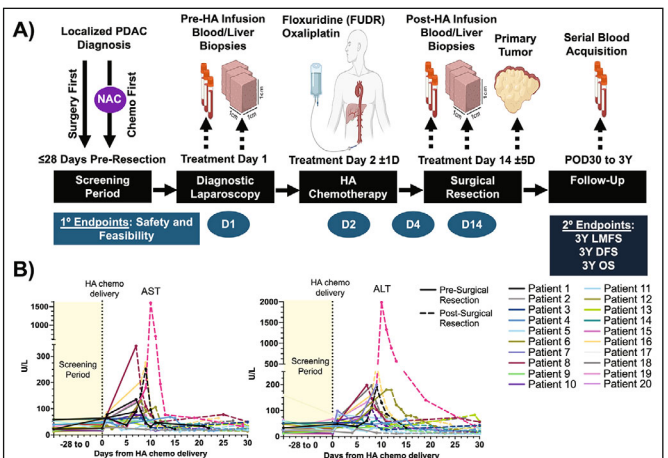

Figure 1. An open-label, non-randomized window-of-opportunity clinical trial. A) Schematic of the clinical trial with corresponding clinical time points. B) Line plots depicting aspartate aminotransferase (AST) and alanine aminotransferase (ALT) values for each trial participant during the screening period prior to hepatic artery (HA) chemotherapy delivery as well as during the short-term follow-up period, for 30-days following HA chemotherapy delivery. Solid lines represent values prior to resection while dashed lines depict values post-resection.

PPS45

Inpatient palliative care and procedural intensity in patients with hepatopancreatobiliary cancers at the end of life

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INTRODUCTION: Hepatopancreatobiliary (HPB) malignancies are among the most aggressive and morbid solid tumors. They are associated with frequent invasive interventions near the end of life, even though high-intensity, aggressive end-of-life care may be associated with poorer perceived quality of care. Although national guidelines emphasize early palliative care integration to improve quality of life and facilitate goal-concordant care, its optimal role for patients with complex HPB malignancies at the end of life and in the inpatient setting remains poorly understood. **METHODS:** We performed a retrospective analysis of patients with HPB cancers admitted within six months of death from 2013-2024 at a single institution. Patients were categorized according to whether they underwent inpatient interventions and further stratified by timing of the procedure—within one month or between one and six months of death. We examined temporal trends in inpatient palliative care consultations and evaluated how palliative care involvement might influence procedural intensity at the end of life. **RESULTS:** Among 3,073 patients, 1,510 (49%) underwent an inpatient procedure within six months of death, including 635 (21%) in the last month of life. Median length of stay was longer among those who underwent procedures (7 vs. 5 days, p<0.0001), while in-hospital death was more frequent among those who did not (21 vs. 14%, p<0.0001). Inpatient palliative care consultations increased over the study period across both groups. However, among patients undergoing procedures, consults were significantly less frequent in the final month of life. Patients who had procedures within the last month were more likely to receive palliative care than those who had procedures earlier (40% vs. 29%, p<0.0001). Nearly two-thirds of patients across both procedure groups received palliative care consults after all inpatient procedures. When palliative care was involved prior to procedures, patients were more likely to undergo palliative rather than curative or exploratory operations (p=0.03). Earlier palliative care involvement was also associated with fewer operative and more percutaneous interventions (p=0.02). **CONCLUSIONS:** Invasive interventions at the end of life remain common among patients with HPB cancers. Although inpatient palliative care use has increased, consultation occurs late, frequently after procedures have already been performed. Earlier palliative care involvement may guide treatment towards less aggressive, more goal-concordant care, improving end-of-life experiences.

PPS46

Is the value of AFP dependent on the underlying etiology of liver disease

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INTRODUCTION: Despite intermediate sensitivity and specificity of alpha-fetoprotein (AFP) as a biomarker for diagnosis of hepatocellular carcinoma (HCC), it remains a vital component of screening and surveillance. There are limited recent high-quality studies to support the use of AFP in this manner. The primary objective of this study is to determine the sensitivity of AFP in diagnosing HCC at a single institution, and to correlate AFP findings with etiology of underlying liver disease and tumor burden at presentation. **METHODS:** An institutional cancer database was queried to conduct a retrospective cohort study including patients diagnosed with HCC between 2004-2024. Patients with no record of AFP were excluded. Independent variables included etiology of underlying liver disease, AFP at diagnosis, and size and number of lesions at diagnosis. Normal AFP was considered < 6 ng/ml, per institutional assay parameters. Sensitivity of AFP and lesion size were calculated for the cohort and for each etiology of disease. Inter-group analyses were completed with

Kruskal-Wallis and Fisher's Exact tests as indicated. **RESULTS:** 613 patients with HCC were identified and 86 were excluded due to missing AFP results. Of the 527 patients included, 76.1% were male, and the average age was 65.5 years old. The most common etiology was Hepatitis C (33%), followed by alcoholic cirrhosis (22.8%) and NASH/NAFLD (15.9%). 10.6% of the population had no identified etiology of liver disease that precipitated the diagnosis of HCC. AFP at diagnosis ranged from 1 to 831,000, and tumor size ranged from 0.4cm to 24cm. Of the 527 patients with HCC, 111 (21.1%) had a normal AFP at diagnosis, indicating a sensitivity of 78.9. Tumor size and number of lesions did not differ between normal vs elevated AFP (p=0.641, p=0.771). Of the patients with a normal AFP, 92.5% had a lesion above the radiological screening threshold of >2cm. Quantitative AFP at diagnosis was significantly different among six etiologies, with the highest median values reported in alcoholic liver disease (p=0.025). **CONCLUSIONS:** Using our institutional assay parameter of 6 ng/ml, the AFP sensitivity was higher in this population than those reported in previous studies. While tumor burden did not correlate with AFP elevation, there was a difference in sensitivity according to disease etiology. To our knowledge, this is the first study to compare the diagnostic predictability of AFP between varying underlying diseases. These findings suggest that tailoring surveillance strategies to specific liver disease etiologies could enhance the effectiveness of HCC screening and facilitate earlier intervention.

	AFP N (%)		Lesion < 2cm N (%)	Lesion 2-5cm N (%)	Lesion >5cm N (%)	AFP at Dx (Median, IQR)
	< 6	≥ 6				
Overall Cohort	111 (21.1%)	**416 (78.9%)**	39 (7.5%)	192 (37.0%)	288 (55.5%)	42 (7.80 – 1722)
Etiology						
EtOH N = 120	29 (24.2%)	**91 (75.8%)**	14 (11.67%)	40 (33.33%)	66 (55.0%)	75.75 (6.33 – 2389.38)
Hep C N = 174	21 (12.1%)	**153 (87.9%)**	15 (8.8%)	65 (38.0%)	91 (53.2%)	93.50 (12.6 – 4475.50)
Hep B N = 14	5 (35.7%)	**9 (64.3%)**	0 (0%)	8 (57.1%)	6 (42.9%)	36.15 (3.55 – 1123.25)
Hep C + EtOH N = 66	10 (15.2%)	**56 (84.8%)**	7 (10.6%)	30 (45.50%)	29 (43.9%)	40.00 (10.13 – 531.25)
Metabolic/Infiltrative Disease N = 13	4 (30.8%)	**9 (69.2%)**	2 (15.4%	4 (30.8%)	7 (53.8%)	16.00 (4.15 – 389.00)
NASH/NAFLD N = 34	22 (26.2%)	**62 (73.8%)**	1 (1.2%)	35 (42.7%)	46 (56.1%)	24.00 (4.53 – 507.50)
No Underlying Disease N = 56	20 (35.7%)	**36 (64.3%)**	1 (1.9%)	10 (18.5%)	43 (79.6%)	20.40 (3.48 – 5042.75)
	Fisher's Exact P = 0.001		Fisher's Exact P = 0.002			Kruskal-Wallis P = 0.025
Excluding "No Underlying Liver Disease"	P = 0.022		P = 0.131			P=0.039

PPS47

Evaluating the Prognostic Impact of IDH Mutations in Intrahepatic Cholangiocarcinoma

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INTRODUCTION: Mutations in isocitrate dehydrogenase 1 and 2 (IDH1, IDH2) are common in intrahepatic cholangiocarcinoma (ICC), but their prognostic value is unclear. Using a large, clinically annotated dataset, we assessed their impact in resected and non-resected ICC. **METHODS:** This was a retrospective study of ICC patients who underwent next-generation sequencing from 2008-2022. Adults treated with curative intent resection (resected) or managed nonoperatively (unresectable) were analyzed. **RESULTS:** Of 795 patients, 25% had IDH1/2 mutations (80% IDH1, 20% IDH2) (IDHmut) and 43% underwent resection. High-risk genetic alterations (TP53mut, KRASmut, CDKN2Adel) were more frequent in IDH wild-type (IDHwt) (IDHmut, OR 2.26; q < 0.001) (Table 1). In the entire cohort, median overall survival (OS) was 32 months in IDHmut and 28 months for IDHwt (p=0.2); by contrast, OS was 19 months in patients with high-risk alterations compared to 40 months without (p< 0.001). In resected patients, recurrence free survival (RFS) in IDHmut was 20 months vs. 14 months for IDHwt (p=0.018), and OS was 69 months vs. 50 months, respectively (p=0.2); however, after controlling for high-risk genetic alterations, any benefit of IDHmut disappeared (RFS: HR 0.78; p=0.095; OS: HR 0.88; p=0.4). In unresectable patients, progression free survival (PFS) in IDHmut was 9.4 months compared to 9.1 months for IDHwt (p=0.7), and OS was 22 months vs. 18 months, respectively (p=0.13) There remained no significant differences after controlling for high-risk alterations (PFS: HR 1.03; p=0.8; OS: HR 0.94; p=0.6). IDH mutational status was not a significant survival predictor in multivariable models for both resected and non-resected patients. In 42 patients with unresectable IDHmut treated with IDH inhibitors, median OS was 12 months. **CONCLUSIONS:** In this large cohort of resected and non-resected ICC patients, IDH mutations were not an independent predictor of survival, after controlling for high-risk genetic alterations and clinical variables. Thus, IDH status should not be used in isolation to guide prognosis.

Characteristic	Overall N = 795[1]	IDHmut N = 202[1]	IDHwt N = 593[1]	OR	95% CI	q-value[2]
TP53	151 (19%)	19 (9.4%)	132 (22%)	2.76	1.69, 4.73	**<0.001**
ARID1A	142 (18%)	51 (25%)	91 (15%)	0.54	0.37, 0.79	**0.004**
CDKN2A	136 (17%)	24 (12%)	112 (19%)	1.73	1.09, 2.83	**0.043**
BAP1	121 (15%)	39 (19%)	82 (14%)	0.67	0.44, 1.03	0.069
FGFR2	119 (15%)	6 (3.0%)	113 (19%)	7.69	3.62, 19.9	**<0.001**
CDKN2B	104 (13%)	20 (9.9%)	84 (14%)	1.50	0.91, 2.58	0.12
PBRM1	89 (11%)	36 (18%)	53 (8.9%)	0.45	0.29, 0.72	**0.002**
KRAS	83 (10%)	14 (6.9%)	69 (12%)	1.77	1.00, 3.34	0.069
CDKN2A_del	114 (14%)	20 (9.9%)	94 (16%)	1.71	1.05, 2.93	0.054
TP53, KRAS, or CDKN2Adel	288 (36%)	47 (23%)	241 (41%)	2.26	1.58, 3,28	**<0.001**

[1] n (%); Median (Q1, Q3)
[2] False discovery rate correction for multiple testing
Abbreviations: CI = Confidence Interval, OR = Odds Ratio

Figure. Co-occurring mutations in IDHmut versus IDHwt

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Single-cell transcriptomic profiling detects radiographically occult liver metastatic disease in patients undergoing surgery for early-stage pancreatic adenocarcinoma

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INTRODUCTION: The majority of patients with early-stage pancreatic ductal adenocarcinoma (PDAC) undergoing curative-intent surgery die of metastatic relapse. Adjuvant systemic therapy has shown minimal benefit in delaying recurrence. The biology of metastatic PDAC cells prior to the development of radiographically detectable metastatic disease is unknown. **METHODS:** Primary tumor and normal-appearing liver tissue were collected from patients undergoing PDAC resection. Samples were sorted using CA 19-9, and single-cell RNA sequencing was performed. To identify malignant cells, we applied scATOMIC, a machine-learning-based single-cell classifier. scATOMIC identifies cells by their concordance with cancer-derived signatures seen in reference transcriptomes of a wide spectrum of human cancer and normal tissue lineages. Enrichr and Gene Set Enrichment Analysis (GSEA) pathway analyses were performed to assess differences in gene expression between primary and disseminated tumor cells. **RESULTS:** Tissue was analyzed from 6 patients who underwent pancreaticoduodenectomy or distal pancreatectomy and splenectomy for PDAC. Demographic and treatment information were available for 5 patients: average age was 65.0, 3 of 5 received neoadjuvant therapy, and none had preoperative evidence of metastatic disease. At an average follow-up of 32.1 months, 4 patients developed metastases, and 3 of those 4 died of their

disease. 3,691 total CA 19-9-positive cells were sequenced, with 2,113 cells from primary pancreatic tumors and 1,578 cells from normal-appearing liver. scATOMIC identified pancreatic cancer cells in all primary tumor samples (3 – 410 cells). 4 of 6 patients were also identified as having pancreatic tumor cells in their normal-appearing liver tissue (4 – 99 cells). The transcriptomes of these disseminated tumor cells were spatially distinct from those of the primary tumor cells (Figure 1). On Enrichr and GSEA pathway analyses, genes involved in antigen processing and presentation were downregulated in disseminated tumor cells compared to primary tumor cells. **CONCLUSIONS:** Using scATOMIC, we have shown that single-cell RNA sequencing can detect disseminated tumor cells in patients undergoing surgery for early-stage PDAC and that the transcriptomes of these cells are markedly distinct from those of the primary tumor. Genes involved in antigen presentation were downregulated in these disseminated tumor cells, suggesting immune evasion as a possible mechanism of metastatic disease dormancy.

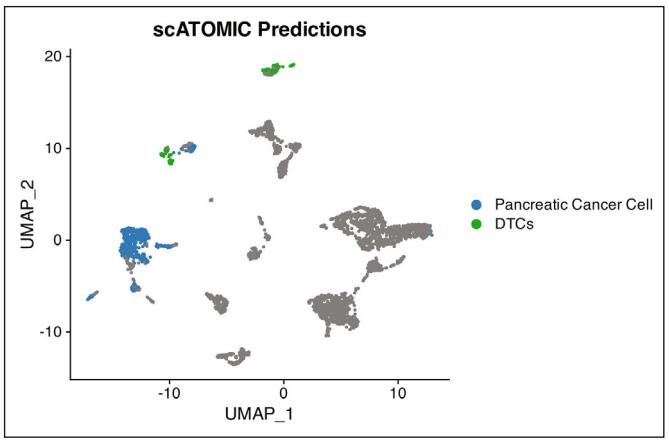

Figure 1. UMAP of scATOMIC-classified malignant cells. Primary pancreatic cancer cells (blue) and dormant tumor cells (DTCs) in the liver (green) form spatially distinct clusters, reflecting transcriptional differences between proliferating and metastatic dormant populations.

PPS49

Evidence-Based Paradigm for Intraoperative Carcinoid Crisis Management - A Single center experience with over 500 surgical cases

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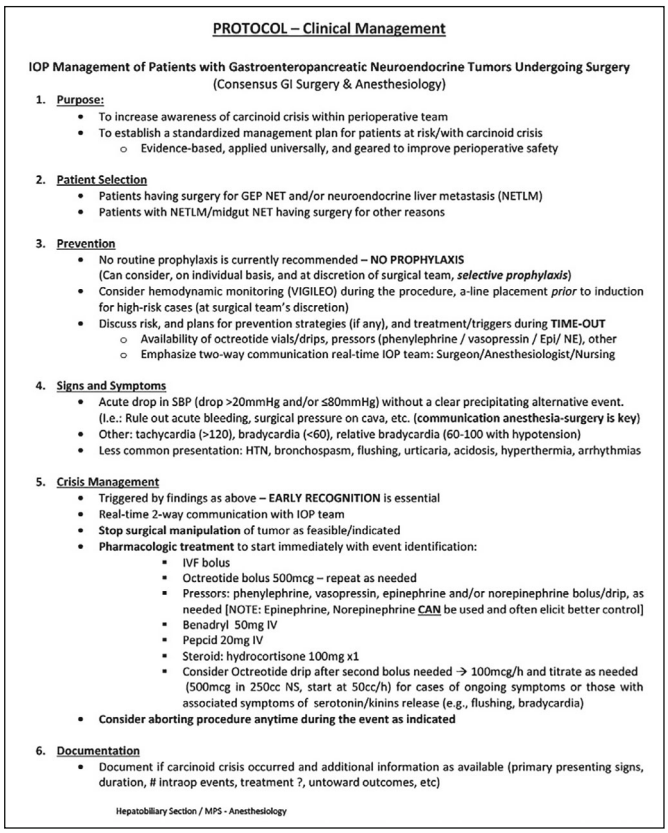
INTRODUCTION: To evaluate the efficacy of implementing an evidence-based carcinoid crisis management protocol (CCMP), on operative and clinical outcomes in patients undergoing abdominal surgery for gastroenteropancreatic neuroendocrine tumors (GEPNET). **METHODS:** A retrospective cohort study was performed in consecutive patients having abdominal surgery for GEPNET at a single institution (2015-2024). CC was defined as a sudden drop in SBP >20mmHg, unexplained by other intraoperative events, and agreed upon by the operating surgeon and anesthesiologist. A CCMP was developed and implemented as a component of the surgical time-out process: no octreotide prophylaxis, early CC recognition, and treatment of hypotension using a standardized medication bundle. Implementation occurred during a 3-month period (Oct-Dec 2020). Comparative analyses were performed between the standard-SA (July 2015–Sept 2020) and the intervention-CCMP (Jan 2021-Oct 2024). The primary outcome was intraoperative cumulative duration of CC events. Secondary outcomes included postoperative clinical outcomes and process measures of intraoperative management. **RESULTS:** A total of 506 cases were identified (321 SA, 185 CCMP). Overall, there were no differences between groups in clinical and tumor variables, though ASA score and the proportion of patients with liver metastasis were higher in the CCMP group ($p< 0.05$). Compliance of CCMP implementation was 96%. The incidence of CC did not vary by group (14% SA vs. 16% CCMP; $p=0.6$). The median intraoperative cumulative duration of CC was significantly longer in the SA (15min [5-60]) vs. the CCMP (10min [1-34]) group ($p=0.001$). Further, significant differences were noted in median intraoperative fluid volume administration (SA=1,800cc vs CCMP=1,400; $p< 0.001$), and median length of stay (LOS) (SA=6.0 days vs. CCMP=5.0 days; $p< 0.001$). Multivariate models with quantile regression and sensitivity analysis with linear models for the primary outcome revealed a significant shorter cumulative duration of CC with CCMP implementation ($p< 0.05$, all models). **CONCLUSIONS:** Implementation of a carcinoid crisis management protocol into the surgical time-out process, which omits octreotide prophylaxis, and centers on early CC recognition with systematic and standardized treatment of hypotension is effective in reducing the cumulative duration of CC and improved outcomes. We propose a revision to national guidelines, driven by available evidence, that shifts away from routine octreotide prophylaxis for patients undergoing abdominal surgery for GEPNETs.



PROTOCOL – Clinical Management

IOP Management of Patients with Gastroenteropancreatic Neuroendocrine Tumors Undergoing Surgery
(Consensus GI Surgery & Anesthesiology)

1. **Purpose:**
   - To increase awareness of carcinoid crisis within perioperative team
   - To establish a standardized management plan for patients at risk/with carcinoid crisis
     - Evidence-based, applied universally, and geared to improve perioperative safety
2. **Patient Selection**
   - Patients having surgery for GEP NET and/or neuroendocrine liver metastasis (NETLM)
   - Patients with NETLM/midgut NET having surgery for other reasons
3. **Prevention**
   - No routine prophylaxis is currently recommended – **NO PROPHYLAXIS**
     (Can consider, on individual basis, and at discretion of surgical team, ***selective prophylaxis***)
   - Consider hemodynamic monitoring (VIGILEO) during the procedure, a-line placement *prior* to induction for high-risk cases (at surgical team's discretion)
   - Discuss risk, and plans for prevention strategies (if any), and treatment/triggers during **TIME-OUT**
     - Availability of octreotide vials/drips, pressors (phenylephrine / vasopressin / Epi/ NE), other
     - Emphasize two-way communication real-time IOP team: Surgeon/Anesthesiologist/Nursing
4. **Signs and Symptoms**
   - Acute drop in SBP (drop >20mmHg and/or ≤80mmHg) without a clear precipitating alternative event. (I.e.: Rule out acute bleeding, surgical pressure on cava, etc. (**communication anesthesia-surgery is key**)
   - Other: tachycardia (>120), bradycardia (<60), relative bradycardia (60-100 with hypotension)
   - Less common presentation: HTN, bronchospasm, flushing, urticaria, acidosis, hyperthermia, arrhythmias
5. **Crisis Management**
   - Triggered by findings as above – **EARLY RECOGNITION** is essential
   - Real-time 2-way communication with IOP team
   - **Stop surgical manipulation** of tumor as feasible/indicated
   - **Pharmacologic treatment** to start immediately with event identification:
     - IVF bolus
     - Octreotide bolus 500mcg – repeat as needed
     - Pressors: phenylephrine, vasopressin, epinephrine and/or norepinephrine bolus/drip, as needed [NOTE: Epinephrine, Norepinephrine **CAN** be used and often elicit better control]
     - Benadryl 50mg IV
     - Pepcid 20mg IV
     - Steroid: hydrocortisone 100mg x1
     - Consider Octreotide drip after second bolus needed → 100mcg/h and titrate as needed (500mcg in 250cc NS, start at 50cc/h) for cases of ongoing symptoms or those with associated symptoms of serotonin/kinins release (e.g., flushing, bradycardia)
   - **Consider aborting procedure anytime during the event as indicated**
6. **Documentation**
   - Document if carcinoid crisis occurred and additional information as available (primary presenting signs, duration, # intraop events, treatment ?, untoward outcomes, etc)

Hepatobiliary Section / MPS - Anesthesiology

Figure 1. Carcinoid Crisis Management Protocol

PPS50

Sexual Diphormism in the Early Apoptotic Switch during MASH progression in mice

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INTRODUCTION: Chronic liver disease, including end-stage liver disease (ESLD) and hepatocellular carcinoma (HCC), is rising globally, driven by viral hepatitis and the growing burden of obesity-related metabolic dysfunction. Our group has identified two apoptotic "switches" in the progression of metabolic dysfunction–associated steatohepatitis (MASH). The first, or early switch, reflects disease severity, whereas the second appears to promote malignant transformation and HCC development. Clinically, HCC shows a marked sex disparity, occurring about three times more often in males than females. This study aims to determine whether sex-based differences exist in the early apoptotic switch during preclinical MASH progression. **METHODS:** Male and female C57BL/6J mice (7

weeks old) were fed a normal chow (NMC) or high-fat diet (HFD) for 12, 24, or 48 weeks (n = 5 per group per sex). Total body weight was monitored, and body composition measured by Echo-MRI. Plasma was analyzed for non-targeted metabolomics and glutathione species via LC–MS/MS. Liver tissue was assessed for cellular senescence, apoptotic activity, and NAFLD activity score (NAS). Data are shown as box-and-whisker plots. Group differences were evaluated by one-way ANOVA and PCA using GraphPad Prism or SPSS/R. Significance was set at $p < 0.05$ (*) and $p < 0.01$ (**). **RESULTS:** Significant sex-based differences emerged during high-fat diet (HFD) feeding. Males gained more lean mass and less fat than females ($p < 0.01$). Redox profiling showed lower glutathione species, including ophthalmate, in males ($p < 0.05$), indicating reduced antioxidant capacity. Metabolic responses also differed, with sex-specific changes in plasma glucose, lactic acid, and butyric acid ($p < 0.05$). PCA confirmed distinct metabolomic signatures between sexes ($p < 0.02$). These changes correlated with increased mTOR and p53 expression in males ($p < 0.05$). While cellular senescence rates were similar, apoptotic activity was higher in females ($p < 0.01$). Expression of surviving and SMAC remained comparable between sexes during the first apoptotic switch. **CONCLUSIONS:** Findings revealed a clear sexual dimorphism in the apoptotic switch emerging from cellular senescence during MASH progression. This dimorphism was particularly evident in the regulation of the early, first apoptotic transition from senescence and in the associated metabolic stress responses. These results provide valuable insight into sex-specific mechanisms underlying MASH pathogenesis and may inform the development of targeted, sex-driven therapeutic strategies.

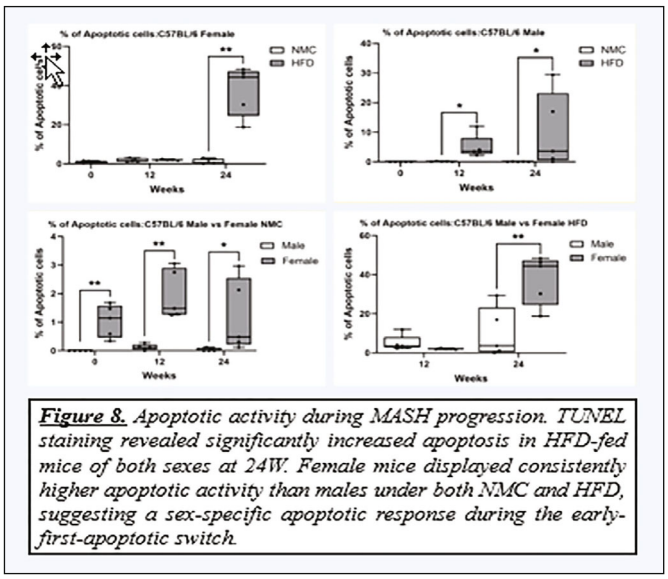

Figure. Apoptotic activity i livers form mice by sex and diet at the first apoptotic switch during MASH progression.

PPS51

Resection of pancreatic neuroendocrine tumors in the setting of metastasis

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INTRODUCTION: Surgical resection is recommended for small bowel neuroendocrine tumors (NETs) and is associated with improved survival, even in the presence of metastatic disease. Resection of primary pancreatic NETs (pNETs) in the metastatic setting is more controversial due to the lack of supportive evidence and the high morbidity associated with pancreatic surgery. Herein, we compared progression and overall survival of a cohort of metastatic pNET patients who underwent resection of their primary tumor to a cohort that did not undergo resection. **METHODS:** The healthcare systems database was searched to find primary pNET patients with metastases and at least 2 years of follow up. Patients were divided on whether they underwent primary tumor resection or not, then subdivided into those with synchronous or metachronous metastatic lesions. Unresected patients were analyzed using modified NCCN pancreatic adenocarcinoma surgical guidelines and categorized as "resectable," (surgery possible at diagnosis) "borderline resectable," or "locally advanced" (surgery not indicated at diagnosis). Primary outcomes included overall survival (OS) and progression-free survival (PFS), estimated by Kaplan-Meier curves. Results were compared using the log rank test. Demographics, additional treatments, tumor grade, resection type, and treatment-related adverse events were recorded. **RESULTS:** Of 284 patients with primary metastatic pNETs, 155 underwent resection and 129 did not. 31% of resected patients had an operative complication (Clavien Dindo grade 2 or greater) and 70% developed long-term morbidities (new/worsening diabetes or exocrine insufficiency). The median OS for the resected vs unresected group was 190 vs 45.6 months (HR 5.59, $p< 0.0001$). The median PFS of the resected vs unresected group was 38.1 vs 8.5 months (HR 2.38, $p< 0.0001$). Among patients with synchronous metastases, the median OS for the resected, resectable (but not resected) and locally advanced groups was 142 months (95% CI 122-162 mo), 63 months (42-84 mo) and 50 months (40-60 mo). Survival was significantly better in resected patients, HR 0.31 (95% CI 0.18-0.51), $p< 0.0001$, whereas potentially resectable patient who were not operated on had similar survival to the locally advanced group, HR 0.96 (0.55-1.67). **CONCLUSIONS:** Resection of the primary pNET in the metastatic setting is associated with improved overall and progression free survival. A decision for pancreatectomy should anticipate frequent short and long-term morbidity.

PPS52

Preoperative Serum Biomarkers for Prediction of Nodal Status in Resectable Pancreatic Cancer: A 13-Analyte Panel Study

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INTRODUCTION: Pancreatic ductal adenocarcinoma remains a highly aggressive cancer with very poor overall survival. Current preoperative staging in the form of computed tomography and endoscopic ultrasound is inadequate, with significant discordance present between preoperative staging and pathologic findings, particularly for nodal staging. This is especially important as overall survival has been demonstrated to be significantly worse in patients with N2 disease. We aim to identify serum biomarkers that can better stratify nodal disease in the pre-operative, pre-treatment setting. **METHODS:** We screened an institutional biobank of pre-treatment serum samples from histologically confirmed pancreatic adenocarcinoma collected between April 2005 and March 2023 with a panel of 13 analytes using enzyme linked immunosorbent assay. Analytes were selected for inclusion based on previous studies demonstrating overexpression in pancreatic cancers in patient serum. Number of lymph nodes involved was used to categorize all patients according to AJCC 8th edition staging. Jonckheere-Terpstra tests were used to assess trends in analyte levels across the three nodal stage groups (N0, N1, and N2) and standardized ordinal logistic regression was used to assess magnitude of significant trends. **RESULTS:** One analyte, collagen type XVIII alpha I chain (COL18A1), demonstrated a significant monotonic trend across pN stages (J-T test, $p= 0.025$), with concentrations systematically decreasing with increasing nodal stage (median concentration 113.16 ng/mL in pN0, 85.87 ng/mL in pN1, and 78.67 ng/mL in pN2, descending trend, $p=0.012$). Using a standardized ordinal logistic regression, each standard deviation increase in COL18A1 (56 ng/mL) was associated with 43% lower odds of being in a higher pN stage category (OR: 0.57, 95%CI 0.38-0.86, $p=0.007$). None of the other 12 analytes screened met statistical significance, however, Leucine-rich alphe-2-glycoprotein 1 demonstrated marginal significance (J-T test, $p=0.090$). **CONCLUSIONS:** This biomarker screening study demonstrates an inverse relationship between levels of COL18A1 and nodal status. This protein is found in the basement membrane and is a precursor for endostatin, an important protein in inhibiting angiogenesis. This ordered descending trend could potentially aid in development of a pre-treatment screening tool to more reliably predict nodal disease at the time of diagnosis.

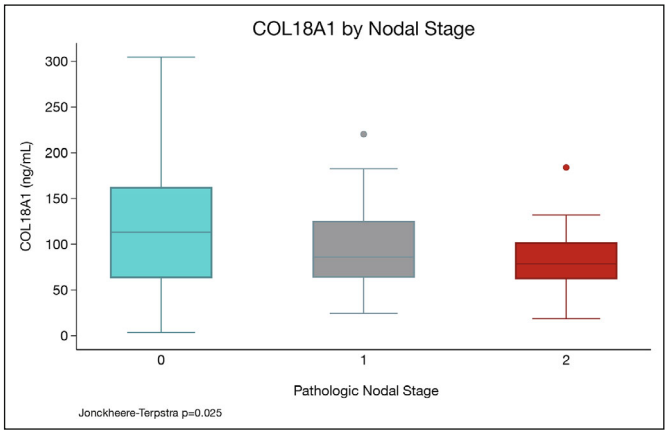

Figure. COL18A1 by Nodal Stage

PPS53

Systemic T cells phenotypic and functional characterization following ablation of liver tumors by histotripsy

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INTRODUCTION: Histotripsy is a non-invasive ultrasound technique that utilizes high-intensity pulses to ablate tumors into acellular lysate. In certain patients treated with histotripsy, the mechanical disruption of the tumors results in stimulation of immune response and abscopal effects. The systemic effect of histotripsy-induced T cell activation is unknown. In this study, we hypothesize that a systemic antigen-dependent T cell response is mounted following tumor ablation by histotripsy and aim to longitudinally evaluate circulating T cell phenotype and function in histotripsy recipients. **METHODS:** Peripheral blood mononuclear cells (PBMCs) were collected immediately prior to histotripsy (baseline), ~24-72 hours post-histotripsy (early), and >21 days post-histotripsy (late). Analyses of circulating T cell abundance and phenotype were performed by flow cytometry. Response of circulating T cells to five clinically approved immunotherapies (3 anti-PD1, and one each of anti-PDL1 and anti-CTLA4) in antigen-independent T cells activation and CD3/CD28 activation were screened ex vivo. **RESULTS:** For microsatellite-stable colorectal cancer (CRC) liver metastasis cases, percent of CD4+ and CD8+ T cells increased in the blood at both early and late post-treatment timepoints compared to baseline. Naïve CD8+ T cells (CD45RA+CCR7+) were specifically enriched at both post-treatment timepoints. Furthermore, in all CRC cases, antigen-independent T cell activation correlated with an increased response to immunotherapy ex vivo (Table 1). Surface expression of CD279 (PD-1) was reduced in CD8+ T cells early and late post-histotripsy. For hepatocellular carcinoma (HCC), intra-hepatic cholangiocarcinoma (IHCC) and squamous cell carcinoma (SCC) liver metastasis cases, no changes in percent of CD4+or CD8+ T cells or PD-1 expressions were observed in peripheral blood T cells post-histotripsy. Ex vivo immunotherapy response was observed at both pre- and post-treatment with histotripsy (Table1) in these non-CRC cases. **CONCLUSIONS:** Systemic increases in CD4+ and CD8+ T abundance and response to stimulation with immunotherapy was observable within 24 hours following histotripsy and is maintained for >30 days in this pilot study. Increase in proportions of naïve CD8+ T cells suggest early mobilization, and in conjunction with reduced PD-1 expression, may further support anti-tumor activity that underlies the abscopal effect observed with histotripsy. Continued longitudinal sampling and monitoring of cases for biochemical and radiographic response is ongoing.

Table 1. Response to Immunotherapies Pre- and Post-Histotripsy by Antigen-Independent T cells activation assay.

	Pre-treatment T-cell response to immunotherapy*	Post-treatment T-cell response to immunotherapy*
CRC1	X	✓
CRC2	X	✓
CRC3	X	✓
CRC4	✓	✓
HCC	✓	✓
IHCC	✓	✓
SCC	✓	✓

*(Anti-PD1: Nivolumab, Pembrolizumab, Dostarlimab; Anti PDL1: Atezolizumab; Anti-CTLA4: Ipilimumab)
CRC: Colorectal cancer, HCC: Hepatocellular carcinoma, IHCC: Intra-hepatic cholangiocarcinoma, SCC: Squamous Cell Carcinoma

PPS54

Surgical Management of Cholecystitis in Pancreatic Adenocarcinoma May Lead to More Rapid Resumption of Chemotherapy

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INTRODUCTION: The management of symptomatic cholecystitis in patients with pancreatic adenocarcinoma (PDAC) remains a challenging problem. While percutaneous cholecystostomy tubes (PCT) are frequently utilized, the role of staged cholecystectomy without pancreatic resection is poorly defined. **METHODS:** A retrospective cohort study included adults diagnosed with PDAC and cholecystitis, January 2013–May 2025, at a tertiary academic center. Patients were identified using ICD-10 codes C25.0–C25.9 (malignant neoplasm of pancreas) along with CPT codes 47562–47600 (cholecystectomy) and/or 47490 (PCT). Cohorts were stratified by disease status (resectable vs. unresectable) and type of gallbladder intervention. **RESULTS:** Total 150 patients with concurrent PDAC and cholecystitis were identified: 98(65%) resectable and 52(35%) unresectable. Median age and BMI were comparable between groups (63.5 vs 70.0 years, p=0.12; 22.9 vs 25.2kg/m², p=0.32). Unresectable patients were more likely to have higher ASA (83% vs 50%, OR = 4.86 [0.81–29.24]) and ECOG ≥ 2 (37% vs 0%, OR = 7.60 [0.40–144.40]), though not statistically significant. Treatment delay rates were similar between groups (38% vs 39%, OR = 0.64 [0.11–3.57], p=0.67) [Table 1]. In the resectable cohort, 6(6.1%) developed symptomatic cholecystitis and underwent PCT before resection (median age 63.5 years, 67% male, mean BMI 25.2 kg/m², 83% ASA II–III, 100% ECOG 0–1). One patient underwent planned resection. One completed neoadjuvant therapy (NAT) and underwent resection after a 2-week delay. One expired from retroperitoneal hemorrhage. Three(50%) experienced treatment delays-one during NAT, one from recurrent cholangitis leading to hospice, and one from septic shock. Final gallbladder pathology predominantly revealed chronic cholecystitis. In the unresectable cohort, 41(79%) had radiographic evidence of cholecystitis (median age 70 years, 78% male, mean BMI 25.9 kg/m², 81% ASA III–IV, 37% ECOG ≥2). PCT was performed in 38(93%), cholecystectomy in 7(17%), and both in 4(10%). Sixteen(39%) experienced delay or cessation of therapy, most from drain-related infections, perforated/gangrenous cholecystitis, or recurrent cholangitis. Those who underwent early or interval cholecystectomy resumed chemotherapy sooner than patients managed with PTC alone. **CONCLUSIONS:** Gallbladder complications disrupt administration of systemic therapy in PDAC. While PCT remains common, our findings suggest early or interval cholecystectomy may reduce treatment interruptions and improve chemotherapy continuity in selected patients.

Table 1. Demographic and clinical characteristics of patients by resectability

Variables	Resectable [n = 6]	Unresectable [n = 41]	Effect size	95% CI	p-value
Age (years)	63.5 (61.5-70.0)	70.0 (63.0-78.0)	r = 0.40		0.118
BMI (kg/m²)	22.9 (22.7-23.4)	25.2 (23.1-29.2)	r = 0.26		0.316
Male sex, n (%)	4 (67%)	32 (78%)	OR=1.78	[0.28, 11.32]	0.614
ASA ≥3, n (%)	3 (50%)	34 (83%)	OR=4.86	[0.81, 29.24]	0.101
ECOG ≥2, n (%)	0 (0%)	15	OR=7.60	[0.40, 144.40]	0.157
Delay in treatment, n (%)	3 (50%)	16 (39%)	OR=0.64	[0.11,3.57]	0.674

Continuous data shown as median (IQR); effect sizes as rank-biserial r or odds ratio (OR, 95% CI).

PPS55

Prognostic Implications of Circulating Cell-Free DNA Concentration in Gastrointestinal Malignancies

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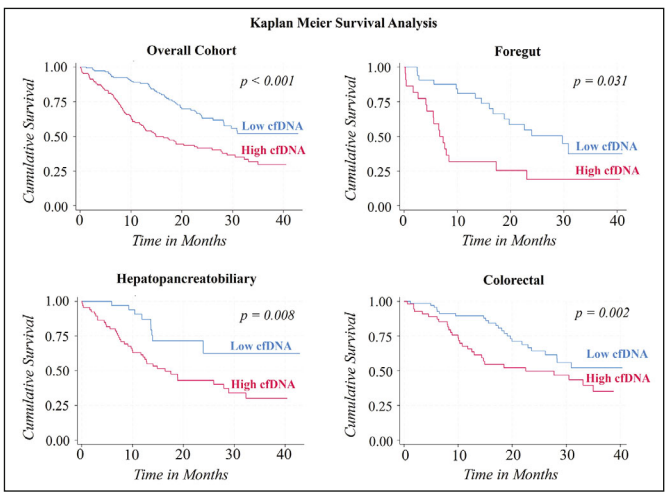
INTRODUCTION: We analyzed the independent effect of circulating cell-free DNA (cfDNA) concentration on disease stage and survival in gastrointestinal (GI) malignancies. **METHODS:** We utilized a prospectively maintained biorepository of patients presenting with oncologic diagnoses, which includes blood draws collected prior to and during treatment. We assessed for concordance between cfDNA and paired tumor samples in the overall cohort. Patients diagnosed with GI malignancies were then selected for focused cfDNA analysis. Patients were categorized into low and high cfDNA categories based on the median of their raw cfDNA concentration values. Univariate and multivariate regression models were utilized to assess the independent association between cfDNA concentration and clinical outcomes including stage and survival. **RESULTS:** Among our cohort of 1000 patients spanning 26 disease sites, high concordance was demonstrated between matched tumor and blood samples (coding mutations: 97%, clinical oncogenic mutations: 88%). Of this, we had 300 patients diagnosed with GI malignancies, they were 62.7 ± 13.5 years old and 61.0% (n=183) male. Of these, 26.7% (n=80) were appendiceal, 17.0% (n=51) were pancreatic, and 14.7% (n=44) were colorectal malignancies. Most common histologic diagnoses were adenocarcinoma (65.8%, n=160) followed by hepatocellular carcinoma (15.6%, n=38). Overall, 59.3% (n=178) presented with metastatic disease. The cohort had an overall survival (OS) of 27.9 (IQR: 10.43-Not reached) months. The median cfDNA concentration was 7.4 (4.5-14.8) ng/mL, and 50.0% (n=150) of the patients were categorized into the low cfDNA cohort. Patients in the high cfDNA cohort were older (64.3 ± 13.5 vs. 61.1 ± 13.4, p=0.042) and female (46.7% vs. 31.3%, p=0.006). 31.3% (n=94) underwent potentially curative resection. Among these, patients in the high cfDNA cohort had a higher R1 resection rate (23.2% vs. 5.7%, p=0.002) but had no difference in lymphovascular invasion (43.9% vs. 31.2%, p = 0.656). On multivariable analysis restricted to surgical patients, high cfDNA was an independent predictor of R1 resection (10.82, 95%CI: 1.11-105.21, p=0.040). For the entire cohort, on cox-proportional hazard analysis high cfDNA was an independent predictor of mortality (HR: 3.84, 95%CI: 1.73-8.54, p=0.001). **CONCLUSIONS:** Our results demonstrated high concordance between serum cfDNA and solid tumor genomic profiles. Circulating cfDNA concentration was independently associated with mortality in patients with GI malignancies.



PPS56

A Phase II Trial Evaluating Combination Cabozantinib and Pembrolizumab in Treatment Refractory Metastatic Pancreatic Adenocarcinoma

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INTRODUCTION: Treatment of metastatic pancreatic ductal adenocarcinoma (PDAC) remains challenging. We have previously demonstrated programmed cell death protein 1 (PD-1)-mediated activation of the proto-oncogene MET and observed effective cytotoxicity with the combination therapy of pembrolizumab and cabozantinib in vitro and in vivo. We hypothesized that this dual therapy would result in improved progression-free survival (PFS) for patients with metastatic PDAC. **METHODS:** In this investigator-initiated phase II clinical trial (NCT05052723), we enrolled patients with treatment refractory metastatic PDAC to a single-arm treatment regimen of pembrolizumab 200 mg IV every 3 weeks and cabozantinib 40 mg PO daily. The primary endpoint was progression-free survival (PFS). Secondary endpoints included overall response, complete response or partial response (PR) at one-year post treatment initiation, and one-year overall survival (OS). **RESULTS:** We successfully completed enrollment (n=21 patients) in this clinical trial. The median age was 66, 11 patients (52.4%) were female, and the majority of patients (85.7%) were white. After survival analysis, median PFS was 2.11 months (95% CI 1.87-2.52). For patients enrolled for 2nd or 3rd line therapy (n=13), median PFS was 2.11 months (95% CI 1.33-3.91) and OS was 4.02 months (95% CI 2.39-8.19). One notable PDAC patient with histology demonstrating features of undifferentiated carcinoma with osteoclast-like giant cells (UCOGC) had PR. Imaging demonstrated stable disease until 25 months, when evidence of disease progression was identified. **CONCLUSIONS:** Overall, combination therapy with cabozantinib and pembrolizumab was not superior to historical controls for treatment refractory metastatic PDAC. However, one patient with features of UCOGC had a prolonged response to therapy and remained on trial for 25 months. This suggests the unique benefit of this combination therapy for patients with UCOGC.

PPS57

Multiomic analysis and oncologic outcomes in pancreatic cancer by PIN1 expression

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INTRODUCTION: Proline isomerase (PIN1) is a novel investigational target and is associated with desmoplastic stroma, an immunosuppressive tumor immune microenvironment (TIME) and worse outcomes in pancreatic ductal adenocarcinoma (PDAC). However, stromal targeting has shown conflicting evidence, with some studies showing it leads to more aggressive tumors. To further understand the implications of targeting PDAC stroma, we characterized PIN1 expression and its impact on the TIME and survival. **METHODS:** Patients with a primary diagnosis of PDAC and a stage 4 biopsy sequenced with Tempus xT DNA and/or xR whole transcriptome analysis prior to receiving either 1L FOLFIRINOX or gemcitabine + nab-paclitaxel were selected from the Tempus Lens deidentified database (n = 1844). Samples were from the liver (L; 49.7%), primary tumor (PT; 26.4%), peritoneum (PT; 12.4%), or non-liver or peritoneal sites (NLP; 11.6%). RNA-sequencing data were corrected for batch and assay effects and then normalized by computing log2(TPM+1) (TPM = transcripts per

million). PDAC samples were stratified into quartiles (Q1- Q4; n = 461 for each) by PIN1 RNA expression. Immune cell proportions were estimated from RNA (quanTIseq). PD-L1 was assessed by IHC using the 22C3 clone. Cox proportional hazards (CoxPH) models with risk set adjustment were used to test for adjusted associations between PIN1 and real-world overall survival (rwOS). All p-values were uncorrected. Statistical significance was defined as $p < 0.05$. **RESULTS:** The PDAC cohort was composed of a diverse population: 56% White, 6.3% Black/African-American, 1.7% Asian and 36.2% Other/Unknown. PIN1 RNA expression was higher in peritoneal (3.39) and NLP sites (3.31) compared to L (3.2) or PT (3.19; $p < 0.001$). There was no association between PIN1 and PD-L1. While immune infiltration analysis demonstrated a significant enrichment (median; all pglobal < 0.001) of both anti-tumor (M1 macrophages: Q1 vs Q4: 4.98 vs 6.38) and pro-tumor (M2 macrophages Q1 vs Q4: 3.38 vs 4.01, T-regs Q1 vs Q4: 2.34 vs 3.20) subsets in high PIN1 tumors, effector CD8 T-cells across PIN1 quartiles were scarce (< 1%). Importantly, higher PIN1 was independently associated with a favorable OS (table). **CONCLUSIONS:** Published literature shows that higher PIN by IHC is associated with a less immunogenic TIME and worse OS. Our results suggest the opposite; PIN1 RNA expression was higher in NLP disease sites and is associated with pro- and anti-tumor immune subsets and a favorable OS. These hypothesis generating findings have implications for PIN1 therapeutic development and underscore the complexity of PDAC stromal targeting via PIN1.

Quartiles (Q)	*PIN1* RNA expression	HR[1]	95% CI[1]	p-value
Q1	<2.98	-	-	-
Q2	2.98-3.22	0.76	0.64, 0.92	0.004
Q3	3.23-3.49	0.74	0.62, 0.89	0.001
Q4	3.50+	0.84	0.71, 1.00	0.052

Risk-set adjusted CoxPH model for rwOS adjusting for 1L therapy, age, sex, smoking status, race; [1]HR=Hazard Ratio, CI=Confidence interval

PPS58

Distinct tumor biology between IPMN-derived and PanIN-derived early-stage pancreatic cancer

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INTRODUCTION: Intraductal papillary mucinous neoplasm (IPMN) and pancreatic intraepithelial neoplasia (PanIN) are well-established precursor pathways to pancreatic ductal adenocarcinoma (PDAC). Neoadjuvant therapy can alter tumor cellularity, potentially reducing the sensitivity of molecular analyses. This study examines treatment-naïve early-stage PDAC patients, focusing on the clinicopathologic and genomic differences between these two subtypes. **METHODS:** Patients from 1999 to 2024 with resected, early-stage (T1N0M0) PDAC who did not receive neoadjuvant therapy were identified from our institutional database. Tumors associated with IPMN (IPMN-derived) on pathology were compared to those that did not have this distinction (PanIN-derived). In addition, we conducted an exploratory molecular analysis on a subset of tumors with next-generation DNA targeted sequencing data. Clinicopathological features and genomic variables were compared using Fisher's Exact test for categorical variables and Mann-Whitney test for continuous variables. Kaplan-Meier method was used for time-dependent endpoints. **RESULTS:** 185 patients met inclusion criteria with 112 in the IPMN-derived group and 73 in the PanIN-derived group. No patients received neoadjuvant therapy. PanIN-derived PDAC patients had larger tumors ($P < 0.001$) that were more likely to be poorly-differentiated ($P < 0.001$) or have perineural invasion ($P < 0.001$). Median overall survival was significantly longer in the IPMN-derived group (124 months vs. 59 months, $P < 0.001$). 11 patients with IPMN-derived PDAC and 22 patients with PanIN-derived PDAC had genomic data. Mutations in KRAS (96% vs. 64%, $P = 0.033$), with a trend towards KRAS G12D (41% vs. 9%, $P = 0.11$), were enriched in the PanIN-derived group compared to KRAS G12V (45% vs 9%, $P = 0.027$) in the IPMN-derived group. Mutations in APC were also enriched in the IPMN-derived cohort (27% vs 0%, $P = 0.030$). Alterations in TP53, SMAD4, and RNF43 were not statistically significant. **CONCLUSIONS:** Our findings not only reinforce that PanIN-derived PDAC demonstrates more aggressive tumor biology but also highlight the distinct patterns of genomic enrichment. KRAS G12V mutations were more frequently observed in IPMN-derived tumors, compared to KRAS G12D mutations in PanIN-derived tumors. Validation in larger cohorts will be essential to confirm these findings. Greater emphasis should be placed on integrating comprehensive genomic profiling to guide personalized treatment decisions, especially with emerging mutation-specific therapies.

Table: Cancer-specific outcomes and genomic variables of resected, early-stage (T1N0M0), treatment-naïve PDAC derived from IPMN (IPMN-derived) or PanIN (PanIN-derived) precursor pathways.

		IPMN-Derived	PanIN-Derived	*P* value
Cancer-Specific Outcomes		N = 112	N = 73	
Tumor Stage	T1	112 (100%)	73 (100%)	1
	T1a	57 (50.9%)	2 (2.7%)	**<0.001**
	T1b	20 (17.9%)	7 (9.6%)	
	T1c	35 (31.2%)	64 (87.7%)	
Nodal Stage	N0	112 (100%)	73 (100%)	1
Lymphovascular Invasion	Yes	7 (6.3%)	17 (23.3%)	**0.002**
Perineural Invasion	Yes	23 (20.5%)	56 (76.7%)	**<0.001**
Grade (*17 missing*)	Well	39 (41.0%)	5 (6.8%)	**<0.001**
	Moderately	47 (49.5%)	50 (68.5%)	
	Poorly	9 (9.5%)	18 (24.7%)	
Positive Resection Margin	Yes	0	4 (5.5%)	**0.023**
Genomic Variables		N = 11	N = 22	
KRAS	Mutated	7 (63.6%)	21 (95.5%)	**0.033**
	Wild-Type	4 (36.4%)	1 (4.5%)	
TP53	Mutated	5 (45.5%)	10 (45.5%)	1
	Wild-Type	6 (54.5%)	12 (54.5%)	
SMAD4	Mutated	3 (27.2%)	5 (22.7%)	1
	Wild-Type	8 (72.7%)	17 (77.3%)	
BRCA1/2	Mutated	4 (36.4%)	4 (18.2%)	0.39
	Wild-Type	7 (63.6%)	18 (81.8%)	
APC	Mutated	3 (27.2%)	0	**0.030**
	Wild-Type	8 (72.7%)	22 (100%)	
RNF43	Mutated	2 (18.2%)	0	0.10
	Wild-Type	9 (81.8%)	22 (100%)	

PPS59

HOUSES Index: A Novel, Patient-Level Measure of Socioeconomic Status Linking Real-World Housing Data to Surgical Outcomes in Pancreatic Ductal Adenocarcinoma

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INTRODUCTION: Health disparities research often relies on census-based social determinants of health (SDoH), which risks ecological fallacy and limits patient-level inference. The HOUsing-based SocioEconomic Status (HOUSES) index, a novel, patient-level SES metric derived from individual addresses, overcomes this limitation. We examined its association with short- and long-term outcomes after pancreatectomy for pancreatic ductal adenocarcinoma (PDAC). **METHODS:** We retrospectively analyzed data from all adults undergoing PDAC resection at a high-volume academic center (2016–2024). HOUSES geocodes unit size, value, bedrooms, and bathrooms into a weighted z-score (higher = better SES). Patients were divided by HOUSES quartiles and dichotomized (Q1 vs Q2–4). Outcomes included 30-day mortality, readmission, prolonged stay (≥75th percentile), major complications, and overall survival (OS; surgery to death/last

follow-up). Associations were tested using multivariable logistic and Cox regression. For all outcomes, we created 3 models: Model 1 (unadjusted), Model 2 (adjusting for clinicopathologic, socioeconomic, and treatment-related covariates significant on univariable analysis), and Model 3 (Model 2 + census-level median household income and Area Deprivation Index [ADI]). **RESULTS:** Of 234 patients, mean age was 66.3 years, 41.9% were female; 95.8% non-Hispanic White; and 76.2% had stage I/II disease. Q1 patients (worse SES) were less likely to receive any chemotherapy (84.7% vs 94.9%, p< 0.02); no other differences in baseline characteristics were observed. HOUSES demonstrated moderate correlations with ADI (Spearman ρ=-0.196) and median household income (ρ=+0.223). 30-day mortality occurred in 1.3%, unplanned readmission in 15.8%, prolonged stay in 23.1%, and major complications in 25.2% of patients. Q1 was associated with a prolonged length of stay in Model 1 (OR: 2.24, 1.04-5.26), though this association was attenuated in Models 2 and 3. Median follow-up time was 28.1 months, and median OS was 30.2 months. HOUSES was not associated with OS in Model 1; however, patients in Q2-4 had improved survival in Models 2 (HR: 0.60, 0.37-0.95) and 3 (HR: 0.61, 0.38-0.99) (Table). **CONCLUSIONS:** HOUSES was associated with long-term outcomes post-PDAC resection after adjusting for clinicopathologic and traditional socioeconomic covariates. HOUSES may help identify patients at higher risk of adverse surgical outcomes – future work will examine its utility in other gastrointestinal cancers and integration into EHR-based risk models.

Table: Results of uni- and multivariable Cox proportional hazards models for predictors of OS after surgical resection for PDAC. Hazard ratios are provided with 95% confidence intervals.

Variable	Category	Model 1*	Model 2†	Model 3§
HOUSES (reference: Q1, ≤33)	Q2-4, >33	0.73 [0.48–1.13]	**0.60 [0.37–0.95]**	**0.62 [0.38–0.99]**
Insurance status (reference: Private)	Medicare	**0.08 [0.03–0.19]**	**0.07 [0.03–0.18]**	**0.08 [0.03–0.20]**
	Self/Medicaid	**1.56 [1.04–2.34]**	**1.82 [1.10–3.02]**	**1.93 [1.15–3.24]**
Rural residence (reference: Rural)	Urban	**0.59 [0.38–0.93]**	0.74 [0.46–1.21]	0.67 [0.40–1.12]
Pathological stage (reference: I/II)	III	**1.75 [1.13–2.70]**	**1.67 [1.04–2.69]**	**1.69 [1.02–2.81]**
Pathological grade (reference: G1)	G2/3	**2.14 [1.26–3.62]**	1.17 [0.64–2.11]	1.26 [0.70–2.29]
Histopathological response (reference: Major)	Minor	**3.38 [1.32–8.65]**	**3.88 [1.22–12.38]**	**3.35 [1.03–10.90]**
Receipt of vascular resection (reference: No)	Yes	**2.25 [1.46–3.47]**	1.14 [0.69–1.88]	1.17 [0.70–1.95]
National Area Deprivation Index (reference: ≤43)	44-64	1.05 [0.65–1.69]	NA	0.98 [0.54–1.78]
	≥65	1.54 [0.96–2.49]	NA	1.79 [1.00–3.23]
Median income (reference: <$50,000)	50,000-140,000	0.56 [0.08–4.06]	NA	0.58 [0.07–4.55]
	>140,000	0.98 [0.13–7.55]	NA	0.63 [0.07–5.66]

*Univariable analysis. †Included HOUSES, insurance status, rural residence, pathological stage, grade, and response, receipt of vascular resection. §Included census-level median household income and Area Deprivation Index in addition to all variables in Model 2. NA: Not applicable.

ABSTRACTS

E-POSTERS

SSO 2026 ANNUAL MEETING

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March 5-7, 2026

LBA3

The Role of Pancreatic Adenocarcinoma Cancer-Stromal Interactions on Cardiac Structure and Function

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) has a dismal 5-year survival and patients with PDAC experience significantly lower cardiac-specific median survival compared to those with other GI cancers. While cancer cachexia impacts survival through skeletal muscle loss, the contribution of cardiac function to outcomes in PDAC is unknown. We aim to evaluate cardiac tissue structure and function in the most representative human preclinical model which will provide insight into cardiac remodeling associated with PDAC and its clinical implication for interventions to improve overall survival. **METHODS:** We implanted a PDAC patient-derived xenograft into five NSG mice heterotopically and five NSG mice orthotopically, with five NSG mice receiving sham surgeries as controls. Tumor volumes were monitored weekly and once reaching 1.5cm, echocardiography and Millar catheterization were performed to assess cardiac structure and function between the three groups. Cardiac muscle, gastrocnemius muscle and tumors were collected for histologic and molecular analysis, including staining for structural assessment RNA sequencing to assess for changes associated with tumor burden, which is ongoing. An ANOVA and simple unpaired t-test were used with a significance value set at $p < 0.05$. **RESULTS:** Global longitudinal strain (GLS) measured by echocardiogram was within the normal values (-18 to -25%) across the groups, with no significant difference between the means of the sham (−20.3%), heterotopic (−21.2%), and orthotopic (−19.9%) groups. However, there is a slight trend showing a decline in GLS in the orthotopic group compared to the control group. The PV Loop data show a decline in left ventricular compliance (EDPVR) means in the heterotopic group (0.86) and orthotopic group (1.06) compared to the control group (0.22). The orthotopic group EDPVR mean is statistically different from the control group mean, with a simple unpaired T-Test p-value of 0.02. **CONCLUSIONS:** The slight reduction in GLS observed in the orthotopic group relative to controls may indicate the presence of early systolic impairment in PDAC-bearing mice. Additionally, the results suggest that tumor burden is associated with impaired EDPVR, with the orthotopic group showing more stiffening as evidenced by a significantly elevated EDPVR when compared to the control group, which may indicate early diastolic dysfunction in the context of tumor-related cardiac remodeling. Recognizing early cardiac changes in patients with PDAC will help identify interventions that may ultimately improve treatment tolerance and clinical outcomes.

LBA4

Taking Leave During Breast Surgical Oncology Fellowship: A National Evaluation of Policy and Practice

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INTRODUCTION: No standardized policy exists for personal/parental leave for Breast Surgical Oncology (BSO) fellowship programs. Leave requests are approved by individual institutions and are reviewed by the Society of Surgical Oncology (SSO) and American Society of Breast Surgeons' BSO Training Committee. We aimed to characterize the frequency, duration, and types of leave taken by BSO fellows and identify barriers and facilitators to implementing leave. **METHODS:** An anonymous electronic survey approved by the SSO Research Committee was distributed to program directors (PDs) and associate PDs (APDs) of all accredited BSO fellowships in October 2025. Additionally, redacted Training Committee meetings minutes were requested (2015-2025). Descriptive statistics and qualitative thematic analysis were conducted. **RESULTS:** Responses were received from 49/66 (74%) BSO fellowship programs. Of these, 33 programs (67%) reported having a formal leave policy. 36 programs (74%) reported having a fellow take leave in the last 10 years, of which 72% (n=26) had a policy. The median duration of parental leave was 4 weeks (IQR 2-6) for birthing parents and 1 week (IQR 0-3.5) for non-birthing parents. Median medical and bereavement leave durations were 2 weeks (IQR 0-4) and 1 week (IQR 0-3), respectively. Total leave duration ranged from 0 weeks to >12 weeks, with a median of 4 weeks (IQR 3-6). Meeting minutes documented training extension for 13 fellows. Formal leave policies were identified as facilitators of taking leave. Barriers to taking leave included concerns about completing graduation requirements, extension of training, and coverage logistics (Table). **CONCLUSIONS:** While leave during BSO fellowship is common, one-third of programs lack a formal policy, and leave durations vary considerably between programs. These findings highlight the need for standardized BSO fellowship leave guidelines to support equitable and consistent trainee experiences.

EP1

Robotic-assisted nipple sparing mastectomy: multi-center clinical trials in progress in the U.S.

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BACKGROUND: Nipple sparing mastectomy (NSM) is associated with increased patient satisfaction, improved aesthetic outcomes and is an oncologically safe procedure for patients with early-stage breast cancer and those at increased risk for cancer. However, conventional NSM has a higher rate of surgical complications and increased ergonomic challenges for the surgery team compared to skin-sparing mastectomy. Robotic-assisted NSM (RNSM) has emerged as an alternative approach with promising early results internationally and is currently being evaluated in prospective clinical trials in the U.S. **METHODS:** Two prospective multi-center trials to evaluate the safety and effectiveness of RNSM in the U.S. for patients at high risk for breast cancer (prophylactic trial; NCT03892980) and those with early-stage breast cancer (therapeutic trial; NCT05720039) have been approved by the FDA and are actively accruing. The prophylactic trial is a single-arm trial that will assess the ability to perform NSM robotically without converting to open and the incidence of intra- and post-operative adverse events (AEs) through the 42-day post-op period. Eligible patients include those with BMI < 30, bra size ≤ C cup, ptosis ≤ grade 2, and no previous breast surgery with a goal to enroll 145 subjects. The therapeutic trial for cancer is a two-arm, randomized (1:1) trial comparing robotic to conventional open approach. Endpoints include the rate of a positive surgical margin, conversion to open surgery, and AEs through 42 days post-op. Eligible patients are women with BMI < 30, bra size ≤ C cup, ptosis ≤ grade 2, who have a breast cancer diagnosis (clinical Tis-T2 N0) with tumor-skin distance of ≥5 mm and tumor location ≥1 cm from the nipple areolar complex. Neoadjuvant therapy is allowed ≥4 weeks prior to surgery. The goal is to enroll 204 subjects. Both trials will collect data on patient reported outcomes and oncologic outcomes to 5 years. Reconstruction in both trials is either one-stage or two-stage implant-based reconstruction. The therapeutic trial also includes an exploratory assessment to measure surgeon workload. A standardized surgical technique with preclinical training on the da Vinci SP® surgical system is required for each investigator.

EP2

Phase I Study to Evaluate the Safety and Tolerability of SX-682 in Combination with anti-PD1 as Maintenance Therapy for Unresectable Pancreatic Adenocarcinoma (NCT04477343)

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BACKGROUND: A diagnosis of pancreatic ductal adenocarcinoma (PDAC) comes with a poor prognosis, in part, related to the late presentation of the disease when it is typically unresectable. Current regimens are associated with median survival of less than one year and are typically associated with toxicity that limits the duration of treatment. If patients tolerate first-line treatment and are without disease progression, there is little guidance for optimal treatment in the "maintenance" setting of unresectable disease. The development of standard treatment for PDAC patients after they complete their first-line chemotherapy without evidence of disease progression is an urgent unmet need. Our group has previously presented data demonstrating synergistic effects of CXC chemokine receptor-2 (CXCR2) inhibition and anti-PD1 in a pre-clinical model. This is based on previous work that showed inhibiting CXCR2 will block in vivo migration of myeloid derived suppressor cells (MDSC) into the tumor microenvironment (TME). We theorize that by inhibiting MDSC migration, effector T-cells can provide enhanced anti-tumoral effect in the PDAC TME. Herein, we present a phase 1 study to determine the safety and tolerability, and the recommended phase 2 oral dosing of the CXCR1/2 inhibitor SX-682 as a maintenance therapy in patients with unresectable PDAC. **METHODS:** The is an open-label, Phase I trial evaluating the combination of SX-682 and anti-PD1 immunotherapy. Patients must complete at least 16 weeks of first line chemotherapy without disease progression per iRECIST. Baseline and on-treatment biopsies are required. The primary end point is the maximum tolerated dose (MTD) of SX-682 using Bayesian optimal interval design, with a target dose limiting toxicity of 30%. Secondary end points include steady-state plasma levels at the MTD, and progression free survival from initiation of maintenance therapy. We plan to explore the immunophenotypic and stromal changes of the TME before and treatment (from required biopsies). Patients were included If they had biopsy confirmed PDAC and have completed 16 weeks of first line chemotherapy, with or without radiation therapy. Patients must have an ECOG score of 0-1 and have an anticipated life expectancy of >12 weeks. Patients are excluded if they have used an immunotherapy within 4 weeks of enrollment, have known autoimmune disease, or are taking immune modulating therapies. As of 10/10/2025, 19 of 20 evaluable patients have been enrolled in the study.

EP3

Sentinel lympH node biopsy with Indocyanine green in breast cancer after NEoadjuvant therapy (SHINE): A prospective clinical trial

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BACKGROUND: Sentinel lymph node biopsy (SLNB) is the standard for axillary staging in breast cancer (BC), typically performed using technetium (Tc)-99m and blue dye dual tracers. This technique carries drawbacks, including radiation exposure, discomfort from awake Tc injections, and reliance on nuclear medicine facilities. Indocyanine green (ICG), a fluorescent dye visualized under near-infrared imaging, enables radiation-free lymphatic mapping. While effective in upfront breast surgery, its diagnostic performance after neoadjuvant chemotherapy (NAC)—where lymphatic channels may be disrupted—remains undefined. As NAC use expands (20–30% of North American patients with BC), evidence is needed to inform safe adoption of ICG-SLNB in this context. **METHODS:** SHINE is a single-centre, prospective non-inferiority study evaluating ICG-guided SLNB versus standard dual-tracer in Stage I–III invasive breast cancer after NAC. Eligible patients will undergo SLNB using Tc-99m, blue dye, and ICG injected into the ipsilateral breast. A near-infrared imaging system will identify ICG-fluorescent sentinel nodes (SNs), and all SNs will be retrieved and pathologically assessed per institutional protocol. Exclusion criteria include inflammatory breast cancer, prior axillary surgery/radiotherapy to the ipsilateral breast/axilla, and persistent clinical nodal positivity after NAC. The primary outcome of this study is non-inferiority of ICG SLNB compared to dual-tracer in post-NAC treated breast cancer patients. This will be assessed using SLN detection rates and SLN characteristics (hot/fluorescent /blue). Sensitivity and accuracy of SLN identification with ICG will be calculated and compared to standard of care dual tracer SLN mapping in the same patient. Secondary outcomes include safety, comparative costs, and patient-reported outcomes (PROs). Adverse events and postoperative complications will be recorded, and patients will complete FACT-B+4 questionnaires at baseline and follow-up to assess breast-specific quality of life, lymphedema symptoms, and treatment-related effects. A cost-minimization and budget-impact analysis will compare dual tracer and ICG-SLNB from hospital and health-system perspectives over 1-, 5-, and 10-year horizons. Current status: Enrolment began September 3, 2025. ClinicalTrials.gov Identifier: NCT06085274. SHINE is the first prospective study to assess the accuracy, safety, patient experience, and economic impact of ICG-SLNB in the neoadjuvant breast cancer setting.

EP4

Patterns of regional lymph node surgery for Merkel cell carcinoma

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INTRODUCTION: Merkel cell carcinoma (MCC) is a rare and aggressive cutaneous malignancy. Regional lymph node (RLN) surgery is an important component of definitive treatment and is considered to have both diagnostic and therapeutic implications. NCCN guidelines recommend sentinel lymph node biopsy (SLNB) for patients with clinically node-negative (cN0) disease, whereas clinically node-positive (cN+) patients should preferentially undergo RLN dissection (RLND) followed by radiotherapy (RT). This study aimed to 1) examine patterns of compliance with guideline-recommended RLN surgery, and 2) assess its association with survival. **METHODS:** The National Cancer Database (2012–2022) was queried for adult patients diagnosed with non-metastatic, primary MCC. Descriptive statistics were performed. Survival probabilities were estimated using the Kaplan-Meier method and Cox proportional hazards regression. **RESULTS:** A total of 11,291 patients were identified. Most patients were treated at academic centers (51%), presented with cT1 (63.3%) or cT2 (24.8%) tumours, and had cN0 disease (79.1%). Overall, 31.2% of patients did not receive any form of RLN surgery (33.2% for cN0, 23.7% for cN+). For cN0 patients, 43.9% had SLNB, 16.1% RLND, and 6.1% had both. In contrast, 52.2% of cN+ patients had RLND, 8.7% SLNB, and 4.9% had both ($p< 0.0001$). Multivariable logistic regression was used to identify variables independently associated with use of any RLN surgery. These included male sex, younger age, lower cT stage, cN+ disease, type of treatment facility (academic or comprehensive community center), negative resection margin, receipt of RT, and no receipt of chemotherapy. Patients who did not receive any RLN surgery had significantly worse overall survival (OS) at 5-years (37.1% [95% CI 35.3 - 39.0]) compared to patients who received any form of RLN surgery (63.4% [62.2 - 64.6], $p< 0.0001$) (Figure). This association remained independently prognostic by multivariable analyses, and each type of RLN surgery had improved OS compared to no RLN surgery, including SLNB only (HR 0.59 [0.55 - 0.63], $p< 0.0001$), RLND (0.73 [0.66 - 0.80], $p< 0.0001$), or both (0.74 [0.65 - 0.86], $p< 0.0001$). Similar trends were observed when analyses were restricted to subgroups of patients with either cN0 or cN+ disease. **CONCLUSIONS:** In the modern era, a significant proportion of patients with primary MCC do not receive RLN surgery, which is independently associated with worse survival. Future efforts should focus on improving guideline-concordant care.

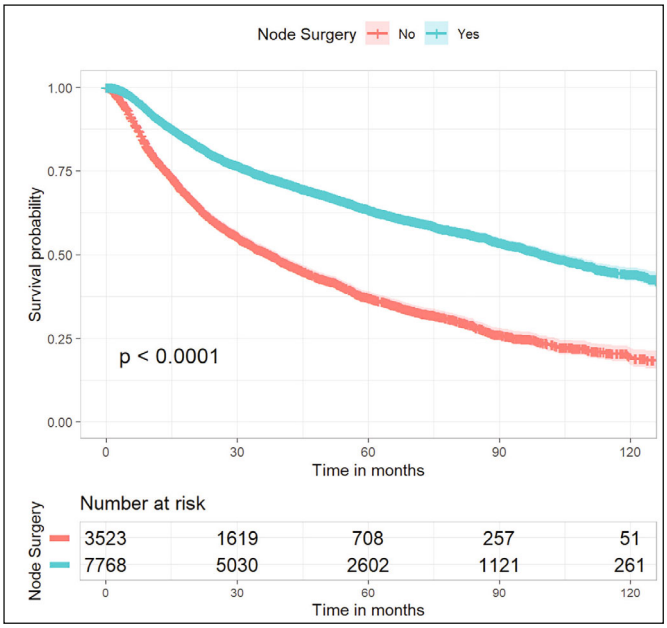

Figure. Overall survival according to receipt of regional lymph node surgery for patients with primary, non-metastatic Merkel cell carcinoma (n=11291) (NCDB; 2012-2022). Kaplan-Meier survival curve = solid line; 95% CI = shaded area.

EP5

Uncovering Prognostic Gene Signatures in Skeletal Muscle of Colorectal Cancer Patients with Advanced Peritoneal Carcinomatosis

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INTRODUCTION: Cancer cachexia is a complex metabolic syndrome characterized by severe muscle loss, reduced physical function, and diminished therapeutic response. Despite its clinical impacts, the transcriptional landscape of cachexia in patients with advanced peritoneal carcinomatosis from metastatic colorectal cancer (pmCRC) remains poorly defined. Our study aims to characterize alterations in skeletal muscle with associated cachexia in pmCRC patients. **METHODS:** Muscle biopsies were obtained from 17 pmCRC patients consented for IRB tissue collection and undergoing cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS/HIPEC), classified as myopenic (n=7) or non-myopenic (n=11) based on skeletal muscle index (SMI cm2/m2). Biopsies were sent for RNA sequencing and differential expression analysis was performed utilizing statistical algorithms within edgeR software. We compared the two cohorts and selected differentially expressed genes (DEGs) with significantly increased or decreased expression (>2-fold change and p-value < 0.05). Enrichment analysis identified gene sets and pathways relevant to cachexia pathophysiology. Last, survival analysis was performed to assess the prognostic value of identified DEGs in predicting patient outcomes. **RESULTS:** Our analysis revealed 231 genes with significant expression changes, including 75 upregulated and 156 downregulated genes in the myopenic group. Enrichment analysis exhibited several pathways involved in immune cell signaling. Overall survival analysis revealed associations with survival outcomes for seven DEGs–six of which have associated prognostic value in colorectal cancer or other cancer variants (figure attached). High expression of two DEGs and low expression of the remaining prognostic genes were linked with poor survival in our patient cohort. **CONCLUSIONS:** Our study highlights molecular features of cancer-induced cachexia in pmCRC and evaluates the relationship between transcriptional changes in skeletal muscle and clinical outcomes, including overall survival. We identified several potential diagnostic and prognostic biomarkers that could serves as tools to inform therapeutic strategies for patients with this disease.

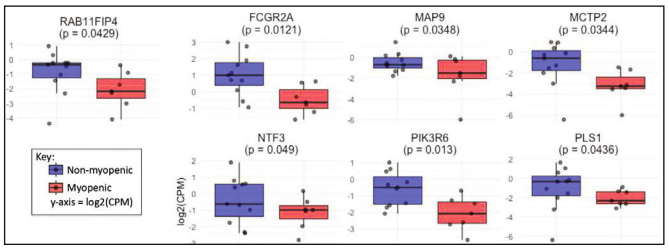

Figure. Kaplan-Meier Analysis of Differentially Expressed Genes with Known Prognostic Value in Other Cancer Variants

EP6

Geographic Divide in Melanoma: Survival Gaps for Rural Patients

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INTRODUCTION: Previous research has revealed rural disparities in cancer incidence and mortality, including melanoma. Current research focuses mainly on differences at the state level. We aim to investigate disparities in melanoma outcomes in the United States, at the national level, based on rural residency and determine potential causes. **METHODS:** We analyzed data from melanoma patients from 2004 to 2021 using the National Cancer Database (NCDB). Descriptive statistics were used to generate demographic, clinical, and treatment details. Univariate and multivariate cox regression were used to analyze overall survival, while Chi square and ANOVA were used to determine differences in demographics stratified by county population. **RESULTS:** A total of 561,084 patients with melanoma were included. When controlling for age, sex, race, Charleson-Deyo comorbidity score (CDCC) score, insurance status, median household income in patient's zip code, mean distance to treating hospital, and tumor stage, we found that rural residency did not decrease overall survival. When only controlling for age, sex, and tumor stage, rural residency was found to decrease survival (HR = 1.20; 95% CI = 1.23 – 1.27; p< 0.01). 5-year survival for patients from a metropolitan (metro) county, rural county adjacent to a metro county, and rural county not adjacent to a metro county decreased from 77.9% to 73.3% to 72.1% respectively (p-value < 0.01). When compared to metro counties, rural melanoma patients had a smaller proportion of black patients and patients with private insurance, and a larger proportion of: CDCC score greater than zero, Medicaid, Medicare, other government insurance, no insurance, and lower income zip codes. Rural patients were more likely to have advanced disease (8.18% vs 6.31%, p< 0.01), not receive treatment (1.58% vs 1.16%, p< 0.01), travel longer distances for treatment (89.5 vs 22.3 miles, p< 0.01), and have brain metastasis at presentation (1.03% vs 0.62%, p< 0.01). No difference was observed in patient age or days from diagnosis to surgery between metro and rural counties. **CONCLUSIONS:** Rural residency was associated with advanced disease at presentation and decreased survival in melanoma patients, suggesting a delay in diagnosing melanoma in rural patients. Even once diagnosed, melanoma patients from rural counties receive treatment at a lower rate than their metro counterparts. Our study highlights the need for continued effort to increase access to primary care in rural counties and increase melanoma awareness and education.

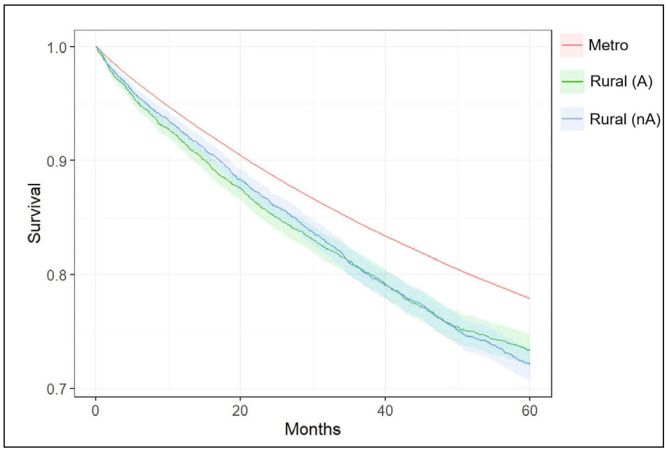

Figure. Kaplan Meier curve of patients from metropolitan county, rural county adjacent to a metro county, and rural county not adjacent to a metro county

EP7

Feasibility of creating a multi-institutional, AI-powered research registry for patients with peritoneal surface malignancies: A new method for conducting national prospective clinical trials for rare cancers

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INTRODUCTION: Peritoneal surface malignancies (PSM) are aggressive cancers with variable treatment approaches and conflicting societal guideline recommendations. Disagreements in optimal treatment strategies stem from PSM being significantly understudied due to its rarity and lack of standardization across clinical trials. This study evaluates the feasibility of creating a multi-institutional, patient-derived PSM registry using an AI-enhanced platform to conduct retrospective and prospective analysis of patients with PSM from across the country. **METHODS:** Regulatory steps include institutional review board (IRB) approval and signing of a business associate agreement, business contract, and a data addendum with the HIPAA-compliant data processing group. A national PSM consortium was established to create a network of providers treating PSM patients. Providers refer interested patients with PSM to our institution where our team obtains consent for inclusion in the registry. Patient data is then extracted from the National Health Exchange into the HIPAA-compliant data-processing platform per regulations from the Trusted Exchange Framework and Common Agreement (TEFCA) (Figure 1). **RESULTS:** Participating providers refer patients to our study team and receive de-identified study cohort summaries of their patients. Providers can also join the registry's steering committee to participate in study design and data analysis. In line with TEFCA laws, patients undergo a thorough consenting process through both a research consent and Individual Access Services (IAS) consent with CLEAR for identity verification. Data extraction and analysis are optimized through HIPAA-compliant AI-algorithms which convert unstructured data from medical records and provider notes into structured data. This reduces manual labor and allows for real-time updates of patient data and the generation of structured results including timelines of chemotherapy and drug regimens, genomic data, operative details, and patient outcomes. **CONCLUSIONS:** We designed a multi-institutional, patient-derived, HIPAA-compliant research registry to conduct prospective studies for patients with PSM. This study not only shows that this type of registry is feasible but also provides a framework that could potentially revolutionize the way that multi-institutional prospective studies are conducted for rare cancers.

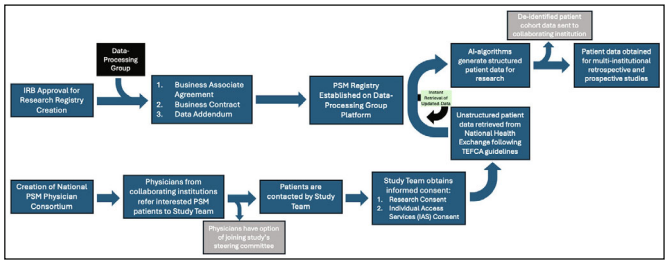

Figure. Workflow for Establishing a Multi-Institutional Research Registry for Patients with Peritoneal Surface Malignancies

EP8

Prognostic significance of signet ring cell predominance in peritoneal metastases of appendix cancer

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INTRODUCTION: Signet ring cells (SRC) are a known poor prognostic factor in appendix cancer (AC). However, the prognostic significance of SRC predominance in peritoneal metastases (PM) remains uncharacterized. Given the frequent absence of primary tumor specimens and presentation with advanced disease, we hypothesized that SRC predominance in PM confers additional prognostic value. **METHODS:** We conducted a single-center retrospective study of patients with high-grade mucinous carcinoma peritonei ± SRC (HGMCP±S) who underwent cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS/HIPEC). Cases with pathology reports describing SRCs in PM were reviewed by an experienced pathologist. For each case, 2–5 slides per specimen with SRCs were examined in 5–10 representative high-power fields. SRC predominance was defined as an estimated proportion of SRC > 50% of tumor cells. Patients were categorized as: >50% SRC (at least one metastatic site with SRC predominance), < 50% SRC (SRCs present without predominance), and No-SRC (control). Cox regression was used to compare progression-free (PFS) and overall survival (OS) after CRS/HIPEC. **RESULTS:** Among 198 patients: 18 had >50% SRC, 25 had < 50% SRC, and 155 had No-SRC. Groups were balanced by age, sex, and peritoneal cancer index (PCI). Median PCI was 32 (IQR: 14-37). Incomplete cytoreduction (CC-2/3) occurred in 50.0% (n=9) of >50% SRC, 44.0% (n=11) of < 50% SRC, and 29.7% (n=46) of No-SRC (p=0.107). Neoadjuvant chemotherapy was more common in SRC groups (>50% SRC: 72.2% [n=13], < 50% SRC: 48.0% [n=12], and No-SRC: 39.4% [n=61], p=0.022), with no significant differences in adjuvant chemotherapy use (p=0.235). Median PFS was 12 (95%CI: 5-16), 19 (95%CI: 7-50), and 43 (95%CI: 31-87) months for >50% SRC, < 50% SRC, and No-SRC, respectively. Having >50% SRC was associated with worse PFS (HR: 2.81 [95%CI 1.33–5.95], p=0.007). Median OS was 13 (95%CI: 9–18), 15 (95%CI: 10–55), and 53 (95%CI: 40–93) months for >50% SRC, < 50% SRC, and No-SRC, respectively (Figure 1). After adjusting for age, PCI, and CC-2/3, both >50% SRC (HR: 3.68 [95%CI: 2.10-6.44], p< 0.001) and < 50% SRC (HR: 2.34 [95%CI: 1.44–3.82], p=0.001) remained independently associated with worse OS. In patients with achieved CC-0/1, worse OS was observed in >50% SRC group (HR: 4.27 [95%CI 1.98 – 9.20], p< 0.001). **CONCLUSIONS:** SRC predominance in PM from AC is independently associated with significantly worse survival outcomes. These findings support incorporating SRC quantification into pathology reporting and highlight the need for further studies to refine SRC-associated prognostication.

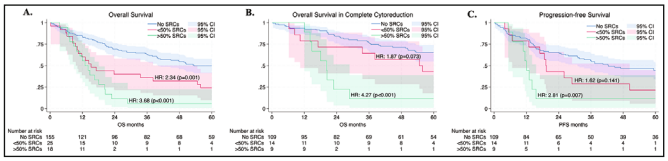

Figure 1. Kaplan-Meier (A) overall survival for the entire cohort, (B) overall survival for patients with complete cytoreduction (CC-0/1), and (C) progression-free survival for the entire cohort of high-grade appendix cancer patients after CRS/HIPEC by signet ring cell prevalence in peritoneal metastases: No SRCs, 50% SRCs.

EP9

Targeted Delivery of IL12 in Combination with Hepatic Artery Infusion Pump Therapy for Patients with Adrenocortical Carcinoma Liver Metastases

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BACKGROUND: Adrenocortical carcinoma (ACC) is a rare, aggressive malignancy with limited treatment options and dismal prognosis, particularly in patients with liver-dominant metastases. Locoregional therapies such as hepatic artery infusion pump (HAIP) therapy, which delivers high-dose floxuridine to the tumor while limiting systemic toxicity, have demonstrated efficacy in colorectal liver metastases but remain underexplored for patients with ACC liver metastases (ACCLM). Tumor doubling times for ACCLM are significantly elevated and ACCLM organoids demonstrate reduced sensitivity to standard chemotherapies, suggesting a potential role for HAIP therapy. NHS IL-12 is a novel antibody drug conjugate that localizes to areas of tumor necrosis to deliver IL-12 and potentially alter the tumor immune microenvironment. Early results with HAIP plus NHS IL-12 in patients with metastatic colorectal cancer have yielded promising results. Reports of responses for ACCLM to HAIP therapy coupled with an efficacy signal for immune checkpoint inhibition in patients with metastatic ACC provide the rationale for evaluating this multimodal approach. **METHODS:** This is an open-label, single-arm, non-randomized Phase II trial conducted at a single center. Eligible patients must have histologically or cytologically confirmed metastatic ACC with liver-dominant disease, and, if present, resectable extrahepatic intra-abdominal metastasis. Any pulmonary metastasis or nodules must be stable for a minimum of 3 months prior to enrollment. All enrolled participants undergo surgical HAIP placement and complete extirpation of non-hepatic intra-abdominal disease prior to therapy initiation. Patients receive HAIP-delivered floxuridine, subcutaneous NHS-IL12, and systemic gemcitabine and oxaliplatin administered in 28-day cycles. The primary endpoint is objective response rate as determined by RECIST v1.1 criteria. Secondary endpoints include intrahepatic and extrahepatic progression-free survival, overall survival, and assessment of safety and tolerability. A Simon two-stage design is used to evaluate efficacy with a target response rate >30%. The trial is actively recruiting under NCT 05286814, Cohort 3 and has accrued one patient to date.

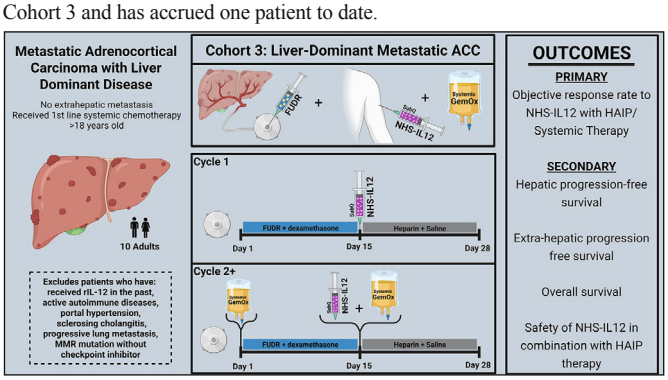

Figure 1. Trial Protocol Summary for NCT 05286814 Cohort 3.

EP10

RECAST DCIS: A novel platform trial combining active surveillance and endocrine therapy for DCIS management

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BACKGROUND: Ductal carcinoma in situ (DCIS) of the breast is a heterogeneous, non-invasive condition characterized by the proliferation of malignant epithelial cells within the duct, with variable risk of progression to invasive disease. Current standard treatment involves surgical resection followed by possible adjuvant endocrine therapy and/or adjuvant radiation. However, a substantial proportion of DCIS may never progress to invasive disease and thus may be overtreated with the current standard of care. Consequently, active surveillance (AS) is emerging as a treatment option for patients with DCIS and has been investigated in prior clinical trials that primarily utilize mammogram as the method of imaging surveillance with vairous recommendations about adherence to endocrine therapy. **METHODS:** RECAST (Re-evaluating Conditions for Active Surveillance Suitability as Treatment) is a Phase II adaptive platform trial studying the efficacy of up front endocrine therapy to identify appropriate candidate for long-term active surveillance versus those who would benefit from standard surgical treatment. Patients with hormone receptor positive DCIS of any grade undergo baseline breast MRI and are randomized to one of four hormonal therapy regimens, including standard endocrine therapy, (Z)-endoxifen, elacestrant or HAV-088 with the potential to offer equivalent or improved benefit with less adverse effects. Serial MRI at 3 and 6 months is then used to evaluate change in background parenchymal enhancement (BPE) and DCIS lesion. Patients deemed low risk based on imaging response have the option to continue AS and avoid surgery and radiation and continue their endocrine therapy for 3 years. The primary endpoint of the trial is to determine whether novel endocrine therapy increases the fraction of patients who will be suitable for long-term AS as measured by the fraction of patients who remain on active surveillance at 7 months compared to control. The trial uses a patient-centered approach and gives all patients a window of opportunity to assess their response as well as medication tolerability to make an informed decision about treatment approach. To date, over 60 patients are enrolled in the trial with an accrual goal of 400. Robust accrual continues at seventeen currently active sites with more sites anticipated to open in the near future. Clinical trials registry number: NCT06075953

EP11

PANCREAS Trial: Subtype-Based Neoadjuvant Therapy Selection in Pancreatic Cancer

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BACKGROUND: Pancreatic ductal adenocarcinoma (PDAC) remains difficult to treat, with 5-year survival for localized disease < 30%. Neoadjuvant therapy is now preferred for patients with localized PDAC, yet a subset of patients progresses during treatment, underscoring the urgent need to optimize first-line regimen selection. Transcriptional subtypes – classical and basal-like – are biologically distinct; recently published COMPASS and PASS-01 trials suggest that basal-like tumors respond poorly to mFOLFIRINOX. The PANCREAS trial (PurIST Classification-Guided Adaptive Neoadjuvant

Chemotherapy by RNA Expression Profiling of EUS Aspiration Samples) is the first subtype-directed precision oncology trial to test whether upfront molecular subtyping can guide neoadjuvant therapy. **METHODS:** PANCREAS is a phase II trial enrolling patients with localized PDAC. Subtyping is performed using PurIST, a single-sample classifier based on the expression of eight gene pairs, in a CLIA-certified lab. Patients with classical tumors are assigned to mFOLFIRINOX, while those with basal-like tumors are assigned to gemcitabine plus nab-paclitaxel (GnP). The primary endpoint is composite response, defined by radiographic and physiologic measures such as CA19-9 levels and performance status, after two months of subtype-directed therapy. Planned enrollment was 41 patients (27 classical, 14 basal-like). Original inclusion criteria required elevated CA19-9 and resectable or borderline resectable tumors. The trial opened to accrual in January 2021 and underwent an interim analysis by the Data Safety Monitoring Committee in January 2024. At that time, 58 patient samples had been sent for PurIST testing. The median turnaround time for test reporting was 5 business days. The prevalence of the basal-like subtype was 6% (2/33), significantly lower than the anticipated 20% based on previously published reports. The protocol was amended in July 2024 to include patients with normal CA19-9 levels and those with locally advanced PDAC to increase basal-like representation. 39 patients had been enrolled prior to protocol amendment. PANCREAS operationalizes real-time molecular subtyping to direct neoadjuvant therapy in PDAC. Early experience demonstrates feasibility, high assay deployability in routine EUS samples, and the practical challenges of subtype prevalence. Ongoing enrollment under the amended criteria will clarify whether subtype-guided selection improves early composite response and may establish a scalable framework for precision oncology in PDAC. Clinical Trials identifier: NCT04683315.

EP12

Differential Benefit from Immunotherapy in Stage 3 Melanoma

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INTRODUCTION: FDA approvals of adjuvant immunotherapy (IO) for resected stage 3 melanoma were granted from 2015-2019. Data show sex-based differences in IO response. We hypothesized that differences in the benefit of adjuvant IO would be seen across sexes and clinical nodal status. **METHODS:** From National Cancer Database 2015-2022 data, AJCC8 stage 3B/C/D melanoma patients undergoing lymph node surgery were identified. IO administration was assessed and subgroups based on clinical nodal status, age, and sex evaluated. Kaplan Meier estimates were used to evaluate overall survival (OS) amongst upfront surgery patients operated 2015-2021. **RESULTS:** Of 21,657 node-positive melanoma patients, median age 62 (IQR 51-72) years, 62% were male, 96% white, and 13,507 (76%) clinically N0. Neoadjuvant therapy was given to 223 (1%) patients: 197 (88%) IO and 26 (12%) targeted therapy (TT). Among 20,675 upfront surgery patients, 5,724 (28%) were pathologic stage 3B, 13,730 (66%) 3C and 1,221(6%) 3D. Adjuvant TT was administered to 1,263 patients (6%) and IO to 11,887 (58%). Across these 11,887 patients, no sex differences in IO administration were seen, however females < 50 years were significantly more likely to receive adjuvant IO then both females ≥50 years and males (64% vs 55% vs 57%, respectively, p< 0.001). Median follow-up from operation was 3.1 years. Patients receiving adjuvant IO had superior OS: 3-year OS 88% vs 84% for stage 3B, 77% vs 66% for stage 3C, and 63% vs 42% for stage 3D for adjuvant IO vs none, respectively, all p< 0.001, and remained significant when stratified by sex (figure). Amongst 13,015 cN0 patients, OS was higher for patients treated with adjuvant IO across stages 3B (3-year OS 89% vs 84%), 3C (79% vs 69%),3D (65% vs 48%), however adjuvant IO in cN0 females < age 50 did not affect OS (3-year OS 91% vs 90% with and without IO, respectively), and held true across substages 3B (95% vs 97%), 3C (88% vs 85%) and 3D (84% vs 75%), all p NS. **CONCLUSIONS:** For the entire cohort, adjuvant IO for stage 3B/C/D melanoma was associated with an incremental OS benefit that was greater as substage increased. However, subset analysis showed no OS benefit for cN0 females < 50 years. Further investigation is warranted to ascertain whether IO truly confers a survival advantage, particularly to older and male patients, or simply that more fit patients receive IO. This in turn will guide more personalized adjuvant therapy recommendations to optimize melanoma-specific outcomes while minimizing potential treatment-related toxicities.

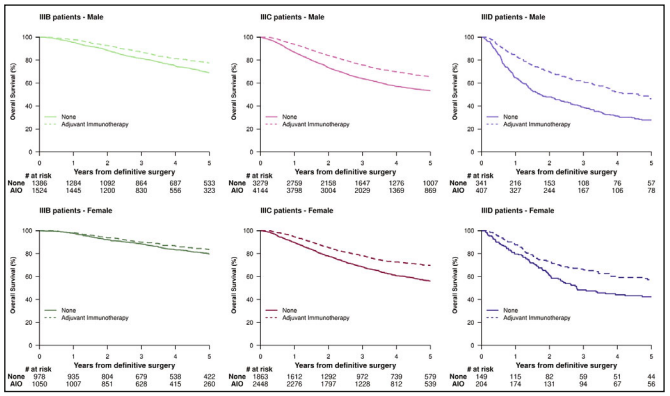

Figure. Overall survival with or without immunotherapy in male and female patients with surgically treated stage 3 melanoma (N=19,412), stratified by substage.

EP13

A reproducible 2D monolayer culture system for murine primary pancreatic ductal cells

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INTRODUCTION: Patient-derived organoids (PDOs) are now widely used to model pancreatic cancer but lack matched "normal" epithelial controls, a critical limitation in studying tumorigenesis, adaptation and therapeutic response. Existing "normal" pancreatic cell lines are immortalized or partially transformed, confounding interpretation. Existing methods in mice are inconsistent and biased towards large or small ducts; we therefore aimed to optimize a method for culturing primary murine ductal cells that could then lay the groundwork for future human-derived primary cell lines. **METHODS:** Duct fragments were isolated from genetically normal murine pancreata using a combination of mechanical and enzymatic digestion, and plated on stiff (2.31 mg/mL) collagen matrices. We varied acinar cell contamination, matrix stiffness, and media composition. Colony formation was quantified, and lineage tracing was performed by injecting Sox9CreER;KrasG12D;Ptenflox/flox;R26RYFP mice with tamoxifen at eight weeks of age. **RESULTS:** Colonies arise from duct fragments and not single cells. The presence of acinar cells reduces colony formation by approximately 3-4 fold, and colony formation is almost completely suppressed when ducts are plated in acinar cell conditioned media. Changing matrix density (within a range of 1.00-2.31mg type I collagen/mL) or media supplementation with FGF-10, RSPO1 and Noggin (factors important for long-term pancreatic duct organoid growth) did not significantly affect initial colony formation. Colonies formed from lineage traced ductal cells were DBA-lectin+, amylase- and YFP+, indicating ductal origin and identity. **CONCLUSIONS:** We describe a robust, reproducible method for culturing primary murine pancreatic ductal cells as 2D monolayers. While optimized in mice, this approach provides a framework for future development of patient-derived "normal" ductal cultures, which could be done in parallel with patient-derived organoids and provide a valuable matched-control system for mechanistic and therapeutic studies.

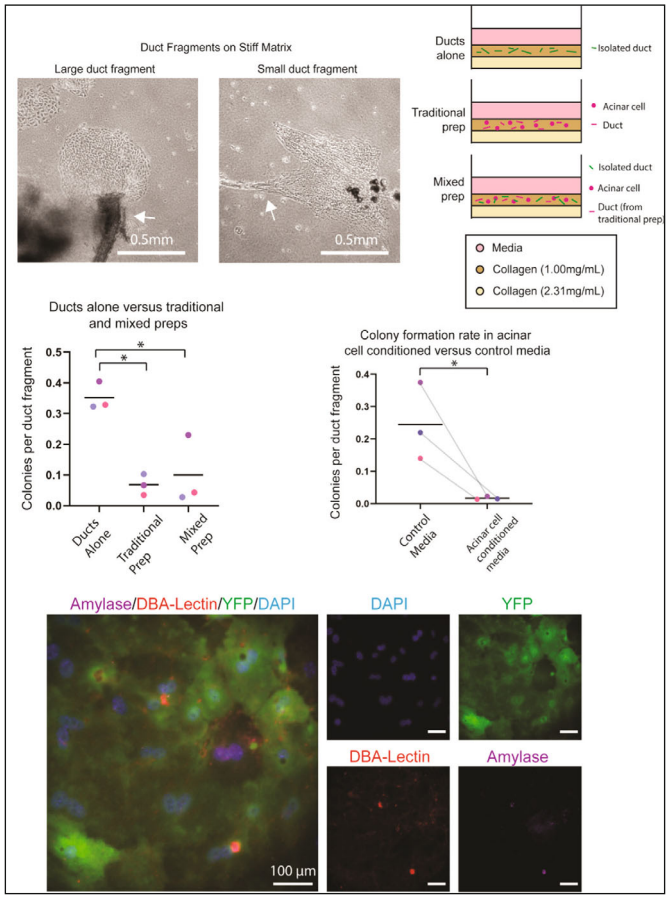

Figure. Primary culture of murine pancreatic ductal cells

EP14

Short and Long Term Oncologic Outcomes of Minimally Invasive Surgery for Gastric Gastrointestinal Stromal Tumors

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INTRODUCTION: Surgical resection remains the cornerstone of curative-intent treatment for gastrointestinal stromal tumors (GISTs). Despite increasing adoption, limited oncologic data support minimally invasive surgical (MIS) approaches. This study evaluated outcomes of MIS versus open resection for gastric GISTs. **METHODS:** We retrospectively reviewed patients who underwent resection of primary or metastatic gastric GISTs without concurrent operations at Mayo Clinic Rochester (2010–2025). Outcomes were compared by surgical approach using χ^2 and Wilcoxon rank-sum tests. Kaplan–Meier curves were compared using the log-rank test, and Cox proportional hazards models were used for multivariable analyses. **RESULTS:** A total of 184 patients (median age 67 [IQR 60–73] years) were included; 11 (6.0%) had metastatic disease at diagnosis. Most underwent laparoscopy (n=81, 44.0%), followed by robotic (n=63, 34.2%) and open (n=40, 21.7%) approaches. 21.7% of the tumors were proximal with no difference in location by approach (p >0.05). Median tumor size was 4.2 cm [IQR 2.7–5.5] for MIS and 4.8 cm [3.2–10.9] for open (p=0.08). 70% of MIS cases had tumors >5 cm (vs 30.0% open; p=0.06). Wedge resection was the most common technique (82.7%), followed by formal gastrectomy (10.6%) and formal sleeve resection (6.7%). Transgastric approaches and intraoperative EGD were performed in 19.7% and 57.4% of cases, respectively. Conversion to open occurred in 1 (0.5%). No intraoperative tumor ruptures occurred, and R0 resection was achieved in 98.9% (100% open vs. 98.6% MIS, p=1.00). Compared to open resection, MIS was associated with a reduction in blood loss (p< 0.001) and length of stay (median [IQR]: 1 [1 – 3] vs. 5 [3 – 6] days, p < 0.001) but no significant difference was observed in operative duration or 30-day postoperative complications (both p >0.05). Median follow-up was 41 months. After excluding n=11 patients who presented with metastatic disease, the 3/5-year PFS was 97.2%/95.0% for MIS vs. 92.3%/85.7% for open (p=0.24). Three/five-year OS was 94.5%/89.9% for MIS vs. 85.4%/79.8% for open (p=0.33) (Figure). On multivariable analysis, adjusting for age, sex, BMI, tumor size, and grade, the surgical approach was not associated with differences in PFS (HR 0.44, 95% CI 0.11–1.77, p=0.25) or OS (HR 0.56, 95% CI 0.18–1.80, p=0.33). **CONCLUSIONS:** Minimally invasive resection for gastric GISTs is safe and oncologically sound, achieving equivalent short and long-term oncologic outcomes compared to open surgery. These results support the adoption of MIS as a standard approach for most gastric GIST tumors.

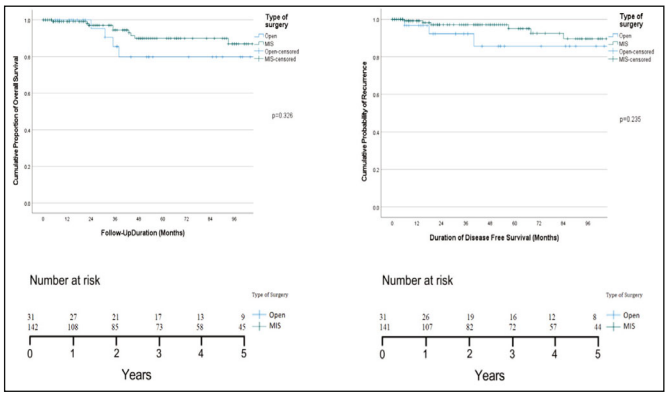

Figure. Kaplan–Meier Curve showing equivalent overall survival and progression free survival among gastric GIST patients by surgical approach.

EP15

Understanding Values Elicitation Among Surgical Oncologists: "It depends on the situation"

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INTRODUCTION: Eliciting and incorporating patient values into decision-making is a key aspect of person-centered care, particularly in high-stakes contexts like surgical oncology. While values elicitation helps identify patient preferences and frame decisions, little is known about how surgical oncologists engage patients in discussions about what matters most to them. **METHODS:** A qualitative interview study was conducted among 14 surgical oncologists. Participants completed a semi-structured interview exploring how they elicit, interpret, and integrate patient values into surgical cancer care, and what barriers, facilitators, and system-level factors influence these conversations. Qualitative content analysis was used to identify themes. **RESULTS:** Participants (n=14) were predominantly male (71%) and non-Hispanic White (86%), with representation across the U.S. South (n=4), Midwest (n=4), Northeast (n=2), West (n=1), and two international countries including Italy (n=1) and South Africa (n=1). Most surgeons had over 0-5 years of experience (range of 0 to >20 years) and practiced in academic (57%) or community (36%) settings. Clinical specialties included gastrointestinal (36%), hepatopancreatobiliary (36%), breast (21%), endocrine (7%), skin/soft tissue (21%), and gynecologic oncology (1%). Four themes emerged, all reflecting recognition of values elicitation as critical but inconsistently practiced. First, values discussions primarily arose in complex, high-risk contexts such as initial consultations or cancer recurrence, and values were often inferred rather than directly elicited by surgeons. Second, documentation practices were inconsistent and limited by EMR systems that lacked integration for tracking values over time. Third, surgeons reported time constraints as a perceived barrier to in-depth conversations. Finally, even when values were elicited they were rarely incorporated into surgical recommendations, as most surgeons emphasized adherence to the standard of care. Many surgeons expressed interest in improving values-centered communication through protected time, formal training, and more

user-friendly documentation tools. **CONCLUSIONS:** Surgical oncologists recognize the importance of eliciting patient values but report variability in when and how they do so, as well as limitations in documentation practices and incorporation of patient values into surgical recommendations. Participants identified opportunities for system-level support to more consistently elicit and apply patient values across the surgical care continuum.

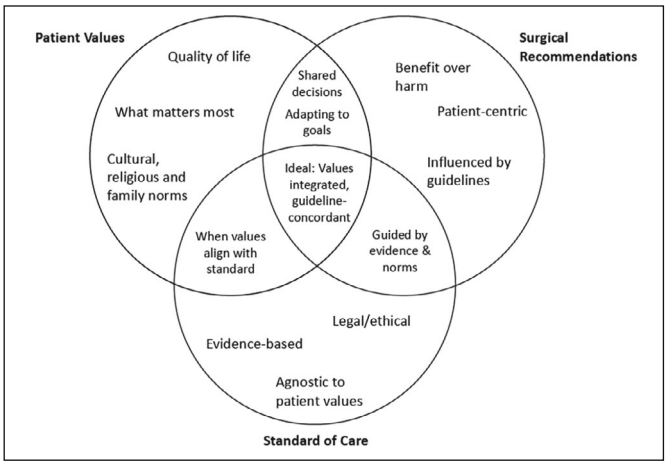

Figure. Where Values Meet Guidelines: The Intersection of Patient Priorities and Surgical Standards

EP16

NRAS mutant melanoma is associated with response to Talimogene Laherparepvec (T-VEC) but not improved survival

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INTRODUCTION: Patient selection for T-VEC in the post-immunotherapy era remains challenging given negative results of MASTERKEY-265. A single-institution study reported TERT mutations were associated with response to T-VEC. Our aim was to identify gene mutations associated with T-VEC response and survival in advanced melanoma patients. **METHODS:** We retrospectively identified patients with Stage IIIB-IVM1c melanoma treated with T-VEC at our institution from 2014-2024, using WebI (web-based reporting and analysis tool) and institutional tissue databank queries. Response was determined from clinical assessment including documented physical exam and imaging. Objective response was defined as complete or partial radiographic and/or clinical response, and non-response included stable and progressive disease, with mixed locoregional response and distant failure categorized as non-response. Overall Survival (OS) was determined at five years from diagnosis of lesions amenable to T-VEC. Mutational data was obtained via Foundry (data extraction platform) query and manually confirmed to source from melanoma tissue. Association with response was determined using Pearson's Chi-squared and Fisher's exact tests and, with OS, using Cox Proportional-hazards model. **RESULTS:** We identified 236 patients; of these, 190 had mutational testing, and 168 had at least one mutated gene (Fig 1). There was no association with response to T-VEC and TERT mutation (n=80, p=0.65). There was an association with response to T-VEC and NRAS mutation, despite NRAS being in the top ten most frequently mutated genes in both responders and non-responders (n=99, OR 2.52 [95% CI 1.23-5.29], p< 0.01). Neither TERT nor NRAS mutations were associated with differences in OS. Notably, concurrent NF1 and CBL mutations were associated with non-response to T-VEC (n=85, OR 0 [95% CI 0-0.813], p=0.026) and worse OS (HR 4.57, p< 0.01). **CONCLUSIONS:** Retrospective review of mutational testing in patients with advanced melanoma treated with T-VEC at our institution in the past decade demonstrated an association of T-VEC response with NRAS but not TERT mutations, which did not reproduce the findings of another single institution. Notably, our response criteria differed by classifying locoregional-only response with distant progression as non-response. Although NRAS mutation was associated with T-VEC response, there was no associated survival benefit. This finding may be attributed to limitations in our survival assessment and/or lack of durability in T-VEC response.

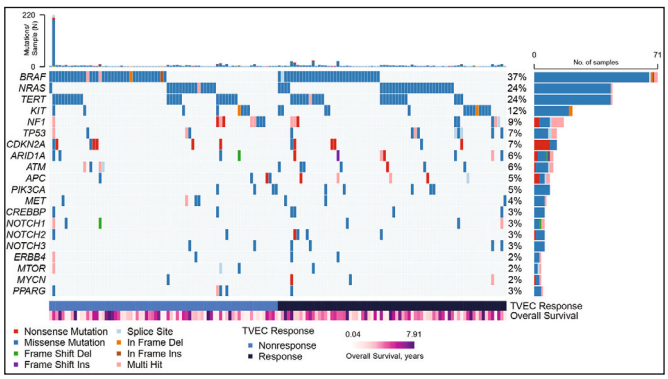

Figure 1. Oncoplot of Response to T-VEC, Overall Survival, and the Top 20 Most Commonly Mutated Genes.

EP17

Comparing traditional versus total neoadjuvant chemotherapy for patients with localized pancreas cancer

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INTRODUCTION: Standard of care for localized pancreatic adenocarcinoma (PDAC) is surgery and 24 total weeks of neoadjuvant and/or adjuvant chemotherapy, with radiation used in select cases. Traditionally, neoadjuvant chemotherapy (NAC) has been delivered for 8-16 weeks, with completion of therapy following surgery. Recently, "total" neoadjuvant chemotherapy (TNCT) has emerged in other gastrointestinal cancers to ensure delivery of all perioperative treatment and optimize outcomes. While TNCT holds the same theoretical advantages in PDAC, data evaluating this approach are limited. **METHODS:** We performed a retrospective analysis of a prospectively maintained database of PDAC patients treated with NAC without radiation from 2015-2024 at a single institution. Patients were stratified by treatment duration: traditional NAC (8-16 weeks) versus TNCT (20-24 weeks), each followed by surgery. Baseline clinicodemographic features and outcomes were compared. The primary outcome was pathological treatment response; secondary outcomes included other pathological features and completion of all perioperative therapy. **RESULTS:** Among 122 patients, 93 received traditional NAC and 29 received TNCT (median 12.7 vs. 23 weeks of preoperative therapy). TNCT patients had slightly larger tumors at diagnosis (3.1 vs. 2.6 cm, p=0.04) and were more likely to be staged as borderline resectable rather than resectable (76 vs. 56%), although the latter did not reach statistical significance (p=0.08). Neoadjuvant

approach was significantly associated with pathologic response (p=0.02). No traditional NAC patients had a complete response, whereas two TNCT patients (7%) had a complete response. Poor or no response occurred in 41 traditional NAC patients (44%) versus only eight TNCT patients (28%). TNCT was also associated with higher completion of 24 total weeks of perioperative chemotherapy (66 vs. 34%, p=0.005). There were no differences in overall nor progression-free survival, although patients with a pathologic response showed improved overall (39 vs. 18 months, p< 0.0001) and progression-free survival (30 vs. 15 months, p=0.0004), regardless of treatment approach. **CONCLUSIONS:** This is the first comparison of traditional NAC versus TNCT for patients with localized PDAC treated with chemotherapy alone. Patients treated with TNCT had improved pathologic response and higher treatment completion despite larger tumors and more advanced local stage at diagnosis. These data support larger prospective studies evaluating TNCT to optimize therapy delivery and potentially improve survival outcomes.

Table 1: Demographic and clinicopathologic variables by neoadjuvant chemotherapy approach

Variable	All (n=122)	Traditional Neoadjuvant Chemotherapy (n=93)	Total Neoadjuvant Chemotherapy (n=29)	P Value
Age, years, median [IQR]	68 [61-74]	68 [61-75]	65 [59-73]	0.29
Gender, n (%)				
Male	66 (54.1)	51 (54.8)	15 (51.7)	0.83
Female	56 (45.9)	42 (45.2)	14 (48.3)	
Race, n (%)				
Caucasian/White	90 (73.8)	73 (78.5)	17 (58.6)	0.13
Black/African American	19 (15.6)	12 (12.9)	7 (24.1)	
Other	7 (5.7)	4 (4.3)	3 (10.4)	
Not Reported/Unknown	6 (4.9)	4 (4.3)	2 (6.9)	
Ethnicity, n (%)				
Non-Hispanic	108 (88.5)	80 (86.0)	28 (96.6)	0.38
Hispanic	1 (0.8)	1 (1.1)	0 (0)	
Not Reported/Unknown	13 (10.7)	12 (12.9)	1 (3.4)	
ECOG performance status, n (%)				
0	64 (52.5)	49 (52.7)	15 (51.7)	0.97
1	47 (38.5)	35 (37.6)	12 (41.4)	
2	5 (4.1)	4 (4.3)	1 (3.4)	
Not Reported/Unknown	6 (4.9)	5 (5.4)	1 (3.4)	
Resectability status at diagnosis, n (%)				
Resectable	48 (39.3)	41 (44.1)	7 (24.1)	0.081
Borderline Resectable	74 (60.7)	52 (55.9)	22 (75.9)	
Neoadjuvant chemotherapy regimen, n (%)				
FOLFIRINOX	92 (75.4)	69 (74.2)	23 (79.3)	0.57
Gemcitabine/nab-paclitaxel	22 (18.0)	18 (19.4)	4 (13.8)	
Both	5 (4.1)	3 (3.2)	2 (6.9)	
Other	3 (2.5)	3 (3.2)	0 (0)	
Tumor size at diagnosis, cm, median [IQR]	2.7 [2.2-3.4]	2.6 [2.2-3.2]	3.1 [2.3-4.3]	0.043
CA 19-9 at diagnosis, median [IQR]	179 [50.5-602.3]	179 [50.5-896]	168 [51-418]	0.43
Pre-operative CA 19-9, median [IQR]	37 [16-110]	40 [19-146.3]	26 [15-49]	0.094
Percent reduction in CA 19-9 (diagnosis to surgery), median [IQR]	74.0 [46.2-87.2]	74.1 [46.4-84.8]	73.8 [46.2-92.3]	0.57
Concerning/indeterminately enlarged lymph nodes at diagnosis, n (%)	37 (30.3)	27 (29.0)	10 (34.5)	0.65
Pathological treatment response, n (%)				
0 (complete response)	2 (1.6)	0 (0)	2 (6.9)	0.022
1 (near complete response)	10 (8.2)	6 (6.4)	4 (13.8)	
2 (partial response)	52 (42.6)	41 (44.1)	11 (37.9)	
3 (poor or no response)	49 (40.2)	41 (44.1)	8 (27.6)	
Not Reported/Unknown	9 (7.4)	5 (5.4)	4 (13.8)	
Pathological T stage, n (%)				
T0	2 (1.6)	0 (0)	2 (6.9)	0.1
T1	35 (28.7)	28 (30.1)	7 (24.1)	
T2	61 (50.0)	48 (51.6)	13 (44.8)	
T3	24 (19.7)	17 (18.3)	7 (24.1)	
Pathological nodal status, n (%)				
Negative	49 (40.2)	35 (37.6)	14 (48.3)	0.39
Positive	73 (59.8)	58 (62.4)	15 (51.7)	
Tumor size on pathology, cm, median [IQR]	2.7 [2-3.7]	2.6 [2-3.5]	2.9 [2.1-4]	0.25
Lymphovascular invasion, n (%)	53 (43.4)	42 (45.2)	11 (37.9)	0.53
Perineural invasion, n (%)	96 (78.7)	76 (81.7)	20 (69.0)	0.19
Lymph nodes evaluated, median [IQR]	20 [15-27]	20 [15-26]	21 [18-27]	0.24
Lymph node metastases, median [IQR]	1 [0-4]	1 [0-4]	1 [0-2]	0.18
Lymph node ratio, median [IQR]	0.048 [0-0.18]	0.067 [0-0.22]	0.037 [0-0.14]	0.16
Resection margin, n (%)				
Negative	80 (65.6)	63 (67.7)	17 (58.6)	0.38
Positive	42 (34.4)	30 (32.3)	12 (41.4)	
Received adjuvant therapy, n (%)				
Yes	68 (55.7)	58 (62.4)	10 (34.4)	0.01
No	54 (44.3)	35 (37.6)	19 (65.6)	
Type of adjuvant therapy, n (%)				
Chemotherapy alone	51 (41.8)	47 (50.5)	4 (13.8)	0.0008
Chemoradiation alone	10 (8.2)	4 (4.3)	6 (20.6)	
Chemotherapy and chemoradiation	7 (5.7)	7 (7.5)	0 (0)	
Total number of perioperative treatment cycles, median, [IQR]	10 [8-12]	8 [6-12]	12 [11-12]	<0.0001

EP18

The Oncopig cancer model, an innovative large animal platform for evaluating novel AI and robotic surgical applications

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INTRODUCTION: Pigs serve as a promising preclinical model for surgical applications given their similar physiology, size, genetics, immunity, and metabolism compared to humans. While pigs are frequently utilized in surgical studies, the inclusion of tumor-bearing pigs would enhance the translatability and clinical significance of these investigations. Here, we propose the Oncopig cancer model as a valuable option for preclinical assessment and training on innovative AI and robotic surgery approaches. **METHODS:** The Oncopig cancer model is capable of modeling a range of tumor types through induced expression of KRASG12D and TP53R167H driver mutations utilizing an adenoviral vector encoding Cre recombinase (AdCre). Several tumor models have been generated through AdCre injection into target organs, including pancreatic, liver, and lung tumors. Tumor progression is monitored using clinically relevant imaging modalities, including CT and MRI scan. Following confirmation of tumor formation, Oncopigs can be utilized for preclinical evaluation of novel AI and robotic surgery approaches, or used to generate a cohort of tumor-bearing animals for surgical training workshops. **RESULTS:** Oncopig tumor formation is successfully achieved across all models within two weeks, demonstrating the efficacy of the established protocols. Tumor sizes vary by organ type, with notable dimensions as follows: pancreatic tumors range from 0.5 to 5.1 cm, liver tumors from 0.5 to 4 cm, and lung tumors from 0.5 to 4 cm. Following tumor induction, Oncopigs can be utilized to test novel oncolytic robotic surgery devices and techniques in the context of real-world surgical conditions, including movement, bleeding, tissue responses, and defined tumor targets. In addition, reproducible induction of tumors in defined locations enables use for AI model training through generation of varied and realistic datasets. Finally, Oncopigs can be utilized to train surgeons on advanced AI and robotic surgery techniques in a controlled setting, allowing for development of skills and confidence prior to use in clinical practice. **CONCLUSIONS:** Use of organ-specific Oncopig tumor models represents an advancement in the preclinical evaluation landscape for AI and robotic surgical oncology. By mimicking human anatomy and physiology, these models provide a robust platform for assessing novel surgical techniques and training AI models and surgeons prior to translation into clinical practice.

EP19

Assessing the quality and reliability of online health information for breast pathology: search engines versus large language models

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INTRODUCTION: With mainstream adoption of large language models (LLMs), more patients are using LLMs for health information. With millions of daily users, LLMs are becoming a primary information source and may eventually replace traditional search engines. Given the growth of LLM use, we aimed to compare the quality and reliability of information from conventional search engines, ChatGPT, and OpenEvidence (OE), a restricted-access medical LLM, across breast pathologies to improve patient education and determine whether patients need access to specialized medical LLMs. **METHODS:** Google was the conventional search engine used; searches were performed for 13 benign, high-risk, premalignant, and malignant breast pathologies. Using the DISCERN tool—a validated measure of health information quality and reliability—two independent reviewers evaluated websites from the first two Google pages, excluding duplicates, ads, and sites requiring payment or login. For each pathology, ChatGPT-4 Omni and OE were asked two standardized questions. Mean total DISCERN, reliability, and quality scores were calculated for each source and compared using one-way ANOVA with post hoc Tukey tests. **RESULTS:** Each diagnosis yielded 10–17 hits and one response from ChatGPT and OE each. Mean total DISCERN scores were 35.9 for Google, 62.2 for ChatGPT, and 64.8 for OE (out of 80). One-way ANOVA revealed highly significant differences among groups ($p < 0.0001$). Tukey test showed significant differences between Google vs ChatGPT ($p < 0.001$) and Google vs OE ($p < 0.001$), but not between ChatGPT and OE. Mean reliability scores were 19.9 for Google, 28.4 for ChatGPT, and 28.3 for OE; mean quality scores were 13.2, 30.5, and 31.1, respectively, both with significant differences between means ($p < 0.0001$). Significant differences were observed between Google and both LLMs for reliability ($p < 0.0001$) and quality ($p < 0.0001$), with no statistically significant difference between ChatGPT and OE for any score. **CONCLUSIONS:** LLMs are a promising resource for patients seeking

information about breast diagnoses, providing more accurate, higher-quality content than search engines. No significant differences were found between ChatGPT and OE, which suggests that open access LLMs may be sufficient, however given OE's higher DISCERN score, specialized LLMs may still have added value. Although limited by few unblinded reviewers, these findings support integrating AI with tools like DISCERN to create reliable, accessible educational materials that enhance patient understanding without excessive medical jargon.

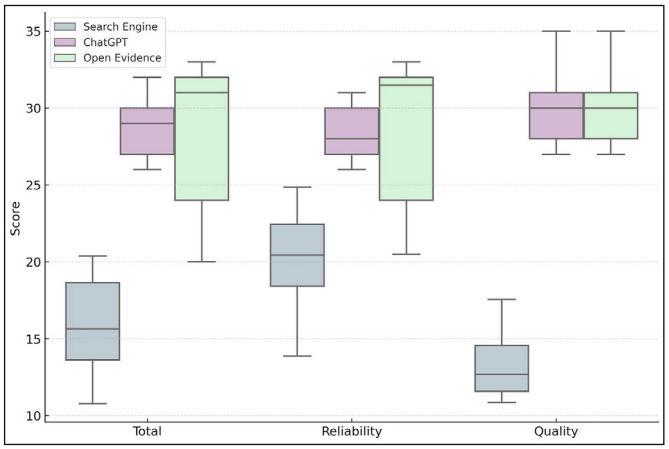

Figure 1. Comparison of DISCERN Scores Between Search Engine vs ChatGPT vs OpenEvidence

EP20

Germline Genetic Risk for Soft Tissue Sarcoma Using Rare Variant Analyses

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INTRODUCTION: Soft tissue sarcomas (STS) are rare mesenchymal neoplasms, comprising 1% of cancer cases annually and most are considered to occur sporadically. Traditional genome-wide association studies (GWAS), using common variants, have yielded limited results for a genetic basis for these rare tumors. In this study, we performed germline genetic analysis of STS patients using techniques designed for rare variants and phenotypes. **METHODS:** This study used whole exome sequencing data from the Healthy Nevada Project from 127 STS patients and 639 matched controls. To investigate genetic associations with sarcoma risk, we conducted a GWAS with gene collapse, which aggregates variants within genes and improves power to detect associations. A ridge regression model was fitted to account for population structure and relatedness, then association tests were performed across the full genotype dataset using predictions as offsets. Firth logistic regression with approximation was applied for rare variants for score test p-values below 0.01. We used Optimal Sequence Kernel Association Test (SKAT-O) for variants grouped by gene into loss of function (LOF), non-benign (NB), a combined category of both and other. The minimum minor allele count was set to 1 to include all ultra-rare variants. **RESULTS:** No genes reached statistical significance in the Manhattan plot (Figure 1) due to the small numbers in the study. However, our analysis noted LOF, NB, LOF/NB and other variants of multiple genes which approached the suggestive threshold of statistical significance and should be tested in further analyses using a larger cohort. These genes are LAP1, an inner membrane protein, and VPS4A, an ATPase enzyme and known tumor suppressor in hepatocellular carcinoma. Both genes are associated with epithelial-to-mesenchymal transition, a key mechanism in melanoma metastasis. We noted several LOF and NB variants of PIK3AP1, which has been implicated as deleterious in somatic genetic studies of STS tumor samples and CNTF, a neurotrophic factor. CNTF has been implicated as a tumor suppressor in neuroblastoma, but has not been previously characterized in peripheral nerve tumors, a subset of STS. **CONCLUSIONS:** We present the first investigation of germline genetic associations with sarcoma risk using computational techniques designed for rare variants and phenotypes. We identify several genes that approach the suggestive threshold for significance. We plan to validate these findings in a hypothesis-driven analysis in a large cohort and provide insight towards population-based genetic risk stratification for sarcoma.

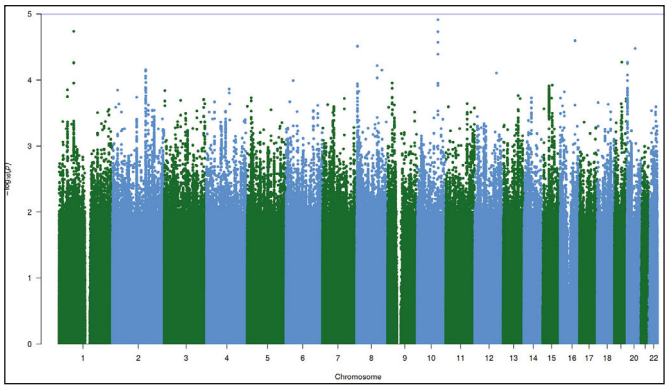

Figure. Manhattan Plot depicting rare gene variants contributing to germline genetic sarcoma risk

EP21

Practice Composition and Sub-Specialization Among Fellowship-Trained HPB Surgeons: Impact on Outcomes Following Hepatopancreatic Surgery

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INTRODUCTION: Sub-specialization and practice composition among surgeons performing hepatopancreatic (HP) surgery may vary based on fellowship training (i.e. Complex General Surgical Oncology [CGSO] or Americas Hepato-Pancreato-Biliary Association [AHPBA]). We sought to investigate variations in HP sub-specialization and practice composition (i.e. HP surgery/overall practice) among HPB surgeons and evaluate the impact on patient outcomes after HP surgery. **METHODS:** Medicare beneficiaries undergoing HP surgery (2016–2021) were identified. Data on surgeon fellowship training (CGSO, AHPBA, or both) were manually extracted and linked to patient-level data. Surgeons were categorized as high vs. low-volume for liver and pancreas surgery. A novel metric, HP practice composition, was defined as the proportion of HP procedures among all surgeries performed by each surgeon during the study period. Associations between HP-specific volume, practice composition, and textbook outcome (TO) after HP surgery were analyzed. **RESULTS:** A total of 20,614 HP procedures were performed by 710 fellowship-trained surgeons (CGSO: n=578, 81.4%, AHPBA: n=111, 15.6%, both: n=21, 3.0%). Most surgeons were low-volume for both hepatic and pancreatic surgery (H-low/P-low: 46.2%), followed by H-low/P-high (24.7%) and H-high/P-high (22.5%) surgeons, whereas only a minority were H-high/P-low surgeons (6.6%). CGSO and AHPBA fellowship graduates had comparable liver and pancreas volume practices (p=0.24). Median HP practice composition among all surgeons was 20.7% (IQR: 10.1-35.7%); remaining surgeries included colorectal/general GI surgery (60.2%), other oncologic surgery (11.8%) and other/uncategorized procedures (7.3%). Surgeons who had completed both CGSO and AHPBA fellowships had a higher HP case proportion than CGSO or AHPBA graduates alone (44.7% vs. 20.0% vs 20.8%, p=0.004). Higher HP-specific volume and higher HP practice composition were independently associated with a greater probability of TO after hepatectomy and pancreatectomy (both $p< 0.05$) (Figure 1a-c). Among CGSO graduates, HP practice composition varied significantly by graduating CGSO program, with graduates of five programs having the most concentrated HP practices (Figure 1d). **CONCLUSIONS:** HP case concentration varied markedly relative to fellowship training. Despite greater HP case concentration being associated with improved outcomes, most fellowship-trained HP surgeons maintained broad-based and low volume HP practices.

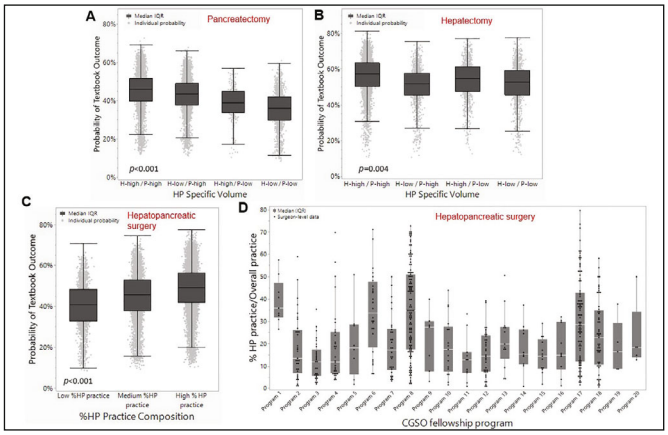

Figure 1.

EP22

Interim Results of a Phase II Clinical Trial of Neoadjuvant Gemcitabine, Cisplatin, and Nab-Paclitaxel for Pancreatic Ductal Adenocarcinoma

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INTRODUCTION: The neoadjuvant approach is favorable in resectable/borderline resectable pancreatic ductal adenocarcinoma (PDAC) to increase the proportion of patients receiving systemic therapy. Current standard regimens, modified Folinic acid, Fluorouracil, Irinotecan, Oxaliplatin (FOLFIRINOX) and gemcitabine nab-paclitaxel (GN), yield a 33% major pathologic response rate [SWOG S1505]. The addition of cisplatin to GN (GCN) achieved a clinical response in 71% of patients with metastatic PDAC in a phase Ib/II trial. We evaluated the efficacy and safety of a biweekly neoadjuvant GCN regimen in resectable/borderline resectable PDAC patients. **METHODS:** This single-arm phase II trial (NCT06423326) evaluates biweekly neoadjuvant GCN in 36 patients with biopsy-proven resectable/borderline resectable PDAC (NCCN, ECOG 0-1, no prior therapy, adequate organ function). GCN (G 800mg/m², C 25mg/m², N 100 mg/m²) is administered IV on days 1 and 15 of 28-day cycle for 4 cycles (Figure 1). The primary endpoint is clinical response (biochemical, radiographic, pathologic or stable disease) leading to surgical resection. Secondary endpoints include resection rates, pathological response and chemotherapy completion. **RESULTS:** As of October 2025, 14 patients were enrolled and 11 were analyzed. The median age was 74 years; 45% were male, and 63% had an ECOG performance status of 0. The median CA 19-9 level was 209 (range 2–1542) before the first cycle and 49.5 (range 2–140) after the fourth cycle of neoadjuvant GCN. Of 11 patients, 8 have completed four cycles, while the remaining 3 are still receiving treatment. Grade 3 adverse events occurred in 63.6% (n=7/11)–constipation (18%), neutropenia (18%), anemia (9%), skin rash (9%), muscle pain (9%) and surgical wound infection (9%); no grade 3 neuropathy, grade 4 toxicities or treatment-related deaths occurred, and 27% required dose reductions. All 8 patients underwent surgical resection, with R0 resection achieved in 87.5% and node-negative status in 37.5%. The clinical response rate was 100%–biochemical (75%), radiographic (75%), major pathologic response (CAP 0–1, 50%) and stable disease (12.5%). **CONCLUSIONS:** Neoadjuvant biweekly gemcitabine, cisplatin and nab-paclitaxel can be safely administered with manageable toxicity in resectable/borderline pancreatic ductal adenocarcinoma patients. The regimen demonstrates promising clinical response and high rates of surgical resection with the potential to outperform the current standard regimens, supporting the ongoing trial and further research.

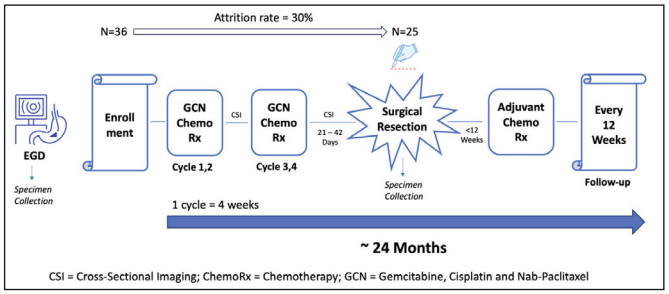

Figure 1.

EP23

High performance of a blood-biomarker test for early detection of pancreatic ductal adenocarcinoma (PDAC) across all stages of disease versus a mixed control population

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INTRODUCTION: Early detection of pancreatic ductal adenocarcinoma (PDAC) has a significant impact on pancreatic cancer outcomes. Despite this, 4 in 5 patients are diagnosed at later disease stage where surgery is no longer an option. There is a need for more accurate and less burdensome testing methodology. We previously conducted two independent clinical validation studies (CLARITI and VERIFI) where PancreaSure, a serum-based early detection test for PDAC, showed high accuracy in differentiating early-stage disease versus high-risk control patients. To further understand the performance of the test across a varied patient population, we set out to determine test performance in Stage III and Stage IV PDAC and in healthy controls. **METHODS:** PancreaSure is a biomarker signature comprising a mathematical summation of ICAM-1, THSB1, CTSD, TIMP1, and CA19-9 values with a predefined cutoff to differentiate Stage I and Stage II PDAC from controls at high-risk due to genetic/familial background. The test was assessed for sensitivity and specificity in detecting Stage III and IV PDAC and in normal, healthy controls in a multi-center, case-controlled and blinded study, AFFIRM. This interim readout of the study also comprise pooled analysis across CLARITI, VERIFI and AFFIRM and was conducted to determine performance across all stages of PDAC and in high-risk and healthy controls. **RESULTS:** This interim dataset comprised 317 Stage I-II and 152 Stage III-IV PDAC cases, 1134 high-risk controls, and 295 healthy controls that were collected from US and European sites. PancreaSure overall weighted sensitivity was 79.8% (73.3-86.4% 95% CI). Sensitivity was 77.6% (73.0-82.2%, 95% CI) in early-stage PDAC and 88.2% (81.8-93.0%, 95% CI) in late-stage PDAC. Overall weighted specificity was 90.8% (87.8-93.8% 95% CI). Specificity was 92.2% (90.6-93.7%, 95% CI) in high-risk controls and 97.7% (95.3-99.1%, 95% CI) in healthy controls. **CONCLUSIONS:** Across a robust clinical experience of almost 1900 patients, PancreaSure showed high accuracy across Stage I-IV PDAC, with improved performance in late-stage disease and in healthy controls. These results support the robustness of the test's performance and can serve as a tool for both early- and late-stage PDAC detection in patients at high and normal risk of pancreatic cancer.

Table. Demographics of PDAC Cases and Controls in the AFFIRM Study

	Stage III + IV (N=143)	Healthy Control (N=303)	Overall (N=446)
Age (Years)			
n	143	303	446
Mean (SD)	71.8 (9.10)	60.8 (8.31)	64.3 (9.99)
Median	74.0	62.0	64.0
Min, Max	49, 92	45, 80	45, 92
Gender, n (%)			
Male	83 (58.0%)	148 (48.8%)	231 (51.8%)
Female	59 (41.3%)	155 (51.2%)	214 (48.0%)
Not Reported	1 (0.7%)	0 (0.0%)	1 (0.2%)
Race, n (%)			
Asian	0 (0.0%)	1 (0.3%)	1 (0.2%)
Multiracial	0 (0.0%)	1 (0.3%)	1 (0.2%)
White	8 (5.6%)	260 (85.8%)	268 (60.1%)
Not Reported/Prefer not to Respond	135 (94.4%)	0 (0.0%)	135 (30.3%)
Unknown/Declined to answer	0 (0.0%)	41 (13.5%)	41 (9.2%)
Ethnicity, n (%)			
Hispanic/Latino	0 (0.0%)	9 (3.0%)	9 (2.0%)
Not Reported/Prefer not to respond	143 (100.0%)	0 (0.0%)	143 (32.1%)
Unknown/Declined to answer	0 (0.0%)	294 (97.0%)	294 (65.9%)
Cystic Lesions, n (%)			
No	143 (100.0%)	0 (0.0%)	143 (100.0%)
Diabetes, n (%)			
Yes	50 (35.0%)	0 (0.0%)	50 (35.0%)
No	93 (65.0%)	0 (0.0%)	93 (65.0%)

EP24

Longitudinal Patient-Reported Outcomes After Minimally Invasive Total vs. Proximal Gastrectomy: Trans-Pacific Multicenter Study, 12-month follow-up

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INTRODUCTION: Proximal gastrectomy (PG) for gastroesophageal junction (GEJ) and proximal gastric adenocarcinoma is increasingly performed, with the expectation that PG mitigates appetite and weight loss seen after total gastrectomy (TG) while modern antireflux reconstructions prevent refractory reflux. However, longitudinal comparative data on symptom burden remain limited. **METHODS:** We conducted an international multicenter, prospective, non-randomized study comparing minimally invasive TG and PG. Patient-reported symptom and interference burdens were collected using a validated 27-item tool (MDASI-GI+) at baseline and 1, 3, 6, and 12 months postoperatively. The primary endpoint was appetite score (0–10 scale). Exploratory endpoints included other MDASI-GI+ domains, body weight, and laboratory measures. **RESULTS:** From 2022 through 2024, 64 underwent gastrectomy (TG 38, PG 26) from five centers: Yonsei, Keio, MD Anderson Cancer Center, Mayo Clinic, and Memorial Sloan Kettering Cancer Center. Among PG, 14 underwent double-flap and 12 double-tract reconstruction. The rates of postoperative complications (19 vs. 24%) and 90-day mortality (0 vs. 3%; both p >0.05) were similar. Five patients were lost to follow-up; MDASI-GI+ completion rates were 95% at 3 months and 82% at 12 months. Median appetite scores were similar between TG and PG (2.0 vs. 2.0 at postoperative month [POM] 3; 1.0 vs. 1.0 at POM 12; p=0.406). Mean reflux scores (2.0 vs. 2.0 at POM3; 1.0 vs. 2.0 at POM12; p=0.237), upper GI composite (1.7 vs. 2.4 at POM3; 1.3 vs. 1.8 at POM12; p=0.113), and total interference (2.3 vs. 1.7 at POM3; 2.0 vs. 1.6 at POM12; p=0.545) were also comparable. Mean body weight loss at POM3 and 12 was 8.0 kg (11.3%) vs. 9.1 kg (11.5%) and 12.1 kg (16.2%) vs. 12.7 kg (15.3%) for TG and PG, respectively (p=0.929). Laboratory values at POM12 were similar: Hb 12.6 vs. 13.0 g/dL, Alb 4.2 vs. 4.3 g/dL, Vit B12 573 vs. 678 pg/dL, Ghrelin 119 vs. 124 pg/mL. **CONCLUSIONS:** At 12 months, PG did not increase upper GI symptoms, including reflux, but failed to show superiority in appetite or weight preservation. TG and PG therefore remain in equipoise. Continued accumulation of longitudinal quality-of-life data is warranted to identify patients who benefit most from PG and refine reconstruction techniques to optimize outcomes.

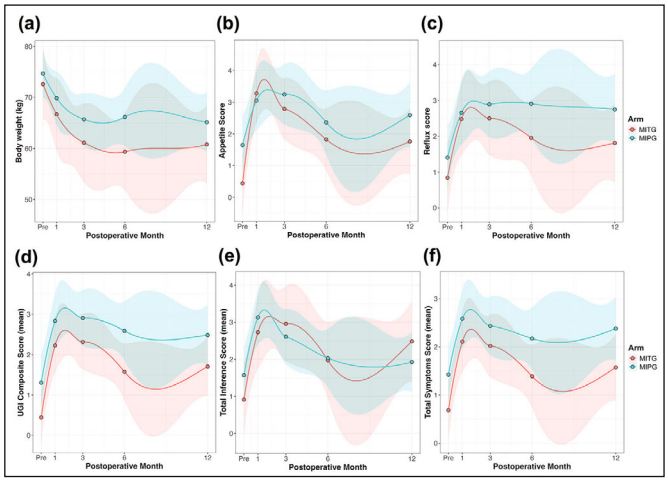

Figure. Mean Symptom, Interference, and Body Weight Trends comparing minimally invasive total (MITG) and proximal gastrectomy (MIPG) cohorts. (a) Body weight, (b) Appetite score, (c) Reflux score, (d) Upper gastrointestinal (UGI) composite score, (e) Total interference score, (f) Total symptoms score. Higher score represents higher symptom/interreference burden.

EP25

Machine learning models using clinicopathologic factors do not improve prediction of recurrence in patients with thin melanoma

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INTRODUCTION: Dermatopathological models for prediction of recurrence risk in thin melanoma use traditional statistical approaches, particularly logistic regression, due to their interpretability and clinical applicability. However, machine learning algorithms offer more sophisticated methods that could enhance prediction of melanoma recurrence. **METHODS:** Pathologic data on all melanoma 2000-2018 in a single center prospective database with Breslow thickness < 0.8mm without ulceration were collected and recurrence was assessed over follow-up (up to 20 years). We compared gradient-boosted decision trees (XGBoost) to traditional logistic regression for predicting recurrence in thin melanoma using 12 clinicopathological features: Breslow thickness, associated nevus presence, regression status, histologic subtype, mitotic index (< 1, 1-2, 3+), tumor-infiltrating lymphocytes (absent, present or brisk), and anatomic site to help us predict the risk of recurrence following excision. Both models were evaluated using standard area under the receiver operating characteristic curve (AUC). A 70/30 train-test split with stratification was employed to ensure balance. **RESULTS:** In 581 patients with resected thin melanoma, median age was 57 [IQR: 43, 69], 89.5% were White, and 44.7% were female with a median follow-up of 4.5 [4.3, 8.8] years. Overall, there were 76 recurrences. Both models demonstrated comparable discriminative ability, with logistic regression achieving an AUC of 0.765 (95% CI: 0.638-0.874) compared to XGBoost's AUC of 0.749 (95% CI: 0.636-0.851). Cross-validation confirmed similar performance (logistic regression: 0.781 ± 0.052; XGBoost: 0.785 ± 0.054), with no statistically significant difference by paired t-test (p=0.754). SHAP analysis revealed that XGBoost prioritized Breslow thickness (mean absolute SHAP: 1.005) and associated nevus (0.731), while logistic regression similarly weighted Breslow thickness (coefficient: 0.711) and associated nevus (-0.803) most heavily, demonstrating concordant feature importance patterns between approaches (Figure). **CONCLUSIONS:** Despite the theoretical advantages of machine learning techniques in capturing non-linear relationships and complex interactions, XGBoost did not outperform traditional logistic regression for predicting thin melanoma recurrence. The marginal performance advantage of logistic regression, combined with its superior interpretability and established clinical acceptance, suggests that traditional statistical methods remain optimal for this application.

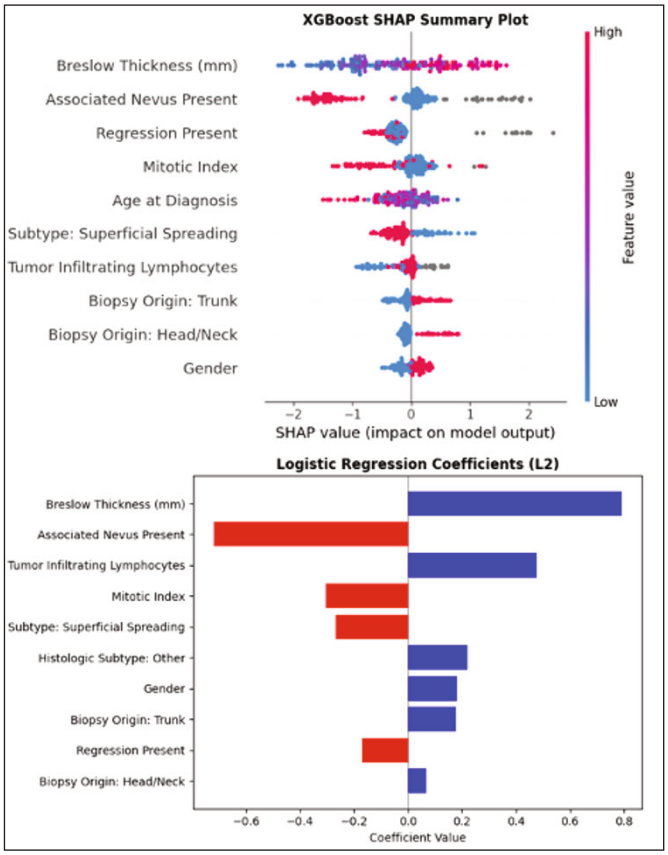

Figure.

EP26

Robotic Surgery for Stage I-III Small Bowel Neuroendocrine Tumors is Associated with Greater Nodal Harvest versus Laparoscopic Surgery

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INTRODUCTION: Treatment of locoregional small bowel neuroendocrine tumors (SBNET) involves primary tumor resection and adequate mesenteric lymph node harvest (LNH), with studies showing comparable LNH between minimally invasive vs open approaches. More recently, robotic surgery (RS) has been adopted in this patient population, offering potential advantages in visualization of nodal disease and mesenteric dissection vs laparoscopic surgery (LS); however, oncologic outcomes of RS have not yet been characterized. We therefore sought to compare LNH of RS vs LS and associated long-term outcomes for SBNETs using a large national cohort. **METHODS:** The National Cancer Database was queried for patients (pts) that underwent RS/LS for stage I-III SBNETs from 2018 – 2022. Clinicopathologic characteristics between the RS and LS cohorts were compared using univariable analysis. Multivariable logistic regression was used to analyze likelihood of undergoing RS and adequate LNH (defined as ≥10 nodes resected). Kaplan-Meier (KM) and multivariable Cox proportional hazards analyses were used to assess 5-yr overall survival (OS) between pts with ≥10 vs < 10 harvested nodes. **RESULTS:** Of 6657 eligible pts, 1359 (20.4%) underwent RS. Compared to LS, pts undergoing RS were younger (62 vs 63 yrs, p< 0.001), had slightly smaller tumors (2 vs 2.2 cm, p< 0.001), and were more likely to have tumors of the ileum (vs jejunum, adjusted odds ratio[aOR]: 2.07, p< 0.001). On univariable analysis, RS was associated with greater LNH vs LS (median 15 vs 11 nodes, p< 0.001). 915 (67%) RS cases had LNH ≥10 vs. 2803 (53%) LS (p< 0.001). On multivariable analysis, RS was associated with increased odds of LNH ≥10 (aOR: 1.48, p< 0.001) vs LS, even when adjusting for tumor size/location. Unadjusted KM analysis was notable for 5-yr OS of 87% for RS vs 85% for LS (p=0.004). Additionally, LNH of ≥10 nodes was associated with 5-yr OS of 88% vs 82% for < 10 nodes (p< 0.001). On multivariable Cox analysis, LNH of ≥10 nodes was associated with reduced risk of mortality (adjusted hazard ratio[aHR]: 0.72, p=0.002), while RS was not independently associated with mortality vs LS (aHR: 0.84, p=0.264). RS was associated with a shorter length of stay vs LS (3 vs 4 days, p< 0.001), but there was no difference in 30-day readmissions (3.9 vs 4.4%, p=0.188) or 90-day mortality (1.4 vs 1.9%, p=0.286). **CONCLUSIONS:** RS was associated with greater LNH in pts with stage I-III SBNETs vs LS. Pts with ≥10 nodes harvested exhibited improved 5-yr OS. RS may offer distinct technical and oncologic advantages vs LS in appropriately selected pts with resectable SBNETs.

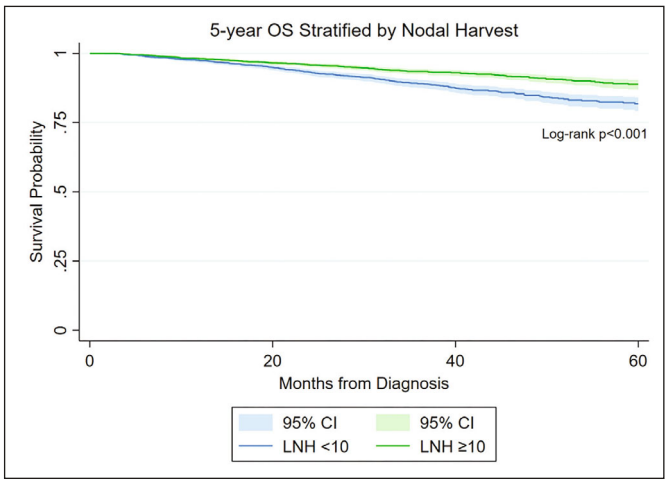

Figure. 5-year overall survival stratified by lymph node harvest.

EP27

Lymphedema after axillary surgery in male breast cancer patients: an overlooked problem?

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INTRODUCTION: The rarity of male breast cancer has resulted in a limited understanding of lymphedema incidence in this population. We examined lymphedema rates and risk factors in a cohort of male breast cancer patients treated with axillary surgery at our institution. **METHODS:** Male patients with stage I-III breast cancer were identified from a prospectively maintained database. A diagnosis of lymphedema was determined using ICD codes. Clinicopathologic characteristics, surgical and adjuvant treatments, and cumulative incidence of lymphedema were examined. Factors associated with lymphedema development were assessed. **RESULTS:** From 2010 to 2020, we identified 20,029 breast cancer cases treated with either sentinel lymph node biopsy (SLNB) or axillary lymph node dissection (ALND); of these, 175 (0.9%) cases were male comprising our study cohort. Median age was 65 years (interquartile range [IQR] 57, 73), and median BMI was 27.8 kg/m2 (IQR 24.9, 31.3). Most patients (83%) identified as White, 4% as Asian, 7% as Black, 2% as Hispanic, and 4% did not specify. The majority (87%) had HR+/HER2- cancer and 93% had ductal histology. Most (95%) underwent mastectomy and 12% received neoadjuvant chemotherapy. SLNB was performed in 65% of patients;

the remainder (35%) had ALND and 16% received nodal radiation therapy (RT) (Table). The majority (75%) presented with cN0 disease; of these, the median number of positive nodes at time of axillary surgery was 0 (IQR 0, 1). Median follow-up was 4 years and 16 patients (9.1%) developed lymphedema; the 5-year incidence was higher in those treated with ALND compared with SLNB (26% [95% confidence interval (CI) 12.1, 37.7%] vs 1% [95% CI 0, 3.1%], p < 0.0001). On multivariable analysis, after adjusting for relevant clinicopathologic factors, ALND was the only factor associated with lymphedema risk (hazard ratio 25.7; 95% CI 2.22, 296, p = 0.009). **CONCLUSIONS:** Lymphedema rates in male breast cancer patients treated with ALND are substantial, and comparable to established rates in female breast cancer patients treated in the same manner; far lower rates were observed among male patients treated with SLNB alone, which mirrors observations in female patients. The limited nodal burden in cN0 male patients suggests that most having upfront surgery can be treated according to AMAROS and SENOMAC, with ALND avoidance in those with 1-2 positive nodes meeting criteria for RT, which will minimize surgical morbidity.

Table. Clinical characteristics of the cohort stratified by type of axillary surgery

Characteristic	Overall	SLNB	ALND
	N=175	N=113	N=62
Age, years	65 (57, 73)	65.5 (57, 73)	64 (56, 72)
BMI, kg/m^2	27.8 (24.9, 31.3)	28.3 (25.6, 31.4)	27 (24.1, 30.7)
Race/Ethnicity			
Asian	7 (4)	4 (4)	3 (5)
Black	13 (7)	7 (6)	6 (10)
Hispanic	3 (2)	3 (3)	0 (0)
White	145 (83)	92 (81)	53 (85)
Other/Unspecified	7 (4)	7 (6)	0 (0)
Histology			
Ductal	162 (93)	101 (89)	61 (98)
Other	13 (7)	12 (11)	1 (2)
Receptor subtype			
HR+/HER2-	152 (87)	102 (90)	50 (81)
HER2+	18 (10)	7 (6)	11 (18)
HR-/HER2-	5 (3)	4 (4)	1 (2)
Clinical T stage			
0	3 (2)	3 (3)	0 (0)
1	91 (52)	64 (57)	27 (44)
2	61 (35)	35 (31)	26 (42)
3	4 (2)	3 (3)	1 (2)
4	7 (4)	2 (2)	5 (8)
Unknown	9 (6)	6 (5)	3 (5)
Clinical N stage			
0	131 (75)	102 (90)	29 (47)
1	29 (17)	4 (4)	25 (40)
2	2 (1)	0 (0)	2 (3)
3	4 (2)	2 (2)	2 (3)
Unknown	9 (5)	5 (4)	4 (6)
Type of breast surgery			
BCS	9 (5)	9 (8)	0 (0)
Mastectomy	166 (95)	104 (92)	62 (100)
No. of lymph nodes removed	5 (3, 17)	3 (2, 4)	21 (16, 28)
No. of positive lymph nodes	0 (0,1)	0 (0, 0)	2.5 (1, 7)
Chemotherapy	74 (42)	31 (27)	43 (69)
NAC	21 (12)	8 (7)	13 (21)
HER2 therapy	15 (83)	6 (86)	9 (82)
Endocrine therapy	141 (83)	90 (83)	51 (84)
Radiation Therapy	55 (31)	19 (17)	36 (58)
Nodal Radiation	28 (16)	9 (8)	19 (31)
Lymphedema	16 (9)	1 (1)	15 (24)

Continuous variables reported as median (IQR) and categorical variables as frequency (N, %). Abbreviations: SLNB, sentinel lymph node biopsy; ALND, axillary lymph node dissection; BMI, body mass index; IDC, invasive ductal carcinoma; HR, hormone receptor; HER2, human epidermal growth factor receptor 2; BCS; breast-conserving surgery; NAC, neoadjuvant chemotherapy

EP28

PLAT expression and Venous Thromboembolism in Pancreatic Ductal Adenocarcinoma

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is associated with the highest risk (>20%) of venous thromboembolism (VTE) among all solid malignancies. Elevated serum tissue-type plasminogen activator (tPA, encoded by PLAT gene) levels are thought to be associated with VTE due to activation of the coagulation cascade. Our lab has observed remodeling of the tumor microenvironment in PDX tumor organoids with elevated PLAT gene expression. We sought to evaluate if elevated PLAT tumor expression is correlated with clinical VTE. **METHODS:** We conducted a retrospective review of 113 patients with resected PDAC at a single institution from 2009-2022 with de-identified tissue available for RNA sequencing. Molecular tumor subtype was determined using PurIST classifier for basal-like and classical tumor subtypes and DeCAF classifier for tumor promoting (pro) and restraining (rest) CAF subtypes. **RESULTS:** High PLAT expression was associated with shorter OS (19.9 months vs 25.4 months, p=0.019, Figure 1), basal-like subtype (p=0.008) and proCAF subtype (p=0.002). PDX tumor organoids with elevated PLAT expression showed an increased invasion index when plated in collagen, expression of basal-like associated genes, increased plasminogen activation by zymography gel and increased ability to degrade surrounding fibrin matrix. Overall rate of VTE was 27% (30/113). VTE was associated with younger median age (61 vs 66, p=0.01) and smaller median tumor size (2.8 cm vs 3.4 cm, p= 0.04). We observed a higher prevalence of VTE in patients who received neoadjuvant chemotherapy, although this did not reach statistical significance (p=0.13). Among VTE patients (N=30), VTE sites were lung 9, extremity 9, and central 12 (portal/SMV/renal). PLAT expression was not associated with VTE prevalence or location (p=NS). VTE prevalence did not differ by PurIST or DeCAF subtypes (p = 1.0). Median overall survival (OS) was similar in VTE vs no VTE patients (p =0.41). **CONCLUSIONS:** We found that high PLAT expression was associated with shorter OS and basal-like and pro-CAF subtypes, supporting its association with increased aggressive tumor biology. Our findings of PLAT association with increase tumor invasion and matrix degradation suggests that PLAT tumor expression may have a mechanistic role in PDAC invasion and metastasis. However, we did not find an association between PLAT expression and VTE, suggesting that the role of PLAT in tumorigenesis may be independent of its role in the coagulation cascade. These findings warrant further investigation in larger prospective cohorts to study the role of PLAT in the tumor progression and VTE risk.

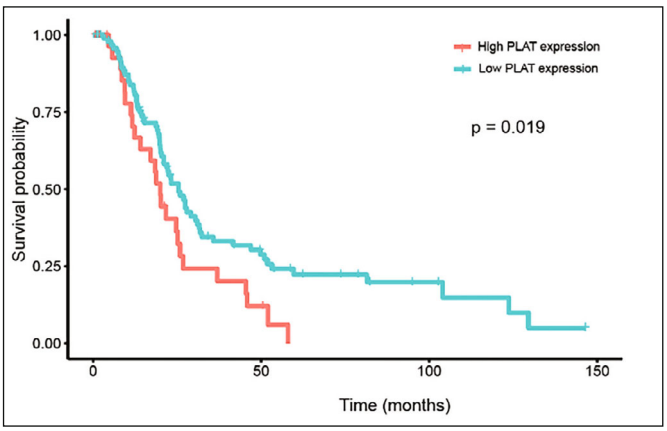

Figure. High PLAT expression is associated with shorter median overall survival (p=0.019). 19.9 months compared to 25.4 months.

EP29

Novel blood immune biomarkers predict liver and brain metastases from melanoma

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INTRODUCTION: Over half of patients with stage IV melanoma develop liver (MLM) or brain (MBM) metastases. Current immune checkpoint inhibitors have substantially improved overall survival, but a considerable proportion of patients progress and ultimately succumb to their illness. Further, current immunotherapies are notoriously less effective for liver and brain metastases. Given the time-sensitive nature of managing MLM and MBM, the identification of robust and clinically validated biomarkers is paramount to facilitate early

detection and guide prompt therapeutic intervention. **METHODS:** With IRB approval, we prospectively collected peripheral blood and tumor specimens from stage IV melanoma patients at baseline, on-treatment, and post-therapy, with concurrent clinical data. Patients were stratified as MLM+ vs MLM- and MBM+ vs MBM-. Longitudinal immune monitoring captured treatment-related dynamics. **RESULTS:** Melanoma liver metastases (MLM+; n = 4) had reduced ICOS+PD1hiCD8+ and elevated CD11c+CD8+ T cells compared to MLM- (n = 8) primary tumors. Consistent trends were observed in peripheral blood (MLM- n = 7; MLM+ n = 16), where MLM+ patients had reduced ICOS+PD1hiCD8+ and elevated frequencies of CD11c+CD8+ T cells. Logistic regression revealed that the peripheral blood ICOS+PD1hiCD8+:CD11c+CD8+ ratio effectively discriminated MLM- from MLM+ patients (sensitivity 85.7%, specificity 100.0%, accuracy 95.7%, AUC 0.97). A predictive model trained and validated on the dataset achieved 100% sensitivity and specificity in the test cohort. In MBM+ patients (n = 4), CD11c+CD8+ T cells were also significantly elevated in the brain metastases compared to MBM- patients (n = 16). Peripheral blood CD11c+CD8+ frequency alone (cutoff = 7.86%) stratified MBM- and MBM+ cases with 100% sensitivity, specificity, accuracy, and AUC. Longitudinal analysis demonstrated that dynamic changes in these peripheral immune populations closely tracked with treatment response over time, highlighting the potential of the immune populations as non-invasive immune biomarkers for early detection, risk stratification, and real-time monitoring in melanoma. **CONCLUSIONS:** These data identify immune alterations in melanoma metastasis—depletion of ICOS+PD1hiCD8+ and enrichment of CD11c+CD8+ T cells. A peripheral blood ICOS+PD1hiCD8+:CD11c+CD8+ ratio discriminates metastatic status, supporting non-invasive biomarkers for early detection and risk stratification. Longitudinal dynamics may enable real-time response and progression monitoring.

Table 1. Logistic regression analysis

Liver Metastasis Logistic Regression	Sensitivity (True Positive Rate)	Specificity (True Negative Rate)	Accuracy	AUC
ICOS+PD1hiCD8+	14.29%	93.75%	69.57%	0.86
CD11c+CD8+	28.57%	93.75%	73.91%	0.84
ICOS+PD1hiCD8+ : CD11c+CD8+ ratio	85.71%	100.00%	95.65%	0.97
LDH	0.00%	100.00%	73.33%	0.50
Albumin	0.00%	100.00%	75.00%	0.50
Brain Metastasis Logistic Regression	**Sensitivity (True Positive Rate)**	**Specificity (True Negative Rate)**	**Accuracy**	**AUC**
ICOS+PD1hiCD8+	0.00%	100.00%	66.67%	0.63
CD11c+CD8+	100.00%	100.00%	100.00%	1.00
ICOS+PD1hiCD8+ : CD11c+CD8+ ratio	0.00%	100.00%	66.67%	0.63

Table 1. Logistic regression analysis was performed to assess the correlative value of biomarkers for liver or brain metastasis. Individually, each biomarker shows limited correlative power. However, when both biomarkers are combined in the model, the correlative value is significantly improved, highlighting the importance of integrating immune parameters for better correlation of liver metastasis. For brain metastasis, CD11c+CD8+ demonstrates the best correlative value.

EP30

Elemental Profiling of Papillary Thyroid Carcinoma Reveals Enrichment of Essential Metals and Novel Accumulation of Cesium and Thallium

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INTRODUCTION: Thyroid cancer is a common endocrine malignancy with approximately 44,000 new diagnoses annually in the United States and a lifetime risk of ~1% in the general population. Increasing evidence suggests that essential trace metals, macrominerals, and environmental metals influence tumor biology through effects on angiogenesis, immune modulation, and cellular transport. However, the roles of environmentally derived heavy metals and endogenous trace elements in thyroid carcinogenesis remain poorly defined. **METHODS:** We quantified 27 metals in resected thyroid tissues using closed-vessel microwave digestion and inductively coupled plasma–mass spectrometry (ICP-MS) with kinetic energy discrimination. Specimens included papillary thyroid carcinoma (PTC; n = 38) and cadaveric thyroids from organ donors (n = 8). Elemental concentrations were calibrated against external standard curves, with scandium, indium, and lutetium serving as internal standards. All quantifications were normalized to the wet tissue weight. All values were $\log_2$-transformed before statistical analysis. **RESULTS:** Of the 27 metals profiled, 19 passed quality control measures (detection in at least 80% of samples). Following Benjamini–Hochberg correction for multiple comparisons, ten metals showed significant differences between tissues based on Welch's t-tests ($q < 0.05$). Thallium, cesium, manganese, magnesium, copper, nickel, iron, tungsten, and zinc were elevated in PTC, whereas cobalt was higher in cadaveric thyroid tissue (Figure 1A). Thallium and cesium showed the most marked elevations in PTC, displaying 12-fold and 6-fold increases, respectively (Figure 1B–C). **CONCLUSIONS:** PTC tumors were enriched in trace metals, including zinc, copper, manganese, and iron, as well as the macromineral magnesium, consistent with the metabolic reprogramming that accompanies tumor growth and proliferation. The pronounced accumulation of thallium and cesium suggests that these may act as potassium mimetics, thereby facilitating tumor uptake. While thallium accumulation in thyroid tumors has long been recognized as Na^+/K^+-ATPase–dependent, cesium's elevation may reflect analogous ionic behavior. This mechanism is speculative and has not been directly tested in thyroid tissue. Finally, concurrent increases in tungsten and nickel implicate potential contributions from environmental exposure. These findings warrant mechanistic validation through targeted transporter assays and environmental exposure assessment.

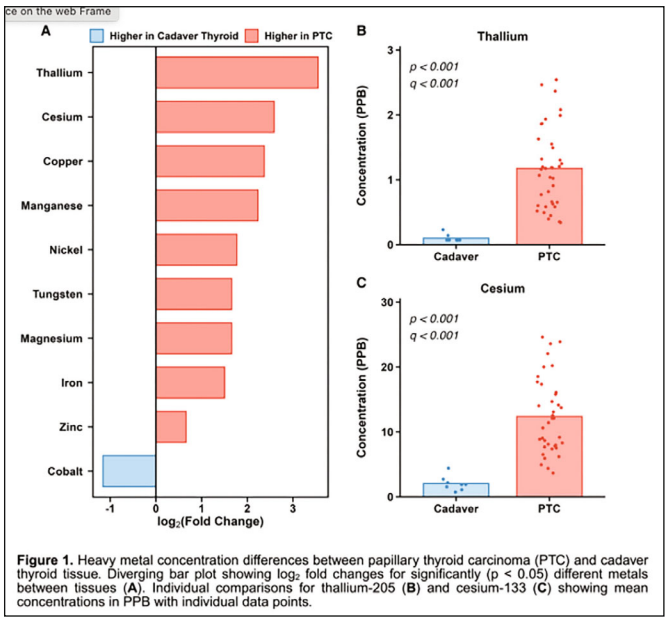

Figure 1. Heavy metal concentration differences between papillary thyroid carcinoma (PTC) and cadaver thyroid tissue. Diverging bar plot showing $\log_2$ fold changes for significantly ($p < 0.05$) different metals between tissues (**A**). Individual comparisons for thallium-205 (**B**) and cesium-133 (**C**) showing mean concentrations in PPB with individual data points.

Figure 1. Heavy metal concentration differences between papillary thyroid carcinoma (PTC) and cadaver thyroid tissue,

EP31

An Interim Analysis of Intra-cavitary Tocilizumab for Immunomodulation in Malignant Effusions and Ascites

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INTRODUCTION: Malignant pleural effusions (MPE) and ascites (MA) are debilitating complications of advanced cancer with few effective treatments. IL-6 signaling fuels local inflammation and epithelial–mesenchymal transition (EMT), contributing to a maladaptive tumor microenvironment. Here, we report interim safety and translational analyses from the RIOT-2 Phase I trial (NCT06016179), which investigates intra-cavitary use of the IL-6 receptor antagonist tocilizumab, as an immunomodulatory strategy to palliate symptoms and overcome tumor immune evasion. **METHODS:** Patients with symptomatic MPE or MA receive weekly escalating doses of intra-cavitary tocilizumab (starting 0.5 μg/mL) via indwelling catheters for four doses. Primary endpoints

are safety and pharmacokinetics (tocilizumab levels by ELISA). Secondary endpoints include flow cytometry for T-cell characterization (subsets, checkpoint expression, cytotoxicity, polyfunctionality, and EMT markers (CD44/CD90, iVIM/ECAD)) and Luminex analysis of serial blood and cavity fluid samples to quantify cytokine expression. **RESULTS:** To date, 9 patients were enrolled, with 4 completing all treatment levels; no drug-related adverse events were noted. Pharmacokinetics confirmed intra-cavitary confinement: tocilizumab was undetectable in plasma but readily measurable in fluid (10–300 ng/mL). Immunological analysis of T-cell subsets revealed low expression of most immune checkpoints but elevated expression of effector markers (4-1BB, Granzyme B, and Perforin), collectively indicating a quiescent immune state. EMT analysis showed 80.6% of epithelial cells exhibited EMT features, with 7.5% undergoing full EMT and lower proliferation. **CONCLUSIONS:** Intra-cavitary tocilizumab, in this interim analysis, appears to be safe and pharmacologically localized. Baseline assessment of the cavitary immunologic milieu indicates a state of quiescence that is potentially modifiable by therapeutic intervention. These first-in-human findings from RIOT-2 demonstrate the feasibility and tolerability of intra-cavitary IL-6R inhibition, as a potential component of future regional immunotherapeutic approaches aimed at remodeling the pleural and peritoneal immune microenvironment.

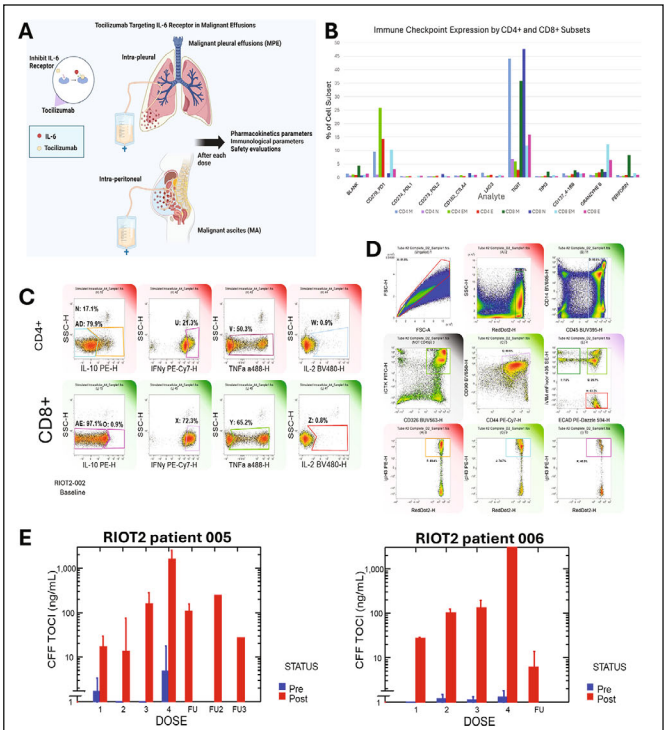

Figure 1: Interim results to the Regional Immuno-Oncology Trial (RIOT)-2 . A) Trial schema. B) . Immunological analysis of CD4+ and CD8+ effector/memory/effector-memory/naïve subsets revealed a low expression of most immune checkpoint molecules (with the exception of TIGIT) and low expression of effector markers, indicating a state of quiescence. C) Polyfunctionality assay of T lymphocytes. D) Detection of EMT. E) Cell free fluid tocilizumab levels of two RIOT2 patients between pre-infusion and post infusion samples.

EP32

Omission of completion axillary dissection in breast cancer patients with three positive sentinel nodes: patterns, predictors, and the role of genomic assays

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INTRODUCTION: Randomized trials show no survival benefit from axillary lymph node dissection (ALND) in patients with 1-2 positive sentinel nodes (+SLNs). Despite guidelines recommending completion ALND (cALND) for ≥3 SLN macrometastases, omission is increasingly considered, reflecting preference for systemic therapy and radiation to minimize morbidity. Data from RxPONDER support genomic testing to guide systemic therapy in postmenopausal patients with up to 3 positive nodes, but its role in surgical decision-making remains unclear. This study evaluates contemporary ALND practice patterns and the influence of Oncotype DX (ODx) among patients with 3 +SLNs. **METHODS:** Using the National Cancer Database (2018–2022), we identified females with cT1–3N0 breast cancer who underwent upfront surgery with sentinel lymphadenectomy (SLNB) and exactly 3 +SLNs. The primary outcome was cALND. Among women ≥50 with HR+/HER2- disease, secondary analyses evaluated ODx use, recurrence score (RS) distribution, and associations with surgical management and residual nodal disease. Temporal trends and predictors of ALND were examined with multivariable logistic regression. The NCDB does not capture nodal metastasis size, precluding distinction between micro- and macrometastases. **RESULTS:** Of 2,988 patients meeting inclusion criteria, 54% underwent cALND, with a mean of 11 additional nodes removed; 54% had at least one additional positive node, with a mean of 2. cALND rates declined from 58% in 2018 to 46% in 2022. Mastectomy was the only independent predictor of cALND on multivariable analysis (OR 1.87, 95% CI 1.54-2.67, p< 0.001). Adjuvant radiation and systemic therapy did not differ between SLNB alone and cALND groups (all p >0.6). Among those ≥50 with HR+/HER2– disease (n=1,983), ODx use increased from 24% to 49%, corresponding to a decrease in cALND rates (49% to 34%, Figure), suggesting surgeons may be using genomic results in axillary management decisions. ODx testing was more frequent in the SLNB alone group (57% v. 43%, p< 0.001). Among tested patients, RS >25 was more common in those undergoing SLNB alone (12% vs 7%, p=0.048). In cALND patients, higher RS did not predict additional positive nodes. **CONCLUSIONS:** In current practice, nearly half of patients with 3 +SLNs are not undergoing cALND, though some may have had micrometastatic disease for which omission is supported. ODx provides valuable information about recurrence risk but is not predictive of residual nodal burden and should not guide axillary surgery. Randomized studies focused on ≥3 macrometastases are needed to define the oncologic safety and impact of cALND omission on morbidity and quality of life.

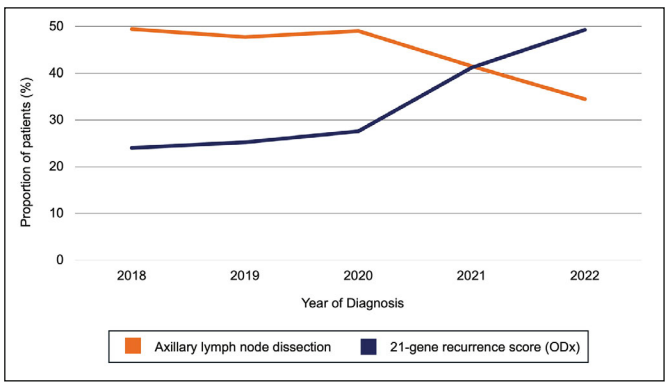

Figure. Trends in ALND and 21 gene-recurrence score testing in patients ≥50 with HR+/HER2- breast cancer and 3 positive sentinel nodes

EP33

Influence of neighborhood disadvantage on stage of diagnosis in cutaneous melanoma patients

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INTRODUCTION: Cutaneous melanoma accounts for the majority of skin cancer deaths. Delays in diagnosis resulting in presentation at an advanced stage is associated with increased risk of mortality and can be a result of a

variety of biologic and patient factors. The role of neighborhood disadvantage in melanoma presentation and prognosis is incompletely defined. **METHODS:** A retrospective review was performed of patients with stage I-IV cutaneous melanoma (cM) treated between 2000-2019 in South Florida using the Florida Cancer Data System (FCDS). Neighborhood disadvantage was defined based on Area Deprivation Index (ADI). Multilevel regression analyses controlling for demographic and clinical factors were performed to assess associations between ADI and late-stage presentation. **RESULTS:** A total of 188,266 patients with mean age 67 years were included. Ninety-three percent were Non-Hispanic white, 2.2% were Hispanic white and approximately 0.5% were non-Hispanic blacks. 33.3% lived in a high ADI area. Compared to non-Hispanic Whites (reference), Hispanic Whites & non-Hispanic Blacks patients had significantly higher odds of late-stage melanoma presentation (OR 2.65, 95% CI 2.12- 3.31, p < 0.001 and OR 5.27, 95% CI 3.70- 7.51, p< 0.001 respectively). On multilevel analysis, patients living in more disadvantaged areas (ADI tertiles 2 and 3 vs. tertile 1) had 25% higher odds of late-stage diagnosis. Additionally, as social and structural factors may differentially influence access to timely diagnosis across racial and ethnic groups, we tested the interaction between race/ethnicity and ADI. However, this interaction was not significant (omnibus p = 0.884), indicating that the effect of neighborhood deprivation on late-stage presentation does not differ meaningfully by race/ethnicity. **CONCLUSIONS:** These findings suggest that living in disadvantaged areas with higher ADI influences stage of presentation and ultimately prognosis. Further studies are needed to further explore the mechanisms behind these findings.

Table 1. Late-Stage Melanoma Presentation (Stage III-IV) by Ethnicity and Area Deprivation Index (ADI)

	OR*	95% CI	p-value
Race/Ethnicity			
Non-Hispanic White		*ref*	
Hispanic Black	4.14	(0.47, 36.1)	0.2
Hispanic White	2.65	(2.12, 3.31)	**<0.001**
Non-Hispanic Black	5.27	(3.70, 7.51)	**<0.001**
ADI Level			
ADI tertile 1		*ref*	
ADI tertile 2	1.27	(1.11, 1.47)	**<0.001**
ADI tertile 3	1.28	(1.12, 1.48)	**<0.001**

*Model adjusted for age

EP34

Cost and Time Implications of Alternative Total Neoadjuvant Therapy Approaches for Gastric Cancer: A Secondary Analysis of a Prospective Clinical Trial

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INTRODUCTION: The role of total neoadjuvant therapy (TNT) for gastric cancer is under investigation. Aside from clinical efficacy, the cost and time implications of alternative TNT sequences are unknown. This study evaluates the differences in institutional and payer costs, as well as patient time toxicity between alternative TNT strategies. **METHODS:** Utilizing data from a single institution phase 1 clinical trial (3/2021-12/2022), patients with localized gastric adenocarcinoma receiving short-course chemoradiotherapy (30 Gy, 10 fractions) then 2 months chemotherapy and surgery (SCXRT+CT) were matched to a cohort who received 2 months of induction chemotherapy then long-course chemoradiotherapy (45 Gy, 25 fractions) and surgery (CT+LCXRT). Institutional and payer-based costs related to radiotherapy, TNT time, healthcare days, and outcomes were compared. **RESULTS:** In the study period, 16 patients underwent SCXRT+CT and 13 underwent CT+LCXRT. Age was 59±12 years, with 66% male and 27% white. Most tumors were cT3/T4 (80%), 45% were cN+, and 86% were poorly differentiated. All patients completed planned radiotherapy and 94% completed intended systemic therapy. There were no differences in patient age, sex, race, ECOG, tumor location, differentiation, or stage (all p >0.05). SCXRT+CT resulted in lower hospital costs ($11,373.31±1,617.77 vs. $22,064.99±4,657.89, p< 0.001) and charges ($43,392.94±4,856.61 vs. $84,769.00±10,876.62, p< 0.001), as well as reduced provider costs ($3,924.34±960.13 vs. $4,573.29±1,025.99, p=0.09) and charges ($14,278.13±2,230.16 vs. $21,234.15±3,687.33, p< 0.001). SCXRT+CT had a shorter TNT duration (110±14 vs. 160±21 days, p< 0.001) with decreased radiotherapy duration (12±1 vs. 34±2 days, p< 0.001) and shorter interval between radiotherapy and chemotherapy (31±7 vs. 72±13 days, p< 0.001). Healthcare days were lower for SCXRT+CT (absolute 19±3 vs. 39±4 days, relative 18±3%TNT vs. 25±3%TNT, both p< 0.001). Hospitalizations (n=3) and ED visits (n=3) were low and comparable between the groups. Following surgery, groups had similar complication rates, hospital stays, and readmission rates (all p >0.05). **CONCLUSIONS:** When compared to conventional sequencing, SCXRT+CT shortens the duration of TNT, lowers both institutional costs and payer expenses, and reduces patient time toxicity. As the role of TNT and its constituent modalities for gastric cancer are investigated, these results emphasize the value-based implications of treatment sequencing.

EP35

Role of Palliative Cytoreductive Surgery for Patients with Peritoneal Carcinomatosis from Lower Gastrointestinal Cancers

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INTRODUCTION: Patients with peritoneal carcinomatosis often suffer from debilitating intraabdominal complications including bowel obstruction, refractory ascites, and/or biliary/ureteral obstruction. Guidelines addressing the role of palliative surgical cytoreduction in patients ineligible for complete cytoreduction remain limited. **METHODS:** We conducted a retrospective review of patients treated between 2004-2025 at one major referral center who underwent cytoreductive surgery (CRS) with or without hyperthermic intraperitoneal chemotherapy (HIPEC), for appendiceal- or colorectal-cancer related carcinomatosis not amenable to complete cytoreduction (completeness of cytoreduction score 2/3). Descriptive statistics were used to characterize patient demographics and summarize surgical and clinical outcomes. Obstruction-free (OFS), ascites-free (AFS), and overall (OS) survival was examined using the Kaplan–Meier method. **RESULTS:** One hundred and thirty-two patients underwent palliative CRS +/- HIPEC, with 20 (15%) originally going to the operating room for curative-intent surgery versus 112 (85%) having known or suspected unresectable disease pre-operatively. The most common reason for incomplete cytoreduction was high overall tumor burden or multiple areas of unresectable tumor (62, 47%), followed by portal (19, 14%), small bowel (19, 14%), or pelvic disease (17, 13%). The most common palliative procedures performed included partial or complete omentectomy (86, 65%), HIPEC (63, 47.7%), bowel resection (63, 48%), gastrostomy tube/gastropexy (60, 46%), abdominal wall resection (49, 37%), and intestinal bypass (27,20%). Twenty-three (17%) patients had major complications (grade ³3), and the median length of stay was 11 days (IQR 9-14). The median OFS, AFS, and OS were 10.2, 62.0, and 13.1 months for patients with high-grade tumors, compared to 30.7, not reached, and 36 months for low-grade tumors (all p< 0.05, Figure 1). The strongest predictors of shortened OFS, AFS, and OS were pre-operation obstruction and high-grade histology. **CONCLUSIONS:** Palliative CRS +/- HIPEC for patients with carcinomatosis not amenable to complete cytoreduction is associated with prolonged obstruction- and ascites-free survival, particularly in patients with low-grade disease. Palliative operations should be considered in carefully selected patients.

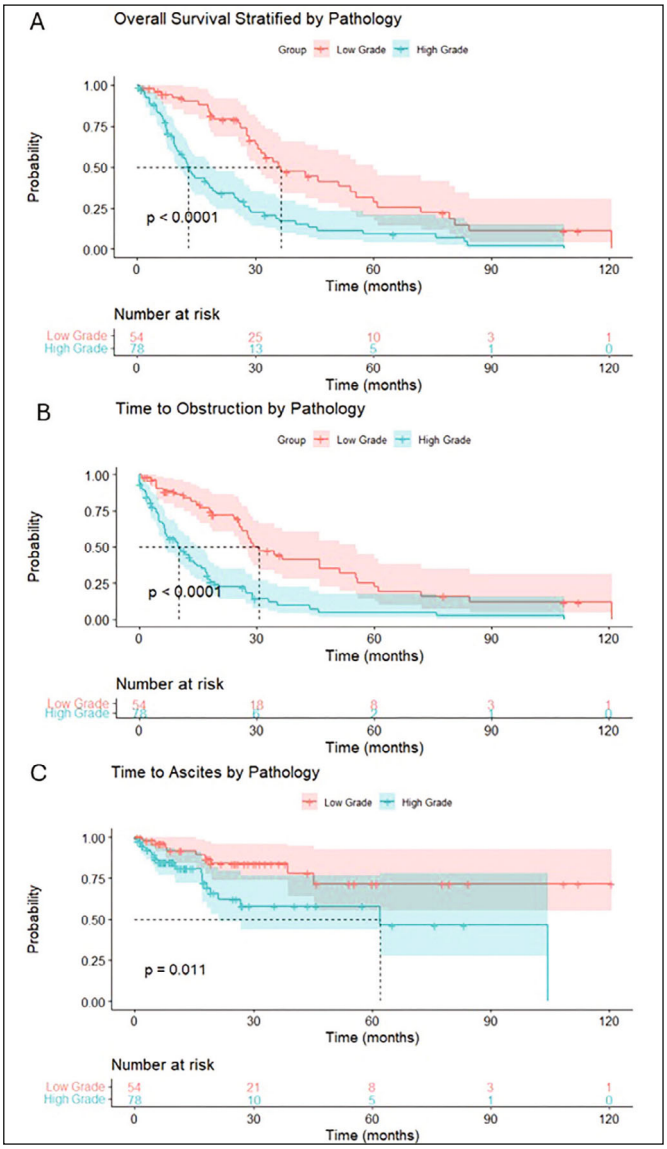

Figure 1. Survival and Symptom-Free Outcomes Stratified by Pathology
Kaplan–Meier (A) overall survival, (B) time to bowel obstruction, and (C) time to ascites according to low-grade versus high-grade pathology.

EP36

Economic hardships and financial distress among cancer patients in Nigeria: baseline findings from the COST-FIN trial

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INTRODUCTION: Low and middle income countries (LMICs), like Nigeria, are projected to account for up to 75% of new cancer cases and 65% of cancer deaths by 2030; this disproportionate cancer burden amplifies financial hardship. COST-FIN is a randomized controlled trial in Nigeria that assesses the impact of a financial navigation program (FNP) on newly diagnosed cancer patients. This study evaluates the association between economic hardships and financial distress in patients enrolled in the COST-FIN trial at baseline. **METHODS:** Baseline data (collected prior to intervention initiation) from COST-FIN were analyzed cross-sectionally. Adults (≥18 years) within six weeks of a new diagnosis of breast, colorectal, or prostate cancer at two tertiary centers completed an 11-item economic-hardship checklist (12-month recall of types of unmet costs) and the 11-item FACIT-COST (score 0–44, higher = less financial distress). Hardship was measured as any hardship (yes/no) and hardship count (0–11). Associations with FACIT-COST were explored using Welch's t-tests (any vs none) and multivariable linear regression of FACIT-COST on hardship count, adjusting for age, sex, cancer type, stage, trial arm, and site. **RESULTS:** Of 148 randomized patients (median age 52 years; 64% female; cancer distribution: breast 64%, prostate 20%, colorectal 16%) 62% reported at least one unmet expense. Some of the most common unmet expenses were transport (33%), meals (31%), and medical consultation fees (30%), while inability to pay health-insurance premiums was rare (5%). Mean FACIT-COST was low at 14.0 ± 3.4, indicating significant financial distress. Patients with ≥1 hardship scored lower than those without any hardships (13.2 ± 3.0 vs 16.0 ± 3.2; Δ = -2.8, 95 % CI -3.9 to -1.7; $p < 0.001$). In the adjusted model, each additional hardship item corresponded to a 0.9-point decrement in FACIT-COST (β = -0.91, 95 % CI -1.18 to -0.64; $p < 0.001$), explaining 29% of the variance in financial distress (model $R^2 = 0.32$). Trial arm, cancer stage, and baseline treatment exposures were not associated with FACIT-COST at the time of enrollment. **CONCLUSIONS:** This study found a high prevalence of economic hardship among patients, with each additional hardship corresponding to increased financial distress at baseline. The findings highlight the burden of indirect costs such as transportation and food as major causes of financial strain in Nigerian patients prior to treatment initiation. Addressing basic unmet needs through interventions like FNPs is critical to alleviating financial toxicity and improving cancer care outcomes in LMICs.

EP37

Verteporfin improves chemotherapy sensitivity for pancreatic ductal adenocarcinoma by disrupting cancer stemness

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INTRODUCTION: Therapy resistance in pancreatic ductal adenocarcinoma (PDAC) is driven in part by cancer stem cell populations and the transcriptional regulator PAF1, which maintains stemness and promotes tumor progression. Targeting this pathway may provide a strategy to overcome resistance. Verteporfin, a clinically available YAP inhibitor, was evaluated for its ability to disrupt PAF1-mediated stemness and sensitize PDAC cells to chemotherapy. **METHODS:** Sensitization and combinatorial synergy studies with verteporfin and gemcitabine, a chemotherapeutic drug, were performed in pancreatic cancer 2D cell cultures and 3D organoid models. Drug screening methods identified verteporfin as a potential PAF1-targeting compound. **RESULTS:** Verteporfin was found to directly target PAF1, leading to a reduction in cancer stem cell populations in PDAC models. Treatment with verteporfin sensitized pancreatic cancer cells to gemcitabine in both cell line and organoid systems, with significant enhancement of chemotherapeutic efficacy compared to gemcitabine alone. Combination treatment induced robust apoptosis, decreased stemness markers (CD44, SOX2, NANOG), and suppressed pathways associated with therapy resistance. Synergistic interactions between verteporfin and gemcitabine were observed in both 2D and 3D models, confirming that verteporfin-mediated PAF1 inhibition disrupts stemness and enhances chemotherapy response. **CONCLUSIONS:** Verteporfin synergistically enhances the efficacy of gemcitabine in preclinical pancreatic cancer models by targeting PAF1 and disrupting cancer stemness. These findings highlight verteporfin as a promising strategy to overcome therapy resistance in PDAC and provide a rationale for future development of PAF1-directed therapies.

EP38

Tumor-Targeted IL-12 (PDS01ADC) with Hepatic Artery Infusion Pump Therapy for Colorectal Liver Metastases: Interim Analysis of a Non-randomized Phase II Trial

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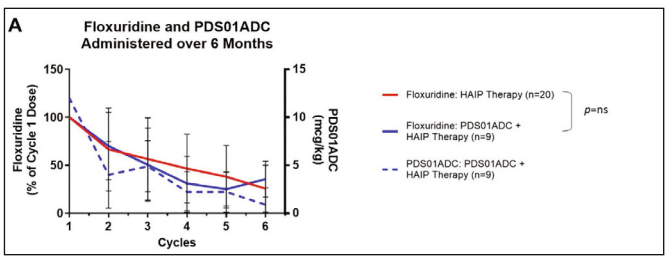
INTRODUCTION: Most patients with metastatic colorectal cancer have microsatellite stable or mismatch repair-proficient tumors, which are resistant to immunotherapy especially in cases of liver metastases. We sought to determine if tumor-targeted interleukin-12 (PDS01ADC) can improve outcomes for patients with colorectal cancer liver metastases managed with hepatic artery infusion pump (HAIP) chemotherapy. **METHODS:** NCT05286814 is a phase II non-randomized trial evaluating subcutaneous PDS01ADC in combination with HAIP floxuridine and systemic chemotherapy (FOLFOX or FOLFIRI) in patients with unresectable microsatellite stable or mismatch repair-proficient colorectal liver metastases previously treated with at least one line of systemic chemotherapy. Primary endpoints for the planned interim analysis were overall response rate and safety. **RESULTS:** Nine patients were included in this planned interim analysis. 78% (7/9) of patients receiving PDS01ADC with HAIP therapy had partial or complete responses at 6 months. Median hepatic progression-free survival for patients receiving PDS01ADC + HAIP therapy was 12.7 months with minimum follow-up of 13.1 months. Grade ≥3 toxicities occurred in 78% but were manageable and did not limit HAIP therapy. No patients developed a biliary stricture within 6 months of initiating treatment. Clinical responders to PDS01ADC demonstrated enhanced peripheral immune activation, including elevated levels of circulating T cell subsets with stem-like features, and increased CD8+ T cell:T regulatory cell ratio in tissue biopsies. **CONCLUSIONS:** Addition of PDS01ADC is not detrimental to HAIP therapy and is associated with both systemic and intratumoral immune modulation. Initial results warrant continuation to full enrollment for further evaluation of clinical and scientific endpoints.



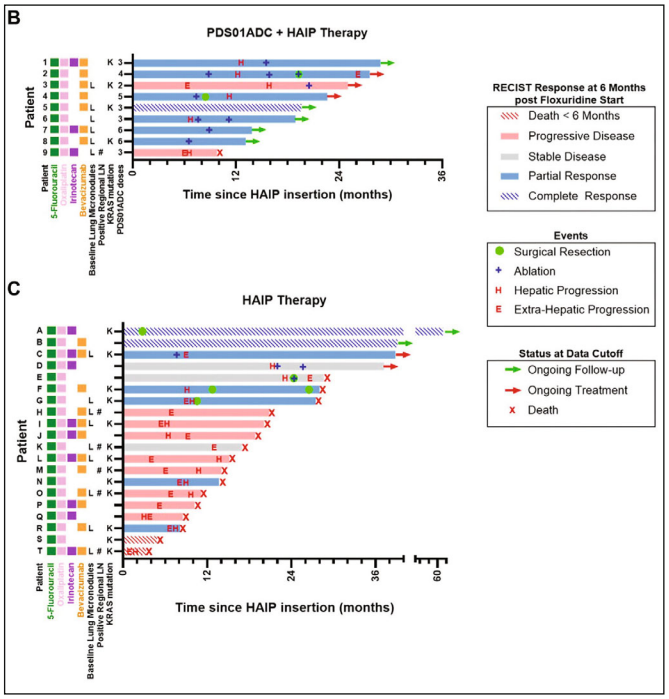


Figure. PDS01ADC administered in combination with HAIP-delivered floxuridine improves RECIST response at 6 months.

EP39

Liver metastases predict poorer outcomes in MSI-H/dMMR colorectal cancer treated with immunotherapy

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INTRODUCTION: Immune checkpoint blockade (ICB) yields durable benefit in microsatellite instability-high (MSI-H) or mismatch repair-deficient (MMR-d) colorectal cancer (CRC), yet responses vary widely. This study sought to identify clinicopathologic predictors of survival, focusing on the impact of liver metastases as a biomarker of poor response. **METHODS:** A retrospective analysis was conducted using MSK-IMPACT patient-level data (April 2015–March 2025). Patients with metastatic MSI-H/MMR-d CRC treated with PD-1, PD-L1, CTLA-4, or combination ICB were included. Overall (OS) and progression-free survival (PFS) were estimated using Kaplan–Meier analysis and compared by log-rank test with 5-year censoring. Predictors of OS were identified via univariate and multivariate Cox regression models in R (v4.3.3) using harmonized clinical, molecular, and metastatic site data. **RESULTS:** Of 277 cases screened, 184 met inclusion criteria (metastatic before ICB, valid OS/PFS). Patients with liver metastases (n=98) demonstrated significantly worse OS (p=0.0003) and PFS (p=0.012) compared to those with other metastatic patterns. On univariate analysis, adverse predictors of OS included liver metastasis (HR 3.1, p< 0.001), CNS metastasis (HR 4.3, p< 0.001), adrenal metastasis (HR 2.8, p=0.004), higher ECOG at ICB initiation

(HR 1.8, p< 0.001), and greater number of metastatic sites (HR 1.3, p=0.008). Treatment with ICB alone following a diagnosis stage IV was protective (HR 0.4, p=0.007). Multivariate analysis confirmed liver metastasis (HR 2.4, p=0.016) and ECOG at ICB initiation (HR 1.5, p=0.01) as independent negative predictors of OS, while CNS metastases (HR 2.8.0, p=0.005) further worsened survival (Figure 1). **CONCLUSIONS:** In MSI-H/dMMR CRC, liver and CNS metastases independently predict inferior survival after ICB. Recognition of metastatic pattern as a prognostic determinant may guide stratification in future immunotherapy trials.

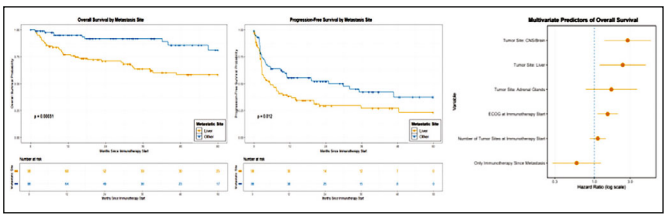

Figure 1

EP40

Pathologic response rates to neoadjuvant PD1 inhibitor monotherapy predict event-free survival (EFS) in metastatic skin cancer patients: A real-world experience

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INTRODUCTION: Results from two prospective randomized trials, one in melanoma patients (SWOG 1801) and one in cutaneous squamous cell carcinoma (SCC) patients (NCT04154943), both demonstrated that neoadjuvant immunotherapy improves event-free survival (EFS) in metastatic skin cancer patients. We sought to define EFS for these patients in a real-world setting, outside of a clinical trial. **METHODS:** We performed a single-institution, retrospective review of a prospectively maintained database to identify patients with stage IIIB -IVC melanoma and stage III SCC. Patients treated with neoadjuvant PD1 inhibitor monotherapy between January 2019-June 2024 with at least 12 months of follow-up or an event were included. The primary end point was EFS, defined as time from diagnosis to recurrence, progression or death. Clinicopathologic characteristics, treatment and adverse reactions were assessed. Kaplan-Meier analysis comparison of EFS using log-rank tests was used. **RESULTS:** Ninety-seven patients met inclusion criteria. 76 (78.4%) were diagnosed with metastatic melanoma, 21 (21.6%) with metastatic SCC. 63 (64.9%) were male, with a median age of 67 (IQR 55-76). Cemiplimab was given to 19 patients (19.6%), pembrolizumab to 39 (40.2%), and nivolumab to 39 (40.2%). Median number of cycles was 4 (IQR 2-7). Complete response (CR) was seen in 54 (55.6%) patients with a pathological CR in 38 (39.2%) and clinical or radiographic CR in 16 (16.5%), partial response (PR) in 11 (11.3%), and progression/mixed/no response (other) in 32 (33.1%). Of the 11 patients with a PR, 7 more patients achieved a CR with surgery for a combined neoadjuvant plus surgery CR rate of 62.9% (61/97). There were 10 patients (10.3%) that had grade 3 or higher adverse events. At 12 and 24 months, EFS was 90.6% and 86.0% for the CR group, 81.8% and 71.6% for the PR group, and 50.0% and 24.4% for the other group, respectively. The global log-rank test showed a highly significant difference in EFS among the groups at both 12 and 24 months ($\chi^2 = 45.2$, $p < 0.001$). **CONCLUSIONS:** To date, this is the largest known single institution study assessing the outcomes of neoadjuvant PD1 inhibitor monotherapy in metastatic skin cancer patients. Patients with a CR and PR were strongly associated with improved EFS compared to those with progression/mixed/no response. These findings support the integration of neoadjuvant PD1 monotherapy into clinical practice and highlight the need for further real-world validation.

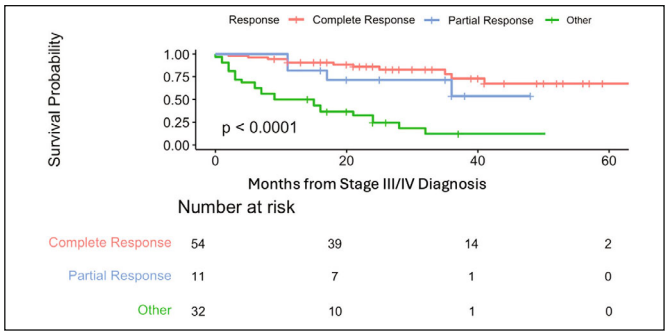

Figure. Kaplan-Meier Curve by Local Response for Event-Free Survival (EFS) where EFS is defined as time from diagnosis to recurrence, progression or death.

EP41

Examining the duration of neoadjuvant chemotherapy prior to pancreatoduodenectomy for borderline resectable pancreatic adenocarcinoma

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INTRODUCTION: The optimal duration of neoadjuvant chemotherapy (NAC) before pancreaticoduodenectomy (PD) for pancreatic ductal adenocarcinoma (PDAC) remains undefined. We aim to evaluate the duration of NAC and its impact on pathologic response and survival after curative-intent resection. **METHODS:** A retrospective analysis of a prospectively maintained institutional database at a quaternary referral network was conducted. Clinicopathologic and survival data were analyzed for patients undergoing Whipple for pancreatic head/neck PDAC between 2015 and 2023. Kaplan–Meier analysis and log-rank tests compared outcomes by NAC receipt and duration (< 3 vs. ≥3 months; < 6 vs. ≥6 months). **RESULTS:** 403 patients were included in analysis, with a median age of 69 [62-75], and 53% were male. In this cohort, 111 patients (27.6%) received NAC (median 3 months) and 292 (72.4%) underwent upfront surgery. NAC was associated with lower margin positivity (27.9% vs. 37.5%, p=0.044) and lower nodal positivity (47.7% vs. 61.3%, p=0.042) compared to those who did not undergo NAC. Extending NAC duration from 3 to 6 months resulted in lower rates of margin positivity (29.6% vs. 12.6%), node positivity (50.8% vs. 37.5%), and higher rates of TRG0/1 (24.7% vs. 43.8%). NAC did not improve LRRFS, DRFS, or OS. When stratified by treatment duration, survival outcomes did not differ between NAC < 3 months and ≥3 months (LRRFS 13.9 vs. 13.6 months; p=0.558, DRFS 11.3 vs. 18.0 months; p=0.370, OS 16.0 vs. 23.9 months; p=0.154) or between NAC < 6 months and ≥6 months (LRRFS 13.6 vs. 10.1 months; p=0.819, DRFS 13.3 vs. 19.4 months; p=0.298, OS 20.9 vs. 24.4 months; p=0.506). **CONCLUSIONS:** Extending NAC before PD for PDAC to total neoadjuvant therapy (TNT) improves R0 rates, N0 rates and tumor regression but this does not translate into improvement in LRRFS, DRFS, or OS.

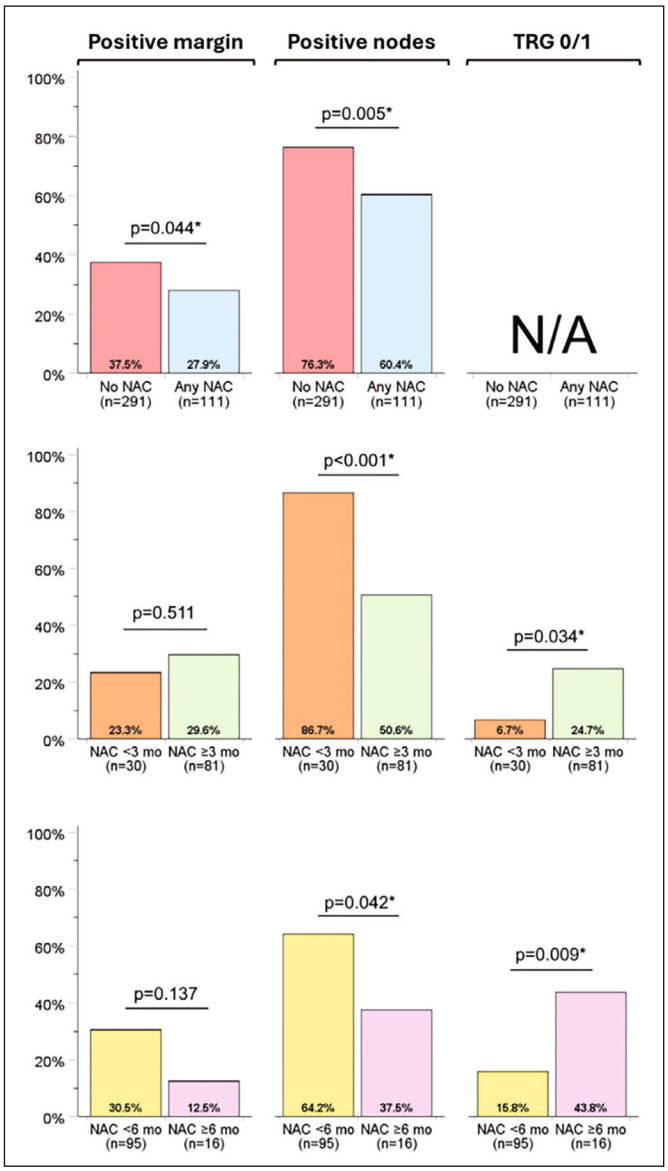

Figure. Rates of positive margin, positive nodes, and tumor regression grade (TRG) 0/1 in NAC vs. no NAC patients, NAC < 3 months vs. NAC ≥ 3 months, and NAC < 6 months vs. NAC ≥ 6 months.

EP42

Access to Online Portal and Cancer Screening in the United States, 2017-2024 A Pooled Cross-

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INTRODUCTION: Digital engagement through patient portals offers new opportunities to promote preventive care, yet its influence on cancer screening uptake remains incompletely understood. We sought to evaluate the association between online portal (OP) access, frequency of portal use, and adherence to recommended cancer screening among U.S. adults. **METHODS:** Data from six pooled cycles of the Health Information National Trends Survey (2017–2024) were analyzed. Adults aged 18 years or older were categorized by self-reported access to an OP access maintained by a healthcare provider, insurance provider, or health system. Multivariable logistic regression estimated adjusted odds ratios (AOR) and 95% confidence intervals (CI) for being up to date with breast, cervical, colorectal, and prostate cancer screening, adjusting for sociodemographic and health variables. Among respondents with OP access, portal-use frequency (1–2, 3–5, >6 times/year) was evaluated. Population attributable risk proportions (PARP) quantified the estimated proportion of screening adherence attributable to portal engagement. **RESULTS:** Among 43,357 respondents, 47.0% reported online portal (OP) access. Users were more likely to be White, younger, college educated, insured, living in urban areas, and to have higher household income (p< 0.001). Screening adherence was consistently higher among users compared with non-users: breast 69.8% vs 62.3%, cervical 72.6% vs 66.1%, colorectal 66.9% vs 60.3%, and prostate 68.6% vs 55.5%. After adjustment, OP access remained independently associated with greater screening adherence—breast AOR 1.44 (95% CI 1.25–1.67), cervical 1.42 (1.21–1.66), colorectal 1.90 (1.64–2.20), and prostate 1.66 (1.28–2.17). Increasing frequency of portal use was associated with progressively higher screening adherence across modalities, most notably for colorectal cancer (AOR 2.66 [95% CI 2.13–3.32]; PARP 13.15%, 95% CI 9.08–17.22). **CONCLUSIONS:** Across seven years of HINTS data, online portal access and repeated engagement were strongly associated with improved adherence to cancer screening. The observed PARP values highlight the population-level opportunity to enhance screening through digital connectivity. Strengthening equitable portal access and sustained engagement may represent a pragmatic strategy to close persistent gaps in cancer prevention

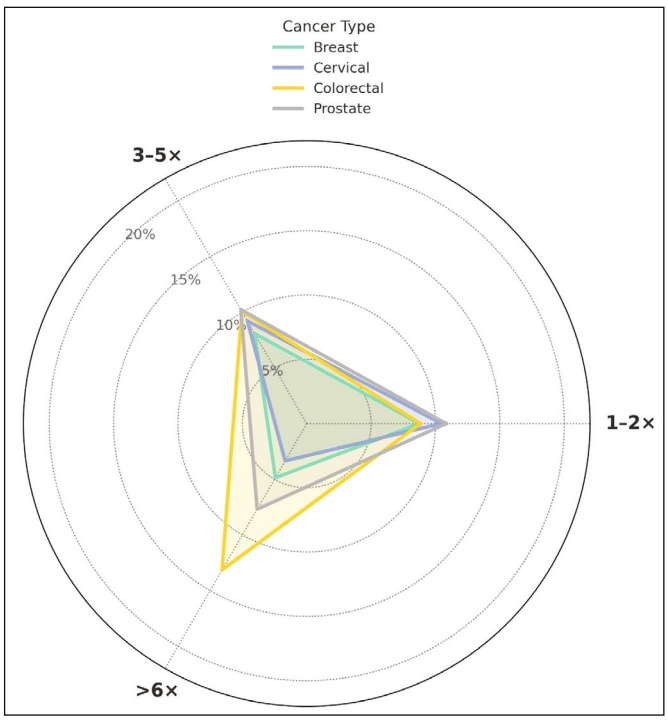

Figure. Spider Chart showing Population Attributable Risk Proportion (PARP) for Cancer Screening Adherence by Frequency of Online Portal Use (Reference: No online portal use)

EP43

When immunotherapy hurts: Neoadjuvant PD-1 inhibitors increase opioid use after mastectomy with reconstruction

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INTRODUCTION: Programmed cell death protein-1 (PD-1) inhibitors have revolutionized cancer therapy, but data suggests PD-1 signaling also modulates μ-opioid receptor activity, potentially impairing opioid-based analgesia. This study evaluates the impact of PD-1–based neoadjuvant

chemotherapy (NAC) for breast cancer on perioperative opioid use and pain scores following nipple-sparing mastectomy (NSM). **METHODS:** We performed a retrospective review of consecutive NSMs with immediate implant/tissue expander reconstruction following NAC from 2020-2024. Patients were grouped into two cohorts: PD-1-based NAC (NAC+PD-1) or NAC without PD-1 inhibitors (NAC). Patient and procedural characteristics, perioperative opioid use, patient-reported pain scores, and post-discharge opioid refills were collected. Multivariable linear and binomial logistic regression models isolated predictors of opioid consumption per hour in the PACU, postoperative pain, and post-discharge opioid refills. **RESULTS:** Of 193 mastectomy patients, 42 received NAC+PD-1 and 151 received NAC (Table 1). BRCA1/2 mutations (40.5% vs 7.9%, p< 0.001) and triple-negative subtype (85.7% vs 21.9%, p< 0.001) were more common in the NAC+PD-1 cohort. Compared to the NAC cohort, the NAC+PD-1 cohort was more likely to undergo bilateral procedures (92.9% vs 69.5%, p=0.001) and sentinel lymph node biopsy (90.5% vs 72.2%, p=0.014). Despite similar preoperative analgesia regimens, intraoperative opioid use, and patient-reported pain scores, NAC+PD-1 patients had more opioid consumption per hour in the PACU (3.74 vs 2.10 oral morphine equivalents (OMEs)/hour, p=0.016) and post-discharge opioid refills (40.5% vs 15.9%, p=0.001). On multivariable linear regression, NAC+PD-1 (β: 1.597, p=0.021), non-White race (β: -1.459, p=0.045), and number of pre-operative analgesia medications (β: -0.918, p=0.004) significantly predicted OMEs/hour in the PACU. On multivariable logistic regression, NAC+PD-1 (OR: 4.295, p< 0.001) and axillary lymph node dissection (OR: 2.329, p=0.049) were the only predictors of post-discharge opioid refills. Bilateral surgery, tissue expander reconstruction, and sub-pectoral placement were insignificant in analyses of opioid consumption per hour and post-discharge refills. **CONCLUSIONS:** Our study presents novel findings linking PD-1 inhibitors with increased opioid requirements. We recommend clinicians be cognizant of this while developing analgesia guidelines for patients receiving PD-1 inhibitors in the neoadjuvant setting.

Table 1: Perioperative Pain and Opioid Outcomes by PD-1 NAC Status

	Total Cohort	NAC+PD-1	NAC	p-value
Total Patients	**n = 193**	**n = 42**	**n = 151**	
Total Intraoperative Opioid Consumption, median mg (range)	64.5 (0-672.0)	60.0 (15.0-635.4)	67.2 (0-672.0)	0.828
Total PACU Opioid Consumption, median mg (range)	15 (0-126.2)	17.3 (0-93)	15 (0-126.2)	0.196
PACU Opioid Consumption Per Hour, median OME*/hour (range)	2.45 (0-22.43)	**3.74 (0-18.98)**	**2.10 (0-22.43)**	**0.016**
Total Perioperative Opioid Consumption, median mg (range)**	87 (22.5-701.7)	86.3 (30.0-665.4)	87 (22.5-701.7)	0.780
Mean Patient-Reported Maximum Pain Score in PACU (SD)	5.65 (2.38)	6.17 (2.03)	5.50 (2.45)	0.080
Initial Post-Discharge Opioid Prescription Received, n (%)	192 (99.5%)	42 (100%)	150 (99.3%)	1.000
Total Initial Prescription, median OME (range)	150 (0-400)	150 (150-200)	150 (0-400)	0.937
Post-Discharge Opioid Refill Received, n (%)	41 (21.2%)	**17 (40.5%)**	**24 (15.9%)**	**0.001**
Number of Refills#, mean (SD)	0.87 (0.39)	0.88 (0.42)	0.83 (0.37)	0.690

*OME: oral morphine equivalent (milligrams).

**Total perioperative opioid consumption was defined as the sum of the total intraoperative opioid consumption and the total PACU opioid consumption.

#A standard refill was defined as the number of tablets refilled relative to the patient's original postoperative opioid prescription. The mean number of refills only included patients who received a refill.

EP44

Patterns of Colorectal Cancer Diagnosis in Older Adults: A SEER-Medicare Analysis of Health and Economic Impact of Missed Screening Opportunities

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INTRODUCTION: Despite national screening efforts, many patients continue to be diagnosed with colorectal cancer (CRC) at an advanced stage. We sought to assess how screening and diagnostic patterns potentially impact long-term outcomes and health care expenditures among older adults with CRC. **METHODS:** Patients aged ≥65 diagnosed with CRC were identified from the SEER-Medicare database (2005-2019). Route to diagnosis (RTD) was categorized as routine screening, inpatient/outpatient (IP/OP) evaluation, or emergency room (ER) presentation based on healthcare encounters 30 days to 6 months before CRC diagnosis. Multivariable regression models were used to examine the association of RTD with clinical and financial outcomes. **RESULTS:** Among 79,251 patients with CRC (colon: 72.4%, rectum: 27.6%), most individuals were diagnosed during IP/OP visits (60.6%, n=48,305), followed by screening (25.7%, n=20,366), and ER encounters (13.7%, n=10,850). Compared with a diagnosis based on CRC screening, patients with an ER-diagnosis were older (79 years, IQR 73-84 vs. 75 years, IQR 71-81), and more often had CCI >2 (22.5%, n=2,437 vs. 8.1%, n=1,655), were Black (11.5%, n=1,243 vs. 7.7%, n=1,570), and were in the lowest income quintile (29.1%, n=2,951 vs. 23.9%, n=4,500) (all p< 0.001). CRC diagnosis in an ER setting was associated with urgent surgery (ER: 59.7% vs. IP/OP: 41.3% vs. Screen: 20.1%), complications (ER: 29.8% vs. IP/OP: 20.3% vs. Screen: 14.2%), inpatient mortality (ER: 7.4% vs. IP/OP: 3.9% vs. Screen: 2.1%), and 90-day readmission (ER: 52.3% vs. IP/OP: 40.4% vs. Screen: 30.6%), as well as lower likelihood of home discharge (ER: 32.7% vs. IP/OP: 47.4% vs. Screen: 62.4%) (all p< 0.001). Of note, median 90-day expenditures were also highest among ER-diagnosed patients (ER: $13,802 vs. IP/OP: $12,130 vs. Screen: $11,458; p< 0.001). On multivariable analysis, an ER diagnosis of CRC was independently associated with higher odds of delayed or stage IV disease (aOR 1.75, 95%CI 1.66-1.84) and lower odds of undergoing surgical resection (aOR 0.48, 95%CI 0.45-0.52). Among patients with CRC, individuals diagnosed in the ER setting had greater odds of urgent surgery (aOR 5.14, 95%CI 4.83-5.48), as well as lower likelihood of achieving a textbook outcome (aOR 0.53, 95%CI 0.50-0.57) or being discharged to home (aOR 0.55, 95%CI 0.51-0.59) (Figure). **CONCLUSIONS:** A CRC diagnosis among older adults in an ER setting was associated with later-stage disease, worse outcomes, and higher costs compared with a diagnosis made through screening or routine care. These findings underscore the importance of improving the reach and timeliness of CRC screening to avoid emergent presentations and their downstream adverse consequences.

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Association of race and age with tumor-infiltrating lymphocytes in triple negative breast cancer

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INTRODUCTION: Stromal tumorinfiltrating lymphocytes (TILs) are prognostic in early triple-negative breast cancer (TNBC) and are predictive of treatment response. Whether age and race are associated with baseline TILs in TNBC is less well understood. **METHODS:** A single-institution, prospectively maintained database was used to identify women with stage I-III TNBC treated from 2016 - 2024. Patients with unknown race or without TILs reported on a core biopsy or surgical specimen in the setting of upfront surgery were excluded. TILs were dichotomized as high (> 50%) versus low (< 50%). Descriptive statistics were used to compare patient and tumor characteristics by TIL group. Among the subset of patients who received neoadjuvant systemic therapy, we performed multivariable logistic regression to identify independent predictors of pathologic complete response (pCR). **RESULTS:** Among 207 patients in the study cohort, 90 (43.5%) had TILs ≥ 50%. Minority patients (n=48) were more likely to have high TILs compared to non-Hispanic White (NHW) patients (56.3% vs. 39.6% p=0.047). TIL levels did not vary significantly by age (p=0.395). In the neoadjuvant subset (n=135), pCR occurred in 60.0%. High TILs were associated with a higher pCR rate (71.7% vs 50.7%, p=0.014) and remained significant on multivariable analysis (OR 2.81, 95% CI 1.23-6.42). Receipt of neoadjuvant immunotherapy (OR 4.26, 95% CI 1.08-16.8) and age < 50 years (OR 7.21, 95% CI 1.90-27.3) were also associated with increased likelihood of pCR, whereas race and ethnicity were not associated with pCR after adjustment (Table 1). **CONCLUSIONS:** Minority racial and ethnic groups had higher TIL levels compared with NHW patients; however, this did not translate into higher pCR rates. High TILs were independently associated with pCR among patients receiving contemporary neoadjuvant systemic therapy.

Table. Predictors of pCR among patients with neoadjuvant chemotherapy

Variable		OR	95% CI	P-value
TILS ≥50%	<50%	1 (Reference)		NA
	≥50%	**2.806**	**1.23-6.42**	**0.015**
Race	NHW	1 (Reference)		NA
	Minority	1.053	0.41-2.71	0.915
Neoadjuvant immunotherapy	No	1 (Reference)		NA
	Yes	**4.26**	**1.08-16.8**	**0.038**
Gene mutation	No	1 (Reference)		NA
	Yes	1.52	0.35-0.57	0.573
Clinical Stage	I	1 (Reference)		NA
	II	0.32	0.06-1.57	0.159
	III	0.279	0.05-1.58	0.149
Grade	2	1 (Reference)		NA
	3	1.741	0.47-6.40	0.404
Age	Age <50	7.212	1.90-27.3	0.004
	Age 50-69	3.143	0.86-11.5	0.083
	Age >70	1 (Reference)		NA
Histology	IDC	1 (Reference)		NA
	ILC	0.289	0.01-6.16	0.427

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Longitudinal symptom recovery after pancreatectomy: A patient-reported outcomes study

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INTRODUCTION: Longitudinal data on symptom recovery after pancreatectomy are limited. We conducted a prospective study of patient-reported outcomes (PROs) using a validated institutional symptom inventory to characterize recovery trajectories. **METHODS:** Patients undergoing curative-intent pancreatectomy for malignancy between October 2020 and May 2025 who completed the symptom inventory at ≥2 of 8 time points through postoperative month (POM) 6 were included. Seventeen symptom and six interference items were rated from 0–10. Composite symptom and interference scores were calculated as the mean of the top five symptoms and top three interference items that had the highest scores on postoperative day (POD) 3. Recovery was defined as achieving mild severity (≤3/10) in composite scores. Cumulative recovery rates were compared by procedure, surgical approach, and presence of complications (Accordion grade ≥3). Variables with p< 0.2 on univariable analysis (preoperative albumin, adenocarcinoma histology, operation type, approach, readmission, grade ≥3 complication) were included in multivariable logistic regression. **RESULTS:** Among 181 patients who underwent pancreatectomy (100 pancreatoduodenectomies [PD], 75 distal pancreatectomies [DP], 6 other), 116 (64.1%) underwent a robotic approach. The survey response rate across 8 time points was 77.1%. The top symptoms on POD3 were pain, fatigue, sleep disturbance, drowsiness, and bloating; the top interference items were activity, working, and walking. Most symptom scores peaked at POD3 and improved by POM1: pain (5.5 to 2.0), sleep disturbance (4.8 to 2.2), drowsiness (4.1 to 1.8), and bloating (3.7 to 2.1). Fatigue improved more slowly (5.1 to 3.1) and remained elevated through POM6 (2.6). Cumulative symptom recovery occurred in 65.6% at POM1, 77.1% at POM3, and 85.7% at POM6. At POM1, recovery occurred in 76.4% of DP vs 57.2% of PD patients (OR 2.18, 95% CI 0.96–5.31, p=0.071). Robotic surgery was associated with recovery on univariable analysis (OR 2.29, 95% CI 1.03–5.12, p=0.042), but not after stratification by operation (PD 66.7% vs 55.8%, p=0.41; DP 85.7% vs 66.7%, p=0.12) or multivariable adjustment (OR 1.51, 95% CI 0.62–3.70, p=0.364). Patients with complications were less likely to recover by POM 1 (OR 3.25, 95% CI 1.12–9.58, p=0.030). **CONCLUSIONS:** This prospective PRO study delineates the course of symptom recovery after pancreatectomy. For most patients, acute symptoms resolve by POM1, although fatigue persists through six months. After adjustment for clinical factors, robotic approach was not independently associated with earlier recovery.

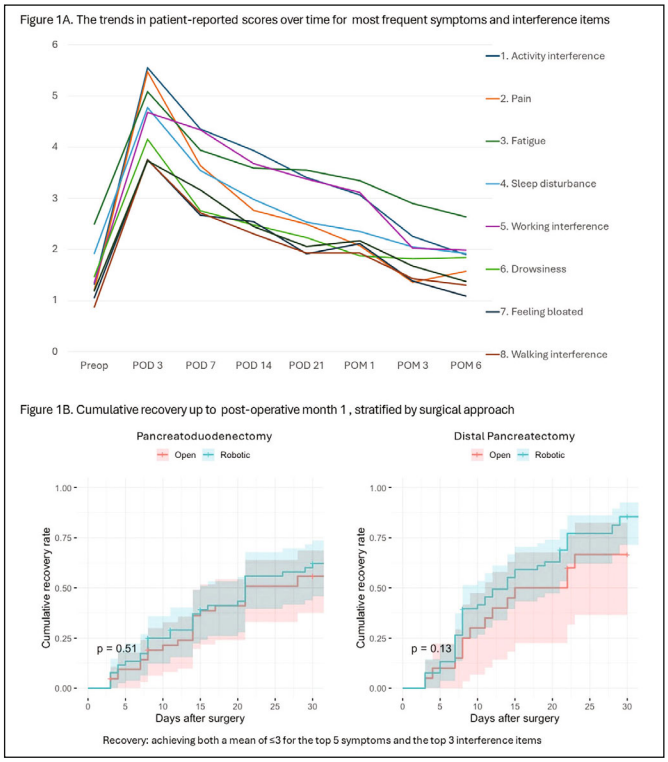

Figure. Patient Reported Outcomes and Longitudinal Recovery after Pancreatectomy

EP47

Financial literacy and access to resources among Nigerian cancer patients enrolled in a financial navigation plan: insights from the COST-FIN trial

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INTRODUCTION: In Nigeria, financial toxicity significantly hinders cancer care, with >80% of patients presenting with advanced disease due to cost barriers. Financial Navigation Programs (FNPs) reduce financial distress (FD) and improve treatment adherence in high-income countries but are underexplored in low- and middle-income countries (LMICs). Financial literacy in enrollees in the first randomized controlled trial (RCT) in Sub-Saharan Africa to evaluate FNP impact on FD, financial catastrophe (FC), and cancer outcomes, is examined here. **METHODS:** COST-FIN is a prospective, single-blind RCT enrolling adults diagnosed with cancer at two Nigerian centers (NCT06630962). From July 2024-25, 152 patients were randomized 1:1 to financial navigation or usual care, with 1 year follow-up. Baseline data came from validated tools including an adapted 8-item OECD/INFE financial literacy (FIN-LIT) scale, for navigators to assess literacy and tailor plans. Analyses included Kruskal-Wallis and Spearman correlations. **RESULTS:** In the FN arm, 48 patients completed FIN-LIT assessment and 41 required some level of navigation assistance (high (N =16), moderate (N =20), low (N =5)); remaining lost to follow-up, not yet attended assessment, or not requiring assistance. 38% enrolled in the National Health Insurance scheme, 17% received philanthropic aid, 31% research support, and 79% drug-discount programs. Higher financial literacy correlated with greater baseline FD (p=0.031). Literacy did not differ by age (p=0.39), gender (p=0.15), or insurance status (p=0.71), but varied by site (p=0.010). FIN-LIT scores positively associated with individual income (p = 0.002), family income (p < 0.001), and education level (p = 0.001), but not significantly with employment (p = 0.16). Post-hoc comparisons showed lower literacy at OAUTHC-Ife versus Lakeshore Cancer Center, though did not reach Bonferroni-corrected significance (p< 0.0167). **CONCLUSIONS:** Baseline financial literacy associated with increased FD in Nigerian cancer patients, while age, gender, and insurance were not predictive. Site differences in literacy suggest importance of localized approaches. Ongoing analysis is exploring how financial literacy modulates FNP impact, informing future allocation for cancer care in Nigeria and other LMICs.

EP48

Concordance between nodal ultrasound and cross-sectional imaging in detecting nodal recurrence in sentinel lymph node-positive melanoma

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INTRODUCTION: After two landmark trials established that active nodal ultrasound (US) surveillance provides oncologic outcomes equivalent to completion lymph node dissection, patients with sentinel lymph node (SLN)-positive melanoma are increasingly managed with active surveillance. However, the concordance between US and cross-sectional imaging (CS imaging; CT or PET/CT) for detecting nodal recurrence remains unclear. **METHODS:** We retrospectively analyzed adults with SLN-positive melanoma diagnosed between 2017 and 2023 at an NCI-designated tertiary cancer center. Patients with clinically positive nodes or distant metastasis were excluded. We evaluated patterns and modalities of nodal recurrence detection and quantified the rates of biopsy-proven recurrences (true positives) and negative biopsies (false positives) prompted by imaging. **RESULTS:** Among 241 patients, 24 (10.0%) developed node-only recurrence over a median follow-up of 36.3 months (IQR 21.4-47.2 months). Nodal recurrences were detected by nodal basin US in 7 patients (29.2%), CS imaging in 15 (62.5%), and clinical exam in 2 (8.3%). Of 18 patients who had suspicious nodal morphology on US, 7 (38.9%) represented true positive recurrences, while 11 (61.1%) were false positives. In contrast, CS imaging identified suspicious nodes in 16 patients, yielding 15 true positives (93.8%) and one false positive (6.3%). All patients with US-detected true positive recurrence underwent CS imaging surveillance. Among these, 5 of 7 had CS imaging performed a median of 55 days prior to US, which identified concordant suspicious nodes in 2 (40%) cases; all 7 subsequently had CS imaging a median of 15 days after US, demonstrating concordant suspicious morphology in 6 (85.7%) cases. Of the 11 patients with suspicious US findings but negative biopsies, 10 underwent CS imaging surveillance, which showed concordant abnormal nodal morphology in 2 (20%) cases, with a median interval of 96 days between studies. Among the 15 patients with true positive recurrence detected by CS imaging, 8 (53.3%) also underwent nodal basin US within a median of 88.5 days, demonstrating concordant suspicious nodal morphology in 3 (37.5%) cases. CS imaging yielded one false positive result, though no US was performed within one year for comparison. **CONCLUSIONS:** Real-world experience at a tertiary cancer center suggests that CS imaging may be non-inferior to US for identifying true positive nodal recurrences in most cases. Additionally, US findings resulted in more negative biopsies than true positive recurrences.

EP49

The integrated 31-gene expression profile test identifies patients with T1b-T2a cutaneous melanoma who can safely avoid sentinel lymph node biopsy

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INTRODUCTION: National Comprehensive Cancer Network (NCCN) guidelines, for patients with cutaneous melanoma (CM), are that a sentinel lymph node biopsy (SLNB) should be offered when tumors have >10% risk of node positivity, considered when risk of positivity is 5-10% risk, and generally avoided if risk of positivity is < 5%. However, only 12% of SLNB procedures yield a positive result and ~15% are associated with procedure-related complications. Combining information from the 31-gene expression profile (31-GEP) and clinicopathologic features, the integrated 31-GEP (i31-SLNB) precisely predicts likelihood of SLN positivity. The purpose of this study is to prospectively evaluate use of i31-SLNB to predict a positive SLN and assess recurrence rates in patients considered low-risk by the i31-SLNB who subsequently avoided SLNB. **METHODS:** This prospective, multi-center study included patients with T1-T4 CM who were 18 years of age or older, clinically tested with the 31-GEP, and being considered for an SLNB at the time of enrollment (n=912). Kaplan-Meier analysis was used to estimate 2-year recurrence free survival (RFS) rates for patients with an i31-SLNB predicted risk of < 5% who did not undergo an SLNB and had at least 2 years follow up or a recurrence event. **RESULTS:** In 912 patients with T1-T4 tumors, 430 patients (47%) had SLNB, 80.5% of which were T1b-T4. The positivity rate in those 430 patients was 2.6% (3/114) in those with < 5% i31-SLNB-predicted risk and 21.4% (28/131) in those with >10% predicted risk. In the subset of 275 patients with T1b–T2a tumors who underwent an SLNB, the positivity rate was 1.4% (1/74) in those with < 5% predicted risk, versus 18.5% (12/65) in those with >10% predicted risk. The 2-year RFS rate was 98.9% for patients with an i31-SLNB predicted risk < 5% who did not have an SLNB. **CONCLUSIONS:** Prospective use of the i31-SLNB accurately identified risk of SLN positivity in patients with T1-T4 tumors (and critically within the T1b-T2a subset) predicted to have < 5% positivity or >10% positivity, providing clinically actionable results to guide SLNB decision making within the NCCN guideline framework. Further, patients who avoided SLNB based on the i31-SLNB risk prediction had a high RFS. Thus, the i31-SLNB identifies patients at low risk of nodal positivity who can safely forego the SLNB procedure.

EP50

Molecular profiling of hepatopancreaticobiliary cancers: Racial and ethnic variations in genomic alterations and immunologic targets

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INTRODUCTION: Hepatopancreaticobiliary (HPB) cancers, comprising hepatocellular carcinoma (HCC), pancreatic adenocarcinoma, and biliary tract cancers, carry a poor prognosis with high recurrence rates even after curative-intention resection. Advances in molecular profiling and targeted therapies have improved outcomes for subsets of patients, particularly those with actionable genomic or immunologic alterations. However, limited data exists regarding the distribution of these alterations across racial and ethnic populations, potentially perpetuating inequities in access to precision oncology. This study evaluates the prevalence and distribution of key molecular alterations in HPB cancers, stratified by race and ethnicity. **METHODS:** A retrospective cohort analysis was conducted of patients with HPB cancers who underwent molecular profiling with next generation sequencing (NGS) at a tertiary academic cancer center. Clinicopathologic and molecular data were extracted from electronic health records. Chi-square tests were performed to analyze the prevalence of major genomic alterations in advanced HPB cancers across racial and ethnic subgroups. **RESULTS:** Eighty-one patients met the inclusion criteria. The cohort included 46 patients (56%) with PDAC, 28 (35%) with BTC, and 7 (9%) with HCC. Females comprised 45% and 60% (n=49) were non-Hispanic Whites. The most frequently altered genes across all HPB cancers were KRAS in 42 (51%), TP53 in 40 (49%), SMAD4 in 14 (17%), ARID1A in 12 (15%), and CDKN2A in 11 patients (14%). Microsatellite instability was rare, observed in < 5% of cases. PD-L1 was detected in 12 patients (15%) overall, with the majority (7) seen in the BTC group and only 4 and 1 in the PDAC and HCC groups respectively. Significant racial and ethnic variations were identified in PD-L1 expression, with Hispanic patients demonstrating a higher frequency of expression compared to other groups (75% vs. 25%, p-value 0.01618). No statistically significant differences were observed in other gene alterations. **CONCLUSIONS:** This study highlights the association between racial and ethnic differences in immunologic biomarker expression among patients with HPB cancers. The higher prevalence of PD-L1 mutation in Hispanic patients suggests a possible biologic or environmental contributor influencing tumor immunogenicity. These findings underscore the critical importance of inclusive genomic profiling and the equitable representation of diverse populations in molecular oncology research, ensuring that precision therapeutics benefit all patients.

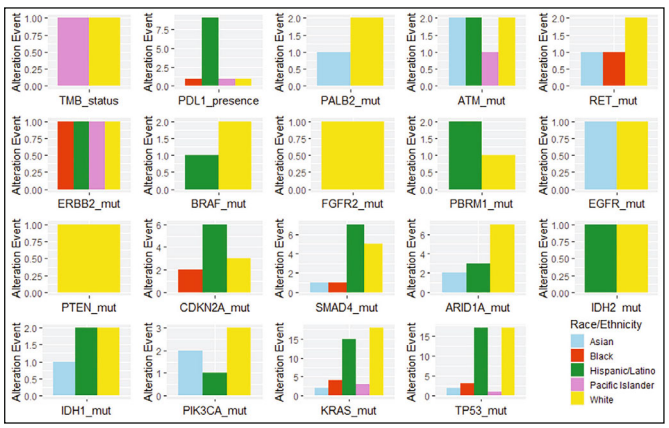

Figure. Variations in gene mutations by racial/ethnic group

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Outcomes among Women ≤50 years with Early-Stage Multifocal/ Multicentric Breast Cancer

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INTRODUCTION: There is a paucity of data to guide the management of early-stage breast cancer in patients ≤50 years with multiple foci of disease, as these patients are underrepresented in clinical trials. Although multifocal (MF)/ multicentric (MC) disease may suggest more aggressive biology compared to unifocal (UF) tumors, survival data are variable. Greater insight into clinical characteristics, treatment patterns and outcomes is needed to inform management for this population. **METHODS:** A prospective database was used to identify stage I-III breast cancer patients ≤50 who underwent surgery from 1/2011 to 12/2022. Patients with bilateral breast cancer and patients who underwent neoadjuvant treatment were excluded. Univariate and multivariate analyses stratified by tumor focality were conducted, including logistic regression to identify predictors of breast conservation and recurrence. Recurrence-free and overall survival were analyzed using the Kaplan-Meier method. **RESULTS:** A total of 647 patients met inclusion criteria; 541(83.6%) patients had UF disease, while 73 (11.3%) patients and 33 (5.1%) patients had MF and MC disease, respectively. Clinicopathologic features were similar between groups [Table]. In terms of surgery, 38.6% of UF, 42.4% of MF, and 69.7% of MC patients underwent bilateral mastectomy. Final pathology demonstrated a higher rate of pN+ patients in the MF/MC groups (54.6% (MC) and 35.6% (MF) versus 26.6% (UF); p=0.004). After a median of 63.2 months (IQR 43.2-89.5 months), 68 patients (10.5%) developed a recurrence (52 UF (9.6%), 13 MF (17.8%), and 3 MC (9.1%)). Most recurrences were local among UF patients (28/541, 5.2%), whereas distant recurrence was more common among MF (6/73, 8.2%) and MC (2/33, 6.1%) patients. On multivariable analysis, younger age, cT2 disease, multifocality, genetic mutation and lobular subtype were significantly associated with lower odds of breast conservation. Only pN3 disease was a significant predictor of recurrence. Recurrence-free survival was similar among the groups (p=0.075), but there was a significant decrease in overall survival for patients with MF/MC disease (p=0.0003). **CONCLUSIONS:** Women ≤50 with early-stage MF/MC breast cancer can present similarly to patients with UF disease, but rates of mastectomy and nodal involvement may be higher compared to UF disease. Patients with MF/MC disease may be more likely to develop a distant recurrence and experience worse overall survival.

Variable	Unifocal N=541	Multifocal N=73	Multicentric N=33	p
Age (median (IQR))	44 (40-48)	46 (42-48)	45 (42-47)	
Menopausal Status at Diagnosis				
Premenopausal	487 (90.0%)	63 (86.3%)	33 (100%)	0.18
Peri/postmenopausal	47 (8.7%)	10 (13.7%)	0 (0.0%)	
Pregnant	5 (0.9%)	0 (0.0%)	0 (0.0%)	
Unknown/Missing	2 (0.4%)	0 (0.0%)	0 (0.0%)	
Family History				
Yes	96 (17.7%)	10 (13.9%)	4 (12.1%)	0.52
No	443 (81.9%)	62 (86.1%)	29 (87.9%)	
Unknown	2 (0.4%)	0 (0.0%)	0 (0.0%)	
Genetic Mutation				
Present	75 (13.9%)	6 (8.2%)	3 (9.1%)	0.31
Not Present or Unknown	466 (86.1%)	67 (91.8%)	30 (91.9%)	
cT Status				
0	1 (0.2%)	0 (0.0%)	0 (0.0%)	0.29
1	382 (70.6%)	45 (61.6%)	18 (54.6%)	
2	129 (23.8%)	21 (28.8%)	12 (39.4%)	
3	12 (2.2%)	1 (1.4%)	2 (6.0%)	
Unknown/Missing	17 (3.1%)	6 (8.2%)	0 (0.0%)	
cN Status				
Positive	72 (13.3%)	9 (12.3%)	6 (18.2%)	0.76
Negative	458 (84.7%)	58 (79.5%)	27 (81.8%)	
Unknown/Missing	11 (2.0%)	6 (8.2%)	0 (0.0%)	
Biopsy Pathology				
Invasive ductal carcinoma	494 (91.3%)	65 (89.0%)	27 (81.8%)	0.09
Invasive lobular carcinoma	37 (6.8%)	8 (11.0%)	5 (15.2%)	
Mixed type	2 (0.4%)	0 (0.0%)	1 (3.0%)	
Other	8 (1.5%)	0 (0.0%)	0 (0.0%)	

Variable	Unifocal N=541	Multifocal N=73	Multicentric N=33	p
Receptor Status				
HR+/HER2-	482 (89.1%)	63 (86.3%)	32 (97.0%)	0.57
HR-/HER2-	21 (3.9%)	3 (4.1%)	0 (0.0%)	
HR+/HER2+	32 (5.9%)	4 (5.5%)	1 (3.0%)	
HR-/HER2+	4 (0.7%)	2 (2.7%)	0 (0.0%)	
Unknown or Not Tested	2 (0.4%)	1 (1.4%)	0 (0.0%)	
Type of Breast Surgery*				
Unilateral Lumpectomy	288 (53.2%)	28 (38.4%)	3 (9.1%)	
Bilateral Lumpectomy	1 (0.2%)	0 (0.0%)	0 (0.0%)	
Unilateral Mastectomy	43 (7.9%)	14 (19.3%)	7 (21.2%)	
Bilateral Mastectomy	209 (38.6%)	31 (42.4%)	23 (69.7%)	
Type of Axillary Surgery*				
None	10 (1.9%)	1 (1.4%)	0 (0.0%)	
Sentinel lymph node biopsy (SLNB)	446 (82.4%)	52 (71.2%)	20 (60.6%)	
Axillary lymph node dissection (ALND)	34 (6.3%)	3 (4.1%)	2 (6.1%)	
SLNB and ALND	51 (9.4%)	17 (23.3%)	11 (33.3%)	
Adjuvant Treatments				
Chemotherapy	221 (40.9%)	29 (39.7%)	17 (51.5%)	0.47
Immunotherapy	2 (0.37%)	0 (0.0%)	0 (0.0%)	0.82
Anti-HER2 Therapy	31 (5.7%)	6 (8.2%)	1 (3.0%)	0.53
Endocrine Therapy	441 (81.5%)	63 (86.3%)	31 (93.9%)	0.15
Radiation Therapy	308 (56.9%)	41 (56.2%)	14 (42.4%)	0.25

* p-values not calculated given small n in many categories

Table. Clinicopathologic patient and treatment characteristics

EP52

TIL Therapy in treatment refractory patients with advanced melanoma

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INTRODUCTION: Over 50% of patients with advanced melanoma progress despite treatment with systemic therapies. Thereafter, effective alternatives are limited and overall survival (OS) often dismal. Tumor-infiltrating lymphocytes (TIL) therapy has demonstrated durable response in the treatment-refractory setting. However, we lack biomarkers predictive or prognostic of response to TIL. Circulating tumor DNA (ctDNA) has shown potential across several solid tumors and treatment settings. Therefore, we report clinical outcomes of patients with advanced melanoma treated with TIL therapy and the role of ctDNA as a biomarker of response. **METHODS:** Patients who had progressed on systemic therapy and had tumor specimen(s) resected for TIL therapy were included. Signatera ctDNA testing was sent prospectively. Patients with non-acral cutaneous and unknown primary melanomas were categorized as cutaneous melanomas and others as rare. Patients were followed for clinical responses. Outcomes of interest were response rates (RR) and OS; patients with non-evaluable responses were excluded from these analyses.

RESULTS: Forty-nine patients who progressed after a median of three lines of systemic therapy were assessed. Tumor specimens were harvested from 54 sites in total, with lymph nodes being the most common (35.2%). Six (12.2%) did not receive TIL and 4(8.2%) patients are awaiting infusion. At 30-day scan, 27 (79.4%) patients had a response/stability, this reduced to 10 (29.4%) patients at 4-months. Following lymphodepleting chemotherapy (LDC) and prior to TIL infusion, a reduction in ctDNA was seen in 14/26 (53.8%) patients, and an increase in 12/26 (46.2%). In patients with paired pre-LDC and pre-TIL data, a reduction in ctDNA occurred in 6 (75%) and 12 (52.2%) patients with rare and cutaneous melanomas respectively. Following TIL, an increase in ctDNA from day 30 to 60 was observed in 6/7 (85.7%) patients with PD at 4-months, whereas ctDNA decreased 4/5 (80%) patients with response/stability. Moreover, an increase in ctDNA was associated with a significant reduction in OS (p = 0.024). **CONCLUSIONS:** Treatment efficacy was demonstrated in some patients following TIL. Assessment of response at 30-days may be too early to accurately delineate patients and is likely influenced by LDC and IL-2. Interestingly, changes in ctDNA between day 30 and 60 following TIL corresponded with clinical response at 4-months. Therefore, ctDNA dynamics may give insight into treatment response.

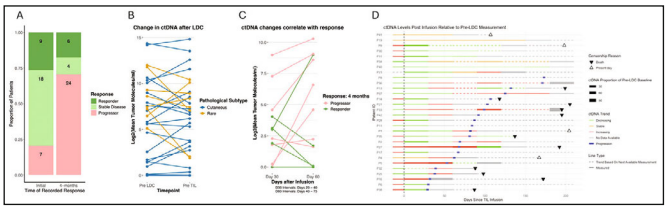

Figure. TIL Therapy in treatment refractory patients with advanced melanoma

EP53

Staging laparoscopy for pancreatic ductal adenocarcinoma: experience from a large quaternary care system

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INTRODUCTION: Detection of radiographically occult metastatic disease (ROMD) in pancreatic ductal adenocarcinoma (PDAC) remains vital for staging. There is no standardized approach, but borderline resectable or locally advanced disease, CA 19-9 > 394, location in the pancreatic body or tail, and no neoadjuvant therapy are predictive of ROMD and often used to select patients for staging laparoscopy. Peritoneal washings have been used at the time of laparoscopy to further detect occult disease, with positive cytology considered by NCCN guidelines to be metastatic (M1) disease. We sought to study characteristics of patients undergoing laparoscopy with or without washings to inform a future protocol at our institution. **METHODS:** This was a single-institution retrospective chart review of all adult patients (> 18) undergoing staging laparoscopy for PDAC from Jan 1, 2020 – Dec 31, 2024. Patients with known metastatic disease were excluded. Descriptive statistics were calculated. Unpaired t-tests were used for normally distributed continuous variables, and Mann-Whitney u-test for nonparametric data. Fischer's exact test was used for comparison of categorical values with small sample sizes. **RESULTS:** 98 patients underwent staging laparoscopy for PDAC. Washings were performed in 55/98 patients (56%). Preoperative characteristics related to ROMD identified at laparoscopy are shown in Table 1. Positive or atypical cytology was found in 7/55 cases (12.7%). One patient (1/55) had positive washings with no gross metastatic disease. In this sample, median CA 19-9, BMI, and tumor location were not associated with ROMD at laparoscopy. Fifty percent (10/20) of patients with ROMD had upfront resectable disease vs. only 41% (32/78) in the no metastasis group (p = 0.01). Cytology results were associated with diagnosis of biopsy proven metastatic disease at laparoscopy (p= 0.003). **CONCLUSIONS:** Staging laparoscopy remains crucial to the workup for PDAC to inform treatment decisions and set patient expectations, particularly in the setting of routine neoadjuvant treatment. In our sample, many factors typically associated with ROMD were not significant, and an unusually high proportion of resectable patients presented with occult metastatic disease. This suggests the need to consider routine staging laparoscopy, and more study is indicated to determine the role of washings.

Table 1: All patients undergoing staging laparoscopy for PDAC

	Radiographically occult metastatic disease *N=20 (%N)*	***No metastatic disease*** *N=78 (%N)*	
Median CA 19-9 at diagnosis (IQR)	1252.5 (161.7-3826)	506.5 (112.25-1469.5)	P = 0.263
Average BMI at diagnosis	25.5 ± 6.5	27.5 ± 6.5	P = 0.108
Tumor location			
Head/uncinate	10 (50)	49 (63)	P =0.296
Body/Tail	10 (50)	29 (37)	
Resectability Status			
Resectable	10 (50)	32 (41)	P = 0.01
Borderline resectable	2 (10)	32 (41)	
Locally advanced	8 (40)	14 (18)	
Cytology (if performed)			
Positive	3 (27)	1 (2)	P = 0.003
Atypical	2 (18)	1 (2)	
Negative	6 (55)	42 (96)	
Not performed	*8*	*35*	

EP54

Cost-Effectiveness Analysis of Peptide Receptor Radionuclide Therapy & Tyrosine Kinase Inhibitors Sequential Therapies in Advanced Pancreatic Neuroendocrine Tumor

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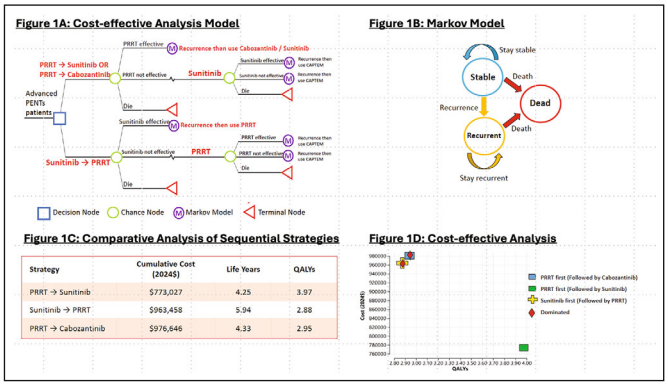
INTRODUCTION: Peptide receptor radionuclide therapy (PRRT) and sunitinib are both recommended systemic therapies for pancreatic neuroendocrine tumors (PNETs), but currently, no standard-of-care combinations of these agents exist. With newer agents like cabozantinib also showing efficacy in progressive cases and high costs of these treatments, identifying the optimal sequencing strategy is essential. Emerging evidence also suggests that PRRT may facilitate conversion surgery in select patients previously deemed unresectable, further underscoring the importance of optimizing treatment sequence. This study evaluates the cost-effectiveness of three clinically relevant sequential strategies to help inform value-based treatment decisions. **METHODS:** A decision analytic model was developed to compare three strategies in patients with unresectable PNETs: A. 1st line PRRT followed by Sunitinib, B. 1st line PRRT followed by Cabozantinib, and C. 1st line Sunitinib followed by PRRT (1A). Markov models with a lifetime horizon were developed to simulate disease progression after each sequence (1B). Model parameters, including transition probabilities and utility weights for calculating quality-adjusted life years (QALYs), were obtained from published studies. Costs (adjusted to 2024$) were evaluated from a healthcare sector perspective. Cumulative costs and QALYs were discounted at 3% annually. A willingness-to-pay threshold of $50,000 per QALY was applied to compare with the incremental cost-effectiveness ratio (ICER). **RESULTS:** The Sunitinib followed by PRRT strategy produced 2.88 QALYs at $963,458 and PRRT followed by Cabozantinib strategy produced 2.95 QALYs at $976,646. PRRT followed by sunitinib sequential therapy yielded the highest QALYs (3.97) and lowest cumulative cost ($773,027), dominating both strategies (1C & D). Sensitivity analyses confirmed the robustness of this finding, with key drivers being the costs of these agents, and the probability of remaining progression-free under PRRT. **CONCLUSIONS:** Our analysis demonstrates that PRRT followed by sunitinib provides the greatest health benefit at the lowest cost, supporting the use of PRRT as first-line treatment in patients with unresectable PNETs. Considering literature supporting PRRT's role in facilitating subsequent resection in selected patients, such as NEOLUPANET and related studies, this sequencing strategy may also offer surgical benefit by expanding candidacy for curative-intent surgery.



Figure

EP55

Gut microbiome modulation ameliorates hepatocellular carcinoma growth by activating type 1 helper T cell response

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INTRODUCTION: Hepatocellular carcinoma (HCC) is a leading cause of cancer related mortality. A better understanding of the factors governing the anti-tumor immune response can help improve disease outcomes. The current study explores the effect of gut microbiome modulation on anti-tumor immune response against HCC. **METHODS:** HCC was induced by a single injection of the carcinogen diethylnitrosamine (DEN) at 2 weeks of age, followed by weekly injections of carbon tetrachloride (CCl4) in male C57BL/6J mice. Mice were then randomized into daily oral gavage with saline or broad-spectrum cocktail of poorly absorbed oral antibiotics (AC) for 14wks (endpoint). In a separate experiment, mice were randomized into saline or AC treatment for 4 weeks, followed by subcutaneous implantation of an HCC cell line derived from DEN-CCL4 mice. Anti-tumor immune response was evaluated using flow cytometry and qPCR. To specifically evaluate adaptive immune response, studies were conducted using Rag 1-/- mice (lack functional B and T cells) as well as using monoclonal antibody based depletion of CD4+ and CD8+ T cells. **RESULTS:** DEN-CCL4 injections induced HCC tumors with 100% penetrance. AC treatment in this model led to significant reduction in tumor burden at end point, when compared to saline treatment, as evidenced by reduced mean liver weight and number of tumor nodules. This was recapitulated in the subcutaneous implanted model as well, with decreased tumor volume and tumor weight at endpoint in AC treated mice. Gut microbiome depletion was confirmed using qPCR and 16s rRNA sequencing. Flow cytometry revealed increased infiltration of CD4+IFNg+ CD4 T-helper cells as well as CD8+GZMB+ cytotoxic CD8 T-cells in the tumor microenvironment upon AC treatment. qPCR similarly revealed increased expression of Th1 markers such as IFNg and TNFa and cytotoxic markers such as GZMB in tumors from AC treated mice. Splenic CD8 T-cells also showed increased cytotoxicity ex-vivo when tested using calcein release assay. Anti-tumor effects of AC treatment were abrogated when the experiment was repeated in Rag1 -/- mice or when CD4 or CD8 T cells were depleted using monoclonal antibodies. AC treatment failed to induce cytotoxic CD8 T cells when CD4 T-cells were depleted, indicating that a Th1 type adaptive immune response is responsible for the anti-tumor effects of gut microbiome depletion (Figure 1). **CONCLUSIONS:** Targeting the gut microbiome stimulates anti-tumor adaptive immune response against HCC. Gut microbiome based therapeutics can emerge as novel therapeutic strategies against this deadly disease.

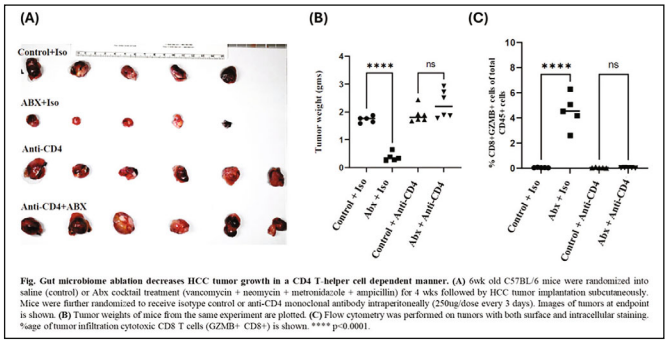

Fig. Gut microbiome ablation decreases HCC tumor growth in a CD4 T-helper cell dependent manner. (A) 6wk old C57BL/6 mice were randomized into saline (control) or Abx cocktail treatment (vancomycin + neomycin + metronidazole + ampicillin) for 4 wks followed by HCC tumor implantation subcutaneously. Mice were further randomized to receive isotype control or anti-CD4 monoclonal antibody intraperitoneally (250ug/dose every 3 days). Images of tumors at endpoint is shown. **(B)** Tumor weights of mice from the same experiment are plotted. **(C)** Flow cytometry was performed on tumors with both surface and intracellular staining. %age of tumor infiltration cytotoxic CD8 T cells (GZMB+ CD8+) is shown. **** p<0.0001.

Figure 1

EP56

Uncovering Global Trends in Surgical Oncology Trials: Applying Natural Language Processing to ClinicalTrials.gov

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INTRODUCTION: Identifying surgical oncology trials within the National Clinical Trial (NCT) database is challenging due to the absence of medical specialty labels. We developed a machine learning classifier to systematically identify and analyze surgical oncology trials registered in the NCT database. **METHODS:** We analyzed 425,736 trials. A training dataset of 4,863 trials were labeled as surgical oncology according to Complex General Surgical Oncology (CGSO) neoplasms. Labels were applied by two independent reviewers, and disagreements resolved by a third, using study descriptions and Medical Subject Headings (MeSH). Neural networks were assessed using stratified 5-fold cross-validation. Models were evaluated using accuracy, balanced accuracy, specificity, sensitivity, and Cohen's kappa. Neural embedding representations were analyzed with principal component analysis (PCA). Trial characteristics, geospatial mapping and social network analyses were evaluated. **RESULTS:** The selected model achieved excellent accuracy (94.1% [95%CI: 93.3–94.9]). PCA of neural embeddings demonstrated separation of CGSO-relevant terms. We identified 24,345 surgical oncology trials. Trial volume was strongly associated with national GDP (r = 0.96) and global disparities were identified. Network analysis revealed strong collaboration amongst U.S. and European institutions. Chinese institutions demonstrated high trial leadership but relatively limited external collaboration. Academic centers like Memorial Sloan Kettering and MD Anderson remained prominent, while industry participation, was consistently evident. **CONCLUSIONS:** This study provides a machine learning approach to identify surgical oncology trials within the NCT database. Our research highlights collaboration networks amongst institutions and global disparities in surgical oncology research. Future work should incorporate funding information to better inform surgical research policy and development.

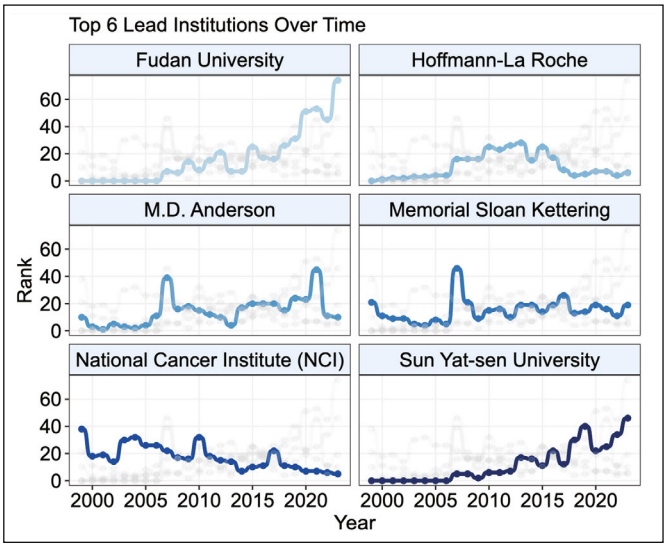

Figure. Top 6 Lead Institutions for Surgical Oncology Clinical Trials within the National Clinical Trials Database

EP57

The effect of prehabilitation on post-operative outcomes in patients with cancer at a single center

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INTRODUCTION: Prehabilitation has been associated with improved perioperative outcomes. The purpose of this study was to evaluate the effect of physical prehabilitation on post-operative outcomes, and to identify opportunities for improvement among patients undergoing major cancer resections at our institution. **METHODS:** This was a single-center retrospective study. Patients who attended at least one pre-operative physical therapy session from 2023 to 2025 were included. All patients underwent esophagectomy, total gastrectomy, pancreaticoduodenectomy, distal pancreatectomy, or hepatectomy (at least two segments) for cancer. Patients were selected for prehabilitation based on increased risk of physical deterioration per surgeon discretion. Preoperative variables included total number of pre-operative therapy sessions, as well as preoperative 6-minute walk test, hand grip strength, "Timed Up and Go" (TUG) scores. Outcomes were any complication, major complications (Clavien-Dindo ≥ 3), or mortality within 30 post-operative days. Categorical variables were compared using the chi-square test. Associations between the number of sessions and complications were evaluated using logistic regression. **RESULTS:** 34 patients were included. 71% of patients received neoadjuvant chemotherapy and/or chemoradiation. Median age was 74 [interquartile range (IQR) 66-78]. 18% of patients were over 80 years old. 21% of patients had pre-existing cardiac disease, 42% had pulmonary disease, and 18% had diabetes. Median number of prehab sessions was 8 (IQR 3-13). 20% of patients attended only one session. The maximum number of sessions was 42. Additional operative and prehab information is in table 1. Overall complication rate was 41%. Major complication rate was 17%. There were two deaths within 30 days. Increased number of prehab sessions was associated with decreased odds of complications on logistic regression (p=0.007). Patients who attended 8 or more prehab sessions had significantly lower rates of any complication (p=0.001) and lower rates of major complications (p=0.031). Most-recent scores from 6-minute walk test, TUG, and hand grip strength were not significantly associated with any post-operative outcome. **CONCLUSIONS:** In a cohort of older patients undergoing major cancer resections, prehabilitation was associated with fewer post-operative complications. A goal of at least eight pre-operative therapy sessions was identified for patients to reduce their risk of post operative complications.

Table 1

Operation	N=	%	average age	age min	age max	Most Recent 6-minute walk below average (%)	Most Recent Hand Grip Strength Below Average (%)	Most Recent TUG below average (%)
Whipple	13	38.2	72.5	62	86	53.8	61.5	15.4
Left Pancreatectomy	3	8.8	68.0	61	78	33.3	66.7	33.3
Hepatectomy	7	20.6	71.7	51	83	42.9	71.4	71.4
Esophagectomy	8	23.5	70.1	50	82	25.0	87.5	37.5
Gastrectomy	3	8.8	82.7	80	86	33.3	33.3	33.3

TUG = Timed Up and Go

EP58

Establishing patient-derived gastric cancer organoids from endoscopic and surgical specimens for personalized drug testing

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INTRODUCTION: Gastric adenocarcinoma (GAC) is a biologically heterogeneous disease with limited actionable molecular targets in the perioperative setting. Reliable, patient-specific preclinical models are lacking. Patient-derived organoids (PDOs) offer a promising ex vivo platform to model tumor biology and therapeutic response. We developed and optimized a protocol to establish GAC PDOs from both untreated endoscopic biopsies and resection specimens, enabling drug testing in clinically relevant timeframes. **METHODS:** Between April 2024-August 2025 with institutional REB approval and patient consent, tumor samples were collected from patients undergoing upper endoscopy (EGD) or curative gastrectomy. PDOs were generated using a standardized culture protocol that we developed, and characterized by histology, short tandem repeat (STR) profiling, SNP and whole genome sequencing. Drug sensitivity screens were performed using clinically relevant chemotherapeutic and targeted agents, and compared to patient outcomes derived from a prospectively maintained GAC patient database. **RESULTS:** Eighteen PDOs were established from 30 gastric tumor samples (60% success rate), with failure more common when patients had received prior treatment. Of the 18 PDO lines, 9 were derived from 15 endoscopic biopsy specimens and 9 from 15 gastrectomy specimens, demonstrating feasibility in both settings. Based on H&E staining, the organoids accurately mimicked the histologic architecture of the individual patient tumor from which they were derived. Furthermore, PDO lines recapitulated the parental tumor's genomic profile (mean STR overlap ~80%, n=4). Drug screens revealed distinct ex vivo responses to individual agents that mirrored the corresponding patient's clinical response. **CONCLUSIONS:** We demonstrate feasibility of generating patient-matched GAC PDOs from both endoscopic biopsy and surgical specimens. These PDOs retain key histologic and molecular features of the original tumor and exhibit concordant therapeutic responses. This platform provides a clinically relevant model for studying GAC biology, testing therapeutic sensitivity, and advancing precision oncology strategies in GAC.

EP59

Gastric ischemic preconditioning reduces reoperation for conduit complications after esophagectomy

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INTRODUCTION: Laparoscopic gastric ischemic preconditioning (LGIP) prior to esophagectomy aims to improve gastric conduit viability and reduce anastomotic complications. This study evaluated the impact of LGIP on perioperative outcomes, particularly the need for reoperation. **METHODS:** An institutional database (2012-2025) was retrospectively analyzed to identify cases of esophagectomy with or without prior LGIP. Exclusions were age < 18 years, non-gastric conduit reconstruction, and palliative resection. The primary outcome was surgical reoperation for anastomotic leak. Comparisons between groups were performed using Mann-Whitney U tests for continuous variables and chi-square tests or Fisher's exact tests for categorical variables. Statistical significance was defined as p-value < 0.05. **RESULTS:** Of 360 esophagectomies included, 107 (29.7%) underwent LGIP. Baseline demographic and clinical characteristics differed between groups with respect to race, smoking status, comorbidities and esophagectomy type, while remaining otherwise similar (Table). LGIP patients had a significantly lower reoperation rate for anastomotic leak (0.9%) compared with controls (5.5%) (p=0.047). Utilization of non-operative treatment modalities for anastomotic leak was similar between groups. Intensive care unit readmission was lower for the LGIP group (12.4% vs. 17.5%), though not statistically significant (p=0.312). The overall anastomotic leak rate was also lower for LGIP (14.0%) compared with controls (19.8%) without statistical significance (p=0.231); however, the distribution of severity of complications according to the Clavien-Dindo classification differed significantly between groups (p=0.006), with a distribution suggesting lower leak severity among LGIP patients. **CONCLUSIONS:** LGIP is associated with reduced reoperation rate and lower severity of anastomotic leak following esophagectomy, suggesting improvement in ischemic conduit complications within the limitations of a single-center observational study.

Table. Baseline characteristics and perioperative outcomes of patients who underwent esophagectomy with or without laparoscopic gastric ischemic preconditioning

		Laparoscopic Gastric Ischemic Preconditioning						
		No = 253 (70.3%)		Yes = 107 (29.7%)		Overall = 360 (100%)		
		N	%	N	%	N	%	p-value
Age at Diagnosis in Years, Median (IQR)		64.6 (56.0 - 69.5)		65.2 (58.2 - 70.6)		65.0 (56.6 - 69.9)		0.338
Sex	Male	209	82.6%	84	78.5%	293	81.4%	0.444
	Female	44	17.4%	23	21.5%	67	18.6%	
Race	White	233	98.7%	99	94.3%	332	97.4%	***0.027**
	Non-White	3	1.3%	6	5.7%	9	2.6%	
Ethnicity	Hispanic	13	5.4%	7	6.5%	20	5.8%	0.803
	Non-Hispanic	226	94.6%	100	93.5%	326	94.2%	
ECOG Performance Status	0	169	70.1%	76	72.4%	245	70.8%	0.767
	1-4	72	29.9%	29	27.6%	101	29.2%	
Tobacco Smoker	Never	100	39.5%	46	43.4%	146	40.7%	***0.021**
	Former	128	50.6%	40	37.7%	168	46.8%	
	Current	25	9.9%	20	18.9%	45	12.5%	
Significant Comorbidities	No	35	14.3%	27	25.7%	62	17.7%	***0.016**
	Yes	210	85.7%	78	74.3%	288	82.3%	
Pre-Operative Diagnosis	Adenocarcinoma	233	88.1%	98	91.6%	321	89.2%	0.247
	Squamous Cell Carcinoma	13	5.1%	8	7.5%	21	5.8%	
	Barrett's Esophagus	2	0.8%	0	0.0%	2	0.6%	
	Achalasia	9	3.6%	1	0.9%	10	2.8%	
	Other Benign	6	2.4%	0	0.0%	6	1.7%	
Esophagectomy Type	Ivor-Lewis	218	86.2%	86	80.4%	304	84.4%	***0.021**
	Transhiatal	21	8.3%	6	5.6%	27	7.5%	
	3-Field	14	5.5%	15	14.0%	29	8.1%	
ICU Readmission	No	207	82.5%	85	87.6%	292	83.9%	0.312
	Yes	44	17.5%	12	12.4%	56	16.1%	
Anastomotic Leak	No	203	80.2%	92	86.0%	295	81.9%	0.231
	Yes	50	19.8%	15	14.0%	65	18.1%	
Clavien-Dindo Severity of Anastomotic Leak	Grade 0	203	80.2%	92	86.0%	295	81.9%	***0.006**
	Grade I	7	2.8%	1	0.9%	9	2.5%	
	Grade II	10	4.0%	2	1.9%	12	3.3%	
	Grade IIIa	5	2.0%	9	8.4%	14	3.9%	
	Grade IIIb	15	5.9%	0	0.0%	15	4.2%	
	Grade IVa	4	1.6%	1	0.9%	5	1.4%	
	Grade IVb	8	3.2%	2	1.9%	10	2.8%	
	Grade V	1	0.4%	0	0.0%	1	0.3%	
Management of Anastomotic Leak	No additional treatment	16	6.3%	2	1.9%	18	5.0%	0.132
	Additional chest tube	8	3.2%	1	0.9%	9	2.5%	0.290
	IR drainage	7	2.8%	0	0.0%	7	1.9%	0.109
	Esophageal stent placement	19	7.5%	9	8.4%	28	7.8%	0.939
	Endoluminal vac placement	5	2.0%	6	5.6%	11	3.1%	0.091
	Reoperation	14	5.5%	1	0.9%	15	4.2%	***0.047**
Length of Hospital Stay in Days, Median (IQR)		11 (9 - 15)		10 (9 - 13)		10 (9 - 15)		0.151

Abbreviations: ECOG, Eastern Cooperative Oncology Group; ICU, Intensive Care Unit; IQR, Interquartile Range; IR, interventional radiology.

EP60

Financial and Opportunity Costs of In-Person Interviews for Complex General Surgical Oncology Fellowship

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INTRODUCTION: The application process for Complex General Surgical Oncology (CGSO) fellowship relies heavily on in-person interviews. Given the competitive nature of the fellowship match, applicants typically apply broadly, incurring significant financial and logistical costs through requisite travel. While prior studies have examined these costs in other specialties, they have not been quantified for CGSO fellowship applicants. **METHODS:** We conducted a cross-sectional survey of the 2025 CGSO applicant cohort. The survey tool assessed satisfaction across multiple facets of the interview process. Preferences regarding in-person versus virtual interviews as well as overall financial and opportunity costs incurred via the in-person interview process were emphasized. Financial toxicity was measured using a modified 9-item FACIT-COST tool. Participants were recruited via direct messaging in the cohort WhatsApp group. Survey results were analyzed using descriptive statistics. **RESULTS:** As of October 2025, 18 applicants had completed the survey (recruitment ongoing). Applicants applied to a mean of 25.8 (SD 8.3) programs and attended a mean of 11.7 (SD 4.0) in-person interviews. The mean total financial cost incurred by applicants was $7,444, with the majority of these costs attributed to transportation (mean $3,885; SD $1,849) and lodging (mean $1,983; SD $990). Applicants estimated per-interview costs of $785 for interviews requiring travel to a different city. Nearly half (44%) of applicants had to utilize savings or retirement funds to cover costs, estimating a mean 23% reduction in available savings following interview season. On the modified FACIT-Cost scale (range 0–36, higher = less distress), the mean score was 21.8 (SD 8.9), suggesting participants experienced moderate financial distress. Applicants missed a mean of 15.7 (SD 8.1) days of clinical time to attend interviews; 39% of applicants were required by their programs to cover additional shifts due to missed clinical time. The majority (89%, n=16) of participants reported a preference for in-person over virtual interviews. **CONCLUSIONS:** CGSO fellowship applicants personally incur significant financial and logistical costs through the process of interviews, spending approximately $7,500 and missing over two weeks of clinical time. Despite these costs, most applicants prefer in-person over virtual interviews. These findings highlight a need to explore strategies to reduce the financial and logistical burden on applicants, whilst maintaining the benefits of in-person interactions.

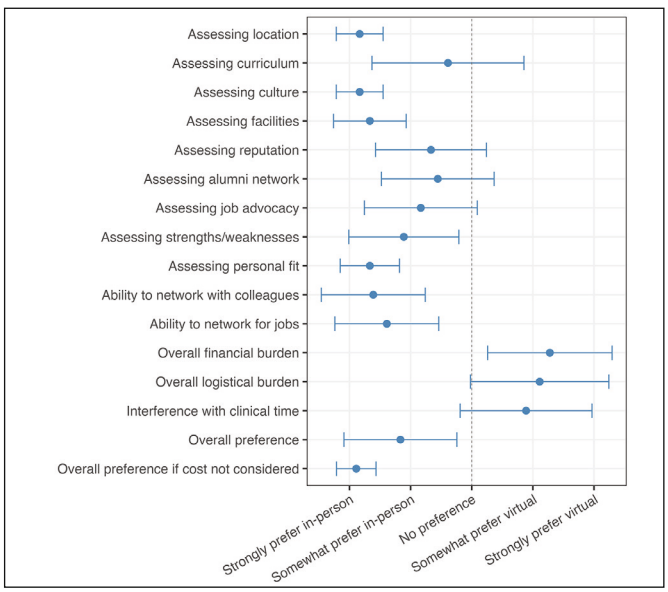

Figure. Mean applicant preferences for in-person versus virtual interview format across key fellowship program factors. Points represent the mean response; error bars indicate standard deviation.

EP61

3D High Density Collagen I Gels Enhance In Vivo Modeling of Metastatic Pancreatic Cancer

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INTRODUCTION: Fibrillar collagen type (CT) I constitutes most of the extracellular matrix in pancreatic ductal adenocarcinoma (PDAC) and is associated with worse prognosis, yet most in vivo murine models involve the use of basement membrane extracts (BME), which instead contain CT IV, as matrices to embed PDAC cells. Our hypothesis is that PDAC cells grown in 3D high density type I collagen (HDC) gels recapitulate human PDAC better compared to the same cells grown using conventional BME (Matrigel). **METHODS:** The FC1199 2D cell line was previously generated from a tumor-bearing male KPC mouse. FC1199 cells were cultured in vitro in HDC or BME for one week. Orthotopic tumors were established by embedding FC1199 cells in HDC (N=25) or BME (N=25) in the pancreatic tail of syngeneic C57BL/6J mice via laparotomy. Tumors were collected at various time points (weeks 1-5) and a smaller set utilized for a survival study. Collagen was imaged by second harmonic generation (SHG) microscopy. **RESULTS:** In vitro imaging of single cells grown in HDC revealed a mesenchymal phenotype with clonal network-like structures compared to a spheroidal phenotype for BME-grown cells. SHG confirmed consistent collagen organization and alignment in HDC tumors but minimal collagen formation in BME tumors. Gross and histological examination of HDC mice showed visible (60%) and histological (80%) liver metastasis compared with none in the BME mice. Our timepoint studies show metastasis formation as early as one-week post-tumor implantation. In the survival study, the entire HDC group died before any of the BME group (Figure, $P < 0.01$). Western blot results show increased vimentin, N-cadherin, and slug (markers of epithelial-to-mesenchymal transition-EMT) expression in HDC-embedded compared to BME-embedded cells. Immunohistochemistry (IHC) results show increased immune (CD45+) and T (CD3+) cell infiltration in the BME vs HDC tumors. **CONCLUSIONS:** Cells embedded in HDC showed a mesenchymal phenotype in vitro with resultant tumors demonstrating more robust collagen organization compared to the same cells grown in BME, translating to worse survival with liver metastasis formation prior to death. This is not typical for most PDAC mouse models but is typical for human PDAC patients. Gene expression studies suggest that these effects may be mediated through induction of EMT by HDC. IHC of tumors show a significant difference in immune cell infiltration spatially that may contribute to the survival differences between HDC and BME. Our preliminary findings support our novel approach of using HDC as an alternative substrate for modeling the aggressiveness of PDAC.

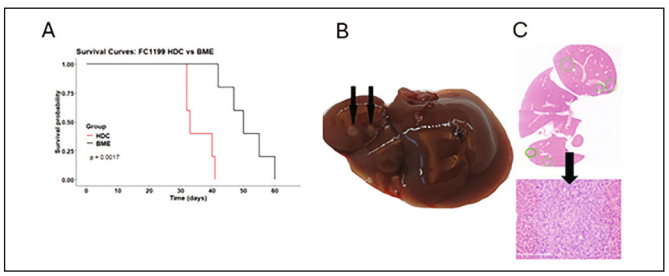

Figure 1. HDC vs BME in vivo models – survival curves and HDC liver metastasis

EP62

Using Generative Artificial Intelligence to Reduce Health Literacy Disparities in Surgical Oncology

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INTRODUCTION: Limited health literacy is a critical barrier to informed consent and equitable care in cancer surgery. Patient education resources in surgical oncology, particularly webpages that serve as a publicly available source of information, often exceed the recommended 6th-8th grade readability standards. This study evaluated whether generative artificial intelligence (AI) could simplify surgical oncology webpages to meet literacy standards while maintaining clinical content and accuracy. **METHODS:** This was a pre-post quality improvement study. Fifteen patient education webpages describing common oncologic procedures were selected from large U.S. cancer centers and hospital systems. Original text and AI-simplified versions were compared using the Flesch-Kincaid Grade Level (FKGL), a validated readability formula that estimates the U.S. school grade level required to comprehend text. Two physician reviewers independently assessed content accuracy using a 5-point Likert scale. Readability before and after AI simplification was compared using the Wilcoxon signed-rank test. Correlation analysis was used to evaluate whether the magnitude of readability improvement was associated with reviewer accuracy scores. **RESULTS:** Readability improved significantly following AI simplification ($Z= -3.408$, $p< .001$). The mean FKGL, representing the estimated U.S. grade level needed for comprehension, decreased from 9.28 (SD 1.52, range 7.30-12.00) for original webpages to 6.26 (SD 1.46, range 4.20-9.40) for AI-generated versions, achieving guideline-recommended levels. Reviewer assessments of accuracy were consistently high, with a median score of 5 out of 5. No significant correlation was observed between the extent of readability improvement and reviewer scores ($p > 0.5$), indicating that even substantial simplifications preserved content fidelity. **CONCLUSIONS:** Generative AI substantially improved the readability of surgical oncology webpages, which represent publicly available resources that patients may rely on to understand their care, while maintaining content integrity. As a scalable quality improvement strategy, AI- driven simplification offers a novel pathway to reduce health literacy disparities, improve patient comprehension, and strengthen informed consent in cancer surgery.

EP63

Artificial Intelligence Powered Tumor Immune Microenvironment Analysis in Malignant Peritoneal Mesothelioma

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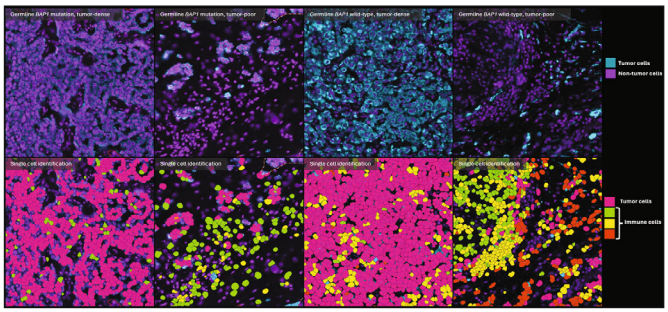
INTRODUCTION: Assessing tumor immune microenvironment (TIME) in malignant peritoneal mesothelioma (MPeM) is critical to understanding MPeM biology and remains an area of inquiry. This study presents 1) an artificial intelligence-powered classification of MPeM tumor tissue into tumor-dense regions (TDR) and tumor-poor regions (TPR) and 2) TIME composition comparison of TDR and TPR based on germline BAP1 mutation status. **METHODS:** MPeM tumor tissue was obtained from 19 discrete sites from 7 patients undergoing index surgical intervention, with median PCI 24. Ten specimens were from patients with germline BAP1 mutations. Multiplex immunofluorescence, detecting 12 protein markers, and quantitative image analysis were used to classify tissue into TDR and TPR, and for single cell identification of TIME. Statistical analysis utilized paired Wilcoxon signed-rank test and unpaired Wilcoxon rank-sum test. **RESULTS:** Tumor cell density varied among samples, with percentage of tumor cells in TDR ranging from 33.5% to 94%, illustrating the heterogeneity of tumor architecture and cellularity. Representative TDR and TPR with associated single cell identification are shown (Figure). Across tumor samples from patients with germline BAP1 mutations, there was minimal variation in TIME between TDR and TPR; only B cells were significantly higher in proportion in TPR. In contrast, in samples from germline BAP1 wild-type patients, there was significant variation in TIME between TDR and TPR: TDR had more monocytes and overall macrophages (mean 17% vs. 9%, p=0.03) and anti-inflammatory M2 macrophages (mean 60% vs. 37%, p=0.01); in contrast, TDR also had fewer cytotoxic T cells (mean 0.6% vs. 1.5%, p=0.02), regulatory T cells (mean 0.5% vs. 1.5%, p=0.01), exhausted T cells (mean 0.3% vs. 1%, p=0.01), and B cells (mean 8.5% vs. 30%, p=0.008). On unpaired analysis between patients with and without BAP1 germline

mutations, there were no differences in TIME of TDR or TPR. Differences in macrophage and T cell subset proportion variation are notable as they are only present on paired analysis between TDR and TPR regions in germline BAP1 wild-type patients. **CONCLUSIONS:** MPeM patients with germline BAP1 mutations may have a homogeneous TIME, whereas those without BAP1 germline mutations have a more heterogenous TIME perhaps related to relative tumor density. Identifying MPeM phenotypes based on germline BAP1 status and TIME, which could be assessed through staging laparoscopy and biopsies, may impact therapeutic strategies, particularly immune-based treatments.



EP64

Longitudinal distress screening in resected breast cancer reveals heterogeneous evolution across multiple distress domains

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INTRODUCTION: Multidisciplinary cancer treatment poses multifactorial stressors to patients, contributing to cancer-related distress which in turn has critical implications for treatment tolerance and compliance. Comprehensive perioperative distress screening data are lacking, and have not previously been reported in any disease site beyond 6 months post-operatively. Breast cancer is an ideal patient population for the study of longitudinal distress outcomes due to high patient volume, multidisciplinary care, and high distress levels. **METHODS:** Patients undergoing resection of breast cancer from 2019-2024 were regularly surveyed for fifteen separate distress domains (scored 0-3: no/mild/moderate/severe distress). Patients with ≥4 postoperative screens were identified. Moderate/severe distress was evaluated for blocked 6-month intervals (6 months pre-op to 24 months post-op), and composite distress score was evaluated with linear regression. **RESULTS:** 589 patients were identified (Table). The proportion with moderate/severe distress in ≥1 domain was stable across 6-month intervals (range 55.7-61.2%). When comparing distress levels across successive 6-month intervals, 47.9-59.6% of patients developed new moderate/severe distress in ≥1 domain across successive 6-month periods through 24 months postoperatively, indicating a high degree of turnover in the distressed population despite a steady proportion of distressed patients. The distress domains with the highest variance in moderate/severe distress were treatment decision-making (range 12.7-34.1%, P<0.001), work/home life disruptions (range 23.1-32.2%, P< 0.01), activities of daily living (range 8.0-22.7%, P< 0.001), and anxiety (range 22.9-35.7%, P< 0.001). On multivariable linear regression, increasing age was the only factor associated with lower distress pre-operatively and at 0-6, 6-12, 12-18, and 18-24 months post-operatively (effect –1.00, –1.06, –0.82, –0.86, –1.02/10 years, P< 0.01, P< 0.001, P< 0.01, P< 0.01, P=0.02, respectively). The extent of breast/axillary surgery, radiation, and systemic therapy were not associated with distress at any time interval. **CONCLUSIONS:** Cancer-related distress in breast cancer evolves heterogeneously throughout the perioperative period. Approximately half of previously non-distressed patients will develop new moderate/severe distress in at least one domain within 6-month intervals, highlighting the critical importance of longitudinal distress screening in surgical oncologic populations requiring multidisciplinary care.

EP65

Phase 1 Dose Escalation Trial of vv-DD-hIL-2-RG-1 (Vaccinia Virus Double Deleted) Administration by Intratumoral Injection for Metastatic Gastrointestinal Tumors: The Regional Immuno-Oncology Trial - 3 (RIOT-3) Protocol

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BACKGROUND: Current treatments for metastatic gastrointestinal malignancies have poor outcomes, necessitating a novel approach to treatment. Oncolytic therapy with vaccinia viruses has previously shown promising results in terms of safety and anti-tumor efficacy. In addition to direct viral cytotoxic effects, oncolytic therapy has the potential to stimulate adaptive immunity against infected tumor cells by altering the tumor microenvironment. The immunostimulatory effects of oncolytic vaccinia vectors have been maximized through the use of recombinant vectors encoding interleukin-2 (IL-2), a potent cytokine that signals T cell activity and proliferation. This trial details the use of a novel oncolytic vaccinia vector-- vvDD-hIL-2-RG-1—which encodes a rigid peptide-linked, membrane-bound form of IL-2, designed to maximize the local immunomodulatory activity following intra-tumoral injection. Previous preclinical data in a murine model have demonstrated that IL-2-bound vaccinia oncolytic virus is safe and exerts dose-dependent anti-tumor activity. RIOT-3 will explore the application of this novel oncolytic viral approach in patients with advanced gastrointestinal malignancies who have failed conventional therapies. The trial is registered at ClinicalTrials.gov; NCT07001592 (registered May 6th, 2025). **METHODS:** RIOT-3 is a phase 1, open-label, single-dose, dose-escalation trial investigating intratumoral injection of vvDD-hIL-2-RG-1. Up to 18 participants with metastatic gastrointestinal cancer who have failed systemic chemotherapy or immunotherapy will be enrolled. The primary study objective is to determine the safety and maximal tolerated and feasible doses for intratumoral injection via a 3+3 dose escalation design. Secondary objectives include quantifying viral replication, pharmacokinetics, and immune response to vvDD-hIL-2-RG-1 intratumoral injection, as well as efficacy assessment by RECIST criteria.

Table. Clinicopathologic Characteristics of N=589 Patients with Resected Breast Cancer and Longitudinal Distress Screening Data

Characteristic	All Patients (N=598) Median [IQR] or N (%)
Age, years	58 [48-67]
Race	
White	424 (72.0)
Asian	72 (12.2)
Black	53 (9.0)
Other/Unknown	40 (6.8)
Marital Status	
Married/Domestic Partner	365 (62.0)
Single	136 (23.1)
Divorced/Widowed/Separated	86 (14.6)
Unknown	2 (0.3)
Histology	
IDC	454 (77.1)
DCIS	58 (9.8)
ILC	48 (8.1)
IDC+ILC	21 (3.6)
Subtype	
Luminal A/B	437 (74.2)
HER2 Amplified	82 (13.9)
Triple Negative	70 (11.9)
Breast Procedure	
Segmental Mastectomy	350 (59.4)
Bilateral Nipple/Skin Sparing Mastectomy	111 (18.9)
Bilateral Total Mastectomy	25 (4.2)
Unilateral Skin/Nipple Sparing Mastectomy	53 (9.0)
Unilateral Total Mastectomy	36 (6.1)

(Table continued)

Axillary Procedure	
Sentinel Lymph Node Biopsy	416 (70.6)
None	89 (15.1)
Axillary Lymph Node Dissection	61 (10.4)
Targeted Axillary Dissection	23 (3.9)
Pathologic Stage	
pCR	55 (9.3)
0	58 (9.8)
1	377 (64.0)
2	64 (10.9)
3	35 (5.9)
Perioperative Systemic Therapy	271 (46.0)
Postoperative Radiotherapy	363 (61.6)
Number of Pre-Operative Surveys	1 [0-2]
Number of Post-Operative Surveys	6 [4-9]
Median Inter-Survey Length, Days	57 [35-105]

Abbreviations: IQR= Interquartile Range; IDC=Invasive Ductal Carcinoma; DCIS=Ductal Carcinoma in Situ; ILC=Invasive Lobular Carcinoma; HER2= Human Epidermal Growth Factor Receptor 2; pCR=Pathologic Complete Response

EP66

Prognostic implications of preoperative and postoperative serum tumor markers in cytoreductive surgery for appendiceal adenocarcinoma

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INTRODUCTION: Appendiceal adenocarcinoma (AA) frequently metastasizes into the peritoneal cavity. The standard of care for resectable AA peritoneal metastases is cytoreductive surgery (CRS) and Hyperthermic Intraperitoneal Chemotherapy (HIPEC). Previous research has shown that the serum tumor markers (TMs) CEA, CA19-9, and CA125 are important prognostic indicators for OS in patients with AA. Here, we see if these TMs can play a role in preoperative and postoperative prognostication and decision-making in patients undergoing CRS-HIPEC. **METHODS:** We performed a retrospective analysis of CRS±HIPEC performed from March 2016-August 2024 at a single tertiary care comprehensive cancer center, focusing on the association of preoperative TM levels, postoperative TM levels, and TM normalization with tumor burden, likelihood of complete CRS, disease-free survival (DFS), and overall survival (OS). **RESULTS:** CRS-HIPEC performed 421 times on 377 unique patients forms the basis of this study. Median postoperative follow-up was 32.2 months. Greater preoperative tumor burden was associated with higher serum TM levels. Although complete and incomplete CRS were both associated with decreased TM levels, complete CRS was more than 4 times more likely to be associated with normalized TM levels (61.5% vs 14.5%, p< 0.001). Elevated preoperative TMs were associated with a 6.6-fold increased risk of incomplete CRS (16.6% vs 2.5%, p< 0.001) and a shorter DFS (HR=1.86, p=0.002) but not a significantly worse OS (HR=1.05, p=0.85). In comparison, postoperative TM elevation predicted both a shorter DFS (HR=3.35, p< 0.001) and OS (HR=3.30, p< 0.001). Failure to normalize TMs was associated with a shorter DFS (HR=3.48, p< 0.001) and OS (HR=6.25, p< 0.001). The association between both postoperative TM elevation and failure to normalize TMs with worse OS remained significant in multivariate analyses controlling for completeness of cytoreduction, PCI, grade, and histology (Postop: HR=3.66, p< 0.001; Failure to normalize: HR=4.18, p=0.016). **CONCLUSIONS:** Serum TMs can estimate AA tumor burden. Elevated TMs are associated with incomplete CRS-HIPEC in patients with AA. Elevated TMs are also associated with worse DFS and OS following CRS-HIPEC, justifying their use in clinical practice.

Table. Summary of Cohort Information

	Complete (n = 325 CRS; 77.2%)	Incomplete (n = 96; 22.8%)	Total (n = 421)
Number of Patients (n, [% of total patients])	296 (78.5)	92 (24.4)	377
Age at Diagnosis (years, median [IQR])	55 (46-63)	55 (47-62)	55 (47-63)
Time From Diagnosis to Surgery			
<6 mo (n, %)	122 (37.5)	32 (33.3)	154 (36.6)
6 mo-2 yrs (n, %)	96 (29.5)	29 (30.2)	125 (29.7)
>2 yrs (n, %)	107 (32.9)	35 (36.5)	142 (33.7)
Female Sex (n, [%])	210 (64.6%)	46 (47.9%)	256 (60.8%)
Histological Subtype			
Mucinous (n, %)	216 (66.5)	71 (74.0)	287 (68.2)
Signet (n, %)	9 (2.8)	1 (1.0)	10 (2.4)
Goblet (n, %)	35 (10.8)	10 (10.4)	45 (10.7)
Adenocarcinoma, not otherwise specified (n, %)	65 (20.0)	14 (14.6)	79 (18.8)
Race/Ethnicity (Self-Reported)			
White or Caucasian, Non-Hispanic (n, %)	252 (77.5)	64 (66.7)	316 (75.1)
Black or African American (n, %)	12 (3.7)	15 (15.6)	27 (6.4)
Asian (n, %)	11 (3.4)	3 (3.1)	14 (3.3)
Hispanic or Latino (n, %)	41 (12.6)	13 (13.5)	54 (12.8)
Other, Unknown, or Declined to Answer (n, %)	9 (2.8)	1 (1.0)	10 (2.4)
Peritoneal Cancer Index (median [IQR])	17 (9-24)	31 (25-36.5)	19 (11-28)
Grade			
Well- and Well to Moderately-Differentiated (n, %)	189 (58.3)	59 (61.5)	248 (59.0)
Moderately- and Poorly-Differentiated (n, %)	135 (41.7)	37 (38.5)	172 (41.0)
Preoperative Tumor Markers			
CEA (n, %)	306 (94.2)	89 (92.7)	395 (93.8)
CA19-9 (n, %)	279 (85.8)	80 (83.3)	359 (85.3)
CA125 (n, %)	281 (86.5)	82 (85.4)	363 (86.2)
Postoperative Tumor Markers			
CEA (n, %)	190 (58.5)	69 (71.9)	259 (61.5)
CA19-9 (n, %)	164 (50.5)	55 (57.3)	219 (52.0)
CA125 (n, %)	172 (52.9)	59 (61.5)	231 (54.9)
Paired Tumor Markers			
CEA (n, %)	179 (55.1)	64 (66.7)	243 (57.7)
CA19-9 (n, %)	143 (44.0)	45 (46.9)	188 (44.7)
CA125 (n, %)	147 (45.2)	48 (50.0)	195 (46.3)

EP67

Perception and Attitude Towards Advanced Minimally Invasive Surgical Training in Oncologic

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INTRODUCTION: Minimally invasive surgery (MIS) has become integral in surgical oncology, yet prior research suggests many Complex General Surgical Oncology (CGSO) fellowship graduates feel unprepared for laparoscopic and robotic procedures in practice. This study aimed to assess MIS training perceptions, career patterns, and the influence of MIS training on program selection and job competitiveness in surgical oncology. **METHODS:** IRB-approved surveys were distributed to current CGSO fellows (2023–2024) and recent CGSO graduates (2018–2022) across 39 U.S. and Canadian CGSO programs. Surveys evaluated MIS training experiences in general surgery residency and CGSO fellowship by surgical oncology subspecialty, modality exposure (laparoscopic/robotic), educational resources (didactics, simulation, labs), and the impact of MIS on fellowship and career decisions. **RESULTS:** Of 416 individuals contacted, 137 graduates (51%) and 102 fellows (68%) responded. While most respondents performed >20 laparoscopic oncologic cases during residency (graduates: 68%, fellows: 73%), only 25% of graduates and 51% of fellows reported similar robotic case volumes. The experience was reversed in fellowship, with 45% of graduates and 55% of fellows rarely or never having performed laparoscopic oncologic procedures whereas most were engaged in robotic surgery (graduates: 80%, fellows: 82%). Upon fellowship completion, 49% felt prepared for independent oncologic MIS practice. A third

of respondents reported insufficient MIS training during fellowship, and over 40% reported no access to robotic educational resources. Post-fellowship, 20% of graduates attended industry-sponsored MIS courses and 23% sought MIS observerships. Most fellows (92%) and graduates (62%) believed MIS skills enhance job competitiveness. Despite gaps in MIS training, 93% of graduates and 98% of fellows use or plan to use MIS in surgical oncology practice. **CONCLUSIONS:** Significant gaps remain in MIS training during CGSO fellowship, particularly in MIS volume, formal curricula, and robotic education resources. While trainees increasingly value MIS proficiency, only half feel prepared upon graduation. As demand for MIS grows, CGSO programs must address these deficiencies to better align training with practice expectations.

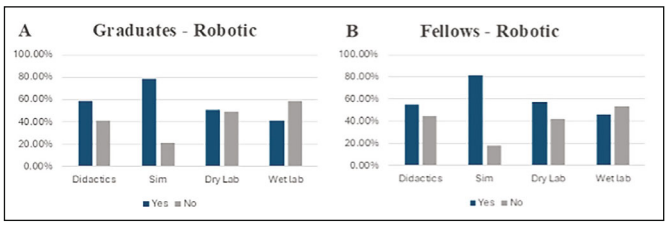

Figure 1. CGSO Fellowship program educational resources available to trainees for robotic surgery (A. graduates and B. fellows)

EP68

Variation in failure-to-rescue after colorectal cancer surgery: a population-based analysis.

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INTRODUCTION: Failure to rescue (FTR), defined as death after major postoperative complication, reflects the capacity to detect and respond to patient deterioration. While a recognized quality indicator, FTR variation across hospitals and its association with a hospital population social makeup remain poorly understood. We examined the extent and drivers of variation in FTR and the association between the social composition of the hospital patient population and the hospital rates of FTR, for colorectal cancer (CRC) surgery. **METHODS:** We conducted a population-based retrospective cohort study of adults undergoing resection for stage I–III CRC over 2007–2020. FTR was defined as in-hospital death after major complication. Exposures were socioeconomic status (SES) and neighborhood ethnic diversity. FTR variation was described using funnel plots. Three-level hierarchical logistic regression examined drivers of FTR. Variance partition coefficients (VPCs) and median odds ratios (ORs) assessed the contribution of surgeons and hospitals to FTR variation. Longitudinal Poisson regression models at the hospital-year level examined the association between the hospital rate of patients with lower SES and from most ethnically diverse neighborhood and the hospital FTR rate (as relative rates – RR). **RESULTS:** Among 61,010 patients, the FTR rate was 1.9%. Crude FTR rates ranged from 0% to 6.7% across hospitals. Variation persisted after case-mix adjustment (0.1% to 4.3%). VPC revealed that 1.9% and 4.8% of the variation was attributable to the surgeon and hospital, respectively. This translated to a median OR of 1.28 (95%CI 1.06-1.41) at the surgeon-level and 1.48 (95%CI 1.32-1.62) at the hospital-level. Among provider and institutional factors, only hospital-level exposure to marginalized populations was significantly associated with FTR. For every 10% increase in the proportion of patients from lowest SES or most ethnically diverse neighborhood, the hospital FTR increased by 9% (RR 1.09; 95%CI 1.03–1.15) and 7% (RR 1.07; 95%CI 1.04–1.10), respectively. **CONCLUSIONS:** FTR after stage I-III colorectal cancer surgery varies significantly across hospitals and surgeons. Otherwise similar patients had 28% and 48% increased odds of FTR depending on the surgeon or hospital treating them, respectively. Hospitals serving greater proportions of patients from lower SES and more ethnically diverse communities were associated with higher FTR rates. These findings underscore the need for quality monitoring of FTR incorporating SDoH stratification.

EP69

Disparities in Mammography Screening in a Welfare-State Healthcare System: Data from 100,000 Women in Israel

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INTRODUCTION: Breast cancer is the most common malignancy among women in Israel and globally. Although early detection significantly improves prognosis, 30% of women in Israel are diagnosed at a locally advanced or metastatic stage. In the early 1990s, Israel implemented a national breast cancer screening program, offering biennial mammograms at no cost to women aged 50 and older at average risk. Such programs, which provide free and accessible mammography, have been shown to improve adherence rates. Despite this, a substantial proportion of women do not participate in regular screening. Our objective is to assess adherence to national mammography screening guidelines among Israeli women and identify sociodemographic and clinical factors associated with screening behavior. **METHODS:** We conducted a retrospective cohort study using Clalit HMO central database. A random sample of 100,000 women aged 45–75 years was followed from 2006–2020. Women with prior breast cancer, breast surgery, or known predisposing genetic mutations were excluded. Adherence was calculated monthly based on 24-month screening intervals and expressed as an adherence index, categorized as poor (< 0.2), low (0.2–< 0.5), moderate (0.5–< 0.8), and full (≥0.8). Associations with sociodemographic, clinical, and preventive health behaviors were analyzed. **RESULTS:** A total of 95,603 women met inclusion criteria. Adherence was poor in 26.6%, low in 26.9%, moderate in 28.2%, and full in 18.3%. Higher adherence was associated with younger entry age, central residence, and Arab versus ultra-Orthodox affiliation. In contrast, lower adherence correlated with peripheral residence and higher religiosity. Clinical factors such as obesity, diabetes, hypertension, depression, and dementia were more common among poorly adherent women. Engagement in other preventive services (Pap smear, influenza and pneumococcal vaccination, colorectal screening) strongly clustered with mammography adherence. Mortality was substantially lower in the highest adherence group (3.8%) compared with the lowest (43.2%; p< 0.0001). **CONCLUSIONS:** In this nationwide cohort of nearly 100,000 Israeli women, substantial disparities in mammography adherence persisted despite universal coverage and organized outreach. Screening behavior reflected not only access but also sociodemographic, cultural, and clinical determinants, and clustered with other preventive health practices. Identifying high-risk subgroups offers opportunities for targeted culturally tailored interventions to reduce inequities and improve early breast cancer detection.

EP70

Evolving indications and outcomes of Splenectomy for hematologic malignancies

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INTRODUCTION: With the advent of new therapies, the diagnostic and therapeutic indications for splenectomy in hematologic malignancies have been changing. This study aims to define the evolving indications for splenectomy and characterize clinical outcomes in patients with hematologic malignancies. **METHODS:** This is a single-center retrospective study. Consecutive patients with hematologic disorders undergoing splenectomy at an NCI-designated comprehensive cancer center, between 2009 to 2024, were included. The patients were characterized under the broader Lymphoid or Myeloid diagnoses. Primary outcome was post-operative complication rate within 30 days. The secondary outcome was the success of splenectomy based on the indication prompting splenectomy. **RESULTS:** Among the 79 patients, 37 were grouped as lymphoid and 33 as myeloid (5 ITP and, 4 others). The median age was 61 years (interquartile range 10 - 84) and 68.4% of patients were male. Diagnostic splenectomy was performed in 13 patients (16.5%) and therapeutic splenectomy in 66 patients (83.5%). The most common indications for splenectomy were bridge to optimal transplant outcome (35.4%), transfusion dependence (24.0%), symptomatic cytopenia (22.8%), and malignancy involving the spleen (17.7%). Overall, the 30-day complication rate was 49% (22% Grade 3 or higher). The 30-day overall complication rate was higher in myeloid patients (63.3%) compared

to lymphoid patients (40.4%) (p = 0.569). Splenectomy was successful in achieving the intended outcome in 72% of patients (by indication, success rates were 92.9% for bridge to transplant, 38.5% for cytopenia, and 40% in post-transplant myeloid patients). Transfusion independence was seen in 38.5% of lymphoid patients (indication cytopenia), 40% of myeloid (post-transplant), and 40% ITP. Among myeloid patients, 92.9% were able to receive hematopoietic stem cell transplantation (HCT) or alleviated requirement. **CONCLUSIONS:** Our results benchmark the post-operative outcomes of splenectomy in select patients with hematologic malignancies in the modern era. Appropriate use of splenectomy can produce favorable outcomes across a broad range of hematologic malignancies, including improved transfusion independence, stabilized blood counts, and successful bridging to definitive therapies.

Table 4. Response to Splenectomy

Characteristic	Pre-Splenectomy (30-day)	Post-Splenectomy (30-day)	p Value
Lymphoma (n=37)			
Indication: Splenic Involvement (N =24) (median)(IQR)			
WBC (K/μL)	6.40 (3.55 - 13.4)	8.90 (6.25 - 11.3)	0.258
Hemoglobin (g/dL)	11.9 (9.4 - 13.9)	12.3 (9.15 - 13.2)	0.594
PLT (K/μL)	119 (67.5 - 203)	327 (194 - 610)	0.003
Indication: Cytopenia (N= 13)			
WBC (K/μL)	4.1 (2.30 - 6.16)	8.1 (5.15 - 9.80)	0.063
Hemoglobin (g/dL)	11.5 (9.95 - 13.7)	11.5 (10.4 - 13.0)	0.312
PLT (K/μL)	109 (36.5 - 155)	394 (103 - 520)	0.094
Transfusion independence*	1 (7.7)	5 (38.5)	0.063
Myeloid Neoplasm (*n = 33*) *Indication: Cytopenia*			
Pre-Transplant *(n = 28)*			
WBC (K/μL)	7.3 (3.60 - 12.2)	12.8 (5.71 - 25.35)	0.071
Hemoglobin (g/dL)	9.1 (7.80 - 10.8)	9.1 (7.88 - 11.6)	0.687
PLT (K/μL)	42.5 (23.0 - 117)	153 (85.5 - 352)	0.005
Transplanted or transplant need resolved	2 (7.1)	26 (92.9)	0.001
Post-Transplant *(n = 5)*			
WBC (K/μL)	3.8 (1.23 - 37.3)	6.4 (3.93 - 8.35)	0.248
Hemoglobin (g/dL)	7.4 (6.80 - 8.95)	8.6 (7.80 - 8.90)	0.386
PLT (K/μL)	11 (9.50 - 136)	43 (23.5 - 209)	0.083
Transfusion independence*	0	2 (40)	0.114
Immune Thrombocytopenic Purpura (n=5) *Indication: Thrombocytopenia*			
Platelet Count			
<50 K/μL	3 (60)	1 (20)	
50 – 100 K/μL	1 (20)	0	
≥100 K/μL	1 (20)	4 (80)	0.150
Transfusion independence*	1 (20)	2 (40)	0.490

** Frequency (percent)*

EP71

Retrospective Analysis of Out-of-Specification Melanoma Patients Harvested for Tumor-Infiltrating Lymphocyte Treatment: Clinical, Genomic, Flow Cytometry and Outcomes Data

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INTRODUCTION: Tumor-infiltrating lymphocyte therapy (TIL) is a recently approved therapy for advanced melanoma. There are patients for whom following TIL harvest and expansion, the product is out of specification (OOS) per the manufacturer's guidelines. It is unknown if there are clinical, genomic or treatment factors prior to TIL harvest that are associated with an OOS product. It is also unknown if an OOS product is associated with worse outcomes. **METHODS:** A single-institution, retrospective analysis of patients with advanced melanoma treated with TIL therapy was performed. Demographic information, histopathologic reports, treatment history, flow cytometric data, clinical outcomes and tumor genomic analysis were collected. **RESULTS:** 40 patients were available for analysis prior to harvest, of which 14 patients (35%) were OOS and 26 patients (65%) were within the company's standard of care (SOC). There were no significant differences appreciated in terms of tissue subtype, harvest location, disease burden (Figure 1A-C). Steroid usage prior to time of harvest was assessed and there was a greater percentage of patients in the OOS cohort who were prescribed prednisone > 10mg in the 28 days prior to harvest (p< 0.01; Figure 1D). There were a number of patients whose steroids usage was de-escalated prior to TIL harvest (Figure 1E). We assessed genetic mutations in the five most common genes identified by SNAPSHOT (Figure 1F). We additionally performed flow cytometry of TILs washed and expanded from the initial harvest in a subset of patients (n=17). There was a greater percentage of CD8+ T cells seen in the SOC vs OOS cohort (p< 0.01; Figure 1G). Finally, we assessed outcomes in patients for whom TIL alone could be associated with progression-free survival (n=34). There was no clear association of worse outcomes in OOS cohort (Figure 1H). Interestingly, 4/5 patients with immediate progression were on steroids at the time of harvest. **CONCLUSIONS:** This work describes the experience using TIL in advanced melanoma at a single institution, highlighting characteristics of patients with an out-of-specification product. These data could be used to help select patients who are more likely to have a TIL harvest product within manufacturer's specifications, though how this correlates with outcomes is unclear.

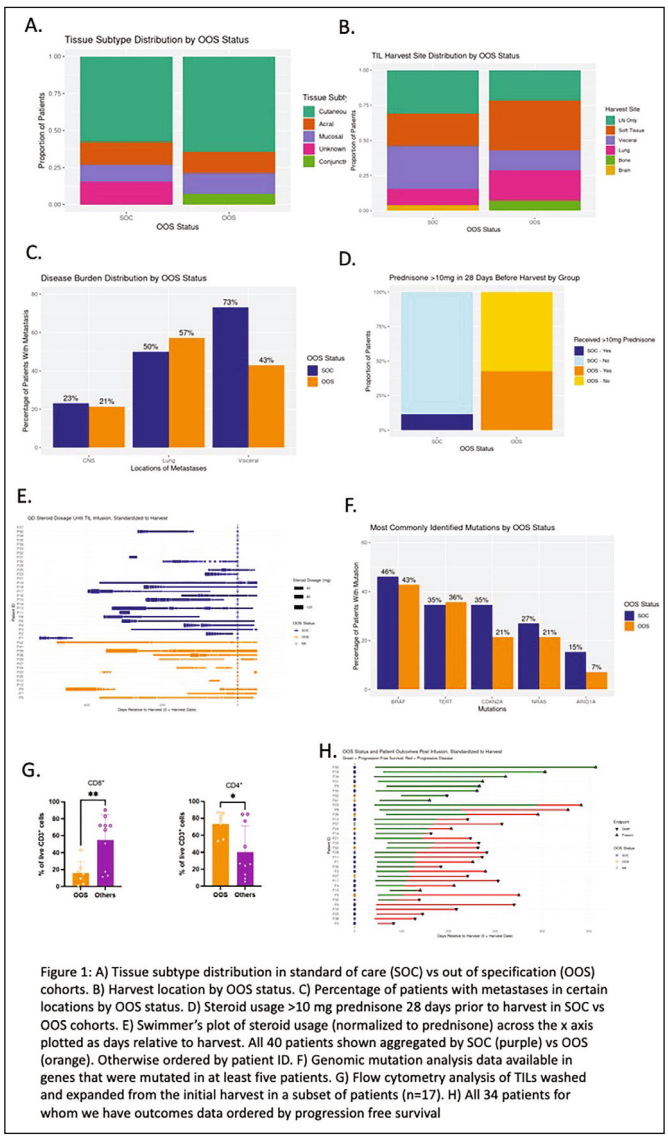

Figure 1: A) Tissue subtype distribution in standard of care (SOC) vs out of specification (OOS) cohorts. B) Harvest location by OOS status. C) Percentage of patients with metastases in certain locations by OOS status. D) Steroid usage >10 mg prednisone 28 days prior to harvest in SOC vs OOS cohorts. E) Swimmer's plot of steroid usage (normalized to prednisone) across the x axis plotted as days relative to harvest. All 40 patients shown aggregated by SOC (purple) vs OOS (orange). Otherwise ordered by patient ID. F) Genomic mutation analysis data available in genes that were mutated in at least five patients. G) Flow cytometry analysis of TILs washed and expanded from the initial harvest in a subset of patients (n=17). H) All 34 patients for whom we have outcomes data ordered by progression free survival

Figure 1

EP72

Dynamic PET/CT-Derived adipose tissue glucose metabolism as a prognostic biomarker for surgically treated esophageal cancer

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INTRODUCTION: Prognostic assessment in esophageal cancer has traditionally focused on tumor-related factors, while host metabolic factors remain underexplored. Recent studies in other malignancies suggest that fluorodeoxyglucose (FDG) uptake in adipose tissue is associated with survival. We investigated whether dynamic glucose metabolic parameters of adipose tissue, measured by dynamic PET/CT, could predict outcomes in esophageal cancer patients undergoing curative resection. **METHODS:** We retrospectively analyzed patients with esophageal cancer who underwent dynamic PET/CT between August 2021 and August 2024, followed by curative resection. From pre-treatment dynamic PET/CT, SUVmax, slope (reflecting metabolic rate), and intercept (reflecting distribution rate) were measured in visceral adipose tissue (VAT) and subcutaneous adipose tissue (SAT). Patients were dichotomized by median values. Associations with overall survival (OS), clinicopathologic factors, and treatment variables were evaluated using Kaplan–Meier analysis and Cox proportional hazards modeling. **RESULTS:** Forty-nine patients were included (median age 72 years, range 50–86; male:female 37:12). High SUVmax and slope values in both VAT and SAT were significantly associated with shorter OS (VAT SUVmax HR 3.51, p< 0.05; VAT slope HR 3.82, p< 0.05; SAT SUVmax HR 3.79, p< 0.05; SAT slope HR 4.32, p< 0.05). Intercept values were not prognostic. In multivariate analysis, VAT slope and SAT slope remained independent predictors of OS after adjustment for T stage, N stage, and preoperative treatment (VAT slope HR 4.95, p< 0.05; SAT slope HR 7.89, p< 0.05). **CONCLUSIONS:** Dynamic PET/CT-derived adipose tissue glucose metabolism, particularly metabolic rate parameters, is an independent predictor of survival in esophageal cancer. These findings identify adipose tissue metabolism as a novel host-related imaging biomarker and suggest potential value for risk stratification and perioperative management.

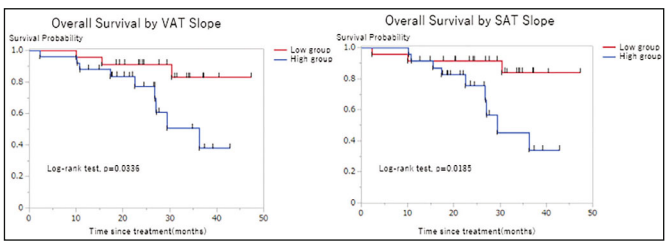

Figure. Overall Survival by VAT/SAT Slope

EP73

Impact of the 21st Century Cures Act on Surgical Oncology Practice: A National Survey of American College of Surgeons Commission on Cancer (CoC)-Accredited Programs

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INTRODUCTION: The 21st Century Cures Act, fully enacted in 2021, mandates immediate release of PHI through secure electronic portals. While intended to enhance patient empowerment, the impact of the immediate release of oncologic surgical pathology results on patient interpretation, clinical workflows, and patient-provider communication remains unclear. **METHODS:** A 16-item anonymous survey was distributed to surgical oncology providers across American College of Surgeons CoC-accredited programs. Demographic information was collected (Figure). The survey assessed provider awareness and perception of the immediate release of oncologic surgical pathology results via electronic portals. **RESULTS:** Of 62 respondents, awareness of the Act was moderate to high, with 56.4% reporting they were “moderately” or “extremely familiar”, and only 3.2% were “unfamiliar”. Perception of the Cures Act was mixed: 33.9% reported somewhat or very positive views, while 41.9% held somewhat or very negative views. 50.0% noted worsened patient-provider communication, and 58.1% reported disruptions in clinical efficiency. 93.5% of respondents disagreed with the statement, “My patients generally have a good understanding of their surgical pathology results after reading them independently”, with 79% of respondents noting increased patient misinterpretation. 90.3% of respondents spent additional time clarifying information, with 67.7% spending ≥5 minutes per patient. Patients frequently reached out via portal messages (56.5%) and phone calls (85.5%), with questions typically addressed by surgeons (50.0%),), nurses (19.4%), and APPs (12.9%). Common challenges included provider perceived patient anxiety and misinterpretation, and negative impacts on the provider-patient relationship. Providers identified clearer guidelines on what information is immediately released (90.3%), patient education and decision aids (61.3%), and increased staffing to handle patient inquiries (43.6%) as top priorities for improving implementation. **CONCLUSIONS:** While the Cures Act aims to increase patient engagement and empower patients, surgical oncology providers report mixed perceptions and notable challenges, particularly regarding communication and workflow efficiency. Targeted interventions for delivery of sensitive results in the surgical oncology setting—including patient education and EMR enhancements for communication—are critical to optimizing the Act’s implementation in oncology care.

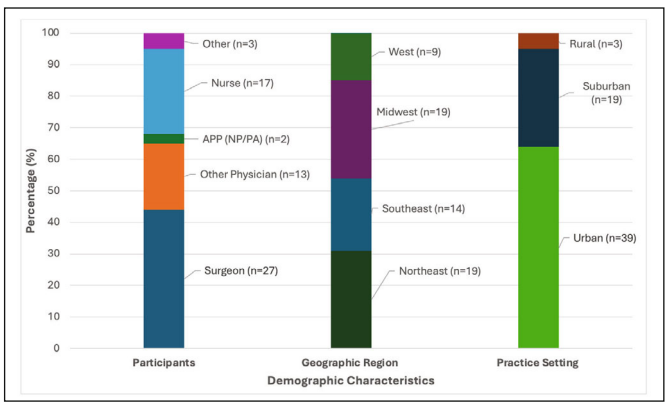

Figure. Demographic Characteristics of Survey Participants

EP74

Characterization of intraepithelial neutrophils in a mouse model of IPMN

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) has a well-known immunosuppressive microenvironment, however infiltrating neutrophils are observed in human pancreatobiliary intraductal papillary mucinous neoplasms (PB-IPMN) and their significance to disease initiation or progression is unclear. We previously described an inducible mouse model

of duct-specific Kras activation and Pten loss that develops PB-IPMN and PDAC similar to human disease. Here we characterize whether this mouse model recapitulates the intraepithelial neutrophilia observed in patients. **METHODS:** Four mice with pancreatic ducts of the corresponding genotypes (KrasG12D;Pten-/-, KrasG12D;Pten+/-, KrasG12D;PtenWT, KrasWT;Pten-/-, KrasWT;PtenWT) were selected. One representative slide per mouse was stained for myeloperoxidase to detect neutrophils. Lesion and duct lumens were annotated, and computational analysis quantified neutrophil-lumen spatial relationships. Lumen geometry was used to quantify papillary architecture. **RESULTS:** Intraepithelial (≤5 µm from lumen) neutrophils were more abundant in IPMN than PDAC (29 vs 8.5 cells/region; KW $p=3.3\times10^{-22}$); this persisted after total lesion area normalization (23 vs 11 cells/mm²; KW $p=5.7\times10^{-9}$). A confirmatory analysis normalized to just the epithelial area showed a similar trend (IPMN vs PDAC: 480 vs 320 cells/mm²; KW p=0.095). Within IPMN, both local (100 µm lumen segment nearest the neutrophil) and global papillary complexity predicted intraepithelial neutrophil localization in logistic regression (local OR per SD = 1.17, 95% CI 1.15-1.18, $p < 0.005$, global OR per SD = 1.04, 95% CI 1.03-1.05, $p < 0.005$). To test if intraepithelial localization preceded precancerous lesion formation, we analyzed non-lesion associated side and main ducts. Pten homozygous loss markedly increased intraepithelial neutrophil density (median 37.5 cells/mm² vs 0 in wild type, $p < 0.005$), while Kras activation alone or in combination with Pten loss did not. **CONCLUSIONS:** In our mouse model, intraepithelial neutrophilia occurs across lesions and is greater in PB-IPMN compared to PDAC. In PB-IPMN, neutrophil localization is linked to papillary complexity. In normal ducts, Pten loss recruits neutrophils, while Kras activation blunts this response. These findings suggest an immune response exists during IPMN development. Defining the impact of these neutrophil-epithelial interactions may inform use of immunomodulation in early disease.

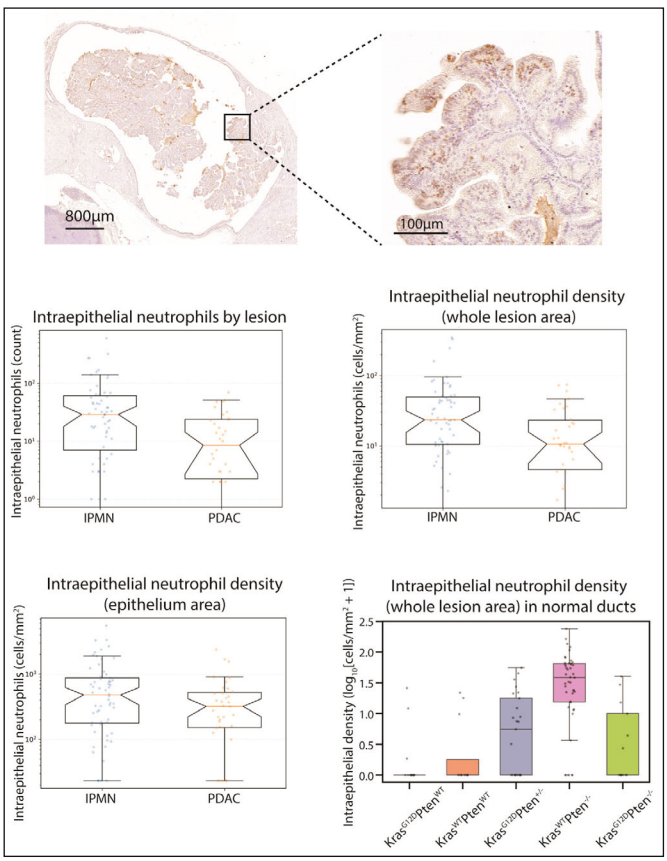

Figure. Intraepithelial neutrophils in a mouse IPMN model.

EP75

Minimally Invasive Oncocytic Thyroid Carcinoma: Are We Overtreating?

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INTRODUCTION: The 2022 WHO reclassification and 2025 American Thyroid Association (ATA) guidelines have refined the definition and management of oncocytic (Hürthle cell) thyroid carcinoma. The ATA differentiates widely invasive oncocytic carcinoma (WIOC) from minimally invasive (MIOC) by vascular and capsular invasion and conditionally recommends lobectomy without completion thyroidectomy or radioactive iodine (RAI) in the absence of high-risk features. We investigated whether recent management of MIOC is consistent with new ATA guidelines and identified factors to risk stratify tumors. **METHODS:** A retrospective review identified all patients who underwent thyroid surgery for oncocytic neoplasms at a tertiary center from 2012–2022. Tumors were classified as oncocytic adenoma (OA), MIOC, or WIOC according to 2025 ATA criteria. Demographic, pathologic, and treatment variables were compared using chi-square, Fisher's Exact, and ANOVA tests, with multivariable analysis comparing OA vs MIOC and OA vs WIOC. **RESULTS:** Among 309 patients, 224 had OA, 46 MIOC, and 39 WIOC. Mean age rose from 54.9 years in OA to 58.9 in MIOC and 62.3 in WIOC ($p = 0.004$). Mean tumor size progressively increased (2.25 cm OA, 2.88 cm MIOC, 5.63 cm WIOC; $p < 0.001$), and tumors ≥ 4 cm were observed in 15%, 35%, and 87%, respectively. The logistic regression showed that compared with OA, the odds of MIOC increased by 21% per 10-year increase in age ($p = 0.11$) and by 25% per cm increase in tumor size ($p = 0.024$). The odds of WIOC increased by 28% per 10-year increase in age ($p = 0.11$) and more than doubled per cm increase in tumor size (OR = 2.44, $p < 0.001$). Initial total thyroidectomy was performed in 44% of MIOC and 46% of WIOC. Among lobectomy cases, 50% of MIOC and 91% of WIOC underwent completion thyroidectomy. Tumor size did not impact extent of surgery decision making preoperatively (patients undergoing total thyroidectomy, < 4cm, 36%; ≥ 4cm, 39%; p=.75). RAI was administered to 48% of MIOC and 74% of WIOC ($p = 0.023$). Recurrence was only observed in WIOC and at a rate of 13% ($p = 0.018$). **CONCLUSIONS:** Widely invasive oncocytic carcinoma is associated with older age, larger tumor size, and increased risk of recurrence, but MIOC exhibits no aggressive behavior or recurrence. However, nearly half of MIOC patients received completion thyroidectomies and RAI, highlighting persistent overtreatment. Adherence to ATA recommendations favoring lobectomy without RAI for MIOC is supported and should inform more conservative, risk-adapted practice.

EP76

Evaluating the effect of fecal diversion on morbidity in patients undergoing CRS/HIPEC with associated colorectal anastomoses: a systematic review and meta-analysis

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INTRODUCTION: Cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) is an established treatment for peritoneal surface malignancies but carries considerable morbidity, particularly when colorectal anastomoses are created. Diverting ostomies are frequently employed to mitigate the risk of sepsis or clinical sequelae from anastomotic leak; however, their benefit remains uncertain and must be balanced against their inherent complications. **METHODS:** A systematic review and meta-analysis were conducted using PubMed and Embase to identify studies of patients who underwent CRS/HIPEC with a colorectal anastomosis and reported outcomes by presence or absence of a diverting ostomy. Eligible studies documented ostomy use, anastomotic leak rates, and perioperative outcomes. Abstracts were screened independently by two reviewers, followed by full-text assessment for inclusion. Pooled odds ratios (ORs) and mean differences

(MDs) were calculated using inverse-variance weighting, with treatment-arm continuity corrections for rare events. Statistical heterogeneity was assessed using the I^2 statistic, with I^2 >50% indicating substantial heterogeneity. Fixed-effects models were applied when I^2 < 50%, and random-effects models were used otherwise. **RESULTS:** Of 506 studies identified, 276 remained after duplicate removal, and 26 met initial screening criteria. After full-text review, 10 studies and our institutional cohort were included, comprising 1,827 patients (670 with ostomy, 1157 without). No statistically significant differences were observed between CRS/HIPEC patients with diverting ostomy versus those without in peritoneal cancer index (MD −1.36 [−7.27, 4.56], p=0.65), operative duration (MD 38.98 [−25.53, 104.49], p=0.24), grade ≥3 complications (OR 1.05 [0.25, 4.43], p=0.94), or length of stay (MD −1.73 [−3.89, 0.42], p=0.12). Formation of a diverting ostomy did not reduce rates of clinically significant anastomotic leaks, the primary outcome of interest, but was associated with higher 60-day readmission rates (OR 3.29 [1.52–7.11], p=0.002). **CONCLUSIONS:** Among CRS/HIPEC patients undergoing colorectal anastomosis, diverting ostomy formation did not reduce clinically significant anastomotic leaks or major perioperative complications but was associated with increased readmissions. Routine fecal diversion may therefore offer limited benefit and should be used selectively.

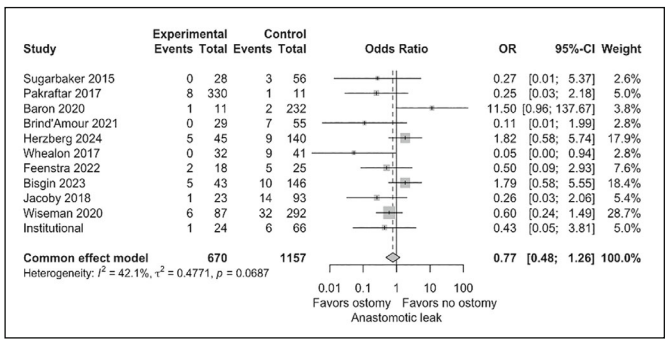

Figure. Rates of clinically significant anastomotic leaks

EP77

Sequential Postoperative Circulating Tumor DNA Analysis Stratifies Conditional Risk of Recurrence Over Time Following Hepatectomy for Colorectal Liver Metastases

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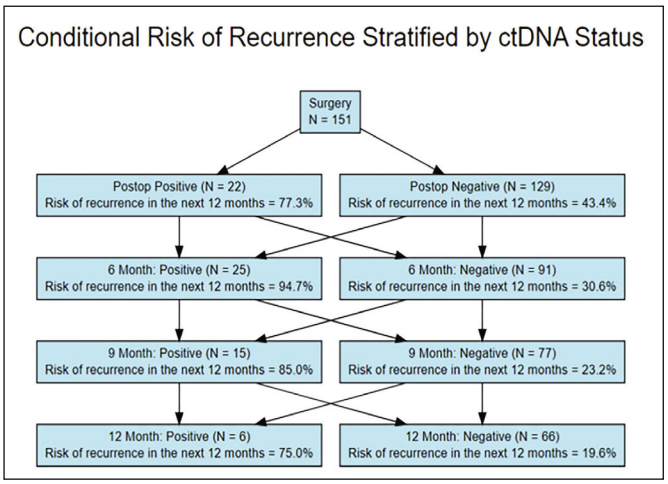
INTRODUCTION: Previous research has identified the concept of conditional recurrence-free survival (RFS) after hepatectomy for colorectal liver metastases (CLM), demonstrating variable probability of recurrence over time. Our study aimed to further stratify probability of recurrence through postoperative circulating tumor DNA (ctDNA) analysis for patients undergoing hepatectomy for CLM. **METHODS:** Patients undergoing curative-intent hepatectomy for CLM were identified from a prospectively-maintained database from 2021 – 2024 along with prehepatectomy and postoperative tumor-informed ctDNA assays. RFS was defined from date of surgery or completion ablation to last follow-up, recurrence, or death. Median follow-up was 26.7 months. **RESULTS:** 151 patients were included with 22 (15%) having detectable ctDNA postoperatively, 30 (20%) by 6 months, 25 (17%) by 12 months, while 74 (49%) patients remained undetectable at 12 months. Compared to those patients with detectable postoperative ctDNA, there was no difference in RFS for patients with detectable ctDNA by 6or 12 months (median 4.9 vs. 6.2 vs. 9.2 months, respectively; p = 0.77). However, undetectable ctDNA at 12 months was associated with longer RFS (median 4.9 vs 34.2 months; p = < 0.001). Undetectable postoperative ctDNA (HR 0.52, p = 0.04), ≤ 2 CLM (HR 0.47, p = 0.003), history of local therapy for prior CLM (HR 2.04, p = 0.004), and RAS+TP53 co-mutation (HR 1.66, p = 0.04) were independently associated with overall RFS. Having ≤ 2 CLM (OR 0.30, p = 0.02), <10% tumor viability (OR 0.20, p = 0.004), undetectable postoperative ctDNA (OR 0.29, p = 0.03), history of local therapy for prior CLM (OR 2.66, p = 0.03) and RAS+TP53 co-mutation (OR 2.91, p = 0.02) were independently associated with risk of recurrence within 12 months. On landmark analyses, maintaining undetectable ctDNA was associated with decreasing conditional risk of recurrence compared to those with detectable ctDNA. The rate of recurrence within the next 12 months was significantly reduced in patients with undetectable postoperative ctDNA (43.3% vs. 77.3%, p < 0.001), and continued to decline among those with undetectable ctDNA at 6 months (30.6% vs. 94.7%, p < 0.001), 9 months (23.2% vs. 85.0%, p < 0.001), and 12 months (19.6% vs. 75.0%, p < 0.001). **CONCLUSIONS:** Sustained ctDNA negativity during surveillance results in a stepwise decrease in risk of recurrence over time following hepatectomy for CLM. The addition of serial postoperative ctDNA analyses may allow for personalized post-hepatectomy surveillance pathways.



EP78

Tranexamic acid in cancer surgery: A systematic evidence map of clinical and preclinical studies

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INTRODUCTION: Tranexamic acid (TXA) is widely used to reduce blood loss and transfusion in major surgery. Its safety in oncologic surgery remains uncertain, with theoretical risks of venous thromboembolism (VTE) and tumor progression. We conducted a systematic analytic review of clinical and laboratory evidence evaluating TXA in cancer surgery or cancer models. **METHODS:** We searched MEDLINE, Embase, CENTRAL, and Web of Science up to May 2025. Screening and extraction were performed in duplicate using Covidence. From 2590 unique citations screened, 116 full texts were assessed and 56 studies met criteria. Eligible studies evaluated TXA or epsilon-aminocaproic acid (EACA) and reported transfusion, VTE, or oncologic outcomes in cancer populations or models. Findings were summarized narratively. **RESULTS:** Fifty-six studies were included: 35 clinical and 21 laboratory. Among 28 clinical studies reporting transfusion outcomes, most retrospective and single-center series demonstrated reduced transfusion with TXA. However, contemporary multicenter randomized trials did not reduce transfusion compared with control, suggesting any benefit is not consistent under modern care. Across 22 studies assessing VTE,

postoperative DVT/PE rates were typically 1-3% and did not differ between TXA and controls. Only six clinical studies examined cancer outcomes directly, none showing harm, but all were underpowered for recurrence or survival. Laboratory studies (n=21) yielded mixed results: some reported enhanced invasion or migration at supratherapeutic concentrations, others showed neutral or protective effects. **CONCLUSIONS:** TXA's clinical effect on transfusion in cancer surgery is inconsistent, and contemporary randomized trials have not shown a transfusion reduction. Available data do not indicate increased VTE risk, and clinical signals of oncologic harm are absent but imprecise. Cancer-specific randomized trials powered for recurrence and survival endpoints are needed to define long-term safety and to clarify whether any indirect effects via transfusion exposure influence oncologic outcomes.

EP79

Scrolling through the noise: what Reddit reveals about tamoxifen

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INTRODUCTION: Tamoxifen, a selective estrogen receptor modulator (SERM), remains central to adjuvant treatment for hormone receptor–positive breast cancer, reducing recurrence and improving survival in both pre- and postmenopausal women. Despite its efficacy, tamoxifen is associated with side effects that may affect quality of life and adherence. Many patients turn to online platforms for information and support, yet the reliability of Reddit as a source of health information on tamoxifen remains unclear. **METHODS:** Posts and comments referencing "tamoxifen" were extracted from r/breastcancer and related subreddits over the past 5 years using the RedditExtractoR package in R Studio. Threads without comments were excluded. Data extracted included text, author, date, and URL. Text was de-identified and thematically coded into domains including vasomotor symptoms, weight gain, sleep disturbance, sexual health, fatigue, CNS symptoms, management strategies, advice seeking, perceived benefits, and social support. Sentiment was analyzed using the Bing lexicon, classifying posts as positive or negative based on polarity scores. To capture emotional nuance, the NRC lexicon was used to categorize text into ten emotional domains. **RESULTS:** A total of 194 posts and 6,030 comments were analyzed. The most frequent themes were side effects (45%), followed by support (17%) and advice seeking (12%). Posts were generally neutral (mean sentiment –2.9), while comments were more negative (mean –21.6). Regardless of post sentiment, comments were overall negative. Over time, sentiment among comments became progressively less negative, from highly negative in 2023 (mean –75) to moderately negative in 2025 (mean –15). Analysis of emotions revealed prominent themes of fear (19%), anticipation (16%), and sadness (15%), representing the top three emotions across both posts and comments. When controlled for comment count, these relative proportions remained stable over time. **CONCLUSIONS:** Reddit is an active forum for patient discussion regarding tamoxifen, focused largely on managing side effects and seeking both support and advice. Although overall sentiment remains negative, comment tone has become less negative over time, indicating a shift toward more balanced tone and engagement. Understanding the nature and trajectory of these discussions can help clinicians anticipate common patient questions, address misconceptions, and guide evidence-based education during clinical encounters. Integrating awareness may enhance communication and better support adherence to long-term endocrine therapy.

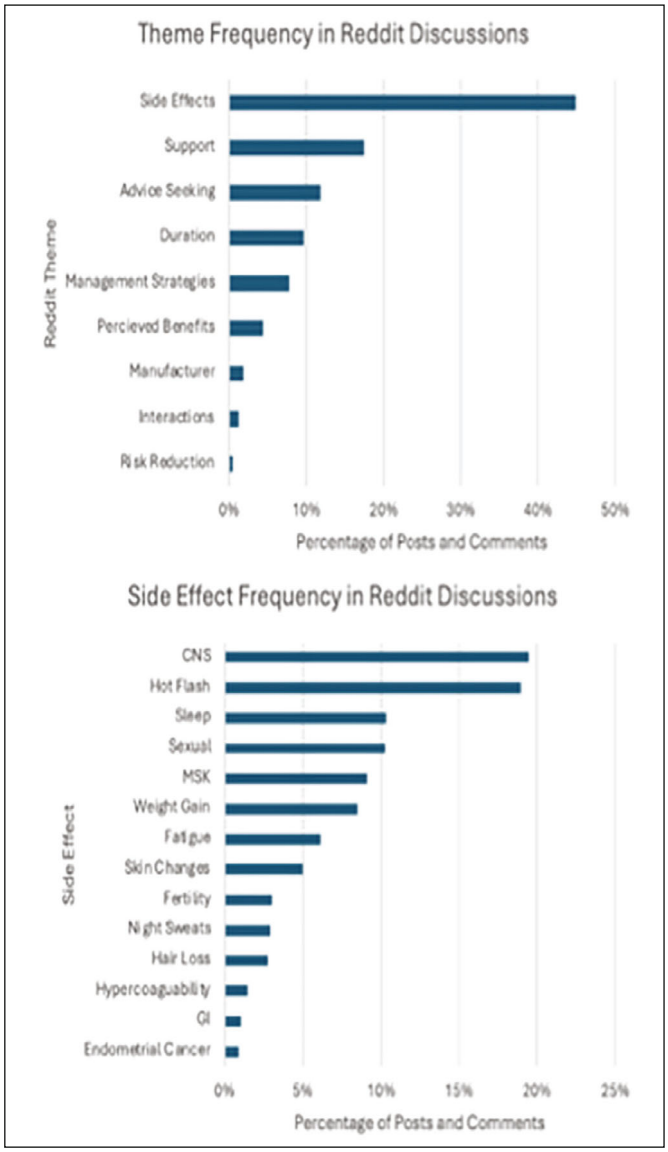

Figure 1. Themes and side effects discussed in Reddit posts about tamoxifen. (A) Theme frequency in Reddit discussions demonstrates that posts most frequently addressed side effects, support, advice seeking, treatment duration, and management strategies. (B) Side effect frequency highlights that central nervous system (CNS) symptoms, hot flashes, sleep disturbance, sexual effects, and musculoskeletal (MSK) complaints were the most commonly discussed. Percentages represent the proportion of posts and comments referencing each category.

EP80

Tamoxifen on the web: accurate, but can anyone understand it?

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INTRODUCTION: Tamoxifen was the first targeted anticancer agent for breast cancer, and is known to reduce recurrence and mortality, yet nonadherence remains a significant barrier in care. Patient overestimation of risks and side effects is shown to contribute to nonadherence. As patients are increasingly turning to the internet for health advice and using it as a tool to

guide their treatment plans, our study investigates online information related to Tamoxifen. **METHODS:** We identified the top four search terms from 2020–2025 for Tamoxifen using Google Trends. These terms were queried by two independent researchers and the top 25 results per term were collated and all duplicates were removed. The search was repeated two weeks later to maximize cross-sectional accuracy. 55 unique websites were categorized and assessed for quality, readability, distractibility, and tone. **RESULTS:** Of the 55 websites, five were commercial, ten were hospital-affiliated, nineteen were journal repositories, seven were national medical organizations, ten were other nonprofit, one was physician-affiliated, and three were social media. Quality was assessed using both JAMA and DISCERN scoring systems. Statistical analysis showed that journal repositories scored significantly higher in quality compared to social media websites ($p< 0.05$). Social media websites were rated to have the lowest quality of information. The other website categories had more favorable quality ratings. Inter-rater reliability was excellent for both JAMA and DISCERN (ICC 0.77, 0.81). Across four distinct readability indices (Cole-Liau Index, Flesch-Kincaid Grade Level, Flesch Reading Ease, Simple Measures of Gobbledygook Index), the average text complexity ranged at or above the twelfth grade reading level, markedly above the suggested reading level for patient education materials. Higher quality was positively correlated with higher reading level ($p< 0.05$). Statistical analysis of the distractibility index exhibited no difference across website categories. Tone analysis revealed the websites carried a mildly negative sentiment overall, with sadness the most common emotion expressed. **CONCLUSIONS:** Online patient information regarding Tamoxifen is overall negative, varies in quality, and is difficult for the public to understand. High-quality online information remains difficult for most patients to understand, while lower-quality content is more readable, creating a barrier to informed decision-making. Surgeons can use these findings to combat patient hesitancy towards treatment and tailor their conversations towards best informed practices which will improve adherence.

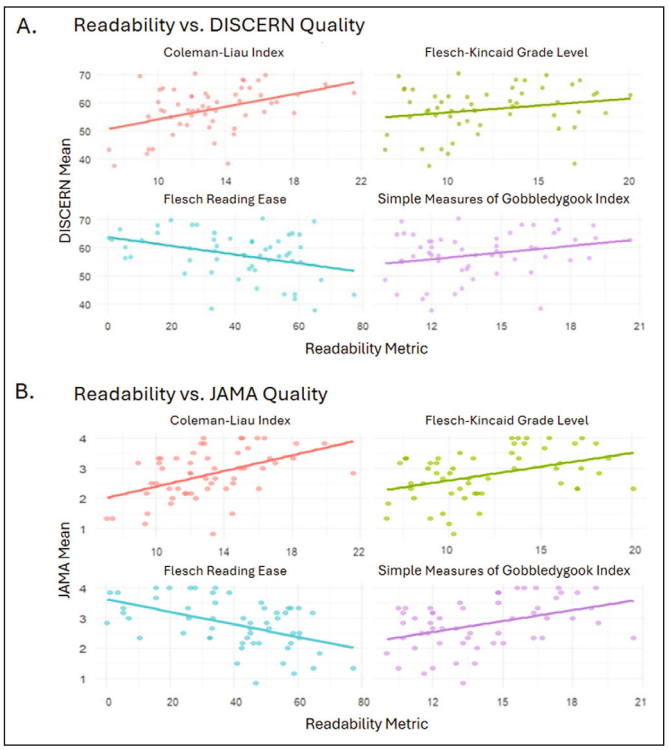

Figure 1. Readability versus DISCERN (panel A) and JAMA (panel B) scores

EP81

Role of routine staging laparoscopy for pancreatic adenocarcinoma in underserved populations: a 14-year experience at a safety-net hospital

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INTRODUCTION: Staging laparoscopy plays an important role in the evaluation of pancreatic ductal adenocarcinoma (PDAC) to detect occult metastases and prevent non-therapeutic laparotomy. However, limited data exist on its routine use in underserved patient populations who face disparities in cancer diagnosis and treatment. The purpose of this study was to evaluate the utility of routine staging laparoscopy in patients with potentially operable PDAC at an urban safety-net hospital and determine its impact on survival. **METHODS:** We conducted a single-institution retrospective chart review of all patients referred for staging laparoscopy for potentially operable PDAC from May 2011 to May 2025. Clinicopathologic data were collected including demographics, tumor characteristics, and relevant laboratory values. The primary outcome was occult metastatic disease detected at laparoscopy; predictive factors were evaluated with multivariable logistic regression. Median survival was estimated using the Kaplan–Meier method and compared using log-rank tests. **RESULTS:** Fifty-three patients were identified between 2011and 2025. Of these, 52 (98%) underwent staging laparoscopy and 18 (35%) ultimately received curative-intent surgery (Figure). Median age was 58 years, 54% were male, 87% were non-White, 40% were non-English Speaking, and 89% presented through the emergency department. Median pre-operative CA 19-9 value was 344.8 U/mL (IQR 42.3 – 1062.4). By radiographic criteria, 19 (36.5%) were classified as resectable, 24 (46.2%) as borderline resectable, and 9 (17.3%) as locally advanced. Staging laparoscopy identified occult metastatic disease in 12 patients (23.1%). Multivariable logistic regression did not reveal any factors predictive of occult metastasis. Median overall survival for the cohort was 30.8 months. Survival differed markedly by group: 35.7 months without occult metastasis versus 9.5 months with occult metastasis (log-rank $p < 0.001$), and 102.5 months after curative-intent surgery versus 17.8 months without resection (log-rank $p < 0.001$). **CONCLUSIONS:** Routine staging laparoscopy is a valuable tool in the management of pancreatic ductal adenocarcinoma in this underserved patient population. One in four in patients were upstaged to metastatic disease, thereby avoiding a non-therapeutic laparotomy and the morbidity of non-curative surgery.

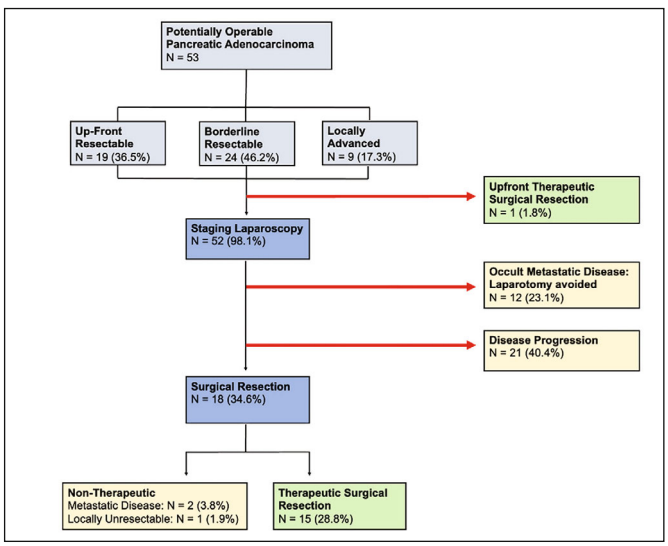

Figure. Treatment of PDAC at an urban safety-net hospital 2011-2025

EP82

Impact of the SSO International Career Development Exchange program on global surgical and cancer-care capacity building

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INTRODUCTION: The Society of Surgical Oncology (SSO) International Career Development Exchange (ICDE) was launched in 2014 to promote international collaboration and capacity building in surgical oncology. The

ICDE program supports international surgeons through short-term observerships at academic cancer centers in the United States. The aim of this study is to evaluate the long-term professional impact and engagement outcomes of the ICDE program. **METHODS:** We conducted a retrospective mixed-methods evaluation of the SSO ICDE program including all participants from 2014 to 2025. Quantitative data was collected from SSO program records and past ICDE participants were surveyed to assess perceived professional impact, continued engagement with SSO, and sustained mentorship and collaborations. We compared the differences between SSO active and inactive member status using Fisher's exact testing for categorical variables and T-test/rank sum for continuous variables. Multivariable logistical regression was done for factors associated with SSO status. **RESULTS:** Of the 81 ICDE participants since 2014, 29 (35.8%) remained active SSO members and 28 (34.6%) completed the follow-up survey. Active membership was significantly associated with more recent ICDE participation (median 2024 vs. 2019, $p < 0.0004$), academic practice settings (72.4% vs 42.3%, $p < 0.0001$), established surgical subspecialty ($p = 0.001$), and higher SSO meeting attendance (mean 2.9 vs. 1.4, $p = 0.001$). In multivariable logistic regression, academic practice settings (OR 0.1, 95% CI 0.01-0.9, $p = 0.04$), and those attending more SSO meetings (OR 2.0, 95% CI 1.1–3.5, $p = 0.02$) had higher odds of active membership. 13 out of 26 participants (50%) reported changing specialties post-ICDE, often expanding from general or GI surgery to oncology subfields. Most respondents reported that ICDE positively impacted their career (96%), clinical practice (84%), approach to patient care (88%), and professional network (96%). Additionally, 92% credited ICDE with advancing their teaching and educational leadership skills, and the majority (96%) would recommend the program to young surgeons in their country. **CONCLUSIONS:** The ICDE program significantly supports professional development, clinical practice, and international collaboration among surgical oncologists. Key improvements include program extension, structured mentorship, and post-program engagement strategies.

Table. Factors Associated with Active SSO Membership for Prior ICDE Participants

	Odds Ratio (95% CI)	p-value
Surgical society:		
Asia	reference	
Europe/ Americas	4.0 (0.8-19.3)	0.08
Africa/Middle East	9.0 (1.4-57.3)	0.02
Primary work setting:		
Academic Practice	reference	
Other	0.1 (0.01-0.9)	0.04
Number of SSO meetings attended	2.0 (1.1-3.5)	0.02

EP83

Perioperative outcomes, survival, and comorbidity impact after CRS-HIPEC in a contemporary national real-world cohort

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INTRODUCTION: Cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS-HIPEC) has emerged as a treatment option for selected patients with peritoneal surface malignancies. However, large-scale U.S. data evaluating utilization, tumor origins, perioperative outcomes and survival remain limited, as this patient population is poorly captured in national surgical and cancer databases. **METHODS:** We performed a retrospective analysis using the TriNetX Network, a multi-institutional electronic health record database, identifying all patients who underwent CRS-HIPEC between 2010–2025. **RESULTS:** A total of 3,342 patients were included (mean age 62.7 ± 13.2 years; 60.4% male; 6.6% Hispanic/Latino; 9.0% African American). The predominant primary malignancies were appendiceal (41%), colorectal (26%), gynecological (7%), and gastric (5%). Thirty-day mortality was 1.2%, and 90-day mortality was 2.9%. Kaplan–Meier analysis demonstrated significant survival differences by primary cancer type ($p < 0.05$), with the most favorable long-term outcomes for appendix (Figure 1A). There were no significant differences in survival across U.S. regions. The most common complications within 30 days postoperatively were pleural effusion (15.6%), ileus (14.6%), intra-abdominal infection/abscess (9.6%), and acute renal failure (8.9%) (Figure 1B). Reoperation was required in 280 (5.9 %) of cases. Mitomycin was the most commonly used intraperitoneal chemotherapy agent (77.5%), followed by cisplatin (14.9%) and oxaliplatin (3.8%). The mean NCI comorbidity index was 0.23 ± 0.39. Higher NCI index was significantly associated with increased postoperative complications, (OR 1.25, 95% CI 1.16–1.35, $p < 0.001$). In multivariable Cox models adjusted for age, sex and comorbidity and primary tumor, neither oxaliplatin nor cisplatin showed survival differences versus mitomycin (HR 1.23, 95% CI 0.63–2.39; HR 1.15, 95% CI 0.86–1.55), and subgroup analyses of appendiceal and colorectal cancers similarly found no significant associations. **CONCLUSIONS:** In this national CRS–HIPEC cohort, survival outcomes varied primarily by primary tumor site. Prolonged median overall survival was noted across several categories, suggesting that CRS-HIPEC is being offered selectively to those patients most likely to benefit. Higher comorbidity independently predicted increased perioperative complications, while no differences in oncologic outcomes were noted for different chemoperfusion agents either overall or within appendix/colorectal subgroups.

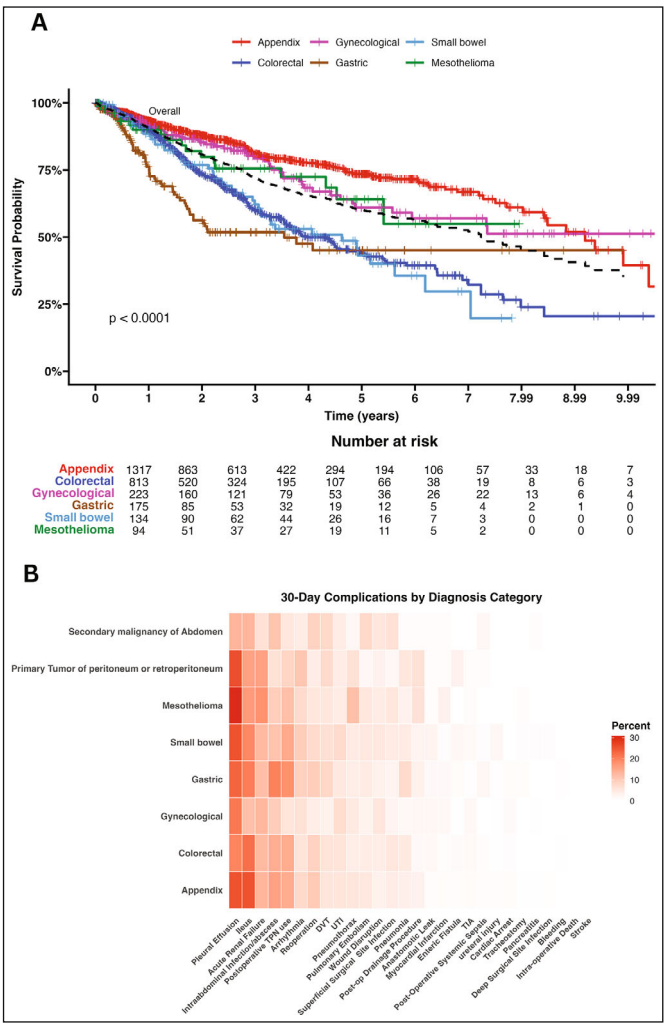

Figure 1. Survival and 30-day complications by cancer type in CRS-HIPEC cohort.

EP84

MKI67 expression identifies a distinct and aggressive subtype of Pancreatic Ductal Adenocarcinoma

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INTRODUCTION: Ki67 is a well-established histologic proliferation marker across many cancers. Multiple studies have demonstrated that higher Ki67 expression is associated with worsened outcomes in pancreatic ductal adenocarcinoma (PDAC). In this study, we aimed to characterize the underlying biology of MKI67-high PDAC. **METHODS:** Clinical and transcriptional data of PDAC patients were obtained from The Cancer Genome Atlas (TCGA; n=177) and four Gene Expression Omnibus (GEO) datasets: GSE205154 (n=218), GSE85916 (n=80), GSE71729 (n=145), GSE21501 (n=132). Mutational analysis from the TCGA cohort was also performed. Patients within each study were stratified into low (MKI67-low) and high (MKI67-high) expression groups based on the median transcript levels. Each dataset was analyzed independently, and differences between groups were subsequently compared across studies. **RESULTS:** Consistent with their enhanced proliferative capacity, MKI67-high PDAC is enriched in the major cell proliferation-related gene sets in the Hallmark collection including G2M checkpoint, E2F targets, MYC targets, and mitotic spindle formation across all studies, and is associated with higher histologic grading and proliferation score despite having similar baseline pathologic staging in the TCGA cohort. In the TCGA cohort, high expression was associated with worse overall survival (p=0.0007) and disease-free survival (p=0.012) compared to low expression while in the other three GEO datasets with survival data showed no difference in overall survival. MKI67-high tumors exhibited a significantly higher mutational burden than the MKI67-low tumors. MKI67-high PDAC also showed enrichment in pro-growth metabolic pathways including glycolysis, cholesterol biosynthesis, oxidative phosphorylation. At the cellular level, MKI67-high tumors contained a larger proportion of tumor epithelial cells and a relative paucity of tumor-associated stromal cells, particularly cancer-associated fibroblasts. Regarding immune cell composition, MKI67-high tumors were enriched in Th1 and Th2 lymphocytes, whereas MKI67-low tumors showed greater enrichment in phagocytic immune cell subtypes. **CONCLUSIONS:** High MKI67 in PDAC correlates with aggressive tumor biology, enhanced proliferative signaling, genomic instability, and distinct microenvironmental and immune features. While further validation is necessary, MKI67-high may constitute biologically district subset of PDAC.

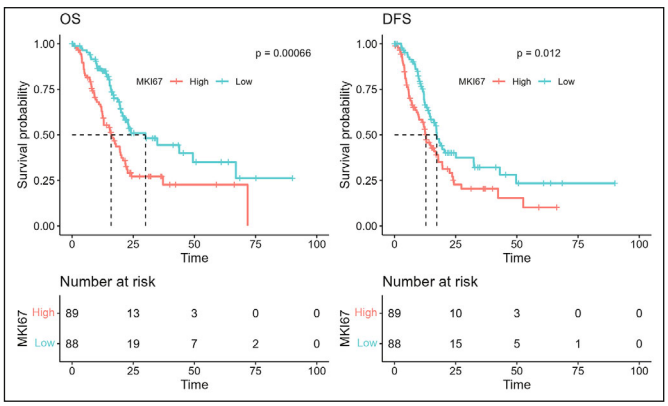

Figure. Overall- and disease free-survival stratified based on high and low Ki67 expression levels in TCGA cohort

EP85

Upgrade rates of pure radial scars diagnosed on core needle biopsy

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INTRODUCTION: Advances in breast imaging have improved the detection of benign, high-risk lesions such as radial scar (RS), historically treated with excision. This study evaluated the malignancy upgrade rate of pure RS diagnosed by core needle biopsy. We hypothesized that upgrade to malignancy is sufficiently low to consider surveillance rather than excision of pure RS. **METHODS:** We retrospectively reviewed the electronic medical record to identify cases of benign breast lesions diagnosed on core needle biopsy between 2001 and 2021 at our institution. Female patients with pure RS and comparison cohorts were identified. Patient and tumor parameters, including size, breast cancer risk factors, symptoms, radiographic abnormalities, and final pathology, were extracted. Upgrade rates among patients with pure RS, RS mixed with any other benign lesion (including atypia), and pure fibroadenoma were compared using Kruskal-Wallis rank sum test, Pearson's Chi-squared, and Fisher's Exact Probability Test. **RESULTS:** From a database of n=5330 patients with benign high-risk lesions, we identified n=187 patients diagnosed with pure RS, n=227 patients with RS mixed, and n=49 patients with pure fibroadenoma. There was no significant difference in the median age for all 3 groups (range 49-57, p< 0.067). The median core biopsy size was 12 gauge, and a median of 4 cores was taken. Mean lesion size was 0.8 cm for pure RS, 1.2 cm for pure fibroadenoma, and 0.9 cm for mixed RS (no difference seen in rates of palpable mass, p = 0.079). Most patients with pure RS (n=168 (90%)) or mixed RS (n=196 (87%)) underwent surgical excision, compared to n=26 (54%) of patients with pure fibroadenoma (p< 0.001). Patients with pure RS upgraded to malignancy in 2.4% of excisions, compared to 18.4% for mixed RS (p< 0.001). Of patients with pure RS, only n=1 was found to have invasive ductal carcinoma (IDC), and n=3 were found to have ductal carcinoma in situ (DCIS). Of patients with mixed RS, n=9 were found to have IDC, and n=25 were found to have DCIS upon excision. There was no difference in upgrade rates to malignancy based on the presence of atypia for all 3 groups (p >0.05). The median follow-up time was 3.4 years, 3.8 years, and 8.6 years for the pure RS, mixed RS, and pure fibroadenoma cohorts, respectively. **CONCLUSIONS:** We found an upgrade rate to malignancy of 2.4% for pure RS upon excisional biopsy. This low upgrade rate for pure RS suggests that surgical excision is not warranted, and observation with clinical/radiographic follow-up is reasonable for pure RS. Upgrade rates for mixed RS (18.4%) were too high for consideration of watchful surveillance; however, atypia was not associated with upgrade.

EP86

Dedicated palliative care (PC) rotation for surgical oncology trainees

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INTRODUCTION: The Accreditation Council for Graduate Medical Education (ACGME) requires that Complex General Surgical Oncology (CGSO) trainees exhibit competence in palliative surgical approaches and non-surgical palliative measures. Dedicated palliative care (PC) rotations have been shown to increase knowledge and attitudes regarding PC practices in multiple medical specialties. However, data suggest that PC instruction is poor compared to other aspects of CGSO training. To address this training

gap, we created a dedicated palliative care rotation for CGSO trainees. The objective of this study was to identify gaps in PC education and to evaluate the effectiveness of the rotation in meeting those gaps. **METHODS:** During the 2024-2025 academic year, a dedicated PC rotation was launched for fellows at an ACGME accredited CGSO fellowship program. The rotation included exposure to palliative surgical approaches and didactic instruction by PC medicine specialists. Fellows were invited to complete a survey before and after the rotation. Respondents ranked their level of perceived preparedness using a Likert Scale of 1-5 with 1 indicating not at all prepared and 5 indicating very well prepared. Survey responses were analyzed using paired t-tests. This project was granted exemption by the IRB. **RESULTS:** Eight fellows participated. All completed general surgery training in the preceding one to two years. Four indicated previous PC instruction. Fellows reported improvement in preparedness to rotate opioids (p=0.037), manage long acting pain medications (p=0.014), manage weight loss and supplemental nutrition (p=0.028), discuss transition to hospice (p=0.001), and discuss spiritual needs (p=0.047). Improvements were not observed for management of ketamine infusions (p=0.405), end-of-life discussions (p=0.089), and transitioning goals of care from curative to palliative (p=0.077). Fellows had high baseline confidence (mean Likert Score > 4) in the assessment of pain, management of patient-controlled analgesia, as well as management of nausea, vomiting, and constipation. No difference was noted in these categories pre- and post-PC rotation. **CONCLUSIONS:** A dedicated PC rotation resulted in improvements in multiple PC domains. These findings suggest that a dedicated PC rotation can enhance a CGSO trainees' preparedness for complex symptom management and end of life discussions. Gaps in certain domains including end of life discussion skills indicate potential areas for curriculum refinement. These findings highlight the value of integrating formal PC training into CGSO to ensure PC competency in comprehensive cancer care.

EP87

Prevalence and duration of adjuvant endocrine therapy for ductal carcinoma in situ (DCIS): findings from real world evidence

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INTRODUCTION: Background: Current adjuvant endocrine therapy (ET) recommendations for breast ductal carcinoma in situ (DCIS) are largely based on reported clinical trial data. However, practice patterns of ET use and whether real-world outcomes reflect the benefits seen in clinical trials remain unclear. **METHODS:** Methods: We collected data through a National Cancer Database (NCDB) Special Study, a retrospective cohort of women diagnosed with DCIS between 2008 and 2015 treated with breast conserving surgery (BCS) with or without adjuvant radiation (RT). Patients were treated at one of 1330 American College of Surgeons NCDB sites. Clinical data were abstracted from primary source documentation at each site as well as from NCDB, including type and duration of ET use. The primary outcome was ipsilateral breast tumor recurrence (IBTR), including either DCIS or invasive cancer. The survival analysis was performed using the Kaplan-Meier method. The log-rank test was applied to detect overall group differences. **RESULTS:** Results: 13,822 women were included in the cohort. Median age at diagnosis was 60 years (IQR 52 - 69) and median follow up was 67.8 months (IQR 46.2 - 93.4). 44.5% reported ET use within 6 months of diagnosis, primarily in patients with ER+ disease (5788/6155; 94%). Selective estrogen receptor modulators (SERMs) were the most frequently used agent (79.5% of ET users; n=4727 tamoxifen; n=164 raloxifene), followed by aromatase inhibitors (AI; 19.7% of ET users). Overall duration of reported use was < 2 years in 16.3% and ³2 years in 63.8% of patients. A total of 526 (3.8%) women experienced an IBTR during follow-up; the cumulative recurrence rate was 2.4% in the ET group and 4.9% in the no ET group (p< 0.001). In both BCS/RT and BCS/no RT groups, ET conferred a significant benefit compared to no ET (p< 0.001 in both groups; Table 1) with the greatest benefit in those with BCS/no RT (3.7% reduction in IBTR at 8 years). This benefit was similar for AI and SERM (p=0.92). **CONCLUSIONS:** Conclusions: Both SERM and AI conferred lower IBTR following BCS for DCIS, although the absolute benefit was modest overall. The magnitude of this benefit in a real-world cohort provides contemporary evidence to help guide individualized decision making for ET in this low-risk population.

Table 1. Cumulative incidence of IBTR at 2, 5 and 8 years (unweighted) for patients by documented ET use within 6 months of diagnosis

Time*	IBTR, All BCS % (95% CI)	IBTR, BCS+RT % (95% CI)	IBTR, BCS no RT % (95% CI)
ET			
2 years	0.77 (0.55-0.99)	0.75 (0.51-0.99)	0.89 (0.31-1.47)
5 years	1.9 (1.54-2.27)	1.77 (1.39-2.15)	2.60 (1.53-3.67)
8 years	3.26 (2.67-3.85)	2.99 (2.37-3.6)	4.85 (2.93-6.73)
No ET			
2 years	1.64 (1.35-1.93)	0.96 (0.68-1.24)	2.76 (2.15-3.36)
5 years	4.36 (3.87-4.85)	3.04 (2.52-3.57)	6.60 (5.61-7.57)
8 years	6.59 (5.87-7.31)	5.41 (4.55-6.26)	8.58 (7.28-9.86)

Abbreviations: CI: confidence interval; ET: endocrine treatment
*Time since diagnosis

EP88

Comparable treatment outcomes between HIV-positive and HIV-negative patients with anal squamous cell carcinoma: A South Florida cohort study

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INTRODUCTION: South Florida, including Broward County, one of the top U.S. regions for HIV prevalence, represents a global HIV hotspot with a large population of men who have sex with men, a group at increased risk for both HIV and anal squamous cell carcinoma (SCCA). Prior studies have reported poorer outcomes in HIV-positive patients, but our institutional experience suggests comparable results. This study aimed to evaluate treatment tolerance, completion, recurrence, and survival outcomes between HIV-positive and HIV-negative patients with SCCA in this high-prevalence region. **METHODS:** A retrospective case-control study was conducted among patients aged ≥18 years diagnosed and treated for SCCA between 2015 and 2024. Demographic, clinical, HIV-related, treatment, recurrence, surgical, and mortality data were collected. Descriptive and comparative analyses using chi-square, t-tests, and logistic regression were performed to assess recurrence and mortality as primary outcomes, and treatment completion, tolerance, and surgical intervention as secondary outcomes, adjusting for demographic and clinical covariates. **RESULTS:** Fifty-nine patients were included, with a median follow-up of 498 [352–935] days. The mean age was 67.4 ± 8.2 years; 81.4% were male and 94.9% white. HIV prevalence was 35.6%, with 80.9% on antiretroviral therapy. Most presented with early-stage disease (Stage I–II: 86.5%) and received definitive chemoradiation (93.2% radiation; 89.8% chemotherapy). No statistically significant differences were observed in treatment completion (95% vs 77.8%, p=0.09) or interruption rates (36.8% vs 31.4%, p=0.68) by HIV status. Recurrence (14.3% vs 5.3%, p=0.39) and survival (90.5% vs 94.7%, p=0.53) were also similar. However, HIV-positive patients were more likely to require surgical intervention post-chemoradiation (52.4% vs 17.6%, p=0.007). On multivariate analysis, smoking (p=0.021), BMI (p=0.003), and higher TNM stage (p=0.03) were associated with increased recurrence risk. **CONCLUSIONS:** In this South Florida cohort, HIV-positive patients with SCCA had comparable treatment completion, recurrence, and survival outcomes to HIV-negative patients despite historically poorer prognoses. The higher rate of surgical intervention among HIV-positive individuals highlights the need for close post-treatment surveillance and multidisciplinary care. These preliminary findings may reflect limited sample size and warrant further study to validate long-term outcomes.

Table 1. Demographic, clinical characteristics and outcomes compared between HIV-positive and HIV-negative patients diagnosed and treated for SCCA

Variable		HIV-Negative (N=38)	HIV-Positive (N=21)	P-value
Age (Years)		70 (±8)	64 (±7)	0.007
Sex	Male	27 (71%)	21 (100%)	0.06
	Female	11 (28.9%)	0 (0%)	
Race/ Ethnicity	White	36 (94.7%)	20 (95.2%)	0.69
	Black	1 (2.6%)	0 (0%)	
	Hispanic	1 (2.6%)	1 (4.7%)	
Smoking	Never	18 (47.3%)	10 (47.6%)	0.81
	Current	2 (5.3%)	2 (9.5%)	
	Former	18 (47.3%)	9 (42.8%)	
BMI (kg/m^2)		27.44 (±5.9)	25.89 (± 6)	0.35
Hypertension		14 (36.8%)	7 (33.3%)	0.78
Hyperlipidemia		17 (44.7%)	4 (19%)	0.04
Diabetes		7 (18.4%)	2 (9.5%)	0.36
CKD		2 (5.2%)	4 (19%)	0.09
COPD		5 (13.1%)	2 (9.5%)	0.67
CAD		8 (21%)	6 (28.5%)	0.51
Atrial fibrillation		4 (10.5%)	2 (9.5%)	0.90
Other cancers		6 (15.7%)	0 (0%)	0.05
Hepatitis		2 (5.2%)	3 (14.2%)	0.23
Age at diagnosis (years)		67 (±9)	59 (±7)	0.001
Stage	I	12 (31.5%)	11 (52.3%)	0.35
	II	20 (52.6%)	8 (38.1%)	
	III	4 (10.5%)	2 (9.5%)	
	IV	2 (5.2%)	0 (0%)	
Dose of radiation (Gy)		53.8 (±3.2)	54.5 (±2.4)	0.52
Treatment completion		28 (73.6%)	19 (90.4%)	0.09
Treatment interruption		11 (28.9%)	7 (33.3%)	0.68
Recurrence		6 (15.7%)	4 (19%)	0.39
Time of treatment (Days)		46 [44-55]	41 [0-50]	0.08
Surgical intervention		6 (15.7%)	11 (52.3%)	0.007
Colostomy creation		5 (13.1%)	5 (23.8%)	0.29
Survival		36 (94.7%)	19 (90.4%)	0.53
Time to follow-up (Days)		386 [274-781]	943 [388-1207]	0.24

EP89

Proteomic profiling of retroperitoneal liposarcoma by liquid chromatography–tandem mass spectrometry on fresh-frozen tissue

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INTRODUCTION: Retroperitoneal liposarcomas (RPS) are a group of heterogeneous tumors with varying biology and clinical progression. Most proteomic studies in RPS have focused on formalin-fixed, paraffin-embedded tissue, while utilizing frozen tissue avoids potential molecular degradation and bias. The aim of this study is to describe proteomic profiling of frozen RPS tissue to evaluate differences in protein expression by tumor grade. **METHODS:** Proteomic profiling by data independent acquisition (DIA) liquid chromatography–tandem mass spectrometry (LC-MS/MS) was performed on fresh-frozen tumor tissue from 15 patients with RPS. Results were analyzed by highest tumor grade as assessed by pathologists according to the French Federation of Cancer Centers Sarcoma Group. Proteins that were identified by > 3 replicates were included for analysis comparing Grade 1 to Grade 2/3 and > 2 replicates were included for analysis comparing Grade 2 to Grade 3 samples. Significance was defined by a log2(abundance ratio) > |1| and p-value < 0.05. **RESULTS:** Six patients had Grade 1 RPS, three had Grade 2 and six had Grade 3. Comparing Grade 1 to Grade 2/3 samples, 4,362 proteins were identified in > 3 replicates. There were 250 proteins more significantly abundant in Grade 1 and 100 proteins more abundant in Grade 2/3. There was not a significant change in most proteins involved in MDM2, CDK4 and other pathways from chromosome 12 (green, blue, dark gray, respectively). The mitotic cell pathway (pink) was more proportionally represented in Grade 1, while neutrophil degranulation pathways were more proportionally represented in Grade 2/3 (orange). Targetable proteins significantly enriched were BARD1 and CHEK2 in Grade 1 samples and IDH1 in Grade 2/3 (yellow). Comparing Grade 2 to Grade 3 samples, 4,813 proteins were identified in > 2 replicates. There were 119 proteins significantly enriched in the Grade 2 and 96 proteins in the Grade 3 samples. Again, most proteins involved in MDM2, CDK4 and other pathways from chromosome 12 were similarly expressed between grades. BARD1 was expressed more in Grade 2 than Grade 3 tumors. Overall, Group 2 and Group 3 proteomes were more similar to each other than they were to Grade 1. **CONCLUSIONS:** In this initial series, we describe LC-MS/MS on fresh-frozen RPS tissue. There are significant differences in proteomic profiling by tumor grade in RPS, especially in Grade 1 compared to Grade 2/3 tumors. Deeper analysis of the data and larger studies are needed to identify potential biologic drivers and therapeutic targets in RPS.

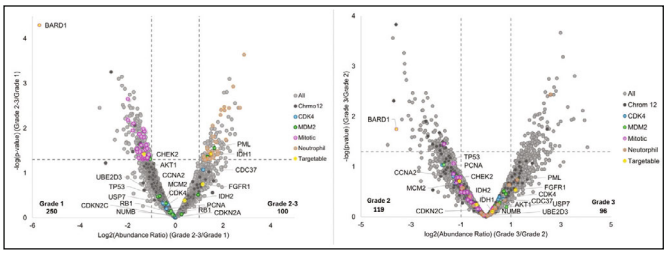

Figure. Volcano plot of all proteins that were identified by data independent acquisition from Grade 1, 2, or 3 frozen retroperitoneal liposarcoma tissue by liquid chromatography–tandem mass spectrometry

EP90

National trends in the treatment of cT3 breast cancer – are we overtreating?

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INTRODUCTION: The optimal management for large cT3 breast cancer remains poorly defined, with most studies having low enrollment of these patients or excluding them all together. As such, it has been common to subject them to upfront total mastectomy (TM) rather than pursuing breast conservation. Here, we aimed to analyze the national landscape in management of cT3 breast cancer and trends overtime. **METHODS:** The National Cancer Database (NCDB) between 2004 and 2020 was queried for all females diagnosed with cT3 breast cancer, excluding patients with metastatic disease. Chi-squared analysis was performed for categorical variables, and time-series data was analyzed via Mann-Kendall tests. Cox proportional hazard models were used in survival analysis. **RESULTS:** A total of 109,383 fit inclusion criteria, of which 82.9% underwent TM and 17.1% a partial mastectomy (PM). PM rates varied only slightly overtime (17.1 +/- 0.02%) and there was no significant trend overall (p=0.77). Ages were comparable between TM and PM groups (56.6 vs 57.1 years). Patients undergoing PM had marginally smaller tumors (5.66 vs 6.66 cm, p< 0.001), lower rates of estrogen receptor positivity (50.5% vs 64.0%, p< 0.001) and progesterone receptor positivity (42.64% vs 55.1%, p< 0.001), higher rates of HER2 positivity (26.8% vs 22.4%, p< 0.001), neoadjuvant therapy (56.1% vs 47.1%, p< 0.001), and pathologic complete response (11.3% vs 5.7%, p< 0.001), and more frequently underwent adjuvant radiation (82.3% vs 59.4%, p< 0.001). Positive margins were higher in the PM group (8.74% vs 6.55%, p< 0.001), though there was no significant difference in rates when limiting to only patients receiving neoadjuvant therapy (6.58% in PM vs 6.19% in TM, p=0.19). Additionally, overall survival was better in the partial mastectomy group, even when controlling for age, neoadjuvant therapy, adjuvant radiation, year of diagnosis, and margin positivity (HR 0.76, p< 0.001). **CONCLUSIONS:** Nationally, only a minority of patients with T3 breast tumors ended up receiving a partial mastectomy, and there has been very little variation in these rates overtime, consistent with the dogma of obligatory TM in large sized breast tumors. However, with at least equivalent survival compared to TM, and increasing use of oncoplastic techniques, PM may be safe in carefully selected patients with T3 tumors. Larger scale trials in this population are needed to further evaluate potential de-escalation strategies.

EP91

Global trends in pre- and post-menopausal breast cancer: A population-based evaluation of the global burden of disease

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INTRODUCTION: Breast cancer is the most common malignancy among women globally, accounting for about 25% of new cancer cases and 15.5% of cancer deaths in 2022, with incidence rates projected to increase by over 54% by 2050. This study examines global variations in pre- and post-menopausal breast cancer incidence and mortality, and the role of geography (based on World Health Organization [WHO] regions) and socioeconomic development (based on World Bank Classification) on disparities in the global burden of breast cancer. **METHODS:** A population-based analysis using publicly accessible GLOBOCAN 2022 data assessed breast cancer age-standardized incidence (ASIR) and mortality (ASMR) rates among premenopausal (0–49 years) and postmenopausal (50+ years) women. Mortality-to-incidence ratios (MIRs) were calculated to estimate survival disparities across WHO regions and World Bank classifications. **RESULTS:** In 2022, an estimated 2.3 million new breast cancer cases and 665,683 deaths occurred worldwide. Postmenopausal women accounted for 71% of cases (1.63 million) and 79% of deaths (524,397). Incidence was highest in the WHO Americas region for postmenopausal women (ASIR 243.5) and in the WHO European region for premenopausal women (ASIR 28.9), while mortality was highest in the WHO Africa region for both pre- and postmenopausal women (ASMR 64.5 and 21.4, respectively). Globally, MIRs were 0.21 for premenopausal and 0.32 for postmenopausal women. The highest case fatality rate for both pre- and postmenopausal women was found in the Africa region (MIR 0.44 and 0.54, respectively), while the regions with lowest case fatality rates differed between the premenopausal and postmenopausal groups. For both pre- and postmenopausal women, case fatality rose incrementally with decreasing World Bank classifications, from an MIR of 0.21 in countries with high income to MIR of 0.53 in countries with low income. However, the difference in case fatality between the highest and lowest income categories was greater for premenopausal women. **CONCLUSIONS:** Postmenopausal women bear the largest share of the global breast cancer burden, but this burden is not evenly distributed worldwide. These disparities highlight inequities in screening, diagnosis, and treatment access. Expanding early detection programs and cancer-care capacity in low resource settings is critical to reducing global mortality-to-incidence ratios and narrowing the survival gap across regions and socioeconomic groups.

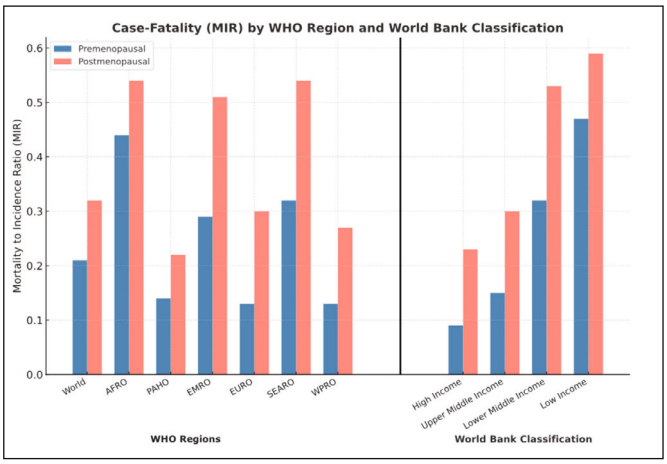

Figure. Disparities in Breast Cancer Case Fatality by WHO Region and World Bank Classification

EP92

Defining Cure and Durable Treatment Effect in Colorectal Peritoneal Metastases Treated with Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy: a 30-year experience

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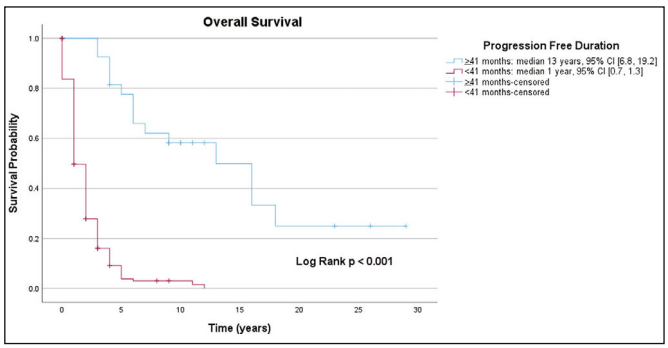
INTRODUCTION: Colorectal peritoneal surface disease (PSD) has a poor prognosis. Survival with systemic therapy is 12.7-16.3 months. Cytoreduction (CRS) with heated intra-peritoneal chemotherapy (HIPEC) improves overall survival but cure rates are not well defined. **METHODS:** 211 patients from a prospectively maintained database of peritoneal only metastases from colorectal adenocarcinoma who underwent CRS+HIPEC from 1991-2021 were evaluated. Patients were designated as cured (NED > 5 years post-HIPEC), suspected cured (NED post-HIPEC < 5 years), or having recurrent disease (proven recurrence post-HIPEC). Within the last cohort, patients were divided into those with durable effect (AWD > 5 years up until death and recurrence within 5 years post-HIPEC) vs ongoing disease progression (AWD <5 years up until death). Disease characteristics and elements of CRS and HIPEC were analyzed. **RESULTS:** 15.6% of patients survived > 5 years following CRS+HIPEC. 5.7% of these were cured while 8.1% had recurrent disease. Median OS were 125.0 months (IQR 109.8-245.5) for cured, 45.5 months (IQR 18.3-102.3) for suspected cured, and 23.0 months (IQR 14.0-38.8) for recurrent disease ($p < 0.001$). If the suspected cured group (n=4) had reached 5 yr OS NED then the cure rate would be 7.6%. Patients in the cured cohort had lower pre-op CEAs (median 2.8 vs 4.3, $p = 0.04$), lower N-stage ($p = 0.01$), and were all R0/R1 resections ($p = 0.01$). The 95th percentile PFS for recurrent disease was 40.8 months. In line with that finding, patients with durable treatment effect had a median OS of 79.0 (IQR 64.5-128.0) with a PFS of 25.0 months (IQR 11.5-56.5 months) vs OS of 22.0 months (IQR 13.0-33.0) with a PFS of 8.0 months (IQR 5.0-13.0 months) for ongoing disease progression ($p < 0.001$). Only tumor differentiation ($p< 0.01$), nodal burden ($p< 0.01$), resection status ($p< 0.01$), and adjuvant chemotherapy initiation before disease recurrence ($p< 0.01$) significantly impacted OS in patients with recurrent disease. **CONCLUSIONS:** CRS/HIPEC provides a durable treatment effect and possibility of cure. 5 years of surveillance significantly separated patient outcomes by disease performance likely due to the finding that 95% of recurrences were found to occur by 40.8 months (3.4 years). This could set a precedent to truncate patient surveillance to < 5 years. Patients with high-risk biology (tumor de-differentiation or high nodal burden) and non-R0/R1a resection have worse OS. Adjuvant chemotherapy improves OS. Future work may better identify features of those with durable treatment response from those who continue to progress.



Overall survival being significantly impacted by disease free interval

EP93

Missed precision in Medicaid patients with ER+/HER2- breast cancer in Ohio

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INTRODUCTION: Multigene testing and molecular assays (molecular profiling; MP) guide adjuvant systemic therapy and can influence surgical decisions (e.g., extent of axillary management) in ER+/HER2− breast cancer. Medicaid beneficiaries receive MP less often than privately insured patients, highlighting an access gap. We evaluated uptake within Ohio's Medicaid ER+/HER- population to identify higher-risk subgroups with the greatest underuse, hypothesizing disproportionate underuse in clinically higher-risk disease and vulnerable populations. **METHODS:** We conducted a retrospective cohort study using linked Ohio Cancer Incidence Surveillance System (OCISS)-Medicaid data. Eligible patients were aged 18-65, diagnosed 2016-2020

with localized or regional ER+/HER2- disease, and continuously enrolled ≥6 months post-diagnosis (or until death). The primary outcome was receipt of MP. Multivariable logistic regression estimated adjusted odds ratios (aORs) with 95% confidence intervals (CI) for MP by stage, sociodemographics, Medicaid status indicators (stable enrollment and long-term care), and neighborhood opportunity (Ohio Opportunity Index, OI). **RESULTS:** Among 1,988 patients, 752 (37.8%) received MP. MP use was lower in regional versus localized disease (23.4% vs 46.4%; aOR 0.35, 95% CI 0.28-0.42) (Table 1). Black women had lower odds than White women (aOR 0.72, 95% CI 0.56-0.91). Married patients had higher odds than single patients (aOR 1.30, 95% CI 1.01-1.67). Income above the federal poverty level (aOR 0.73, 95% CI 0.57-0.94) and Medicaid long-term care status (aOR 0.47, 95% CI 0.33-0.66) were associated with lower MP. Stable enrollment at diagnosis trended positive (aOR 1.24, 95% CI 0.98-1.58). OI scores were not associated with MP. Findings were consistent in stage-stratified models for localized disease; no covariates reached significance within regional disease, reflecting uniformly low testing. **CONCLUSIONS:** Underuse of MP, particularly in regional disease and among Black and long-term-care beneficiaries, is a modifiable access gap in precision oncology. An incomplete assessment of clinical risk, resulting from the underutilization of MP risks, may lead to both over- and undertreatment in an already disadvantaged population, potentially influencing decisions around axillary surgery in ways that are misaligned with tumor biology. Reflex testing at diagnosis, especially in states where Medicaid already covers MP (e.g., Ohio), paired with navigator follow-through and streamlined authorization, is a scalable solution to right-size treatment and advance equity.

Table 1. Predictors of Molecular Profiling Use

Predictor		OR (95% CI)	p-value
Stage	Localized	ref	
	Regional	**0.35 (0.28-0.42)**	**<0.05**
Age group	21-49	ref	
	50-65	0.90 (0.74-1.11)	0.32
Race	White	ref	
	Black	**0.72 (0.56-0.91)**	**<0.05**
	Other	1.01 (0.60-1.65)	0.98
Marital status	Single	ref	
	Married	1.30 (1.01-1.67)	**<0.05**
	Unknown	1.10 (0.81-1.49)	0.53
Stable enrollment at diagnosis	No	ref	
	Yes	1.24 (0.98-1.58)	0.08
Income compared to federal poverty level	Below	ref	
	Above	**0.73 (0.57-0.94)**	**<0.05**
	Unknown	0.86 (0.64-1.15)	0.31
Medicaid long term care status	No	ref	
	Yes	0.47 (0.33-0.66)	**<0.05**
Ohio Opportunity Index		1.00 (0.99-1.00)	0.54

EP94

Patterns of metastasis and treatment outcomes in mucinous and non-mucinous appendiceal adenocarcinoma

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INTRODUCTION: Differences in tumor biology and outcomes between mucinous and non-mucinous appendiceal adenocarcinoma have been described, but the impact of different metastatic patterns remains unclear. We sought to elucidate survival outcomes between different sites of metastasis in mucinous and non-mucinous appendiceal adenocarcinoma using a large national database. **METHODS:** Patients >18 years old diagnosed with stage IV appendiceal adenocarcinoma from 2016-2022 were identified in the National Cancer Database. Sociodemographic and clinicopathologic variables were obtained. Metastatic sites were categorized into liver, lung, and peritoneum/other. Multivariable cox regression analysis was performed to identify predictors of overall survival (OS). Kaplan Meier analysis was performed to estimate median OS. **RESULTS:** Out of 4575 patients with stage IV appendiceal adenocarcinoma, 3128 (68.4%) were mucinous and 1447 (31.6%) were non-mucinous. Peritoneum/other was the most common metastatic site for both mucinous and non-mucinous cancers, although more common in mucinous cancers (86.1% vs. 76.8%, p< 0.001). Liver metastasis, on the other hand, was more common in non-mucinous compared to mucinous cancers (8.5% vs. 1.5%, p< 0.001) while lung metastasis was rare for both (0.6% vs. 1.7%, p< 0.001). Oligometastatic disease (two or more sites out of three) was present in 11.8% of mucinous and 12.9% of non-mucinous patients (p< 0.001). Non-mucinous histology was an independent predictor of worse OS (hazard ratio 1.24, 95% confidence interval 1.07-1.43, p=0.004) in the overall cohort (Table). However, neither oligometastatic site nor the presence of two or more metastatic sites were significant predictors of OS (Table). In the entire cohort, treatment with surgery or surgery with systemic therapy were associated with improved OS compared to systemic therapy alone (Table). In the cohort of patients with metastatic well differentiated adenocarcinoma (both mucinous and non-mucinous), median OS with surgery alone compared to surgery with systemic therapy was similar (41.0 months vs. 42.3 months, p=0.095). **CONCLUSIONS:** In patients with metastatic appendiceal adenocarcinoma, the peritoneum is the most common site of metastasis. Non-mucinous histology compared to mucinous histology is associated with worse survival. In patients with both mucinous and non-mucinous metastatic well differentiated appendiceal adenocarcinoma, surgery alone was associated with a similar survival to surgery with systemic therapy.

Table: Multivariable cox regression analysis – predictors of overall survival

	Entire cohort			Mucinous appendiceal adenocarcinoma			Non-mucinous appendiceal adenocarcinoma		
	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value
Histology									
Mucinous	Reference								
Non-mucinous	1.24	1.07-1.43	**0.004**						
Metastatic site									
Liver	Reference								
Lung	0.71	0.30-1.70	0.45	1.12	0.37-3.37	0.85	0.33	0.07-1.46	0.14
Peritoneum/other	0.89	0.64-1.25	0.51	0.86	0.54-1.39	0.55	0.93	0.56-1.54	0.78
2+ sites	0.84	0.57-1.22	0.35	0.77	0.46-1.28	0.32	0.95	0.49-1.82	0.88
Treatment									
Systemic	Reference								
Surgery	0.54	0.43-0.68	**<0.001**	0.56	0.42-0.76	**<0.001**	0.61	0.39-0.95	**0.03**
Surgery + systemic	0.49	0.40-0.60	**<0.001**	0.54	0.41-0.70	**<0.001**	0.44	0.31-0.63	**<0.001**

HR = hazard ratio, CI = confidence interval

EP95

Active monitoring versus surgical excision in patients with atypical ductal hyperplasia

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INTRODUCTION: Surgical excision (SE) has historically been recommended for proliferative breast lesions such as atypical ductal hyperplasia (ADH) and ductal carcinoma in situ (DCIS) due to risk of occult cancer. Recently, the COMET trial reported similar short-term cumulative incidence of invasive cancer between active surveillance (AS) and SE for low-risk DCIS. It is unclear if and how these findings should be applied to women with ADH. **METHODS:** Using observational data from a cohort of women diagnosed with ADH on core needle biopsy at our institution from 2004–2022, we emulated a target trial of AS versus SE with eligibility criteria, treatment strategies, and follow-up consistent with COMET trial protocol. Patients were considered COMET eligible based on modified COMET criteria: age >40 years, no evidence of mass lesions, no concurrent invasive cancer or DCIS, and no ipsilateral invasive cancer within 5 years. We estimated the cumulative incidence of ipsilateral invasive carcinoma under SE or AS with at least annual imaging. We adjusted for confounding patient and lesion characteristics with inverse probability weighting. **RESULTS:** Of 1,090 women with ADH, 726 met modified COMET trial criteria. Within 6 months of ADH diagnosis, 205 (28.2%) women underwent SE. The mean age was 56.9 years (SD 10.9) and majority (637 of 726 [87.7%]) of ADH were diagnosed on biopsy of calcifications. Most women (626 of 726 [86.2%]) had no prior history of invasive breast cancer or DCIS. The median duration of continuous yearly

follow-up conducted at our institution, including breast imaging, was 2.7 years (IQR: 1.1, 4.9 years). The 2-year cumulative incidence of ipsilateral invasive carcinoma was 1.3% (95% CI: 0.4, 2.2%) under AS and 4.5% (95% CI: 1.2, 11.2%) under SE (risk difference: 3.3%; 95% CI: -0.3, 10.2%). At 5 years, the cumulative incidence was 4.8% (95% CI: 2.7, 7.1) under AS and 5.2% (95% CI: 1.4, 12.1%) under SE (risk difference: 0.5%; 95% CI: -4.5, 7.8%). Risk reducing endocrine therapy use was 31.5% (95% CI: 27.0, 36.1%) under AS and 34.6% (95% CI: 27.3, 42.6%) under SE. **CONCLUSIONS:** Women with ADH meeting eligibility criteria derived from the COMET trial had a low risk of ipsilateral invasive carcinoma under either SE or AS, supporting implementation of AS in select patients with ADH.

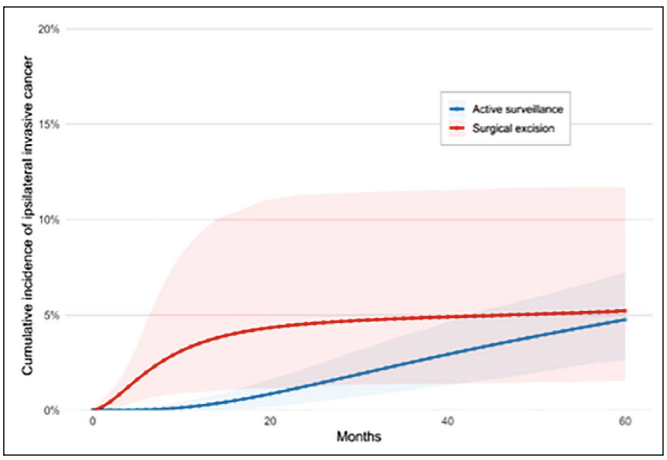

Figure. Cumulative incidence of ipsilateral invasive cancer under surgical excision versus active surveillance in women diagnosed with ADH

EP96

The cut and paste trial: Assessing the accuracy of artificial intelligence recommendations when compared to multidisciplinary tumor board discussion

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INTRODUCTION: Artificial intelligence (AI) has emerged as a powerful tool to aid in synthesizing the growing amount of medical literature. As physicians are becoming increasingly more sub-specialized, maintaining familiarity with evolving evidence poses a unique challenge which AI may help address. Therefore, in this study we seek to assess the accuracy and clinical relevance of AI generated recommendations for treatment of rectal cancer in order to understand its potential role in multidisciplinary decision-making. **METHODS:** This study retrospectively reviewed 155 patients with rectal cancer at a single institution between 2022-2024. Data was collected on demographics, AJCC clinical stage, imaging findings, colonoscopy reports, multidisciplinary tumor board (MTB) decisions, and clinical outcomes, such as death, surveillance, and progression/recurrence. De-identified patient information about presentation from clinical notes were cut and pasted into ChatGPT, which was prompted to provide next-step recommendations in care. These AI-generated recommendations were then compared to the MTB decisions for concordance. Descriptive analysis and Pearson's chi square test for categorical variables were performed using SPSS. **RESULTS:** The median age of the study population was 60 years old (IQR 52-69) and 64.5% were male. The majority of the patients presented with clinical Stage III rectal cancer (N = 87, 56.1%). ChatGPT tumor board recommendations were concordant with institutional MTB decisions in 64.5% of cases, with the most recommended treatment being total neoadjuvant therapy followed by surgical resection (N=102, 65.8%). The most common recommendation by AI in discordant cases was the need for additional imaging for staging (N= 21, 38.2%). A chi-square test of independence was performed to examine the relationship between concordance with tumor board decisions and clinical outcomes and there was found to be no statistically significant association [X2 = (1, N=155) = 2.360, p =0.151]. **CONCLUSIONS:** As the role of AI in medicine expands, our study shows a potential feasible application for providing tumor board-style recommendations for patients with rectal cancer, a disease where treatment guidelines are well established. Further investigation is warranted to establish protocols and evaluate the clinical utility, consistency, and safety of AI-assisted decision-making within multidisciplinary oncology care.

EP97

Discerning the Natural History of Superior Mesenteric Artery Margin Positivity after Pancreaticoduodenectomy for Pancreatic Adenocarcinoma.

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INTRODUCTION: This study examined recurrence patterns in patients with positive superior mesenteric artery (SMA) margins (≤1 mm) compared with negative margins following pancreaticoduodenectomy (PD) for pancreatic ductal adenocarcinoma (PDAC). **METHODS:** PDAC patients undergoing PD at a single tertiary center (2010–2022) were included. All pathology slides were rereviewed by a board-certified pathologist to ensure consistent SMA margin assessment. The primary outcome was recurrence-free survival (RFS). Kaplan–Meier and multivariable Cox models evaluated RFS by SMA margin status, adjusting for sex, tumor size, N stage, CA19-9, lymphovascular and perineural invasion, and receipt of chemotherapy. **RESULTS:** Among 258 patients, 20.9% had SMA margin positivity. Margin positive tumors were larger (3.1 cm vs. 2.3 cm), had higher T stage, greater nodal involvement (83.6 vs. 58.3%), and more frequent lymphovascular (63.0% vs. 38.2%) and perineural invasion (90.9 vs. 72.4%) (all $p < 0.01$). Overall, 63.6% of patients had recurrence with a median RFS of 9.6 months. The median RFS was not different in SMA margin positive compared to SMA negative patients (6.3 vs. 9.8 months, p=0.25); (adjusted HR 1.25, p=0.82); (Figure 1A). There was no difference in local recurrence isolated to the SMA margin in SMA positive vs. negative group (12.5% vs. 21.8%, p=0.20). There was difference in RFS in patients who had first recurrence at the SMA margin compared to those that did not (HR 0.97, p=0.75) (Figure 1B). Most patients presented with systemic recurrence as the first site and were similar between groups (62.5% vs. 61.3%, p=0.89). Similarly, concurrent SMA margin and systemic recurrence was similar in SMA margin positive vs. negative group (25.0% vs. 16.9%, p=0.26). Median OS was 25.9 months. OS was shorter in SMA positive patients (27.5 vs. 61.0 months, p=0.08); (adjusted HR 2.15, p=0.009). However, cause of death in SMA margin positive patients was more often sepsis- (25%, p=0.007) and hepatobiliary-related (25%, p=0.007). Among SMA margin positive patients, receipt of adjuvant radiation was not associated with RFS (HR 0.72, p=0.54) or OS (HR 0.68, p=0.46). **CONCLUSIONS:** There was no difference in RFS or local SMA site of recurrence by SMA margin status. SMA margin positivity after PD for PDAC is associated with adverse clinico-pathologic features, which may explain the associated compromised OS but not local recurrence. These findings suggest that SMA margin involvement serves as a surrogate marker of aggressive disease rather than a direct driver of recurrence.

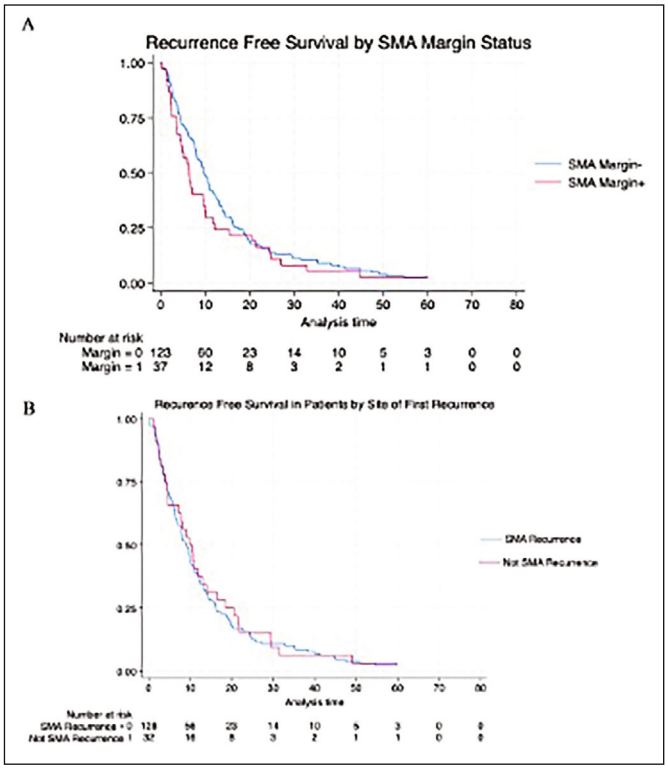

Figure 1. Kaplan Meier curves of recurrence free survival stratified by superior mesenteric artery (SMA) margin status (A) and by site of first recurrence (B). Survival distributions were compared using the log rank test (p=0.25 and 0.75, respectively).

EP98

Mixed Hepatocellular–Intrahepatic Cholangiocarcinoma: Exploring the Prognostic Divide Between HCC and iCCA

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INTRODUCTION: Mixed hepatocellular–intrahepatic cholangiocarcinoma (HCC–iCCA) is a rare primary liver cancer exhibiting dual hepatocytic and cholangiocytic differentiation. Its optimal management and oncologic behavior relative to pure HCC or iCCA remain uncertain. This study aimed to evaluate survival outcomes of patients with mixed HCC–iCCA compared with pure HCC and iCCA following curative-intent liver surgery. **METHODS:** NCDB patients diagnosed between 2004–2021 and received curative surgical intervention were identified. Cohorts included HCC, iCCA treated with adjuvant systemic therapy, mixed HCC–iCCA without adjuvant systemic therapy (AST), and mixed HCC–iCCA with adjuvant therapy. Propensity score matching was performed and Kaplan–Meier analysis compared overall survival (OS) across matched cohorts. **RESULTS:** A total of 43,884 patients met inclusion: 42,407 HCC (96.6%), 742 iCCA (1.7%), and 735 mixed HCC–iCCA (1.7%). Median OS was 49.8 months for HCC, 28.6 months for mixed, and 27.9 months for iCCA (p< 0.001 for HCC vs mixed; p=0.621 for iCCA vs mixed). After 3:1 matching, mixed tumors showed significantly poorer survival than HCC (5-year OS 41.5% vs 55.7%, p=0.002) but no difference from iCCA (5-year OS 38.9% vs 38.2%, p=0.713). Among mixed cases, adjuvant systemic therapy provided no OS benefit (median 30.2 vs 28.9 months, p=0.447), and 5-year OS remained comparable between patients with and without AST (39.2% vs 37.8%, p=0.518). **CONCLUSIONS:** Mixed HCC-iCCA behaves more like iCCA than HCC, with outcomes inferior to HCC and statistically indistinguishable from iCCA under iCCA-style management; current adjuvant strategies offer no clear survival advantage in mixed disease.

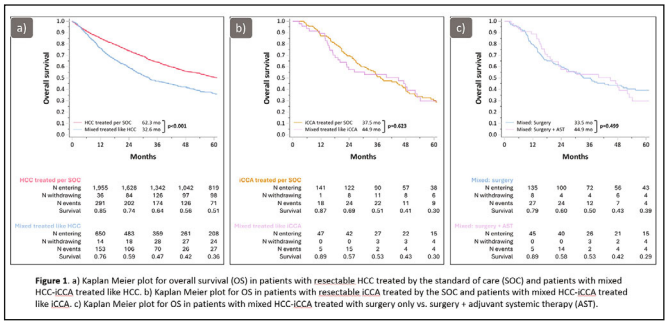

Figure 1. Kaplan Meier Plot for Overall Survival in Patients with mixed HCC-iCCA

EP99

Nutritional optimization post-pancreaticoduodenectomy to decrease readmissions, a pilot study

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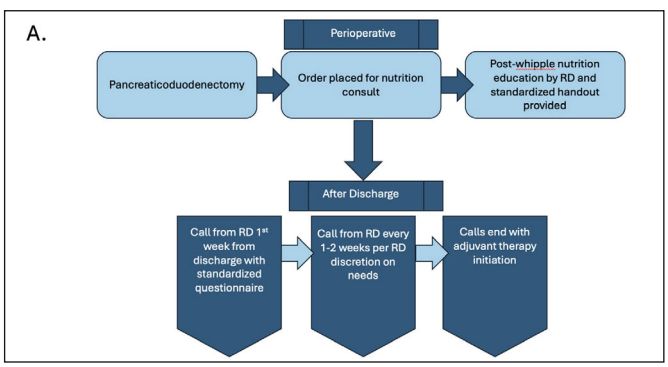
INTRODUCTION: Readmission after pancreaticoduodenectomy is estimated at 19% within 30-days and can increase to >37% within a year. The most common causes include infectious complications, delayed gastric emptying, nutrition depletion, and failure to thrive. We hypothesized that improving nutrition consultation in the inpatient and outpatient setting would decrease readmission rates. **METHODS:** A quality improvement initiative was established in September 2024 at our institution (Figure 1A). We measured compliance on the new protocol defined as dietician consult post-pancreaticoduodenectomy, inpatient education on nutrition recommendations post-pancreaticoduodenectomy, and follow-up telephone calls from a dietician with a standardized questionnaire every 1-2 weeks after discharge until chemotherapy initiation. Fisher's exact test compared 30-day readmission rates between patients that did and did not receive a call within two weeks of discharge. **RESULTS:** 73 patients underwent pancreaticoduodenectomy, and 94% (n=68) had a malignancy. A nutrition consult was placed post-operatively for 94.5% of patients (n=69), and 93.2% (n=68) received nutrition education. There were 69 patients evaluated for protocol compliance. Thirty-day readmission rates were increased for patients that did not receive a dietician follow-up within two weeks from discharge at 31.2% (n=10/32) compared to 18.9% (n=7/37) for patients that had a dietician follow-up within two weeks from discharge (p=NS). Adjuvant therapy was resumed by 8 weeks in 58% of patients that did not have a dietician follow-up within 2 weeks from discharge, and adjuvant therapy was resumed by 8 weeks in 79% of patients that had a follow-up within 2 weeks from discharge. During follow-up, dieticians assessed symptoms (Figure 1B) and recommended medication changes 22-35% of the time. These included pancreatic enzymes, acid-reducing medications, and bowel regulating medications. **CONCLUSIONS:** A post-operative nutrition program is a feasible initiative for patients undergoing pancreaticoduodenectomy. Although not statistically significant, we found decreased readmission rates for patients with close dietician follow-up. Close follow-up with dieticians assisted with expedient gastrointestinal management.



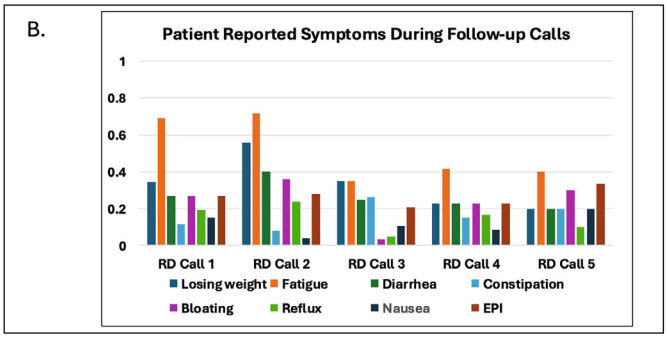


Figure. Protocol to Improve Nutrition Post-Pancreatecticoduodenectomy and Patient Reported Symptoms

EP100

Surveillance of high-risk melanoma with circulating tumor DNA (ctDNA)

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INTRODUCTION: The incidence of melanoma continues to increase worldwide. Even with newer therapeutic treatments, metastatic melanoma mortality remains high. Studies support earlier detection of metastatic disease can impact overall survival. Tumor Specific Circulating tumor DNA (ctDNA) has been shown to identify early recurrence in many tumor types prior to physical or radiologic exam. This study reviews the benefits of following high risk melanoma patients with ctDNA in the surveillance setting. **METHODS:** A retrospective chart review of high-risk melanoma patients was conducted. Those patients who had ctDNA as a surveillance test were identified. High risk patients were classified based on melanoma thickness, high Castle class 2A or higher, and lymph node involvement at presentation. Only patients with no evidence of disease (NED) on clinical or imaging follow-up were included in the study. CtDNA was evaluated every 3-6 months in addition to following routine surveillance guidelines in accordance with NCCN guidelines. Patients were excluded if they had evidence of metastatic disease at the time of diagnosis or at first ctDNA draw. **RESULTS:** 86 patients with high-risk melanoma were identified. Sixty-nine patients were found to be NED on clinical and radiographic exam and had serial ctDNA draws. There were 53 (76.8%) patients with negative ctDNA during follow-up; of these, 50 (94.3%) remain NED on clinical and radiographic exams. Three patients (5.7%) with negative ctDNA developed metastatic disease on clinical or radiographic exams. Of the 69 patients, 14 (20.3%) patients had a positive ctDNA during their follow up 12 (85.7%) patients went on to develop metastatic disease, while 2 (14.3%) patients currently have no evidence of metastatic disease but are being monitored closely. The ability of ctDNA to detect predict metastatic disease is:

Sensitivity = 80%
Specificity = 96.2%
Positive predictive value = 85.7%
Negative predictive value = 94.3%
Accuracy = 89.8%
P< 0.001 (Fischer's exact test)

CONCLUSIONS: In conclusion, this study identifies a highly significant association between ctDNA positivity and melanoma recurrence/metastasis. CtDNA may offer a more aggressive way to follow these patients in surveillance to identify early recurrence and this impart better survival.

Table. Distribution of ctDNA and recurrence

	Recurrence (+)	Recurrence (-)	Total
ctDNA (+)	12 (True Positive)	2 (False Positive)	14
ctDNA (-)	3 (False Negative)	50 (True Negative)	53
Total	15	52	69

EP101

The impact of neoadjuvant chemotherapy on small (T1a/b) HER2+ and triple negative cN1 breast cancers

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INTRODUCTION: Neoadjuvant chemotherapy (NACT) plays an evolving role in breast cancer management for HER2-positive (HER2+) and triple-negative (TN) subtypes. While clinical trials support NACT paradigms for tumors ≥T1c, optimal management of smaller, clinically node-positive tumors remains unclear, highlighting a gap in guidance for selecting NACT vs upfront surgery. **METHODS:** A retrospective analysis was performed using the National Cancer Database for patients diagnosed 2018–2022. Logistic regression identified predictors of nodal positivity, treatment selection, and nodal pathologic complete response (pCR). Overall survival (OS) was evaluated via Cox proportional hazards models. **RESULTS:** Among 353,671 cT1a/b tumors, 2.2% (7,850) were cN1, of which 32.9% were TN (1,079) or HER2+ (1,500). Predictors of both cN1 (in all patients) and pN1 (in non-NACT patients), were histology, grade, lymphovascular invasion (LVI), receptors, and higher pT stage. cN1 was also predicted by Black (OR 1.717, p< 0.001) and Asian (OR 1.244, p=0.01) race and insurance status. Among cT1a/b patients, the proportion having surgery first was 98.5% overall, 76.8% in the cN1 subset, and 92.1% in all HER2+ and TN patients. Mastectomy was more likely if cN1 than if cN0 (46% vs.18.5%, p< 0.001). In cN1 patients, NACT use was predicted by younger age, Hispanicity, receptor status, higher grade, LVI, and phenotype (ORs: TN 4.631, p< 0.001; HER2+ 3.652, p< 0.001). Nodal pCR was less likely in tumors having LVI (OR: 0.486, p< 0.001) and more likely for HER2+ and TN phenotypes (ORs: TN 1.961, p=0.002; HER2+: 2.293, p< 0.001). In multivariable modeling of cT1a/b patients, subtype was not associated with OS. OS prognostic factors (HRs) were race (Black 1.276, p=0.04), lobular histology (1.513, p=0.0025), Charlson Score (2: 2.849, p< 0.0001, ≥3: 2.358, p=0.003), LVI (1.359, p=0.0005) and tumor size (1.01, p< 0.001). With a median follow up of 6.9 and 5.1y, OS was similar for TN and HER2+ patients having surgery first as vs NACT (p=0.616). 5 and 10y OS was 86.9% vs 88.0% and 77.0% vs 78.6%, respectively. **CONCLUSIONS:** HER2+ and TN breast cancers < 1 cm represent a unique population where cN1 patients, despite small tumor size, more frequently undergo mastectomy. Patient characteristics and receptor status predicted NACT, but tumor biology predicted nodal pCR, emphasizing the importance of the latter in treatment decisions. In these smaller tumors, NACT did not confer a survival advantage, highlighting a need to prospectively study recurrence and morbidities to refine the paradigm in this population.

EP102

Clinical and demographic predictors of recurrence and progression in appendiceal goblet cell adenocarcinoma

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INTRODUCTION: Goblet cell adenocarcinoma (GCC) is a rare appendiceal malignancy with variable biological behavior and a high rate of peritoneal recurrence. Prognostic factors following surgery remain poorly defined. This study aims to identify clinical and pathological predictors of recurrence after curative-intent resection. **METHODS:** We performed a multicenter retrospective review of patients who underwent surgery for GCC between 1990 and 2024. Patient and disease-specific variables included demographics, type of surgery, histopathology, TNM stage, tumor size, margin status, and recurrence patterns. Time to recurrence or last follow-up was analyzed using Cox proportional hazards regression. Variables significant on univariate Cox analysis were entered into a multivariable model including tumor size, pT stage, pN stage, and margin status. Hazard ratios (HRC) with 95% confidence interval (CI) were reported. **RESULTS:** A total of 125 patients met inclusion criteria. Median age at diagnosis was 58 (IQR 59-65) and 46% were female. Definitive surgery included right hemicolectomy for 104 patients (83%), appendectomy for 15 patients (12%), and ileocecectomy for 6 patients (5%). Twenty-two patients (18%) developed recurrence at a median follow-up of 3.7 years (IQR 2.1-6.3). Recurrence was local in 4%, peritoneal in 13%, and distant in < 1%. On univariate analysis, tumor size ≥2 cm (HR 15.2, CI 1.94–119; p=0.028) and nodal positivity (HR 3.45, CI 1.32–8.99; p=0.035) were associated with increased risk of recurrence. On multivariate analysis, T4 stage (HR 4.86, CI 1.86–12.7; p=0.001) and positive surgical margins (HR 5.04, CI 1.02–24.8; p=0.047) remained independently associated with recurrence. Recurrence risk increased stepwise with the number of risk factors present, with HR of 5.69 (CI 1.20–26.9) for 1 factor, 10.1 (CI 2.08–49.4) for 2 factors, and 54.9 (CI 9.18–329) for 3 factors (p< 0.001). **CONCLUSIONS:** Nearly one-fifth of patients with GCC developed recurrence, and the risk rose markedly with multiple adverse factors. Identifying high-risk patients may inform tailored postoperative management and support early consideration of HIPEC or other adjuvant strategies.

Table. Associations of demographic and clinical characteristics with risk of recurrence.

Characteristic	No. recurred	Person-months	Univariable associations[1]		Multivariable associations[2]	
			HR (95% CI)	P-value	HR (95% CI)	P-value
Age at diagnosis				0.941		
< 50	7	185.10	1.00 (ref)			
50-59	7	170.56	1.11 (0.38-3.19)			
60-69	5	164.83	0.77 (0.24-2.43)			
70+	3	87.18	0.98 (0.25-3.85)			
Sex				0.545		
Male	14	340.98	1.00 (ref)			
Female	8	266.69	0.76 (0.32-1.83)			
BMI				0.256		
< 25	9	159.19	1.00 (ref)			
25.0-29.9	6	204.18	0.53 (0.19-1.49)			
30+	4	197.31	0.37 (0.11-1.20)			
Missing	3	46.99	1.19 (0.32-4.42)			
Presentation				0.642		
Appendicitis	14	416.35	1.00 (ref)			
Incidental imaging	0	42.40	-			
Other	8	148.92	1.53 (0.63-3.73)			
Definitive procedure				0.995		
Appendectomy	5	129.22	1.00 (ref)			
Ileocecectomy	0	34.27	-			
Right hemicolectomy	17	444.18	1.05 (0.37-2.97)			
Signet ring				0.217		
No	16	514.58	1.00 (ref)			
Yes	6	93.09	1.84 (0.70-4.86)			
Mucin				0.839		
No	19	539.39	1.00 (ref)			
Yes	3	68.28	1.14 (0.33-3.90)			
Appendiceal perforation				0.139		
No	15	486.71	1.00 (ref)			
Yes	7	120.96	1.98 (0.80-4.91)			
Tumor size (cm)				0.028		0.086
< 2	1	210.87	1.00 (ref)		1.00 (ref)	
2+	14	220.79	15.2 (1.94-119)		10.1 (1.30-78.9)	
Missing	7	176.01	8.58 (1.05-69.8)		7.43 (0.86-64.1)	
pT stage				0.001		0.001
0-3	13	513.10	1.00 (ref)		1.00 (ref)	
4	9	94.57	4.12 (1.73-9.84)		4.86 (1.86-12.7)	
pN stage				0.035		0.133
Negative	8	354.55	1.00 (ref)		1.00 (ref)	
Positive	9	109.26	3.45 (1.32-8.99)		2.92 (1.03-8.33)	
Missing	5	143.87	1.42 (0.45-4.48)		1.42 (0.41-4.94)	
Grade				0.128		
1	3	181.22	1.00 (ref)			
2	2	68.67	2.04 (0.33-12.6)			
3	12	179.97	3.84 (1.07-13.8)			
Unknown	5	177.82	1.62 (0.38-6.87)			
Margins				0.031		0.047
Negative	19	571.68	1.00 (ref)		1.00 (ref)	
Positive	2	13.80	5.26 (1.16-23.8)		5.04 (1.02-24.8)	
LVI				0.178		
No	6	266.56	1.00 (ref)			
Yes	5	70.29	3.10 (0.94-10.2)			
Unknown	11	270.82	1.66 (0.58-4.74)			
PNI				0.891		
No	5	142.44	1.00 (ref)			
Yes	5	174.17	0.92 (0.26-3.21)			
Unknown	12	291.06	1.18 (0.41-3.41)			
Combinations of signet ring and pT-stage				0.011		
Signet ring no, pT-stage 0-3	9	432.43	1.00 (ref)			
Signet ring no, pT-stage 4	7	82.15	4.45 (1.64-12.1)			
Signet ring yes, pT-stage 0-3	4	80.67	2.05 (0.61-6.90)			
Signet ring yes, pT-stage 4	2	12.42	6.48 (1.36-30.8)			
Combinations of signet ring and pT-stage				0.010		
Signet ring no, pT-stage 0-3	9	432.43	1.00 (ref)			
Signet ring yes OR pT-stage 4	11	162.82	3.17 (1.31-7.71)			
Signet ring yes AND pT-stage 4	2	12.42	6.54 (1.38-30.9)			
Number of risk factors[3]				<0.001		
0	3	293.7	1.00 (ref)			
1	8	204.3	5.69 (1.20-26.9)			
2	7	94.9	10.1 (2.08-49.4)			
3	4	14.8	54.9 (9.18-329)			

1. Cox proportional hazards regression analysis, modeling time to recurrence or last follow-up as the outcome and characteristic of interest as exposure
2. Cox proportional hazards regression analysis, modeling time to recurrence or last follow-up as the outcome, and simultaneously including tumor size, pT stage, pN stage and margin status as exposures
3. Number of the following characteristics a patient possesses: tumor size 2+ cm, pT stage 4, pN positive and margins positive.

EP103

Persistent Racial and Ethnic Disparities in Cancer Outcomes Following Medicaid Expansion Under the Affordable Care Act

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INTRODUCTION: Medicaid expansion (ME) under the Affordable Care Act (ACA) aimed to improve access to healthcare and screening for racial and ethnic minority groups who historically experience delayed cancer diagnosis and worse survival. We evaluated the impact of ME on stage at presentation and overall survival (OS) across racial and ethnic groups for screening-amenable malignancies. **METHODS:** Patients aged 40–64 years with lung, colon, rectal, or breast cancer were identified from the National Cancer Database. Difference-in-difference (DID) models compared outcomes pre- (2009–2013) and post-expansion (2015–2019) in ME states (MES) versus non-MES; models adjusted for age, sex, comorbidity, rural–urban status, and facility type. **RESULTS:** Among 724,009 patients, 45% resided in MES. Compared to MES, non-MES patients were more likely to be Black (17% vs 11%), uninsured (8% vs 3%), and

from the lowest income quartile (22% vs 13%, all p< 0.001). Overall, ME was associated with higher rates of early-stage presentation (44% vs 41%, p< 0.001) and improved 3-year OS for lung (DID +2.4%, p< 0.001), colon (DID +2.1%, p< 0.001), and rectal (DID +2.2%, p=0.004) cancers. However, benefits varied markedly by race. (Table 1) For lung cancer, early-stage presentation improved significantly for White patients (DID +4.0%, p< 0.001) but not for Black (+2.0%, p=0.140) or Hispanic (−5.5%, p=0.061) patients. Similar trends were observed for colon and rectal cancer, where White patients saw improvements in early detection (colon DID +2.2%, p=0.004; rectal DID +0.4%, p=0.63) and OS (colon DID +2.3%, p< 0.001; rectal DID +1.8%, p=0.03), whereas Black and Hispanic patients did not experience statistically significant gains. In contrast, Asian and Hispanic women with breast cancer demonstrated no OS improvement and, in some subgroups, paradoxically worse outcomes (Asian breast DID −1.2%, p=0.037). When adjusting for stage, the survival advantage persisted only for colon cancer (DID +1.1%, p=0.015), suggesting that earlier detection mediated most of the benefit associated with ME. **CONCLUSIONS:** Medicaid expansion improved access and survival for several cancers, primarily through earlier stage at diagnosis. Yet, these benefits disproportionately favored White patients, underscoring persistent racial inequities in outcomes despite coverage expansion. Without universal ME implementation and targeted equity strategies, cancer disparities may persist or worsen.

Table 1: Difference-in-difference (DID) analysis for proportion of patients presenting with early-stage disease and 3-year overall survival. Positive values indicate greater benefit in Medicaid-expansion states relative to non-Medicaid expansion states, whereas negative values indicate worse outcomes in Medicaid expansion states. Early-stage disease was considered Stage I or II at presentation, except for rectal cancer which was Stage I only.

	Early-Stage at Presentation		3-Year Overall Survival	
	DID (%)	P-Value	DID (%)	P-Value
Lung Cancer				
Overall	**3.4**	**<0.001**	**2.4**	**<0.001**
White	**4.0**	**<0.001**	**2.6**	**<0.001**
Black	2.0	0.140	2.0	0.219
Hispanic	-5.5	0.061	1.8	0.622
Asian	1.4	0.648	-7.1	0.059
Colon Cancer				
Overall	**1.6**	**0.013**	**2.1**	**<0.001**
White	**2.2**	**0.004**	**2.3**	**<0.001**
Black	0.4	0.808	0.9	0.530
Hispanic	0.7	0.774	2.5	0.252
Asian	0.1	0.975	2.4	0.396
Rectal Cancer				
Overall	0.7	0.373	**2.2**	**0.004**
White	0.4	0.634	**1.8**	**0.030**
Black	2.1	0.416	5.4	0.060
Hispanic	-4.3	0.164	-1.3	0.674
Asian	1.2	0.778	6.5	0.102
Breast Cancer				
Overall	0.4	0.079	0.1	0.639
White	0.2	0.381	0.0	0.742
Black	0.2	0.728	0.6	0.234
Hispanic	0.9	0.357	0.7	0.253
Asian	-0.5	0.630	**-1.2**	**0.037**

EP104

Biophysical and technical determinants of pancreatic cancer organoid establishment: a systematic analysis to optimize translational research protocol

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INTRODUCTION: Patient-derived organoids hold promise for precision medicine in pancreatic ductal adenocarcinoma, yet successful generation from surgical specimens remains inconsistent. We systematically identified tumor biophysical properties and technical variables that predict organoid establishment success to create an evidence-based protocol optimization framework. **METHODS:** We prospectively evaluated 32 pancreatic cancer patients undergoing surgical resection. Technical variables including gross tumor features (fibrosis, necrosis, stiffness), tissue processing time, and cold ischemia intervals were systematically recorded. Organoid viability and yield were correlated with clinical, pathological, and biophysical features using multivariable regression, exponential decay modeling, and machine learning algorithms. **RESULTS:** Median post-processing tissue mass was 480 mg with median organoid viability of 65.5%. Overall success rate (viability greater than 50% and yield greater than 1 million cells) was achieved in 68.8% of specimens. Viability declined exponentially with cold ischemia time: same-day processing yielded a viability half-life of 8.2 hours versus 4.1 hours for overnight storage (p less than 0.001). Multivariable analysis identified shorter processing time (beta equals negative 0.45, p equals 0.008) and higher post-processing tissue mass (beta equals 0.38, p equals 0.02) as independent predictors of viability. Additional univariate predictors included greater cell diameter variability (p less than 0.05), higher patient body mass index (p less than 0.05), lower tumor stiffness (p less than 0.01 for yield), and larger mean cell diameter (p less than 0.05 for yield). Machine learning models achieved 88.9% accuracy in predicting successful organoid establishment, with cell diameter, tumor stiffness, and live cell count as dominant predictive features. Unsupervised clustering identified a distinct biophysical profile associated with optimal organoid success. **CONCLUSIONS:** Same-day processing with minimal cold ischemia emerged as the critical modifiable factor for pancreatic cancer organoid success, while higher tissue mass, lower tumor stiffness, and greater cellular heterogeneity served as important predictors. These findings provide an evidence-based framework to standardize protocols and improve success rates for organoid-based precision oncology applications.

Table. Technical and Clinical Predictors of PDO Viability

Experimental & Clinical Variable	Cell Viability ≥ 50%			Viable Cells per mg >1000			Log_{10} Viability		
	OR	p (Univ.)	p (Multi.)	OR	p (Uni.)	p (Multi.)	OR	p (Uni.)	p (Multi.)
Same Day Processing (Yes/No)	0.71	0.681		0.12	0.065	0.123	2.41	0.228	
Pre-Processing Mass (mg)	1.00	0.376		1.00	0.769		1.00	0.0464*	0.063
Post-Processing Mass (mg)	1.00	0.288		1.00	0.766		1.00	0.0193*	0.0307*
% Mass Change	1.01	0.713		1.01	0.746		0.99	0.744	
Stiffness Factor (a.u.)	1.55	0.176		0.32	0.0218*	0.0417*	0.70	0.163	
Processing Time (hrs)	0.55	0.0459*	0.0403*	1.41	0.291		1.31	0.149	
Digestion Time (min)	1.67	0.542		0.99	0.481		0.99	0.492	
Digestion Time Group (<60 vs >60 min)	1.01	0.702		0.85	0.838		0.27	0.074	
Mean Cell Diameter (µm)	1.04	0.927	0.528	3.55	0.0227*		1.24	0.613	0.305
Cell Diameter SD (µm)	5.39	0.0213*		0.86	0.638		0.45	0.0186*	
Cell Yield (%)	0.99	0.713		0.99	0.746		1.01	0.744	
Gender (M/F)				4.89E+09	1.000		2.12	0.446	
Age at Diagnosis (Years)				0.92	0.433		0.96	0.509	
BMI at Diagnosis				1.15	0.457		1.23	0.0386*	
Smoking History (Y/N)				4.89E+09	1.000		0.26	0.152	
Neoadjuvant therapy (Yes/No)	1.46	0.661		1.46	0.661		0.68	0.626	
Functional Status				3.06E+09	1.000		0.22	0.146	
ECOG Performance Score				3.37	0.312		0.94	0.933	
Primary Tumor Size (cm)				1.00	0.963		0.95	0.585	

EP105

Assessing the learning curve for a novel approach to esophagectomy within a large community health system

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INTRODUCTION: Transhiatal Endoscopic Esophageal Mobilization (TEEM) esophagectomy is a minimally invasive novel approach to treating esophageal cancers and is a technically demanding operation requiring multiple surgical specialties. This study aims at identifying the learning curve and assessing surgical outcomes at 2 hospital sites. **METHODS:** A retrospective chart review

of 176 patients who underwent TEEM esophagectomy from 2015-2021 was conducted. Patients were excluded from analysis if they did not have a diagnosis of esophageal cancer (n=17) or if they underwent an open esophagectomy (n=9). Demographic information, operative details, and survival data were collected for analysis. Patients were divided into four quartiles (PQ1, PQ2, PQ3, PQ4) in order of procedure date for analysis (n=37 or n=38 per quartile). **RESULTS:** A total of 150 patients were included in the analysis (patient demographics found in Table 1). Median operative time decreased by 54 minutes from PQ1 (221 min [IQR 204-243]) to PQ3 (167 min [IQR 154-183]) and remained similar in PQ4 (170 min [IQR 151-184]). The percentage of patients with an estimated blood loss (EBL) of more than 100 ml decreased from 26% in PQ1 to 13% in PQ3 and 8% in PQ4. The percentage of patients with 15 or more lymph nodes resected was similar between PQ1 (47%) and PQ3 (45%) and was highest in PQ4 (65%). The percentage of patients going to the ICU following the procedure decreased with each quartile, from 25% of patients in PQ1 to 17% in PQ3 and 6% in PQ4. Median LOS for patients decreased from 9 days (IQR 7-11) in PQ1 to 5 days (IQR 4-7) in PQ3 and 5 days (IQR 4-6) in PQ4. Improvements in 1- and 5-year mortality were also observed: 71% of patients from PQ1 survived to 1 year, compared to 79% from PQ3 and 100% from PQ4. A more modest improvement was seen at 5 years, with 58% of PQ1, 63% of PQ3, and 62% of PQ4 patients surviving to 5 years. **CONCLUSIONS:** Results from this study indicate that proficiency for the TEEM approach to esophagectomy occurred after approximately 110 operations at our institution. Operative time, EBL, ICU admission rate, and hospital LOS decreased markedly with experience. Survival at 1-year and 5-years post-procedure increased with experience.

Table 1. Patient Demographics

Patient Demographics (n=150)	
Age (years), median (IQR)	68 (60-74)
Male Sex, n (%)	124 (82.7%)
Race, n (%)	
White	143 (95.3%)
Black/African American	6 (4.0%)
Unknown	1 (0.7%)
Ethnicity, n (%)	
Not Hispanic/Latino	146 (97.3%)
Hispanic/Latino	3 (2.0%)
Unknown	1 (0.7%)
Diagnosis, n (%)	
Adenocarcinoma	130 (87.7%)
Squamous Cell Carcinoma	20 (13.3%)

EP106

Among clinical N1 breast cancer patients following neoadjuvant chemotherapy, selective sentinel lymph node biopsy alone does not adversely impact local/regional recurrence or survival

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INTRODUCTION: In patients with node positive breast cancer following neoadjuvant chemotherapy (NAC), axillary lymph node dissection (ALND) remains the standard of care as it is purported to guide treatment decisions and control local/regional failures. However, the value of this in the contemporary era remains to be clearly elucidated. **METHODS:** A retrospective study was performed among patients with biopsy proven clinical N1 disease treated with NAC from 2010 to 2021. Patients with recurrence or distant metastasis at the time of diagnosis were excluded. **RESULTS:** A total of 265 patients were analyzed. The median age at diagnosis was 54 years, mean tumor size was 3.6 cm. One hundred thirty-three (50.2%) tumors were hormone receptor positive (HR+) and Human Epidermal Growth Factor Receptor 2 negative (HER2-), 53 (20.0%) tumors were triple negative (TN), 48 (18.1%) were HR+/HER2+, and 31 (11.7%) were HR-/HER2+. One hundred-six (40.0%) patients underwent ALND alone, 92 (34.7%) patients underwent both selective sentinel lymph node biopsy (SLNB) and ALND, and 67 patients (25.3%) underwent selective SLNB alone. Selective SLNB was performed with the aide of a fiducial marker placed in the lymph node in the majority of these patients. The median SLN yield was 4 for both SLNB groups. The median (range) positive nodes were 2 (0-25) in the ALND group, 1 (0-24) in the SLNB/ALND group, and 0 (0-6) in the SLNB only group. Following surgery, 120 (45.3%) patients had pN0 disease, 78 (29.4%) were pN1, and 67 (25.3%) were ≥ pN2. At a median follow-up of 78 months, 60 (22.8%) patients developed recurrent disease: 13 (4.9%) local (breast or chest wall), 5 (1.9%) regional (of whom only 2 were in the axilla) and 57 (21.7%) distant. There was no difference in the rate of axillary recurrence based on type of axillary surgery: SLNB only, ALND only, or SLNB/ALND. Furthermore, there was no difference in the rate of breast cancer-related death between the three axillary surgery groups. **CONCLUSIONS:** In this study of breast cancer patients with clinical N1 disease following neoadjuvant chemotherapy, type of axillary surgery did not adversely affect additional treatment decisions, breast cancer recurrence rates, or survival. These findings suggest that selective sentinel lymph node biopsy alone after neoadjuvant chemotherapy is more than adequate.

EP107

Immune Cells Retain In-vitro Function in Pancreatic Cancer Patient Derived Organoids

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INTRODUCTION: Patient derived organoids (PDO) have been utilized as an easy to develop and maintain cancer model to study tumor biology and drug sensitivities. However, there has been concern that PDOs do not accurately recapitulate intratumor heterogeneity. In pancreatic ductal adenocarcinoma (PDAC), the tumor microenvironment (TME) is highly fibrotic and contains a heterogenous immune component and it is unclear if PDOs retain these features. In this study we sought to investigate if PDAC PDOs retain functional immune system components with the goal of using PDOs to test immunotherapies in-vitro. **METHODS:** PDOs were created by first obtaining patient tumor samples, either through surgical or endoscopic retrieval. Tumor tissues were cut into smaller pieces, washed, and mechanically and enzymatically digested into single cells. These cells were embedded into BME and cultured in a medium supplemented by growth factors. PDOs were harvested at an early passage and dissociated for flow cytometry using antibodies for immune markers. In vitro immune activation studies in PDOs were performed using IL-2 and anti-CD3 and CD28 antibodies, measuring for gamma interferon secretion via ELISA. Confocal microscopy was used to view immunofluorescence (IF) staining of mounted early passage (< P4) PDO lines stained with antibodies against immune and fibroblast markers. **RESULTS:** Our microscopic findings found populations of α-SMA + /FAP + [KJ1] double positive, pro-tumor myofibroblasts. We additionally identified T-reg populations in PDOs with expression of IL-2Rα and central FOXP3 expression. Immune activation studies resulted in measurable expression of interferon gamma in early passage PDOs when compared to late passage (P10). Upon flow cytometry, we identified distinct populations of CD3+/CD8+ T-cells, as well as CD3+/CD4+ T-cells. **CONCLUSIONS:** Our results show that early passage PDOs maintain patient derived TME and immune function. This suggests that PDOs can be used to form a patient specific immune competent model of personalized drug testing in PDAC patients.

EP108

Stoma Creation and Reversal After Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy for Peritoneal Surface Malignancies: A 30-Year Experience

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INTRODUCTION: Stoma formation is commonly performed during cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS–HIPEC), yet contemporary data on reversal rates and outcomes remain limited. Our institution's previously published experience reported a low reversal rate. Herein, we sought to update our experience following this original report, to assess whether similar patterns persisted. We also aimed to identify predictors of non-reversal and determine associated morbidity and mortality. **METHODS:** A retrospective analysis of a prospectively maintained, single-institution database of 929 CRS–HIPEC index procedures (January 2012–May 2025) was performed. We examined patient demographics, malignancy, and postoperative morbidity and mortality among patients who underwent stoma reversal and reasons for non-stoma reversal. Group differences were tested with the Wilcoxon two-sample test and Fisher's exact test. **RESULTS:** Of 929 CRS–HIPEC procedures, 122 (13%) involved stoma creation, and 47/122 (38.5%) were subsequently reversed—slightly higher than our prior report (1991–2014: 26.2% [43/164]). Stoma types were: 41% loop ileostomy, 21% loop colostomy, 17% end ileostomy, and 21% end colostomy. Loop stomas were more likely to be reversed than end stomas (60.5% [46/76] vs 2.2% [1/46]); median time to reversal was 6.2 months (range 2–32). Non-reversal was most often due to death (70%) or disease progression (23%). Extensive residual disease was associated with failure to reverse (R2b/c: 23% unreversed vs 4% reversed; P=0.015), as were intraoperative transfusions (P=0.025). Primary cancer type, PCI, ICU days, and LOS were not associated with reversal. Among patients who underwent reversal, 3/47 (6.4%) had Clavien Dindo grade III/IV complications, anastomotic leak occurred in 4.3% (2/47), and there were no deaths within 30 days. Compared with our prior study, corresponding rates after reversal were 27.9% (12/43) for Clavien Dindo grade III/IV complications,9.3% (4/43) for anastomotic leak, and 4.7% (2/43) for 30-day mortality. **CONCLUSIONS:** In this cohort, morbidity and mortality after ostomy reversal were improved compared to our earlier institutional experience and most patients with loop stomas were able to undergo reversal. Non-reversal typically reflected death or disease progression and correlated with more extensive residual disease, while most other factors showed no consistent association. These findings support reversal in appropriate patients and help guide counseling for stoma closure.

EP109

Survival outcomes after oncoplastic versus standard breast-conserving surgery: A multicenter cohort

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INTRODUCTION: Breast-conserving surgery may result in significant deformities and is often not feasible for larger tumors. Oncoplastic breast surgery (O-BCS) techniques were developed to enable wider excisions while preserving aesthetic outcomes. Data comparing O-BCS with standard BCS (S-BCS) are limited. Therefore, this study evaluated and compared locoregional recurrence-free survival (LRRFS), recurrence-free survival (RFS), breast cancer-specific survival (BCSS), and overall survival (OS) between the two approaches. **METHODS:** This retrospective multicenter cohort study included 685 female breast cancer patients (Stage 0–III) who underwent BCS followed by radiotherapy (2016–2022) in six Brazilian centers. S-BCS was defined as lumpectomy/WLE (with or without simple remodeling). O-BCS was defined as therapeutic mammoplasty. Survival analyses were performed using multivariable Cox proportional hazards models adjusted for clinical stage. **RESULTS:** The cohort included 550 (80.3%) S-BCS and 135 (19.7%) O-BCS patients. O-BCS patients were younger (mean age 53.3 vs. 59.5 years). Tumor characteristics differed significantly: advanced stages (≥IIB) were more frequent in the O-BCS group (24.8% vs. 10.8%; $p< 0.001$), which was confirmed as an independent predictor for receiving O-BCS (ORadj=2.71; $p< 0.001$). Multivariable survival analyses, adjusted for clinical stage, showed no significant differences between groups across all endpoints. Multivariable survival analyses, adjusted for clinical stage, showed no significant differences between groups across all endpoints. LRRFS events occurred in 5.3% of the S-BCS group and 2.2% of the O-BCS group (HR=0.35; p=0.085). The remaining endpoints also showed no significant differences, including RFS (HR=0.36; p=0.091), BCSS (HR=0.26; p=0.198), and OS (HR=0.53; p=0.31). **CONCLUSIONS:** This study found no significant difference in survival outcomes between S-BCS and O-BCS, despite the O-BCS group presenting with more advanced tumors. These findings support the oncological safety of therapeutic mammoplasty, reinforcing its role in expanding breast conservation for patients initially considered ineligible for conventional BCS.

EP110

Triple Platinum Therapy Outperforms Conventional Platinum Agents in Glycosaminoglycan-High Pancreatic Cancer

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INTRODUCTION: Patients with the most common pancreatic malignancy, pancreatic ductal adenocarcinoma (PDAC), typically present with advanced disease and their cancer progresses 6-12 months after treatment with the front-line regimen, FOLFIRINOX (5-fluorouracil, oxaliplatin, irinotecan and leucovorin). Therefore, there is a critical need for new and effective treatment regimens for PDAC patients. Although the novel polynuclear platinum agent, Triplatin (BBR3464), did not advance beyond Phase II, our new understanding of its mechanism of action supports the rationale for its re-examination against tumors expressing high levels of glycosaminoglycans (GAGs), specifically chondroitin-4-sulfate (C4S). **METHODS:** We performed in vitro and in vivo testing of the efficacy of Triplatin and Oxaliplatin against PDAC models with defined levels of GAG expression. **RESULTS:** Our preliminary data indicates that alterations in the expression of GAG levels in PDAC cell lines affect the cytotoxicity and cellular uptake of Triplatin. First, we show Triplatin is generally more active than oxaliplatin against human and mouse PDAC cell lines. Secondly, a GAG-deficient CHX1990 cell line (CRISPR KO of β-1,4-galactosyltransferase 7 (B4GalT7), verified by reduction in binding of CS-binding peptide, rVAR2-V5, shows a correlative loss in cytotoxicity. Interestingly, the reduction in Triplatin Pt-DNA adduct formation observed in the CHX1990 B4GalT7 KO (HS and CS deficient), CSGalNAcT1/2 KO (CS deficient) and CHST 11/12 KO (chondroitin-4-sulfate (C4S) deficient) is at similar levels, suggesting DNA platination by Triplatin is dependent specifically

on C4S. Third, we show significant activity of Triplatin against high GAG-expressing PDAC PDX and mouse CHX1990 models in vivo. Finally, we show high GAG expression in PDAC patient samples vs normal tissues, highlighting the potential of GAG-targeted platinum therapy. **CONCLUSIONS:** Together, our results show that GAGs may provide a viable biomarker for Triplatin in PDAC patients, producing a significant clinical advantage over oxaliplatin in this setting. A more active platinum would not only increase response rates and durations of response, but also avoid the toxicity of relatively inactive therapy.

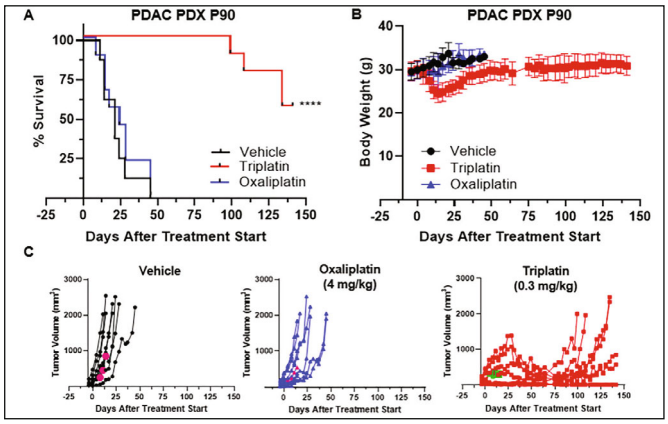

Figure. Triplatin is more active than Oxaliplatin against PDAC Growth within NSG Tumor-Bearing Mice

EP111

Adrenal Metastasectomy in the Immunotherapy Era

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INTRODUCTION: Immune checkpoint inhibitors (ICIs) and targeted agents have expanded multimodal treatment options for oligometastatic solid tumors, potentially altering the role of adrenal metastasectomy. We evaluated treatment patterns and outcomes for adrenal metastasectomy in the immunotherapy era and compared survival with a historical pre-immunotherapy cohort. **METHODS:** We performed a retrospective cohort study of patients undergoing adrenalectomy for metastatic disease from January 2017 to October 2024 ("immunotherapy era") and compared outcomes with a pre-2017 cohort ("pre-immunotherapy era"). Overall survival (OS) was measured from adrenalectomy to death. Recurrence-free survival (RFS) was measured from adrenalectomy to first recurrence. Survival was estimated via the Kaplan–Meier method and compared with the historical cohor. **RESULTS:** In total, 63 patients underwent adrenal metastasectomy in the immunotherapy era. The majority were male (57.1%) and Non-Hispanic White (84.1%). The median age at time of adrenalectomy was 62 years (IQR: 55 – 69). The most common primary malignancies were renal cell carcinoma (28.6%) and lung cancer (28.6%), followed by melanoma (7.9%), colorectal cancer (7.9%), and hepatocellular carcinoma (6.4%). Isolated adrenal disease at surgery was present in 25.4%, while 14.5% had synchronous resection of extra-adrenal metastases. Neoadjuvant ICI was given in 33.3% of patients and 36.5% received adjuvant ICI. Operative approach was primarily laparoscopic (46.0%), with 28.6% undergoing open and 19.0% robotic adrenalectomy. Mean follow-up was 41.7 months (SD 28.8). In our immunotherapy cohort, R1 resection was associated with worse recurrence free survival (HR 2.0) but this finding was not significant (p=0.05). Median RFS was 16.9 months (IQR 2.4–19.1) in the immunotherapy era versus 14.9 months (IQR 2.5–not reached) in earlier controls (p >0.05). Median OS was not reached in the immunotherapy era cohort, suggesting improved long-term outcomes compared to 52.1 months in the pre-immunotherapy cohort; differences did not reach statistical significance. **CONCLUSIONS:** Adrenal metastasectomy in the immunotherapy era is safe and effective, with recurrence-free survival comparable to the pre-immunotherapy era and a trend toward improved overall survival. These findings support continued use of surgical resection in carefully selected patients as part of multimodal treatment for metastatic cancer.

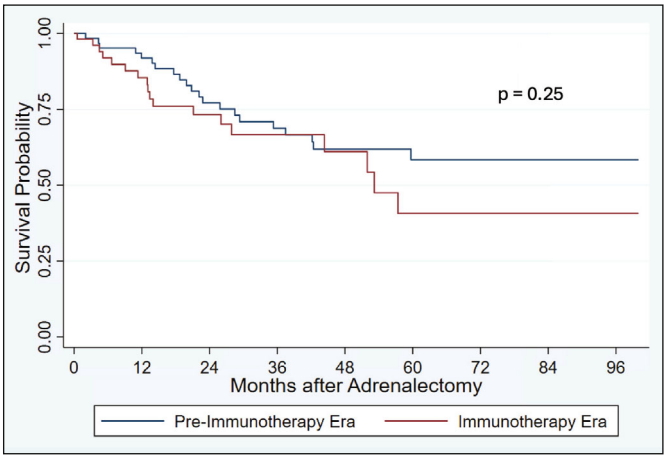

Figure. Overall Survival: Pre-Immunotherapy vs Immunotherapy Era

EP112

LIFE-NETs (Life Following Excision of Neuroendocrine Tumors): a multi-institutional prospective cohort study of quality of life after surgery for neuroendocrine tumors

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BACKGROUND: Neuroendocrine tumors (NETs) represent a distinct group of malignancies with indolent growth and prolonged survival even with active advanced disease. NETs are conceptualized as a "chronic cancer" in which therapeutic goals often focus on long-term disease and symptom control. Surgery remains central to management, whether for localized or metastatic disease. The potential repercussions of surgery must be carefully weighed against benefits. While patient quality of life (QOL) is a critical factor in decision-making, current evidence after surgery is sparse, single-centre, and lacks use of standardized, validated instruments. To support informed, patient-centred surgical decisions, robust multi-institutional data on post-operative QOL are needed. We aim to describe QOL measures following surgery for NETs and identify factors associated with them. **METHODS:** LIFE-NETs is a prospective, multi-institutional, international prospective cohort study (NCT06981455). 246 adults (>18 years old) diagnosed with grade 1 to 3 loco-regional or metastatic gastro-entero-pancreatic NETs and consented for surgery at high-volume centres in North America and Europe will be enrolled over 18 months, with follow-up to 36 months after surgery. QOL will be assessed at baseline and 6, 12, 24, and 36 months post-operatively using validated tools: SF-12, EORTC QLQ-C30 with GEPNET21, EQ-5D-5L, and symptom inventories. Clinical, sociodemographic, and treatment variables will be collected. Mixed linear regression models with random intercepts for patients will model the trajectory of scores after surgery, accounting for random effects and for correlation within repeated measures. It will estimate the relative change in a patient's scores over time. Differences in scores trajectories based on key sociodemographic and clinical factors will be examined by including interaction terms between time and key factors of interest defined a priori: age, sex, primary tumor site, grade, and type of surgery. An interim analysis is planned at 12 months after the end of enrollment. Patient and service user engagement is integrated across the study continuum. This study has been approved by research ethics boards and has begun enrollment. Findings will directly inform surgical decision-making frameworks, patient counselling, and integration of QOL outcomes in interventional surgical trials for NETs.

EP113

Retrograde transhepatic approach to right anterior vessels during left hepatic trisectionectomy with bile duct resection

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INTRODUCTION: Division of the right anterior hepatic artery and/or portal vein is a key step during left trisectionectomy with bile duct resection (H123458-B, according to the New World terminology). These hepatic inflow vessels are usually divided in the antegrade direction (antegrade hilar approach, AHA) before hepatectomy. However, this attempt often fails due to vascular invasion or deep operative field from the hilar view. When the AHA is unfeasible, the right anterior vessels can be divided under direct visualization by incising the ventral side of Glissonean sheath between the right anterior and posterior sectors following liver transection (retrograde transhepatic approach, RTA). **METHODS:** Patients who underwent H123458-B between 2010 and 2024 were included. Clinical characteristics and short-term outcomes were compared between the AHA and RTA groups. **RESULTS:** Among 182 patients, the AHA was used in 71 patients and RTA in 111 patients. Clinicopathological characteristics were similar between the groups. Preoperative PVE was significantly more frequent in the RTA group (91.6 vs. 98.2%, P = 0.033), although the rates in both exceeded 90%. The independent right posterior PV was more frequent in the AHA group (39.4 vs. 6.3%, P < 0.001), because the common trunk of the right anterior PV and left PV functioned as a safety margin from a tumor. Combined vascular resection was more frequent in the RTA group (28.2 vs. 64.9%, P < 0.001). Reconstruction between the right posterior PV and the main PV did not differ significantly between the groups (33.3 vs. 36.2%, P = 0.919), although the rate of pT4 disease was significantly higher in the RTA group among patients with perihilar cholangiocarcinoma (30.0% vs. 74.0%, P < 0.001; n = 156). Significantly greater blood loss (17.2 vs. 22.8 mL/kg, P < 0.001), longer operative times (594 vs. 641 min, P = 0.005), and longer Pringle time (83 vs. 98 min, P < 0.001) were found in the RTA group, although the rate of postoperative complications and the duration of postoperative hospital stay did not differ between the groups. The curative resection rate was approximately 80% in both groups. There was a significant difference in the surgical mortality (0 vs. 5.4%, P = 0.046), with all surgical deaths occurring in the RTA group. **CONCLUSIONS:** The RTA was needed in over 60% of patients, and surgical proficiency in this approach is essential for safely performing H123458-B.

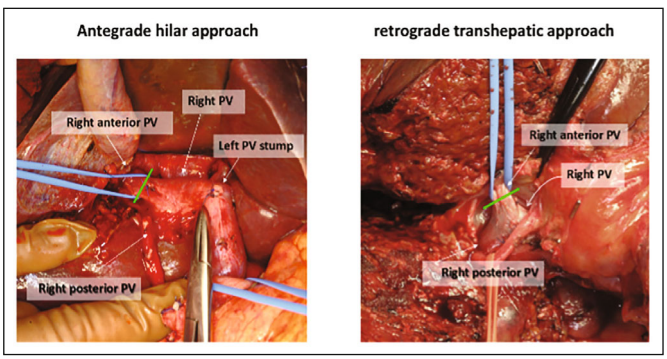

Figure. Ligation of right anterior portal vein in H123458-B

EP114

Favorable long term safety of percutaneous hepatic perfusion for metastatic uveal melanoma

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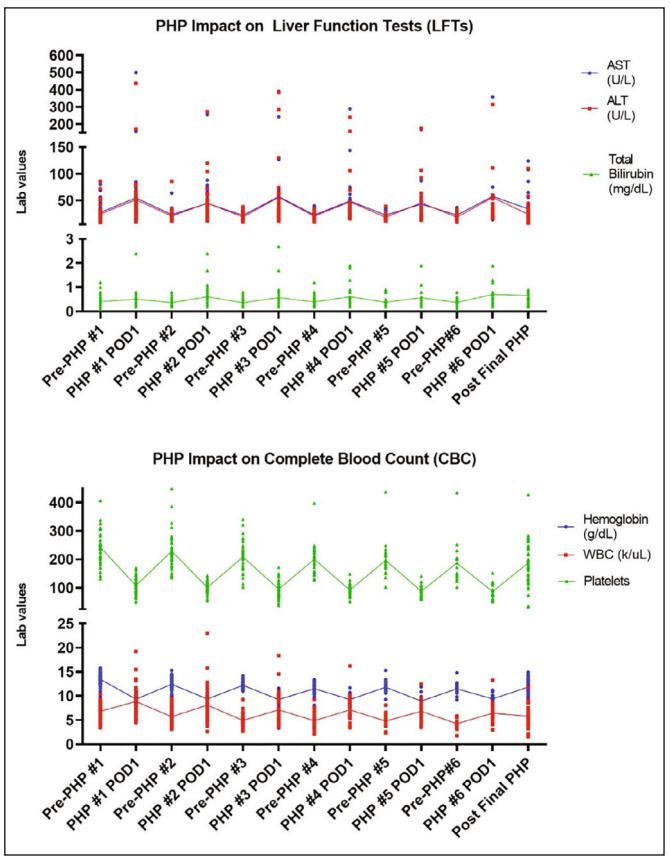
INTRODUCTION: The prognosis of uveal melanoma (UM) precipitously declines with the diagnosis of metastatic disease which has a high propensity for spread to the liver. Percutaneous hepatic perfusion (PHP) is a minimally invasive approach to selectively deliver melphalan into the liver to treat liver metastases from UM with limited systemic exposure. PHP demonstrates significant improvement in progression free survival (PFS) compared with best alternative care (BAC). While there are some transient adverse effects that resolve without active intervention (most commonly cytopenias associated with transient bone marrow suppression), the goal of this study was to evaluate for any long-term toxicities after PHP. **METHODS:** A retrospective review of a prospectively collected database included patients treated with at least one PHP from 2008-2024 with at least 12 months of follow up from the first PHP. Laboratory values, imaging reports and clinic documentation were reviewed. **RESULTS:** 38 patients were identified, with a median age of 62 (range, 36-78) years and 63% female. Median follow-up from the first PHP was 22 months and the median number of PHPs was 5 per patient with a total number of 170 PHPs performed in this cohort. Patients were normally discharged after 24 hours of observation with a median postoperative length of stay of 1 day (range, 1-4). Transient abnormalities in liver function tests (LFTs), complete blood count (CBC) and troponin levels were seen in the majority of patients (52.6%,100% and 28.9% respectively) after any one of their PHPs. These deviations resolved prior to subsequent PHPs (figure 1a, 1b, 1c). Only 1 patient (2.6%) had a persistent pancytopenia lasting at least 12 months after the last PHP (patient had 5 PHPs). **CONCLUSIONS:** Patients who undergo PHP are unlikely to have long term adverse effects related to the treatment despite repeated PHPs (up to 6) over a period of 1 year. This study affirms the favorable safety profile of PHP with future studies ongoing to continue to assess long term safety post-FDA approval in 2023.



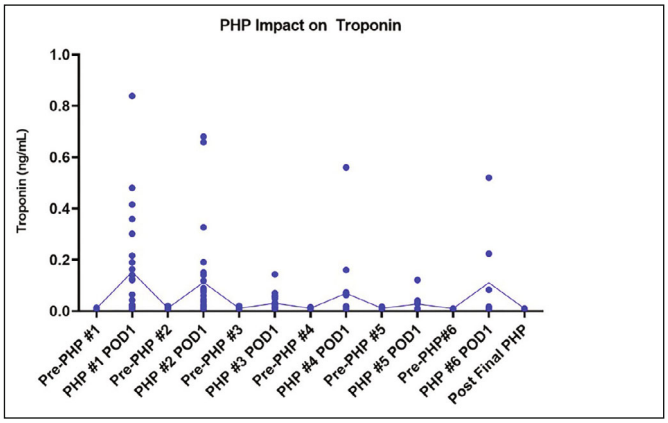


Figure. Transient PHP Impact on Laboratory Values

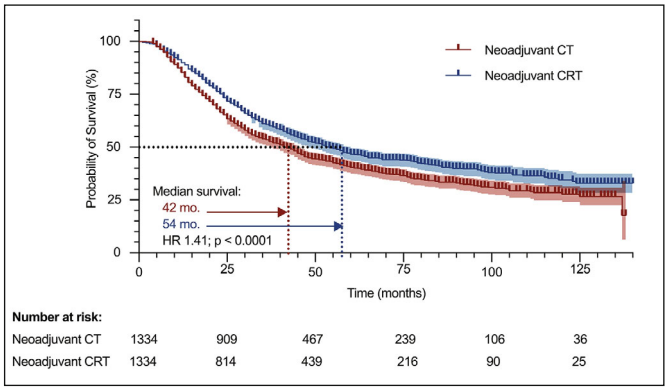


Figure 1. Kaplan-Meier survival analysis with the log rank test comparing neoadjuvant chemoradiation and chemotherapy alone in patients with locally advanced, resectable gastroesophageal junction adenocarcinoma.

EP115

Pathologic response without survival benefit: target trial emulation of neoadjuvant chemoradiation vs chemotherapy in resectable GEJ adenocarcinoma

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INTRODUCTION: Recent trials in locally advanced esophageal and gastric cancer indicate a survival benefit with neoadjuvant chemotherapy (CT) compared to chemoradiation (CRT). Although these studies included gastroesophageal junction (GEJ) tumors, subgroup analyses were not conducted. GEJ adenocarcinoma may represent a distinct clinical entity with unique treatment response, warranting further study to elucidate whether this trend persists in this population. **METHODS:** We conducted a target trial emulation using data from the National Cancer Database (NCDB) from 2012-2022. Adult patients ages 18-75 with locally advanced, resectable GEJ adenocarcinoma (stage II/III) were included. An intention-to-treat analysis was performed comparing patients in the neoadjuvant CRT and CT groups, adjusting for baseline demographic and tumor characteristics at the time of theoretical arm allocation to mimic randomization. Endpoints included complete pathologic response (pCR), partial pathologic response (down-staging of T or N on final pathology), lack of pathologic response (no down-staging of Tor N), R0 resection, and overall survival. **RESULTS:** Each cohort consisted of 1334 patients (total n=2668). Patients were predominantly male (81.5%) with an average age of 61 years. There were no significant differences in patient demographics or tumor characteristics between groups. Nearly all (>98%) patients received the recommended neoadjuvant therapy and most underwent definitive resection (96.7% and 97.3% in the neoadjuvant CRT and CT groups respectively). The rate of pCR was 14.4% (175 of 1221 patients) in the neoadjuvant CRT group and 8.6% (106 of 1233 patients) in the CT group (odds ratio [OR] 1.79 [95% CI 1.39-2.31], p< 0.001). Lack of pathologic response was observed in 63.3% of CT patients and 51.2% of CRT patients (p< 0.001). Partial pathologic response was more likely in the neoadjuvant CRT group (33.9% vs 28.4%, OR 1.30 [95% CI 1.09-1.54], p=0.003), as was R0 resection (92.7% vs 90.2%, OR 1.38 [95% CI 1.04-1.83], p=0.025). Neoadjuvant CRT was associated with worse overall survival (hazard ratio 1.41 [95% CI 1.2-1.64], p< 0.001), with a median overall survival of 41 and 53 months respectively. **CONCLUSIONS:** In patients with locally advanced, resectable GEJ adenocarcinoma, neoadjuvant CRT improves pathologic response and R0 resection rates, but CT alone is associated with improved survival. Thus, the short-term pathologic response to CRT may not translate into long-term survival advantage in resectable GEJ adenocarcinoma.

EP116

Disaggregating Hispanic Subpopulations in Small Cell Lung Cancer

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INTRODUCTION: While Hispanic patients with non-small cell lung cancer (NSCLC) show lower incidence and mortality than non-Hispanic White (NHW) patients, outcomes for Hispanic patients with small cell lung cancer (SCLC) remain understudied. Databases often group diverse populations into broad categories, masking disparities in incidence, treatment, and survival. This study disaggregates Hispanic subpopulations to uncover potential disparities in SCLC. **METHODS:** We conducted a retrospective analysis of patients with SCLC diagnosed between 2009 and 2019 in the National Cancer Database. Multivariable logistic regression estimated odds of advanced stage (III–IV) at diagnosis, and Cox regression estimated 3-year overall survival (OS). Analyses were adjusted for age, comorbidity, insurance, diagnosis year, and zip code income quartile. Analyses were performed for both the aggregated Hispanic group and disaggregated subpopulations. **RESULTS:** The cohort included 186,077 patients with SCLC: 181,072 NHW and 5,005 Hispanic patients. Compared with NHW patients, the aggregated Hispanic group had higher odds of advanced stage at diagnosis (adjusted odds ratio [aOR] 1.24, 95% CI 1.11–1.40, p< 0.001) but higher 3-year OS (adjusted hazard ratio [aHR] 0.90, 95% CI 0.87–0.93, p< 0.001). When disaggregated, using Mexican patients as the reference group, no subpopulation showed a statistically significant difference in odds of advanced stage. For OS, Puerto Rican (aHR 0.82, 95% CI 0.70–0.96, p=0.012), Cuban (aHR 0.79, 95% CI 0.66–0.94, p=0.010), and Dominican (aHR 0.45, 95% CI 0.34–0.60, p< 0.001) patients had significantly higher OS. South/Central American and NHW patients showed no significant difference in OS. Among Hispanic subpopulations, Mexican patients were most likely to be uninsured (12.4%) and had the lowest rate of timely chemotherapy (< 60 days, 55.6%), while Puerto Rican patients had the lowest uninsured rate (2.4%) and the highest timely chemotherapy rate (63.2%). **CONCLUSIONS:** Overall survival for SCLC is notably worse for Mexicans compared with other Hispanic subpopulations. There was no OS difference between aggregated Hispanic and NHW patients. These findings emphasize the need to disaggregate Hispanic populations in future research, as subgroup-specific differences may be masked in aggregate analyses.

Table. Outcomes and access disparities among Hispanic subpopulations and NHW patients with SCLC.

Subpopulation	n	aOR (95% CI)	p	aHR (95% CI)	p	Uninsured (%)	Chemotherapy within 60 days (%)
Mexican (reference)	620	1	-	1	-	12.4	55.6
Puerto Rican	382	0.69 (0.43–1.11)	0.12	0.82 (0.70–0.96)	0.012	2.4	63.2
Cuban	249	1.63 (0.84–3.39)	0.17	0.79 (0.66–0.94)	0.01	5.7	66.7
South/Central American	192	0.97 (0.52–1.93)	0.93	0.88 (0.73–1.07)	0.21	15.2	68.5
Dominican Republic	110	1.32 (0.58–3.55)	0.54	0.45 (0.34–0.60)	<0.001	1.8	63.5
Non-Hispanic White	181,072	0.77 (0.55–1.05)	0.12	1.00 (0.91–1.10)	0.96	3.1	67.7

Description: From left to right, adjusted odds ratio of advanced stage at presentation, adjusted hazard ratio of overall survival, and percentages of access disparities.

EP117

Axillary Surgical Management and Nodal Burden in Patients with DCIS

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INTRODUCTION: Ductal carcinoma in situ (DCIS) is a non-obligate precursor to invasive breast cancer (iBC) with rising incidence due to improved screening. Surgical axillary nodal staging may be considered for patients at high risk for upstaging to iBC and those undergoing mastectomy; however, recent trials have broadened the indication for omission of surgical axillary nodal staging in select patients with iBC. Subsequently, we aimed to describe surgical nodal management in patients with DCIS, report rates of axillary nodal burden, and examine factors associated with upstaging to iBC with nodal involvement. **METHODS:** A retrospective cohort study was performed using the NCDB from 2018–2022. Patients were ≥18 years old, female, with clinical DCIS (cTis N0 M0) and had upfront surgery. Upstaging was defined as iBC on surgical pathology (breast and/or axilla). ANOVA, Kruskal-Wallis, χ^2, and Fisher's Exact tests were used to compare surgical axillary nodal staging groups (omission, sentinel node biopsy (SLNB), and axillary dissection (ALND)). In patients who had nodal surgery, a multivariable logistic regression (MLR) analysis was used to identify factors predictive of upstaging with pathologically positive nodes (pN+) compared to those that upstaged but were pathologically node negative (pN0). **RESULTS:** A total of 144,550 patients met inclusion. Median age was 61 (IQR: 51, 69); most (68.4%) were NH-White, had a Charlson Comorbidity index of 0 (83.1%), had private insurance (54.9%), with ER+ (83.8%) and PR+ (64.9%) disease. Most (70.8%) underwent lumpectomy and 29.2% underwent mastectomy. Upstaging to iBC was seen in 17.1% of patients. Less than half of the cohort (41.1%, n=59,415) had nodal surgery and it was more often performed for patients who had mastectomy compared to those who had lumpectomy (89.2% vs 21.3%, p< 0.01). Most patients who had nodal surgery received SLNB (93.2%), but ALND was performed more often in patients who had mastectomy compared to lumpectomy (8.2% vs 4.3%, p< 0.01). In the 59,415 who had nodal surgery, only 3.2% (n=1,892) were pN+: 3.0% (n=1,784) were pN1 and 0.2% (n=108) were pN2–3. On MLR, NH-Black patients, those with Medicaid, increasing tumor grade, and those who underwent mastectomy were more likely to upstage with pN+ disease (p< 0.05 for all, Figure 1). **CONCLUSIONS:** Most patients with DCIS did not undergo nodal surgery. In those who did, only 3.2% were pN+ and nearly all had a low nodal burden. Findings suggest it is reasonable to consider omission of nodal surgery for most patients with DCIS undergoing upfront surgery.

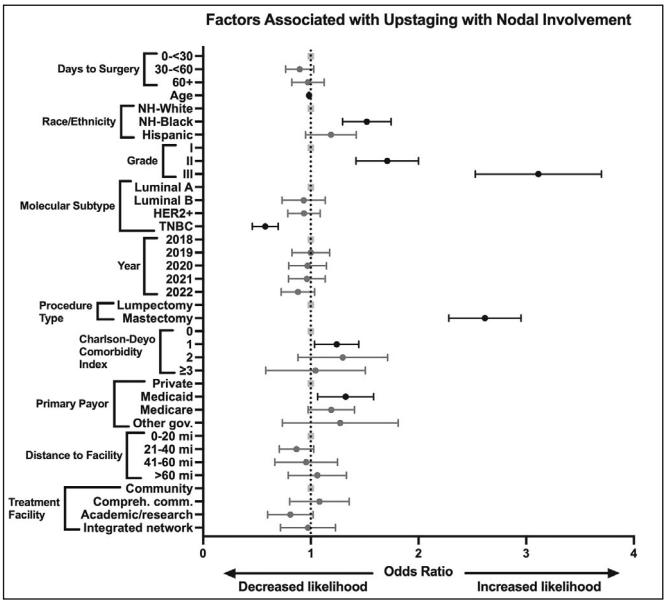

Figure. Factors Associated with Upstaging with Nodal Involvement

EP118

Assessing Textbook Outcomes and Predictive Factors for Laparoscopic Liver Resections

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INTRODUCTION: Textbook outcomes (TOs) provide an objective, composite measure representing optimal postoperative surgical results. Although TOs have been established in several surgical fields, their application to laparoscopic liver resection (LLR) remains limited and undefined. This study aimed to develop and validate a TO definition for LLR and identify factors associated with achieving a TO. **METHODS:** A systematic review was conducted following PRISMA guidelines to identify studies evaluating TOs in LLR. Frequently used TO metrics were identified, and associated factors were validated using our institution's prospective hepatopancreatobiliary (HPB) database (1/2002–5/2025). Univariate and multivariable analyses assessed the association between 180-day mortality, clinical factors, and TO definitions. Among patients with metastatic colorectal carcinoma, cumulative incidence methods estimated time to adjuvant therapy between TO and non-TO groups. Logistic regression determined predictors of achieving a TO. **RESULTS:** Fourteen studies met inclusion criteria. Based on prior literature, the TO definition included: negative resection margin, absence of perioperative transfusion, no major complication (Clavien-Dindo ≥III), no 30- or 90-day mortality, no 90-day readmission, and length of stay (LOS) ≤75th percentile. Among 349 patients undergoing LLR for benign or malignant disease, 59.6% achieved a TO (n=208) and 40.4% did not (n=141). The most limiting criterion was LOS ≤75th percentile (≤6 days), unmet in 29.5% of cases. Predictors significantly associated with achieving a TO included minor resection (p=0.001), absence of cardiac disease (p=0.04), and shorter operative time (p< 0.0001). **CONCLUSIONS:** Textbook outcomes in LLR provide a meaningful, objective quality benchmark for surgical performance. Failure to achieve a TO was independently associated with reduced six-month overall survival, irrespective of disease histology. These findings support the role of TOs in evaluating surgical quality and guiding patient counseling. Multi-institutional validation with larger cohorts is warranted.

Table. Predictive Factors Associated with TO in Minimally Invasive Liver Resections

Textbook Outcome Parameter and reference (n=349 operations at UL)	Yes (%)	No (%)	P value for OS	P value for TO
Operative time				**P < 0.0001**
≤ 280 min per D'Silva et al. 2024	292 (83.7%)	1 (0.3%)		
Neoadjuvant Chemotherapy per Altaf et al. 2024*	121 (88.3%)	16 (11.7%)		
Age			P = 0.0660	**P = 0.0072**
≤ 65 years old per D'Silva et al. 2024, Tsilimigras et al. 2020	209 (59.9%)	140 (40.1%)		
Obesity per D'Silva et al. 2024	108 (30.9%)	241 (69.1%)		P = 0.5558
Major Resection per D'Silva et al. 2024, Tsilimigras et al. 2020	140 (40.1%)	209 (59.9%)		
Minor Resection per D'Silva et al. 2024, Tsilimigras et al. 2020	209 (59.9%)	140 (40.1%)		**P = 0.0013**
Intraoperative Blood Loss			P = 0.3246	**P < 0.0001**
≤500 mL per D'Silva et al.	298 (85.4%)	19 (5.4%)		
• **This was only for metastatic colon cancer patients**				

EP119

Deep Learning-Based Semantic Segmentation of Robotic Distal Pancreatectomy Videos for Post Operative Pancreatic Fistula Risk Prediction

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INTRODUCTION: Post operative pancreatic fistula (POPF) is a major driver of morbidity after distal pancreatectomy, but existing risk stratification tools capture limited intraoperative detail. We previously demonstrated that video-based assessment can improve POPF prediction when integrated into existing clinical models. Computer vision enables quantitative frame-level analysis of operative video. Here, we develop a deep learning-based semantic segmentation model as a foundation for real-time POPF risk classification. **METHODS:** Robotic Distal Pancreatectomy (RDP) videos from 2020-2024 were annotated for 4 classes: pancreas (pre-transection), proximal pancreas, proximal staple line, and stapler. A total of 1029 frames from 12 cases were labeled and split by video to avoid data leakage (70/20/10 train/test/validate%). A deep learning-segmentation model was trained to assign each pixel to a predefined class. Performance was assessed using mean Average Precision (mAP) reported at moderate overlap threshold (mAP@0.5) and increasingly strict overlap thresholds (mAP@0.5:0.95). **RESULTS:** Across the test videos (51 images, 226 instances), the model achieved an overall mAP@0.5 = .907 and mAP@0.5-0.95 = 0.621, with precision/recall = 0.92/0.87. Per-class mAP@0.5:0.95 values in the test set were pancreas = 0.44, transected pancreas = 0.57, stapler = 0.90 and proximal staple line = 0.66. In the validation cohort, overall mAP@0.5 = .67 and mAP@.5:0.95 = 0.39 with per-class mAP@.5-0.95 scores of 0.16, 0.50, 0.45 and 0.45 respectively. Performance was strongest for identifiying the stapler and staple line, moderately strong for detecting the transected pancreas and lowest for the pre-transected pancreas. **CONCLUSIONS:** We developed the first semantic segmentation model for robotic distal pancreatectomy videos, achieving high accuracy in identifying instruments and the proximal staple line, and moderate performance detecting the proximal transected pancreas. The segmentation model provides a practical substrate for downstream frame-level feature extraction to be utilized in real time computer vision-aided POPF risk prediction. Ongoing work will focus on label harmonization, model fine tuning, and integration with classification models for POPF risk prediction.

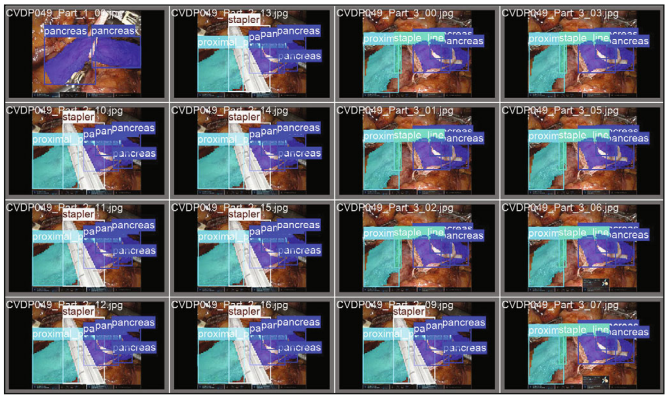

Figure. Representative Frames of Segmentation Model Output

EP120

Spatial transcriptomic characterization of gastric adenocarcinoma heterogeneity at subcellular resolution

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INTRODUCTION: Gastric adenocarcinoma exhibits marked molecular and histologic heterogeneity that limits precise risk stratification and therapeutic targeting. We sought to resolve tumor and microenvironmental programs at subcellular resolution using spatial transcriptomics across multi-region surgical specimens. **METHODS:** Spatial RNA profiling was performed on formalin-fixed paraffin-embedded sections from primary gastric adenocarcinoma surgical specimens using the Singular G4X platform. Subcellular transcript detection was paired with morphology-guided segmentation to define cell types and subpopulations. Unsupervised clustering, lineage-specific markers, and differential gene expression were examined to assess cell-type composition. **RESULTS:** We profiled 29 unique tumor sections, obtaining >2 million spatially resolved single-cell transcriptomes. The sections corresponded to 8 patients (median age 56.5), of whom 5 were male (62.5%), 3 were female (37.5%). All but one patient received neoadjuvant chemotherapy (87.5%); one patient who received neoadjuvant chemotherapy also received radiation (12.5%). Twelve major cell types were resolved, including adipocytes, B cells, T cells, endothelial cells, epithelial cells, fibroblasts, mast cells, myeloid cells, neuronal/Schwann cells, pericytes, plasma cells, and smooth muscle cells. Epithelial cells showed prominent intra- and inter-tumoral heterogeneity, with seven distinct subpopulations. Expression quantifiable at the subcellular level enabled visualization of spatially restricted epithelial programs. Preliminary associations with clinical features (e.g., histological subtypes and serum biomarkers) were observed for select epithelial subpopulations. **CONCLUSIONS:** Subcellular-resolution spatial transcriptomics is feasible at scale in gastric adenocarcinoma and captures extensive tumor–microenvironment diversity. Early findings highlight patient-specific epithelial programs with potential clinical relevance, supporting spatially resolved RNA profiling as a complementary approach to refine histopathologic interpretation and to generate hypotheses for risk stratification and therapeutic targeting in gastric cancer.

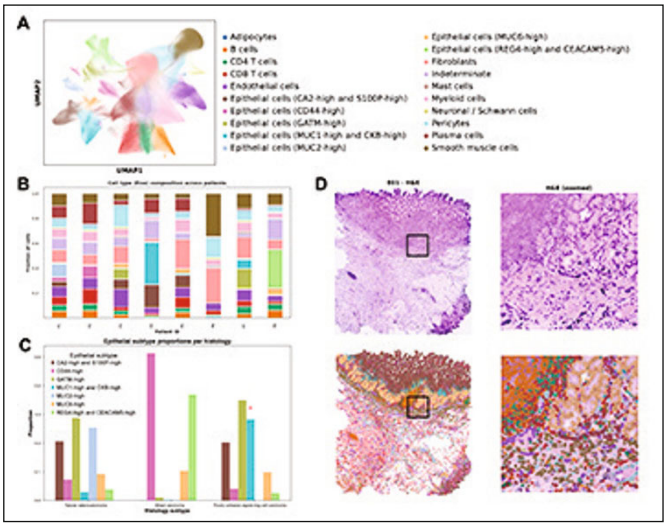

Figure 1. (A) UMAP of single cell spatial transcriptomes from 29 sections of primary gastric adenocarcinoma. (B) Cell type composition across 8 patients. (C) Epithelial subtype proportions for each WHO histological subtype. Asterisk denotes statistically significant enrichment of epithelial subtype proportions, averaged across sections for each patient (mean difference = 0.267, p-adj = 0.007). (D) Example fluorescent H&E image and corresponding spatial scatter plot with segmentation mask colored by cell type.

EP121

Predicting patterns of pancreatic ductal adenocarcinoma recurrence utilizing multi-omic profiling

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INTRODUCTION: Understanding pancreatic ductal adenocarcinoma (PDAC) biology is key to guiding surgical decisions. An operation for PDAC must be aligned with tumor biology and the likelihood of systemic disease. For aggressive potentially curative resections the perioperative mortality is up to 15% and about 80% of these patients will develop distant disease recurrence. Tools predicting individual disease patterns are not available yet. The objective of this study is to identify clinicopathologic and molecular determinants of timing and location of PDAC recurrence after an operation using perioperative multi-omic profiling. **METHODS:** Our single-institution cohort integrated tumor genomic, transcriptomic, proteomic, computational pathology and plasma proteo-lipidomic of 71 patients resected between 2015-2019. Utilizing 6,358 multi-omic features, logistic regression, random forest, and support vector machine (SVM) machine learning (ML) models were trained to predict locoregional vs distant, lung vs liver, and early vs late (≤ vs >12 months postoperatively) tumor recurrence. **RESULTS:** After a median follow-up of 88.7 months, 72.8% of patients recurred of whom 54% recurred distantly (liver: 22.5%, lungs: 12.7%, multiorgan involvement: 18.3%) and 26% locoregionally. Median disease-free survival was prolonged with locoregional vs distant recurrence (18.4 vs 11.4 months, p=0.24), and with lung vs liver metastases (15.8 vs 3.6 months, p=0.05). Single-omic analysis revealed distinct molecular characteristics associated with distant and early PDAC recurrence. Distant recurrence was best predicted by a multi-omic model with a 0.83 area under the receiver operating curve (AUROC), with top contributing features being NOTCH RNA expression and HLA-class-I (HLA-C) protein expression. Among distant recurrence sites a multi-omic model predicted lung vs liver recurrence with an AUROC 0.73, capturing the significant survival differences among these groups. Lastly, early recurrence was predicted by computational pathology (AUROC 0.83), clinical and surgical pathology (AUROC 0.76), and targeted NGS (AUROC 0.76) models. Our model revealed new associations between somatic SGK1 CNV loss, and HOXA11CNV gain mutations for an increased risk of early recurrence. **CONCLUSIONS:** Integration of multi-dimensional molecular data may support the development of precision oncology models to predict location and timing of PDAC recurrence and support appropriately aggressive operations.

EP122

The ABODE study: At-home Breast Oncology care Delivered with E-health solutions

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BACKGROUND: Background: eHealth tools like smartphone apps are increasingly used to improve patient-centered cancer care. Up to 60% of women with breast cancer experience psychosocial distress, yet fewer than 30% receive adequate support. eHealth interventions help reduce early distress and fill gaps in psychosocial care. Meta-analyses and trials show these tools enhance quality of life—especially emotional, cognitive, and social well-being—by boosting self-efficacy, symptom management, and emotional health. The ABODE app supports breast cancer patients throughout treatment by offering educational content, psychosocial support from oncology e-health coaches, and tracking patient-reported outcomes (PROMs). We hypothesize that ABODE use will improve PROMs, reduce distress, and foster a more integrated, supportive care model. **METHODS:** Methods: Our trial will enroll 200 patients with early-stage breast cancer. Participants must be assigned female at birth, diagnosed with primary invasive breast cancer, aged 18 or older, undergoing surgery as the initial treatment step, have internet access via an electronic device, possess a valid email address, and be English literate. The intervention group (n=100) will use the app, in addition to standard care, for 13 months following diagnosis. The control group (n=100) will receive standard care. Both groups receive a Fitbit for activity tracking. Patients will complete questionnaires at enrollment, 6- and 12-months. The primary outcome is to assess whether use of the ABODE app improves patient activation scores (measured with the PAM-13) at the 12-month follow-up. The secondary outcomes include additional PROMS such as: IES-R, GAD-7, EORTC QLQ-C30, QLQ-BR23, EORTCINFO25, CEQ, and heiQ. We will also evaluate health services outcomes such as utilization of the nursing triage line and unplanned visits to the hospital and emergency department. Finally, participant and HCP user experience with the ABODE app will be assessed through qualitative interviews. Exploratory outcomes include Fitbit utilization and physical activity. Statistical Methods. The change in PROM scores from baseline to 12 months will be calculated. A paired t-test will be used to compare the intervention and control groups. Demographic and clinical characteristics will be compared using Kruskal-Wallis tests for continuous variables and Fisher exact tests for categorical variables. Data from the interviews will be validated through peer debriefing, coded, and analyzed inductively, using the approach of qualitative description. To date, 115 participants have been enrolled. ClinicalTrials.govID:NCT05989477

EP123

A Brief Psychological Intervention to Improve Emotional Well-Being During Neoadjuvant Therapy for Pancreatic Cancer: A Prospective Feasibility Trial

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BACKGROUND: Neoadjuvant therapy (NT), the delivery of chemotherapy and/or radiation therapy prior to surgical resection, is increasingly utilized for patients with pancreatic ductal adenocarcinoma (PDAC). However, the delivery of NT involves unique challenges for patients. In addition to the physical side effects of the cancer and toxicities from treatment, patients experience psychosocial difficulties - coping with a new cancer diagnosis and anxiety regarding leaving the cancer in situ during treatment and worries about prognosis and uncertainty for future surgery. For this reason, patients often express an inherent preference for upfront surgery and a desire to "just get the cancer out." Despite the significant psychosocial challenges of undergoing NT, little research has been conducted on patient-centered interventions aimed at psychosocial

distress and emotional well-being which could improve quality of life and facilitate longer adherence to cancer therapy. **METHODS:** Adult patients with localized PDAC undergoing NT are eligible for this prospective nonrandomized clinical trial of a brief telehealth psychological intervention during NT (Figure). Enrollment occurs after NT has been decided by a multidisciplinary team. Enrolled patients will then be referred to psychosocial oncology who will conduct a four-session psychologic intervention via telehealth. Written materials will be provided to patients to prepare for and supplement these sessions. NT continues per standard of care with the goal of undergoing surgical resection. The primary outcome of the trial is feasibility, defined as the completion of at least 3 sessions, and self-rated acceptability of the intervention. Secondary endpoints include changes in validated measures of health-related quality of life, mood, distress, worry, and uncertainty which will be measured at baseline and after completion of NT. All patients will undergo semi-structured interviews after NT to gauge perceptions on the feasibility, acceptability, and utility of the psychosocial oncology intervention. A sample size of 35 patients is necessary to demonstrate an evidence-based 30% feasibility rate with a 90% confidence interval and margin of error < 0.15 assuming a withdrawal rate < 20%. Enrollment is open (NCT07124611). If successful, this brief psychologic intervention has the potential to improve not only quality of life during NT but also the completion of aggressive multimodality cancer therapy which could improve long-term physical and psychological outcomes.

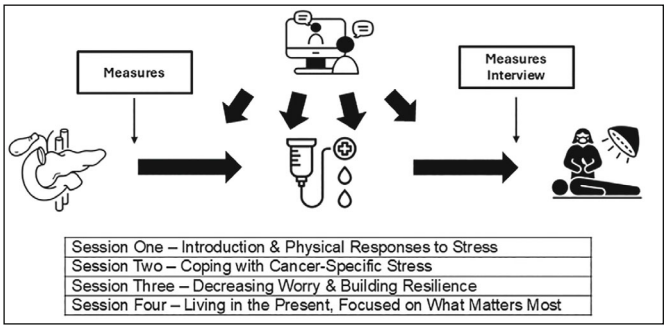

Figure. Trial Schema

EP124

There are no shortcuts: The intersection of Tribal and academic research ethics in a clinical trial for American Indian patients diagnosed with cancer

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INTRODUCTION: Historical violations in research ethics and the geo-remote location of reservations has hindered American Indian/Alaska Native (AI/AN) patients from participating in clinical research. To address lower participation and mistrust, we designed a clinical trial that will be delivered on the reservation grounded in an Indigenous governance framework and compatible with university regulation. **METHODS:** Over the course of 5 years, semi-structured interviews were conducted with Tribal members who are cancer survivors, and meetings were held with the Tribal health facility's leadership, staff, board of directors and Tribal Council to assess needs, develop on-site infrastructure, and reiteratively refine a clinical trial responsive to feedback. A Tribal Resolution signed by the Tribal nation's attorney general and university officials solidified the partnership and terms of research conduct, publication, and intellectual property. **RESULTS:** Through Tribal-academic collaboration, we designed a clinical trial that pilots a prospective 3-week prehab intervention designed to alter inflammatory biomarkers for American Indian patients preparing for oncologic surgery, which is now open for enrollment. This is the first prehab for AI/AN and one of the earliest registered clinical trials conducted on a reservation. The project is grounded in the CARE Principles for Indigenous Data Governance (Collective benefit, Authority to control, Responsibility, and Ethics). These principles have bridged successful relationships between Tribes and outside organizations in other sectors, yet have not been implemented in clinical research. The activation of the CARE Principles in this study's design prioritized the community, fostered transparency, showcased tribal capacity for research, and ethically facilitated regulatory exchanges. Applying the framework to the protocol planning and approvals process supported Indigenous governance while meeting academic research principles. This intersection was key to developing a university sponsored clinical trial on a reservation. **CONCLUSIONS:** By anchoring this prehab intervention in the sovereignty-based CARE Principles, we have collaboratively innovated a pathway for conducting reservation-based clinical research with a Tribal nation. This achievement is a shareable example that can support other clinically focused Tribal-academic research.

EP125

Geographic distribution of surgical oncologists in the United States: Comparing board-certified and NPI taxonomy-identified providers

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INTRODUCTION: Many surgeons providing oncologic care are not certified in Complex General Surgical Oncology (CGSO) but self-identify as surgical oncologists through the National Provider Identifier (NPI) taxonomy. We compared national workforce distributions using both definitions and assessed their alignment with regional cancer burden. **METHODS:** We conducted a cross-sectional analysis of 2023 American Board of Surgery data and 2025 NPI taxonomy records. Surgeon counts were linked to 2020 Census populations to calculate densities per 100,000 population. Age-adjusted all-cancer incidence rates for 2022 were obtained from SEER U.S. Cancer Statistics. Cancer cases per surgeon were calculated, and taxonomy-based density was displayed using a gradient map labeled with CGSO-certified counts per state. **RESULTS:** There were 534 CGSO-certified surgeons nationwide (0.16 per 100k), with no representation in Alaska, Montana, South Dakota, or Wyoming. The highest CGSO densities were in the District of Columbia (0.58), Vermont (0.31), and Rhode Island (0.27), while Oklahoma (0.03), Missouri (0.03), and Idaho (0.05) were lowest. Cancer burden per CGSO surgeon exceeded 14,000 cases in Oklahoma and Missouri. Incorporating 3,894 NPI self-identified surgical oncologists increased overall density to 1.20 per 100k, removing states with zero representation but maintaining large disparities. The highest taxonomy densities were in the District of Columbia (3.63), Rhode Island (3.19), and Connecticut (2.38), while Idaho (0.82), Oklahoma (0.38), and South Dakota (0.34) remained lowest. Correlation between surgeon density and cancer incidence was weak ($R^2 < 0.1$), indicating limited alignment between provider distribution and cancer burden. **CONCLUSIONS:** Using CGSO certification alone reveals profound workforce maldistribution. Including taxonomy-identified surgeons increases apparent capacity but does not correct inequities or align supply with need. These findings highlight the necessity of targeted regional training programs, incentives, and tele-oncology efforts to ensure equitable access to certified surgical oncologic care.

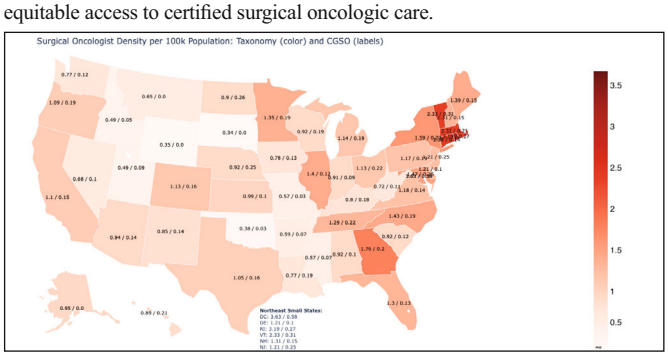

Figure. Geographic distribution of surgical oncologists in the United States: Taxonomy-identified density (color gradient) and CGSO-certified density (labels).

EP126

Time Toxicity for Patients with Hepatocellular Carcinoma

Alex Y. Zhuang, MD, Department of Surgery, University of Illinois at Chicago; Lily Zhang, n/a, University of Illinois at Chicago; Ziyi Zhou, MA, University of Illinois at Chicago; Patrick L. Quinn, MD, Department of Surgery, Ohio State University; Aslam Ejaz, MD, University of Illinois at Chicago

INTRODUCTION: Time toxicity has emerged as an important patient-centric metric that quantifies the cumulative burden of time patients spend in healthcare settings rather than at home. This study aimed to evaluate the time toxicity experienced by patients with hepatocellular carcinoma (HCC). **METHODS:** We identified newly diagnosed patients with HCC using ICD-9 and ICD-10 codes in the SEER-Medicare database between 1/1/15 and 12/31/19. The primary outcome was time toxicity, defined as the percentage of healthcare encounter days within 1 year after diagnosis. Secondary outcomes included overall survival (OS). Outcomes were analyzed using negative binomial, log-Gamma, and Kaplan-Meier models. **RESULTS:** A total of 11,375 patients were diagnosed with HCC during the study period, most of whom were male (n=8057, 70.8%) and White (n=9144, 80.4%). At the time of diagnosis, most patients had localized disease (n=5856, 51.5%). Treatment modalities included chemotherapy (n=2095, 18.4%), radiation (n=815, 7.2%), ablation (n=235, 2.1%), resection (n=2058, 18.1%), and transplantation (n=188, 1.7%), whereas no treatment was documented for 48.5% of patients. Overall median time toxicity was 17.5% (IQR 10.4-30.3%). Patients with localized disease had significantly lower time toxicity (15.0%, IQR 9.3-25.5%) compared to those with regional (19.8%, IQR 12.3-32.5%) or metastatic (26.2%, IQR 16.3-42.3%) disease (p< 0.001). Among patients undergoing surgery, those receiving transplant had higher time toxicity compared to those undergoing resection (22.5% vs 20.0%; IRR 1.25, 95% CI 1.12-1.39; p< 0.001). Overall five-year survival was longer for patients undergoing transplantation compared to resection (71.4% vs. 34.7%; p< 0.001). After controlling for measurable confounders, Black (IRR 1.14, 95% CI 1.08-1.20; p< 0.001) and Hispanic patients (IRR 1.04, 95% CI 1.00-1.09; p=0.032), regional (IRR 1.28, 95% CI 1.24-1.32; p< 0.001) and metastatic disease (IRR 1.64, 95% CI 1.57-1.71; p< 0.001), and a higher comorbidity index (IRR 1.38, 95% CI 1.35-1.41; p< 0.001) were associated with higher time toxicity in the year after diagnosis. **CONCLUSIONS:** Patients with newly diagnosed HCC spend an average of nearly 1 in 6 days interacting with the healthcare system in the year after diagnosis. Several patient-, disease-, and treatment-related factors influence time toxicity. These data should be used to inform patients of the healthcare burden associated with HCC diagnosis and treatment.

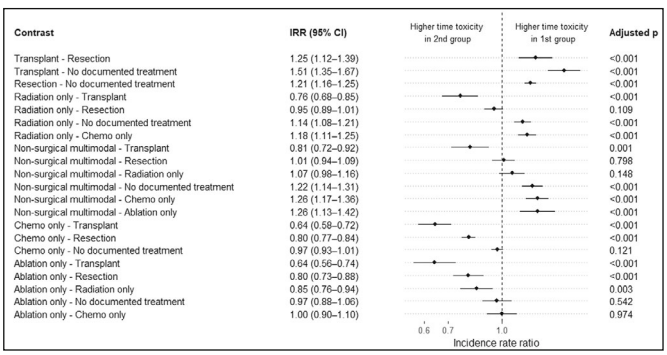

Figure 1. Pairwise comparison of treatment modalities for healthcare encounter days, with FDR adjusted p-values

EP127

Neighborhood and individual-level barriers to neoadjuvant chemotherapy completion among patients with breast cancer

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INTRODUCTION: Individual-level characteristics (e.g., race/ethnicity, insurance status) have been associated with failure to complete neoadjuvant chemotherapy (NAC) due to difficulty accessing care and cost-related nonadherence. However, the association between neighborhood-level disadvantage and NAC completion is unknown. Lack of guideline-concordant NAC completion is associated with inferior breast cancer outcomes, including lower odds of pathologic complete response (pCR) and increased mortality. In our study, we evaluated the association between individual and neighborhood-level factors and completion of at least 80% of prescribed NAC, our cutoff for a clinically significant reduction from planned therapy, at a tertiary cancer center. **METHODS:** We conducted a retrospective study of patients with stage I–III invasive breast cancer receiving NAC at a single center between 2014–2023. Sociodemographics, tumor characteristics, and treatment factors (chemotherapy regimen, completion dates, and number of cycles received) were obtained from the electronic medical record. Patient's residential addresses were geocoded to census block groups, linked to the state-level Area Deprivation Index (ADI), and dichotomized for analysis. Multivariable regression analysis was used to evaluate characteristics associated with ≥80% NAC completion, in a model that included age, race, body mass index, smoking status, insurance status, ADI, stage, grade, and subtype. **RESULTS:** Among 2,537 patients, the median age was 51 years old, and the majority were White race (67%; Table 1). 66% had private insurance and 11% lived in the most disadvantaged neighborhoods (ADI 7-10). Most had stage 2 (69%) and HER2+ (37%) breast cancer. 84% completed ≥80% NAC. On multivariable analysis, age 70 years or older vs. less than 49 (OR 0.42, 95% CI 0.27-0.65, p< 0.001), Medicare (OR 0.59, 95% CI 0.44-0.81, p< 0.001) or Medicaid vs. private insurance (OR 0.50, 95% CI 0.36-0.70, p< 0.001), and living in a disadvantaged vs. advantaged neighborhood (OR 0.66, 95% CI 0.48-0.91, p=0.012) were associated with failure to complete ≥80% NAC. Patients with HER2+ disease were more likely (OR 1.75, 95% CI 1.33-2.31, p< 0.001) to complete ≥80% of their prescribed NAC. **CONCLUSIONS:** Patient factors, insurance status, and neighborhood disadvantage all impact NAC completion. Studies identifying specific neighborhood-level factors are needed to help overcome barriers and ensure receipt of appropriate and timely treatment, especially among patients with additional risk factors, such as older age.

Table 1. Participant sociodemographic and cancer characteristics

Characteristic	Overall No. (%)	Completed ≥80% NAC: No No. (%)	Completed ≥80% NAC: Yes No. (%)
TOTAL	*2537*	*394*	*2,143*
Age (years)			
≤ 49 years	1,186 (47%)	149 (38%)	1,037 (48%)
50-70 years	1,180 (47%)	188 (48%)	992 (46%)
≥ 70 years	171 (6.7%)	57 (14%)	114 (5.3%)
Body Mass Index			
< 25	110 (4.3%)	19 (4.8%)	91 (4.2%)
25-30	1,154 (45%)	174 (44%)	980 (46%)
≥ 30	1,273 (50%)	201 (51%)	1,072 (50%)
Race			
White	1,697 (67%)	248 (63%)	1,449 (68%)
Black	451 (18%)	77 (20%)	374 (17%)
Asian	389 (15%)	69 (18%)	320 (15%)
Smoking Status			
Never/Former	1,752 (69%)	253 (64%)	1,499 (70%)
Current	785 (31%)	141 (36%)	644 (30%)
ADI			
1-6	2,253 (89%)	335 (85%)	1,918 (90%)
7-10	284 (11%)	59 (15%)	225 (10%)
Insurance Status			
Private	1,679 (66%)	196 (50%)	1,483 (69%)
Medicare	569 (22%)	131 (33%)	438 (20%)
Medicaid	289 (11%)	67 (17%)	222 (10%)
Subtype			
ER+/HER2-	874 (34%)	163 (41%)	711 (33%)
HER2+	937 (37%)	111 (28%)	826 (39%)
TNBC	726 (29%)	120 (30%)	606 (28%)
Stage			
1	234 (9.2%)	46 (12%)	188 (8.8%)
2[a]	1,745 (69%)	258 (65%)	1,487 (69%)
3	558 (22%)	90 (23%)	468 (22%)
Grade			
Low/Medium	1,006 (40%)	168 (43%)	838 (39%)
High	1,531 (60%)	226 (57%)	1,305 (61%)

[a] Stage 2 was used as the reference group in the multivariable analysis due to most patients having stage 2 disease.

Abbreviations: NAC: neoadjuvant chemotherapy; ER: estrogen receptor; HER2: human epidermal growth factor receptor 2; TNBC: triple negative breast cancer.

EP128

Prognostic Impact of Anatomic Subsite in Head and Neck Cutaneous Melanoma: A 50-Year Population-Based Study

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INTRODUCTION: Previous studies have shown that scalp melanoma carries a worse prognosis than other head and neck subsites. However, most series combined face and neck primaries, lacked long-term follow-up, or did not adjust for surgical and histologic factors. We evaluated the independent prognostic role of anatomic subsite in a population-based cohort. **METHODS:** A retrospective review of 716 patients with HNCM treated in Manitoba (1970–2020) was conducted. Primary sites were categorized as scalp (n=99), face (n=479), or neck (n=138). Outcomes assessed included disease-specific survival (DSS), disease-free survival (DFS), and local recurrence-free survival (LRFS). Multivariable Cox proportional hazards models adjusted for age, sex, stage, histology, margin status, and adjuvant therapy. **RESULTS:** Median follow-up was 92 months (IQR 48–183). Scalp melanomas presented with more advanced disease: only 46.5% were Stage I, compared to 66% of face and 66.7% of neck primaries (p=0.008). Stage II–III disease was present in 53.5% of scalp cases, versus 34% of face and 33.3% of neck cases. On multivariable analysis, scalp location independently predicted worse outcomes. Compared with scalp, patients with face primaries had superior survival: DSS (HR 0.59, 95% CI 0.36–0.95, p=0.031), DFS (HR 0.47, 95% CI 0.32–0.69, p< 0.001), and LRFS (HR 0.28, 95% CI 0.13–0.61, p=0.001). Similarly, neck primaries demonstrated improved DFS (HR 0.51, 95% CI 0.31–0.83, p=0.007) and LRFS (HR 0.12, 95% CI 0.03–0.53, p=0.006). Stage II and III disease remained strong adverse prognostic factors across all outcomes (p< 0.001). Histologic subtype, margin adequacy, and adjuvant systemic therapy were not independently associated with survival. **CONCLUSIONS:** Although the adverse prognosis of scalp melanoma has been reported, our population-based analysis with long follow-up confirms its independent impact across DSS, DFS, and LRFS, even after full adjustment. These findings reinforce the relevance of anatomic subsite in risk stratification and highlight the need for tailored surveillance and treatment in scalp melanoma.

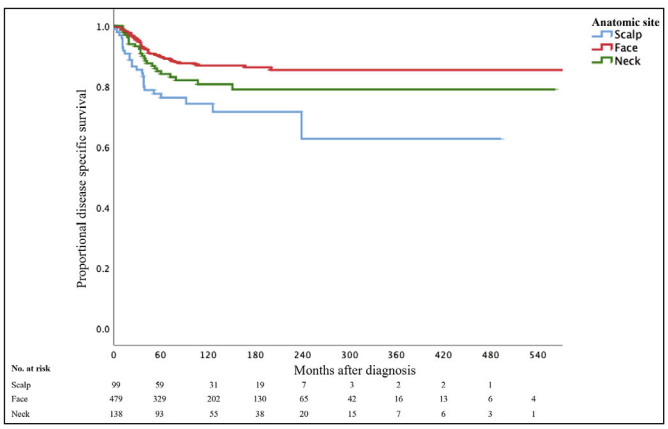

Figure. Disease specific survival by anatomic location

EP129

Broad-spectrum antibiotics do not reduce in surgical site infection for patients undergoing distal pancreatectomy for benign disease: a target trial emulation analysis

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INTRODUCTION: Surgical site infections (SSI) remain a major source of morbidity after pancreatectomy and are associated with pancreatic fistulas, delayed adjuvant therapy, and reduced survival. While broad-spectrum antibiotics like piperacillin-tazobactam reduce SSI after open pancreatoduodenectomy, their impact in distal pancreatectomy is unknown. **METHODS:** We conducted a target trial emulation using the ACS-NSQIP database of patients undergoing distal pancreatectomy for benign disease (2016- 2022), excluding those with preoperative infection. Patients receiving perioperative broad-spectrum antibiotics (e.g., piperacillin-tazobactam, 4th-generation cephalosporins, aminoglycosides, quinolones) were compared to those receiving 2nd-3rd generation cephalosporins using an intention-to-treat analysis. Demographics, comorbidities, and surgical approach were balanced via propensity score matching at the time of theoretical arm allocation. The primary endpoint was SSI; secondary endpoints included pancreatic fistula, sepsis, and 30-day mortality. **RESULTS:** A total of 1,552 patients were included (776 per group). Most were female (59.9%) with a mean age of 57. Intraoperative characteristics were similar between groups, including pancreatic duct size, gland texture, and drain placement. Most (64.6%) underwent laparoscopic-assisted surgery; 15.1% converted to open. The overall rate of SSI was 15.6%; rates were similar between the broad-spectrum and cephalosporin groups (15.3% vs 15.9%; p=0.782), as were rates of wound disruption, clinically relevant pancreatic fistula (grade B/C), need for percutaneous drainage/re-operation, sepsis, and 30-day mortality. Broad-spectrum antibiotics were associated with a modest reduction in biochemical leak (5.2% vs 7.9%; p=0.010). Subgroup analysis of open distal pancreatectomy found no difference in SSI (15.7% vs. 17.0%, p=0.574), though biochemical leaks were lower (OR 0.66, p=0.026) without reduction in clinically relevant pancreatic fistula. In patients with ≥1 SSI risk factor (diabetes, steroid use, smoking, dialysis, obesity) broad-spectrum antibiotics likewise did not show reduced SSIs (16.5% vs 15.6%, p=0.678). **CONCLUSIONS:** Unlike pancreatoduodenectomy, broad-spectrum antibiotics did not reduce SSI after distal pancreatectomy in our study, likely due to limited biliary and intestinal manipulation. Routine use for benign disease may not offer added benefit over narrower regimens, underscoring the need for tailored antibiotics selection.

Table 1. Target trial emulation analysis comparing perioperative broad-spectrum antibiotics and 2nd-3rd generation cephalosporins among patients undergoing distal pancreatectomy for benign.

Variable	Broad-spectrum (n=776)	Cephalosporins (n=776)	Odds ratio (95% CI)	*p-value
Surgical site infection	119 (15.3%)	123 (15.9%)	0.962 (0.733-1.263)	0.782
Superficial incisional	19 (2.4%)	22 (2.9%)	0.861 (0.462-1.602)	0.635
Deep incisional	6 (0.8%)	3 (0.4%)	2.007 (0.500-8.050)	0.316
Organ space	101 (13.0%)	105 (13.5%)	0.957 (0.715-1.280)	0.767
Wound disruption	2 (0.3%)	3 (0.4%)	0.666 (0.111-3.995)	0.654
Biochemical leak (grade A fistula)	40 (5.2%)	61 (7.8%)	0.580 (0.381-0.881)	**0.010**
Pancreatic fistula (grade B or C)	81 (10.4%)	86 (11.1%)	0.856 (0.614-1.193)	0.358
Percutaneous drain placement	93 (12.0%)	82 (10.6%)	1.150 (0.841-1.573)	0.381
Return to the operating room	25 (3.2%)	19 (2.4%)	1.325 (0.724-2.424)	0.360
Sepsis	38 (4.9%)	49 (6.3%)	0.765 (0.496-1.182)	0.226
Septic shock	10 (1.3%)	7 (0.9%)	1.434 (0.545-3.783)	0.465
Mortality (30-day)	4 (0.5%)	5 (0.6%)	0.799 (0.214-2.986)	0.738

EP130

Long-Term Quality of Life, Financial Toxicity, and Decision Regret Following Therapeutic and Prophylactic Gastrectomy for Cancer

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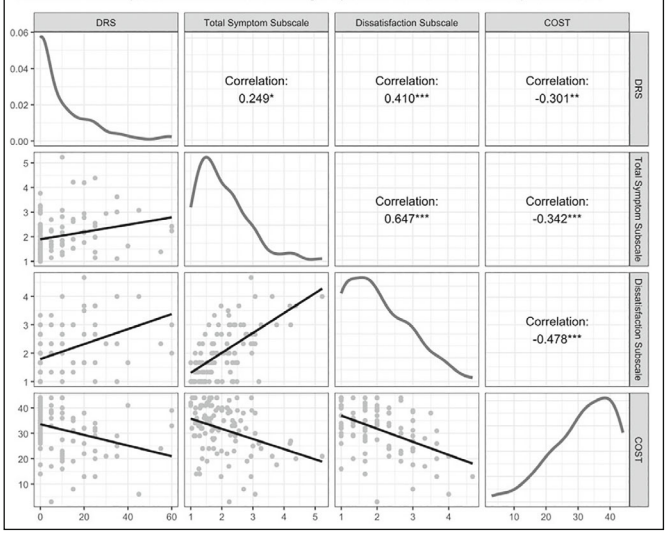
INTRODUCTION: Long-term quality of life (QoL) outcomes among U.S. gastrectomy survivors are not well defined. This study evaluated QoL, financial toxicity, and decision regret ≥3 years after therapeutic or prophylactic gastrectomy. **METHODS:** A cross-sectional paper survey incorporating SF-8, Postgastrectomy Syndrome Assessment Scale (PGSAS), COmprehensive Score for financial Toxicity (COST), and Decision Regret Scale (DRS) was administered to adults (8/2024-4/2025) who underwent gastrectomy at three U.S. hospitals (1/2010-12/2020). Outcomes were analyzed by demographics,

extent of resection, approach, complications (30-day Clavien-Dindo ≥3) and recurrence. **RESULTS:** Of 241 eligible survivors, 117 responded to the survey (49% response rate). Median age at survey was 68 (IQR: 57-77) with 57% male. Median follow-up was 7.6 years (IQR: 5.6-11.2). Overall, 30% were prophylactic; 62% were total gastrectomy; 50% open, 44% laparoscopic, and 6% robotic. Complications occurred in 15% with recurrence in 7%. Median BMI change from surgery to survey was -12.7% (IQR: -22.6% to -6.3%). SF-8 physical and mental component scores (median 50.5 and 53.5) were comparable to U.S population norms. The most burdensome postgastrectomy symptom subscales were (based on a 7-point scale): meal-related distress (2.44/7), dumping (2.21/7), and diarrhea (2.11/7). Compared with partial gastrectomy, total gastrectomy was associated with worse diarrhea (2.00 vs. 1.17, p=0.001) and total symptom severity (1.98 vs. 1.65, p=0.021). Dissatisfaction was predominantly due to eating limitations (2.21) rather than physical symptoms (1.89) or activity limitations (1.85). Median COST score was 33 (of 44) with 27% reporting at least mild financial toxicity. Most participants (85%) reported little-to-no regret (DRS < 25). Regret was not associated with prophylactic indication, operative approach, complications or recurrence, but correlated with symptom burden, dissatisfaction, and financial toxicity (Figure 1). **CONCLUSIONS:** Among long-term gastrectomy survivors, decision regret was primarily driven by lifestyle and financial factors rather than surgical or oncologic variables, underscoring the importance of nutritional counseling, symptom management, and financial support. Total gastrectomy was associated with higher symptom burden highlighting the unmet need for improved reconstruction techniques to address the long-term impact on QoL.

Figure 1: Correlation matrix of scores for Decision Regret Scale (DRS), Total Symptom Subscale, Dissatisfaction Subscale, and FACIT-COST.
Top-right: Correlation values shown use Pearson's correlation coefficient. Asterisks denote the statistical significance for the pairwise association: * = p<0.05, ** = p<0.01, *** = p<0.001. Example: *0.249** denotes a strength of correlation of R^2 = 0.249 and a significance of association of p<0.05 between Total Symptom Subscale and DRS.
Diagonal: The blue density histogram curves show the distribution of scores within each scale.
Bottom-left: Scatter plots with black trendline showing the pairwise correlation between respective scores.



EP131

Tumor-informed circulating tumor DNA during neoadjuvant therapy in patients with localized pancreatic ductal adenocarcinoma

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INTRODUCTION: Neoadjuvant therapy (NAT) is increasingly utilized in patients with early-stage pancreatic ductal adenocarcinoma (PDAC). Tumor-informed circulating tumor DNA (ctDNA) is an emerging biomarker in PDAC. This study investigated the feasibility and role of ctDNA detection in patients with PDAC during NAT. **METHODS:** This prospective, single-institutional pilot study enrolled adult patients with treatment-naïve, resectable or borderline resectable PDAC referred for NAT. A tumor-informed assay (SignateraTM, Natera, Inc.) was used to perform whole exome sequencing (WES) using pre-treatment tissue from a core needle biopsy (CNB) or a sample from the surgical specimen. Plasma samples for ctDNA analysis were collected at baseline, monthly during NAT, on the day of surgery, and at regular clinical intervals during surveillance for up to 5 years. **RESULTS:** Of the 21 patients enrolled from July 2022 to August 2025, a total of 19 patients with confirmed PDAC histology and without evidence of metastatic disease were included in the final cohort (Figure 1). The median follow-up to date was 14.8 months (range: 5.7-33.7 months). Tumor-informed WES assays were successfully designed for 36.8% (7/19) of patients using CNB samples alone and 93.3% (14/15) from either CNB or surgical tissue. Two patients who developed metastatic progression while on NAT had higher ctDNA at baseline (median 6.42 Mean Tumor Molecules (MTM)/mL) compared to patients without progression (median 0 MTM/mL). Furthermore, patients without progression on NAT maintained low ctDNA levels of < 1 MTM/mL throughout NAT. The change in tumor size between the final preoperative restaging and baseline scans was not significantly different between patients with detectable and undetectable ctDNA during NAT. Patients with detectable ctDNA (7/8) at any time during NAT had more events (recurrence or death) than those with undetectable ctDNA (1/6; p= 0.026). **CONCLUSIONS:** The preliminary results demonstrate that tumor-informed ctDNA detection is feasible during the NAT period and shows promise as a prognostic biomarker, as patients with detectable ctDNA experienced significantly more events. Further technological advancements are needed to improve WES success rate, especially with CNBs. Future studies with larger cohorts are essential to validate these findings and explore the dynamics of ctDNA.

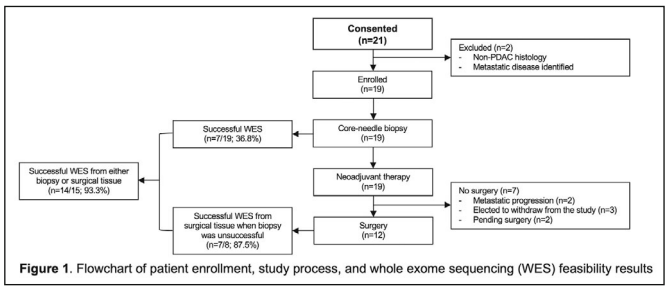

Figure 1. Flowchart of patient enrollment, study process, and whole exome sequencing (WES) feasibility results

EP132

Pancreatic Neuroendocrine Tumors: Size Still Matters

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INTRODUCTION: Pancreatic neuroendocrine tumors (PNETs), while rare, have seen an increased prevalence over the past few decades. Current U.S. guidelines for PNETs include tumor size as the main determinant in treatment decision. However, early stage, "small," PNETs with a size of 2cm or less are left to the discretion of the provider with no concrete guidelines—varying from observation versus formal pancreatectomy versus enucleation. Given the rise in detection, definitive guidance on the management of small non-functional tumors is paramount. Ongoing clinical trials are attempting to elucidate a treatment algorithm, however the real-world outcomes for these patients in a large cohort examination are unknown. We thus sought to clarify the pragmatic outcomes of small PNETs using a population-based dataset. **METHODS:** Retrospective cohort study using SEER database (2000–2022). Adult patients with well-differentiated PNETs were identified. Variables included IDC-0-3 codes, age, gender, race, survival months, and PNET size. PNET size was categorized as ≤10mm, 10-20mm, and >20mm. The primary outcome was 5-year overall survival. Disease-specific survival was evaluated using SEER's cause-specific death classification variable. **RESULTS:** The frequency of surgical resections for pNETs, particularly small tumors (< 2 cm), increased steadily from 2000 to 2022, with incidence for tumors 0.1cm to 40cm increasing from 0.1 to 0.7 cases per 100,000 people per year. A total of 69,792 patients were included in the analysis, of whom 43.6% had tumors ≤10 mm, 19.6% had tumors measuring 11–20 mm, and 36.7% had tumors >20 mm. The 5-year overall survival rate was significantly different across tumor size (≤10 mm: 78.8%; 11-20 mm: 71% vs. >20 mm: 56.6%; p< 0.001). Similar findings were observed

for disease-specific survival (≤10 mm: 94.8%; 11-20 mm: 89.5%; >20 mm: 77.9%; p< 0.001). Kaplan–Meier analysis demonstrated a significant difference in both overall and disease-specific survival according to tumor size (pairwise comparisons p < 0.001, Figure 1). **CONCLUSIONS:** The rising incidence of small PNETs underscores the need for more definitive management criteria. Our findings show a survival difference among tumors ≤2 cm, supporting a tailored treatment approach for this group. This supports different treatment guidelines for PNETs < 2cm as distinguished by more specific size thresholds.

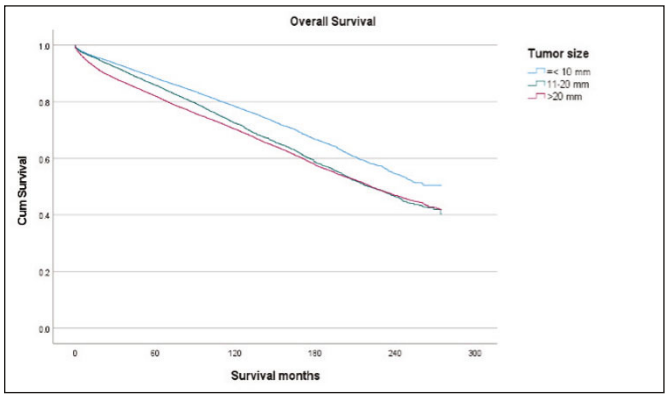

Figure 1. 5-Year Overall Survival

EP133

Distribution of Driver and Allele-Specific KRAS Mutations Across Racial and Ethnic Groups in Pancreatic Adenocarcinoma

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) arises from recurrent alterations in core driver genes, yet the incidence of these mutations in patients according to self-identified race and ethnicity remains poorly characterized. **METHODS:** We identified patients with PDAC diagnosed from 2016-2024 who underwent targeted molecular testing at a single, high-volume institution. Clinical and genomic data were harmonized from the institutional cancer registry and electronic health record using Palantir Foundry. Sequencing was performed by institutional panels and commercial assays (FoundationOne, Guardant360, BostonGene, etc). Mutation and allele frequencies were compared by self-reported race and ethnicity using chi-squared or Fisher's tests with false discovery rate (FDR) correction using the Benjamini-Hochberg method performed independently for gene-level and allele-level analyses. **RESULTS:** Among 1610 patients identified, 73.7% of patients self-identified as non-Hispanic White (NHW), 10.6% Hispanic, 7.6% Asian, and 8.1% Black. Mutations in KRAS were detected in 87.9% of patients (88.2% NHW, 85.6% Hispanic, 83.2% Asian, 92.7% Black; FDR=0.103). Among the 1369 patients with KRAS-mutant tumors, the most common allele subtypes were KRASG12D (39.5%) and KRASG12V (32.2%), followed by KRASG12R (15.9%), and KRASQ61 (7.2%). Mutation allele subtype distributions differed by race and ethnicity (FDR=0.021). NHW and Hispanic patients most often had tumors with KRASG12D mutations (40.5% and 36.5%, respectively). Asian patients showed a relative increase in tumors with KRASG12R mutations (20.2%) and rarely had KRASQ61 mutated tumors (2.0%). Black patients predominantly had mutations in KRASG12V (37.7%) with a relative increase in KRASQ61 subtypes (11.4%). CDKN2A was the only other gene demonstrating differences between groups (14.7% Hispanic, range 21.1%–23.4% non-Hispanic; FDR=0.033). Alterations in TP53 (74.6%), SMAD4 (18.7%), ARID1A (9.2%), ATM (6.9%), RNF43 (6.6%), BRCA2 (4.6%), and PIK3CA (4.6%) did not show a significant variation by race and ethnicity (FDR >0.05 for all). **CONCLUSIONS:** Apart from CDKN2A, overall frequencies of driver mutations were similar across racial and ethnic groups in patients with PDAC, but allele-specific differences in KRAS highlight potentially meaningful biologic heterogeneity. Because allele-specific subtypes may be associated with therapeutic sensitivity, prognosis, and eligibility for targeted therapies, recognizing these distinctions is essential to ensure equitable advances in precision oncology.

Table 1. Distribution of KRAS mutations and KRAS-mutation allele subtypes by self-reported race and ethnicity.

Patients, no (%)	Cohort (n=1610)	White (n=1186)	Hispanic (n=171)	Asian (n=123)	Black (n=130)
KRAS Mutated	1369 (88)	1019 (88)	137 (86)	99 (83)	114 (93)
KRAS Allele:					
G12D	541 (39)	413 (40)	50 (36)	40 (40)	38 (33)
G12V	441 (32)	322 (32)	46 (34)	30 (30)	43 (38)
G12R	217 (16)	161 (16)	22 (16)	20 (20)	14 (12)
Q61	98 (7)	76 (7)	7 (5)	2 (2)	13 (11)
Other	72 (5)	47 (5)	12 (9)	7 (7)	6 (5)

EP134

Geographic and Social Drivers of Surgical Access in Hepatic Malignancies: A Geospatial Study

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INTRODUCTION: Optimal outcomes in hepatic malignancies rely on timely access to surgical oncologic care. Yet, access disparities, rooted in geography and social determinants of health continue to perpetuate survival inequities. This study integrates geospatial and sociodemographic analyses to identify social and spatial vulnerability (SSV) patterns influencing access to hepatopancreaticobiliary surgical care, to inform equity-driven interventions. **METHODS:** We performed a retrospective Geographic Information Systems analysis of patients treated for hepatocellular carcinoma and intrahepatic cholangiocarcinoma between 2010 and 2024 at a tertiary academic cancer center (TACC) in Southern California (SC). Residential addresses were geocoded to census tracts and analyzed for SSV. Kernel density estimation mapped liver cancer case density. Regional healthcare systems (RHS) providing cancer care were mapped with 10-mile service radii to assess geographic accessibility. The Centers for Disease Control Social Vulnerability Index (SVI; four themes: socioeconomic status, minority/language, household composition, housing/transportation) and Getis–Ord Gi* statistics were used to identify statistically significant clusters of SSV. Overlay analysis (OA) examined intersections among patient-density hot spots, SVI clusters, and surgical service zones. **RESULTS:** Of 2,328 patients, 2,204 met spatial-analysis criteria; 1,295 had hepatic malignancies. Among patients with hepatic malignancy, 71% were male and 29% female; median age 64 years (20–97). Across SC, the racial distribution cohort was 37.5% non-Hispanic White, 47.2% Latino, 6.5% Black, 7.2% Asian/Pacific Islander, and 1.6% others. Although geospatial analyses

identified high-density liver cancer clusters within 10-mile RHS catchments, patients traveled a mean 40 miles for treatment at a TACC, and OA showed these high-incidence areas align with high-SVI tracts characterized by lower income, limited English proficiency, underinsurance, and transportation barriers. **CONCLUSIONS:** Proximity to regional health systems offering cancer care does not ensure equitable access; structural and social barriers persist even in service-proximate communities. Addressing these barriers demand tailored, community-based strategies, such as patient navigation, culturally competent outreach, insurance navigation, and expanded tele-oncology to bridge spatial and social gaps in cancer care. This geospatial framework offers a replicable approach to map and mitigate inequities in surgical oncology care nationwide.

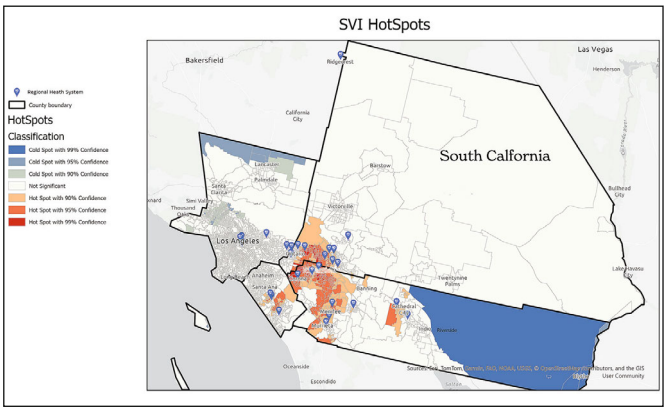

Figure. SVI Hotspots

EP135

Breast Cancer Outcomes Among Intersex Individuals in the National Cancer Database

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INTRODUCTION: Up to 2% of the population is intersex, due to chromosomal and inherited genetic variants (e.g., Klinefelter and Turner's Syndromes, 5α-reductase 2 deficiency, etc.). Many receive hormone replacement therapy, which may increase breast cancer (BC) risk. Given there are no cohort studies examining BC in this population, we aimed to explore patient demographic, tumor clinicopathologic, treatment, and overall survival (OS) characteristics of intersex vs female patients with BC. **METHODS:** A retrospective cohort study using the NCDB was performed of patients ≥18 years with BC from 2004–2023. Demographic, clinicopathologic, and treatment characteristics were compared by sex assigned at birth (SAB) (coded within NCDB as either intersex or female SAB) using $\chi 2$ and t tests for independent variables. A matched cohort was created using an optimal pair matching, matched on diagnosis year, age, race and ethnicity, stage, receptor status, and Charlson Comorbidity Index (CCI). 5-year OS was evaluated using Kaplan-Meier survival analysis and log-rank test to compare time-to-event outcomes by SAB. Relative risk (RR) for endocrine therapy (ET) receipt by SAB was calculated. Significance was set at $p \leq 0.05$. **RESULTS:** During the study timeframe, 235 patients were intersex and 4,819,982 were female. Most intersex patients were NH-White (63.2%), privately insured (54.1%), and had a CCI of 0 (84.6%). Compared to all female patients, intersex patients were younger (median age 59.7 vs 65.7 years, $p< 0.01$) and more had DCIS (18.5% vs 9.5%, $p< 0.01$). While intersex patients more frequently had ER- (16.2% vs 6.2%, $p< 0.01$) and PR- disease (26% vs 13.7%, $p< 0.01$), there was no difference in HER2 status by SAB (8.1% vs 7.7%, p=0.88). On matched analysis, there was no difference in local therapy or systemic chemotherapy receipt by SAB; however, of those with ER+ and/or PR+ disease, intersex patients received ET less often (61.5% vs 76.7%, $p< 0.01$) and were less likely to receive ET for invasive BC (RR=0.80, 95% CI 0.69–0.92, $p< 0.01$). There was no difference in 5-year OS by SAB (Figure 1). While the likelihood of being disease-free within the first 5 years after diagnosis was lower in intersex patients, this did not reach significance (77.9% vs 84.7%, p=0.07). **CONCLUSIONS:** In the first cohort study of intersex patients with BC, we identified they were younger and less likely to receive ET for ER+ and/or PR+ disease compared to females. Although 5-year OS did not differ by SAB, findings suggest a potential trend towards a shorter disease-free interval, underscoring the need for long-term follow-up to fully characterize intersex patients and their BC outcomes.

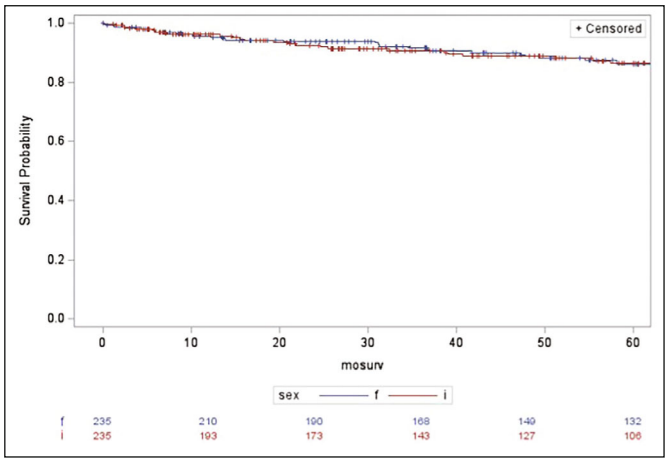

Figure 1. Five-year OS Kaplan-Meier curves for intersex vs matched female patients with breast cancer in the NCDB from 2004–2023.

EP136

Preparing for the inevitable: Early comprehensive genomic profiling for patients with localized pancreas cancer

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is a highly lethal disease, even when diagnosed at a localized stage. Despite frequent disease recurrence after curative-intent therapy, national guidelines do not recommend comprehensive genomic profiling (CGP) until progression occurs following treatment. As approved and investigational therapies expand for PDAC, ensuring access to early CGP data is critical to enable molecularly informed treatment strategies. **METHODS:** We performed a single-institution retrospective analysis of patients with localized PDAC who underwent surgery between 2019-2024 to evaluate CGP use and post-recurrence treatment patterns. In tandem, we implemented a prospective institutional initiative in 2025, partnering with commercial vendors to test CGP feasibility from endoscopic biopsies at the time of diagnosis in patients with localized PDAC. **RESULTS:** Among 380 patients in our retrospective cohort, 215 (57%) developed disease recurrence at a median of 17.3 (IQR 7.6-65.6) months after resection. Of those with documented recurrences, 43% never underwent CGP. Among those who did, only 62% had access to results before initiating post-recurrence systemic therapy. Earlier testing (within two months of surgery) improved access to CGP prior to initiation of post-recurrence treatment, while deferred testing was associated with molecularly uninformed treatment. Patients whose surgery and systemic therapy occurred at difference institutions were less likely to receive CGP (66% vs. 29%, $p< 0.0001$). CGP results were consistent with other large PDAC sequencing efforts (Fig. 1A) and were obtained using several specimen types (Fig. 1B). Receipt of CGP was associated with higher rates of molecularly tailored treatment (11% vs 1%, p=0.004), including 10 patients (8%) whose post-recurrence treatment was part of a clinical trial (Fig. 1C). In our prospective cohort, CGP has thus far been attempted in 16 patients. Tissue samples were accessible in 12 patients. Of these, CGP successfully resulted

in nine patients (75%), representing a failure rate of 25% due to insufficient or poor-quality samples. **CONCLUSIONS:** CGP is feasible and actionable in patients with localized PDAC, yet failure to obtain these data prior to disease recurrence is common and impacts the ability to match patients with molecularly informed clinical trials and treatments. Given the high rate of recurrence, we advocate for a uniform strategy ensuring all patients undergoing resection for PDAC receive early CGP to improve access to clinical trials and molecularly tailored treatments.

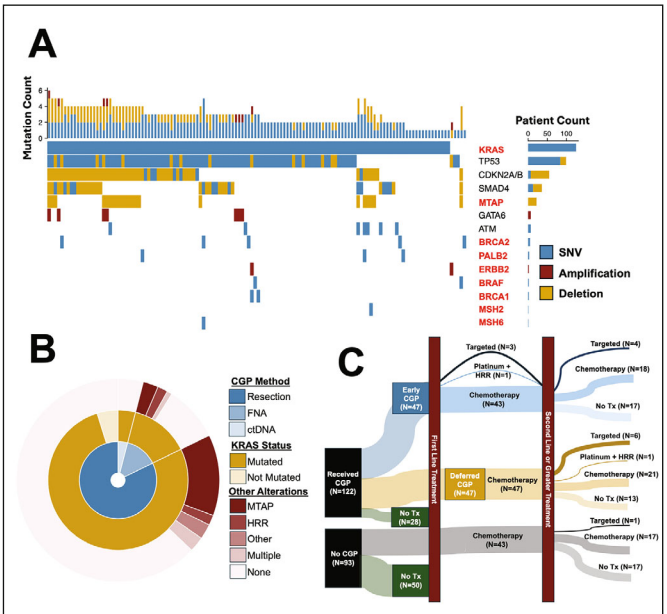

Figure 1. CGP results in resected PDAC patients. A) An Oncoprint displaying alterations identified by CGP in patients with resected PDAC (*N*=122). Genes with alterations in >5% of our resected cohort or with corresponding investigational or approved therapies (red) were included. B) Donut chart with inner ring (blue) showing the proportion of patients who received CGP via blood-based ctDNA, fine needle aspiration (FNA), or resected tumor (Resection). The middle ring (gold) shows the proportion of patients within each testing approach with a *KRAS* mutation detected. The outer ring (red) shows the proportion of patients within each testing approach who had an MTAP deletion, Homologous Recombination and Repair (HRR) pathway mutation or deletion, other FDA approved target (*BRAF* V600E, mismatch repair pathway mutation, *ERBB2* amplification, multiple alterations, or none. C) Sankey diagram showing the treatment patterns based on timing and receipt of CGP.

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Distinct evolutionary constraints drive a clonal gradient across the gastrointestinal tract

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INTRODUCTION: Tumor evolution within the gastrointestinal (GI) tract proceeds under distinct developmental constraints, but how these forces shape clonal architecture across disease sites remains unclear. We sought to quantify clonal architecture across GI cancers and assess how patterns of selection vary by anatomic site. **METHODS:** Genomic and clinical data were obtained from the AACR Project GENIE registry and filtered to six epithelial GI cancer types: colorectal, esophagogastric, small bowel, hepatobiliary, pancreatic, and appendiceal. Gene-specific variant allele frequency (VAF) distributions and subclonal fractions were derived from single-nucleotide variant data. Inter-site comparisons used Kruskal–Wallis and pairwise Wilcoxon tests. **RESULTS:** The cohort included 35,794 tumors. Median VAFs decreased systematically from colorectal (0.30) to esophagogastric (0.28), small bowel (0.24), hepatobiliary (0.22), pancreatic (0.19), and appendiceal (0.14) cancers ($p < 0.001$), defining a continuous clonal gradient along the GI axis. This gradient reflects developmental lineage rather than linear anatomy and highlights distinct clonal constraints among foregut, midgut, and hindgut tumor types. Appendiceal and small bowel cancers showed the greatest subclonal diversity, reflecting diffuse evolutionary branching. Within each organ type, median VAF distributions were broad (IQR widths 0.22–0.29; SD = 0.03 across cancer types), indicating comparable intra-organ heterogeneity in clonal architecture. Truncal drivers such as TP53 (0.36), APC (0.25), and CDKN2A (0.27) maintained high VAFs across all organs, consistent with early fixation. KRAS displayed lineage-specific variability, truncal in colorectal and pancreatic cancers yet lower in distal sites, reflecting context-dependent selective pressures. SMAD4 (0.16), ARID1A (0.18), and PIK3CA (0.12) exhibited greater subclonality and organ-specific enrichment that signal adaptive evolution. Copy-number amplitude correlated only weakly with median VAF ($\rho = 0.14$), indicating that the clonal gradient is not explained by global genomic instability or purity differences. **CONCLUSIONS:** This study defines the first population-scale clonal architecture gradient across GI cancers, revealing distinct evolutionary constraints that correlate with anatomic origin. These results highlight that tumor evolution is shaped by tissue context, offering a framework for understanding heterogeneity and guiding site-specific investigations across the gastrointestinal tract.

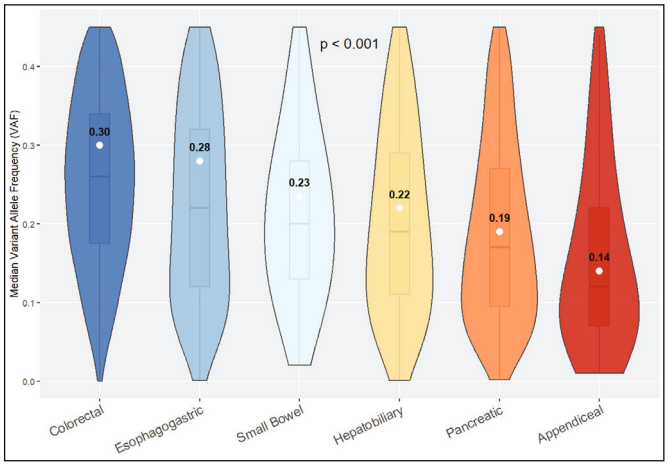

Figure. Median variant allele frequency (VAF) distributions across gastrointestinal cancers show a stepwise decline from colorectal to appendiceal ($p < 0.001$, Kruskal–Wallis).

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Machine learning analysis of pancreatic cancer tissue immune markers for prognostic model development

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INTRODUCTION: Among patients diagnosed with resectable pancreatic ductal adenocarcinoma (PDAC), survival rates remain poor (5-year survival rate of only 17%), and many patients lack surgical benefit as they succumb to early recurrence. The study aimed to determine if soluble immune signatures from the PDAC tumor microenvironment can predict early recurrence and death (less than 1-year survival). **METHODS:** A retrospective review of patients diagnosed with pancreatic ductal adenocarcinoma (PDAC) at a single institution was performed. Patients met inclusion criteria if they underwent upfront surgical resection, surgery occurred >365 days prior to review, and had fresh-frozen surgical tissue samples for immune profiling. Samples were subjected to a 40-plex antibody-based multiplex immunoassay (Luminex xMAP). Multimodal machine learning predictive models were generated using immune analytes and clinical data as covariates and a binary outcome of survival at 1-year post-surgery. Model performance was compared using receiver operating characteristic (ROC) curves, sensitivity, specificity and accuracy. Data were analyzed using R statistical software. **RESULTS:** 59 patients met the inclusion criteria, of which 2 were excluded for a death within 90 days post-op. The remaining 57 patients were predominantly white (96.5%) and male (59.6%), with a median age of 72 years (IQR 11). Nearly half (45.6%) died within 1 year of surgery. An additional set of 8 patient samples processed separately served as a validation set. Four machine learning models were generated using 36 immune analytes and 15 clinical variables. Aberrant tissue expression of IL-4, VEGF, and RANTES was consistently predictive of 1-year survival across multiple models.

A penalized logistic regression model demonstrated the best performance with an AUROC of 0.8 and accuracy of 0.75. Predicted relative survivals, expressed as a continuous risk score, were calculated and split at the median into high and low risk. Overall survival in the high-risk group was significantly less than the low-risk group (median 7.7 versus 28.6 months, respectively; p< 0.0001). **CONCLUSIONS:** The host immune response to PDAC, as reflected by soluble immune proteins present in the tumor microenvironment, enhances the ability to predict 1-year post-op survival in treatment-naïve PDAC. Clinical implementation of this assessment could allow for improved surgical decision-making. Further refinement of our models with larger cohorts is warranted.

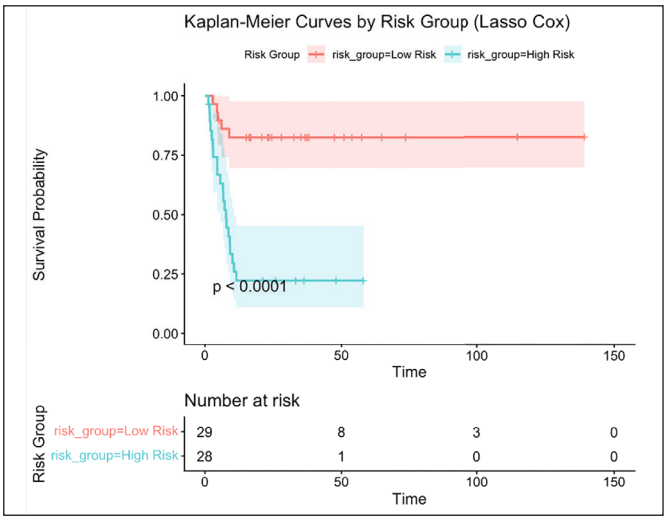

Figure. Predicted post operative survival in months based on penalized Cox regression

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Patient Perspectives on Adjuvant Therapy for Colorectal Liver Metastases

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INTRODUCTION: Following curative-intent surgery for colorectal liver metastases (CRLM), adjuvant therapy extends recurrence-free survival (RFS) without improving overall survival (OS). However, patient perspectives on the value of RFS in this context remain poorly understood. The objective of this study was to explore patient attitudes toward therapies that delay cancer recurrence without prolonging survival and to understand their rationale. **METHODS:** This mixed-methods study included semi-structured interviews with patients undergoing evaluation for resectable CRLM. Participants reviewed visual aids depicting four adjuvant treatment scenarios with a 6-month course of a hypothetical Drug X. The scenarios were: S1) 0.5-year RFS improvement without OS change; S2) 1-year RFS improvement without OS change; S3) 2-year RFS improvement without OS change; S4) 0.5-year RFS and 0.5-year OS improvement. Patient preferences were captured through dichotomized treatment choice questions, with open-ended probes exploring reasoning. Descriptive statistics summarized patient demographics and preferences. A codebook was developed inductively and representative themes were developed via thematic analysis of transcripts. **RESULTS:** Participants (n=20) had a mean age of 58 years (65% male), and 90% received prior chemotherapy (94% oxaliplatin). In scenario S1 (0.5-year RFS gain without OS change), 30% chose Drug X, 60% opted for no treatment, and 10% were unsure. Drug X selection increased to 65% for S2 (1-year RFS gain) and S3 (2-year RFS gain), and reached 75% for S4 (0.5-year RFS and 0.5-year OS gain). Most participants did not value delaying recurrence without improving OS (30% not/little important, 45% somewhat important, 25% quite a bit/greatly important). Thematic analysis revealed dominant rationales for or against adjuvant treatment use (Table 1) and three key themes: 1) personal priorities - quality of life, peace of mind during cancer-free periods, and family/friend dynamics; 2) balancing oncologic outcomes - prioritizing OS over RFS, valuing delayed recurrence to defer symptoms, and individual RFS thresholds; 3) Assessing treatment options - side effect tolerability, maintaining sense of self, and clinician guidance. **CONCLUSIONS:** The majority of patients with resectable CRLM reported disinterest in adjuvant treatments that led to isolated, limited (Δ6 months) improvements in RFS, whereas the greatest enthusiasm was observed when therapy produced modest OS gains. The diverse patient priorities highlight the need for shared decision-making to align expected therapeutic outcomes with individual values.

Table. Patient-Reported Reasons For and Against Adjuvant Treatment Following Resection of Colorectal Liver Metastases

Reasons For Treatment	Reasons Against Treatment
Delaying the emotional burdens of recurrence – "Living your life knowing you're cancer-free gives you a certain sense of being — it's hard to explain."	**Perceiving RFS-only benefit as pointless** – "It just delays the recurrence, but it doesn't bring any output." – "How long am I going to live? If it only delays finding recurrence but the outcome is the same, then no benefit."
Buying time for options & advances – "I think just… peace of mind — the longer to delay, the more time for new things to come out, the more time without having to deal with that, the better."	**Avoiding side effects** – "Neuropathy, fatigue — that detracts from the quality of my life." – "You're going to be spending part of that five years sick."
Misperceiving physical benefits – "If it shortens the period of being really symptomatic from cancer… if that window of time can be as short as possible, then I guess that's a positive thing."	**Minimizing opportunity costs** – "Not being able to spend that time with your family." – "I don't want to lose months to appointments when survival's the same."

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Limiting sentinel lymph node biopsy to the "hottest" node in melanoma: diagnostic yield, complications, and recurrence under the 10% criterion

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INTRODUCTION: Standard practice for sentinel lymph node biopsy (SLNB) for melanoma involves removing nodes that (1) have radioactive counts ≥10% of the ex vivo count of the most radioactive node or "hottest node" (10% criterion), (2) are blue, or (3) noted suspicious intraoperatively. SLNB is critical as it helps stage melanoma with high accuracy. We aimed to evaluate patients with positive sentinel lymph nodes (SLN) to assess number of positive and negative nodes per patient and complication risk. **METHODS:** This is a retrospective review of patients treated by academic medical center surgical oncology who underwent SLNB from 9/2017-5/2025. Lymphoscintigraphy was performed using single agent tracer (Tc-99m tilmanocept or Tc-99m sulfur colloid). Charts provided demographics, tumor features, complications, and recurrence information. Data was analyzed with Fisher's exact test. **RESULTS:** Of the 527 patients undergoing SLNB, 53 were diagnosed with melanoma metastasis in the SLN (median age, 67 years; sex distribution: 31 men). Of these, 64% were in the axillary basin, 23% inguinal, 7% cervical, 4% two basins, and 2% other, including the interval node. The median number of SLNs excised per case was 2 (range, 1–6), and the median total number of positive SLNs was 1 (range, 1-3). Overall, 28% (15/53) had 1 lymph node excised versus 72% (38/53) with >1 lymph nodes excised. Among cases with multiple excised nodes by the 10% criterion, 82% (31/38) of patients had only one positive node, being the "hottest" node identified. Six patients had two positive nodes; one had three. No patients had 4 positive nodes. Across all patients, none of the less radioactive nodes were positive when the "hottest" node was negative. Post-procedural complications, including seroma, pain, and infection, occurred in 13.3% (2/15) of patients when 1 lymph node was removed and 21.1% (8/38) when >1 node was removed (p=0.71). Of those 10 cases, 7 were axillary, 1 inguinal, and 2 cervical. Eight patients had a recurrence: nodal basin-only (3), primary-site and nodal basin (2), in-transit (1), and liver metastases (2). 75% (6/8) of

recurrences occurred when >1 lymph node was excised. **CONCLUSIONS:** Additional SLNs excised by the ≥10% criterion rarely added diagnostic yield: metastasis was typically confined to the "hottest" node, and no patient had a positive lower-count node with a negative "hottest" node. Complications and recurrences trended higher when >1 node was removed. Limiting SLNB to the hottest node may reduce procedural invasiveness and lower complication risk without compromising staging accuracy.

Table. Nodal involvement, complications, and recurrence by basin type among SLN-positive melanoma cases

	Nodal Basin Type				
	Axillary	Inguinal	Cervical	Two Basins	Other
Total Patients (N = 53)	34	12	4	2	1
Number of Nodes Excised	75	19	7	5	3
Number of Positive Nodes	38	13	4	4	2
Complications	5	2	2	1	0
Nodal Basin recurrence	3	1	0	0	1
Distant Recurrence	2	1	0	0	0

EP141

Training on target: a national survey of resident confidence in performing breast lumpectomy

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INTRODUCTION: Resident confidence in performing breast lumpectomy is known to depend on lesion palpability, training level, and case volume, with lower proficiency for nonpalpable lesions. Beyond postgraduate year (PGY) level and operative experience, we hypothesized that understanding key imaging features of lesion-localizer anatomy and attending surgeon practices may also influence confidence in performing these procedures. **METHODS:** A 21-item anonymous survey on confidence in performing breast lumpectomy and preoperative imaging review practices was emailed to 363 USA general surgery programs to circulate to their residents. Participation was voluntary. Multivariate logistic regression, adjusted for PGY level (junior 1-2 vs senior 3-5) and case volume (≤25 vs >25), assessed whether attending involvement or review of lesion size and localizer-lesion-clip relationships predicted confidence. Confidence was rated on a five-point scale (always, often, sometimes, rarely, never), and dichotomized as high or low, with "sometimes" responses excluded. **RESULTS:** A total of 170 general surgery residents from 27 states completed the survey; 47 were excluded for selecting "sometimes". Of the remaining 123 participants, 72 (59%) reported high confidence and 51 (41%) reported low confidence. Compared to residents with low confidence, residents with high confidence were more likely to be senior (89% vs 43%, $p < 0.001$) and to have completed >25 cases (81% vs. 24%, $p< 0.001$). Pre-operatively, residents most frequently reviewed lesion size (86%), distance of lesion from nipple (88%), lesion clock face position (80%), and biopsy clip position (81%), but fewer reviewed localizer-lesion (57%) or localizer-clip (53%) relationships. Those who reviewed the localizer relationships and size of lesion were more likely to report high confidence (adjusted OR 3.82, 95% CI 1.47-11.0, p=0.008). High confidence was associated with greater comfort recommending additional margins (76% vs 37%, $p< 0.001$) and lower rates of self-reported attending frequency of taking over (18% vs 95%, $p< 0.001$). Resident confidence was not significantly associated with having a breast surgeon at the institution, reviewing imaging with the attending, or surgeon-performed localizer placement (Figure). **CONCLUSIONS:** Resident confidence in lumpectomy increases with seniority and case volume but is independently strengthened by preoperative imaging review of localizer-lesion-clip anatomy. Integrating structured imaging-based review into training may enhance residents' understanding of nonpalpable lesion anatomy and operative confidence.

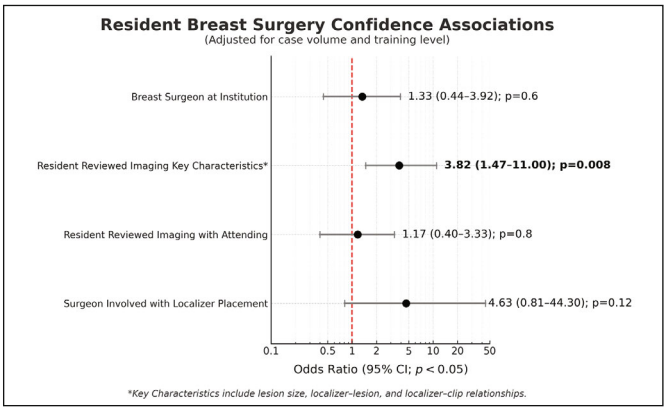

Figure: Forest plot from a multivariate logistic regression illustrating predictors of high resident confidence in performing breast lumpectomy, adjusted for case volume (≤25 vs >25 cases) and training level (junior PGY 1-2 vs senior PGY 3-5)

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Challenges in Predicting Completion of Adjuvant Chemotherapy in Gastric Cancer: Implications for a Total Neoadjuvant Approach

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INTRODUCTION: Perioperative chemotherapy is the treatment paradigm in locally advanced gastric cancer (GC), yet initiation and completion of adjuvant chemotherapy (AC) remains suboptimal. This study aimed to identify factors associated with non-receipt, non-completion and delayed initiation of AC and to evaluate their impact on survival outcomes. **METHODS:** We conducted a single-institutional retrospective cohort study of patients with resectable GC treated with perioperative chemotherapy between 2002 to 2024. Continuous and categorical variables were compared using Student's t-test and Chi-square test or Fisher's exact test, respectively. Multivariate logistic regression was performed, adjusting for age, sex and race. KM curves and multivariable Cox regression compared adjuvant treatment characteristics with overall (OS) and recurrence-free survival (RFS). **RESULTS:** Among 121 patients, 61% were male, 82% were Caucasian, with a mean age of 60.5 years. Fifty-six (46%) received FLOT/FOLFOX, while 64 patients (53%) received older regimens (ECF, EOX, EOF, DCF, XELOX). AC was initiated in 88 (73%) patients, 37 (51%) experienced delayed initiation of AC, (≥ 8 weeks postoperatively) and 32 (36%) required dose reductions or changes in AC regimen. Finally, only 53 (46%) completed all intended cycles. AC initiation was more likely among patients with private/commercial insurance (p=0.05), lower tumor regression grade (p=0.02), and lower postoperative TNM staging (p=0.04). Delayed initiation of AC was associated with diffuse type histology and distal tumor location (p=0.04). AC completion was less likely among patients with ECOG performance status ≥1 (p=0.02) and those receiving FLOT/FOLFOX regimens (p=0.02). Delayed initiation of AC and dose reductions/regimen changes did not significantly impact oncologic outcomes. However, patients who initiated AC had significantly improved OS and RFS ($p< 0.05$, Figure 1). Initiation of AC remained independently associated with improved OS after controlling for age, sex, race, ECOG status, insurance status, TRG and ypTNM stage (HR 0.45 95%CI 0.27-0.73), p = 0.02). **CONCLUSIONS:** Despite clear survival benefits, nearly half of all patients fail to complete AC after curative intent resection of their GC. Both clinical and socioeconomic factors influence adherence, though few are readily identifiable preoperatively. These findings highlight the difficulty in predicting AC attrition and support consideration of total neoadjuvant therapy approaches to optimize systemic treatment delivery in resectable GC.

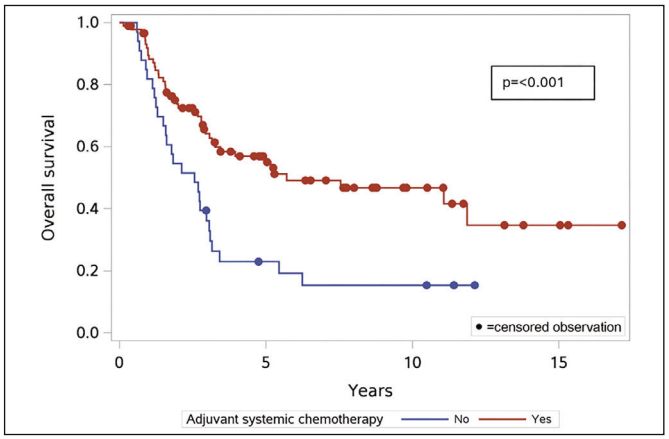

Figure. Kaplan-Meier analysis of overall survival stratified by receipt of adjuvant systemic chemotherapy in patients with gastric cancer.

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Limited impact of sentinel lymph node biopsy in older women with cT2N0 hormone-positive HER2-negative breast cancer

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INTRODUCTION: Consensus guidelines recommend selective use of sentinel node biopsy (SNB) for axillary staging in older women with early breast cancer and favorable tumor biology. Applicability of this to clinical T2 tumors remains unclear. This study examined how often SNB influenced adjuvant treatment decisions in women >65 years with clinical T2N0 hormone receptor-positive (HR+), HER2-negative (HER2-) disease. **METHODS:** A single-institution retrospective review identified consecutive patients treated from 2019-2023. Clinicopathologic features, adjuvant therapy decisions, and outcomes were analyzed. Adjuvant treatment was considered impacted if there was receipt of: 1) chemotherapy based primarily on nodal positivity (rather than primary tumor characteristics or genomic assays), and/or 2) regional nodal irradiation (RNI). **RESULTS:** Among 113 patients included, 35 (31%) were pN1 and 2 (1.8%) were pN2. Tumor sizes included 25 (22.1%) downstaged to pT1, 48 (42.5%) measuring 2.1-3 cm, 27 (23.9%) measuring 3.1-4 cm, and 13 (11.5%) >4 cm. Nodal positivity was significantly lower for pT1 tumors (n=2; 8%, p=0.035) but did not differ among pT2 subgroups (39.6% vs 37% vs 46.2% respectively, p=0.864). Figure 1 demonstrates an adjuvant therapy decision tree. Of 12 (10.6%) patients who received chemotherapy, nodal status was the deciding factor in only 2 cases, with multigene assay results guiding the remainder. RNI was administered to 15 (13.3%) patients, but was omitted for the majority (n=22) of pN+ cases. Among pN+ patients, recurrence rates were 13.3% with RNI (n=2/15) and 9.1% without (n=2/15 and n=2/22, respectively, p=0.207). At a median follow-up of 3.1 years (range 0.1-6.3), 9 (8%) patients experienced recurrence (5 pN0, 4 pN+), and 4 (3.5%) died of breast cancer (2 pN0, 2 pN+). Endocrine noncompliance was noted in the 4 pN+ patients with recurrences. **CONCLUSIONS:** In women >65 years with cT2N0 HR+/HER2- breast cancer where downstaging to pT1 disease was not infrequent, SNB rarely altered adjuvant management. Chemotherapy decisions were primarily guided by genomic assays, and most node-positive patients did not receive RNI. These findings support a more selective approach to SNB in this population, emphasizing individualized decision-making over routine axillary staging.

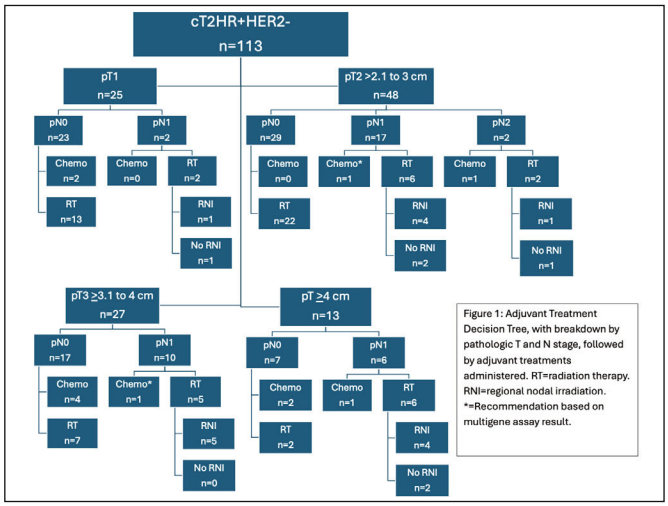

Figure 1

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Development of Staging Guidelines for Metastatic Breast Cancer: Which method is best?

Jennifer Plichta, MD, MS, FACS, FSSO, Duke University Medical Center; Victoria Rey, BS, Duke University Medical Center; Maya Blasingame, BS, Duke University Medical Center; Sheng Luo, PhD, Duke University Medical Center; Samantha Thomas, MS, Duke Cancer Institute

INTRODUCTION: Staging is foundational for assessing prognosis. Multiple methods have been used to create staging guidelines, although it remains unclear which statistical approach is best. We compared 3 methods for developing staging guidelines, using de novo metastatic breast cancer (dnMBC) as an example. **METHODS:** Patients with dnMBC in the NCDB (2016-2022) were identified, which was split 80/20 into a training set (N=35,522) and test set (N=8,880). Stage groups were assigned based on 3-year overall survival (OS) rates estimated via Kaplan-Meier: stage group IVA > 70%, IVB 50-70%, IVC 25-< 50%, and IVD < 25%. Using LASSO-penalized Cox regression, the training set was used to identify the most parsimonious model, which excluded 6 variables (clinical N, histology, inflammatory, brain only met, bone only met, distant only met). The variables from the most parsimonious model were used for the remaining analyses (clinical T, grade, ER, PR, HER2, visceral met, # of metastatic sites). Staging Model Development: (1) We analyzed all possible variable combinations (ACA), yielding 241 characteristic profiles. (2) Recursive partitioning analysis (RPA) grouped patients with similar OS based on these same characteristics; 3-year OS rates were estimated for each terminal node. (3) Bootstrapping was used; the RPA was repeated 1000 times (B-RPA). Patients were categorized as stage IVA-D based on the 3 methods (ACA, RPA, B-RPA), resulting in 3 stage assignments. Differences between the 3 methods in stage assignments were classified as minor (1 group) or major (>1 group). Performance was compared with the Akaike Information Criterion (AIC). **RESULTS:** Application of the 3 methods yielded similar findings in the training set (Table). The ACA had the best performance (lowest AIC), followed by the B-RPA and RPA (in the training and test sets). Patient-level Comparison (N=35,522). The same stage group (IVA-D) was assigned to 92.5% of patients by all 3 methods. Comparing B-RPA to AC, 4.3% of patients had a minor stage discrepancy and 0.1% had a major discrepancy. The RPA compared similarly to ACA (6.9% minor, 0.1% major). Profile-level Comparison (N=241). B-RPA and ACA had 74.3% agreement in stage assignments, 23.7% minor discrepancies, and 2.1% major discrepancies. Comparing RPA to ACA was similar (71.8% agreement, 26.1% minor, 2.1% major). **CONCLUSIONS:** There was a high level of agreement in stage assignment at the patient level and a moderate degree of discrepancies at the profile level (mostly minor). Although the ACA was missing some profiles, it had the best performance. These findings will help inform future staging guideline development.

Table. Comparison of statistical methods. ACA=all combinations analysis. RPA=recursive partitioning analysis. B-RPA=bootstrapped RPA. OS=overall survival.

	Stage IVA	Stage IVB	Stage IVC	Stage IVD
Number of profiles (N=241)				
ACA*	25	71	72	58
RPA	13	88	89	54
B-RPA	18	85	87	56
Number of patients (N=35,522)				
ACA**	9280	15617	7374	3159
RPA	8672	16313	6867	3670
B-RPA	9087	15898	7387	3150
Unadjusted 3-year OS rates				
ACA	73.0%	60.0%	36.8%	14.4%
RPA	72.8%	60.3%	37.2%	17.1%
B-RPA	72.8%	59.9%	36.7%	14.8%
Hazards Ratios from multivariable analysis***				
ACA	Ref	1.481	2.518	4.202
RPA	Ref	1.497	2.538	3.894
B-RPA	Ref	1.490	2.520	4.108

*The ACA was missing 15 profiles
**The ACA was missing 92 patients
***Multivariable analysis included stage group (IVA-D), age group (<50, 50+), sex, race/ethnicity, chemotherapy receipt, endocrine therapy receipt, immunotherapy receipt, radiation receipt, and surgery receipt.

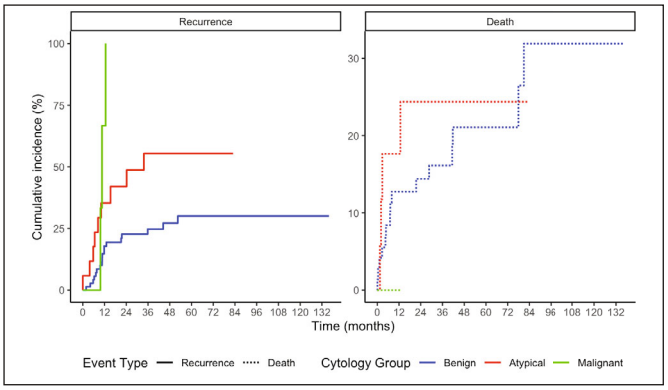

Figure. Cumulative incidence of peritoneal recurrence and death across peritoneal cytology groups

EP145

Significance of atypical peritoneal cytology in patients with locally advanced gastric cancer

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INTRODUCTION: While positive peritoneal cytology is associated with worse outcomes in patients with gastric cancer, the significance of atypical peritoneal cytology remains unclear. This study evaluated the incidence of atypical peritoneal cytology and its association with survival and peritoneal recurrence. **METHODS:** We retrospectively identified patients with pT3 and pT4 stages of gastric cancer who underwent curative-intent surgery at our institution between 2011 and 2022, including those with preoperative diagnostic laparoscopy and peritoneal cytology results. Overall survival (OS) was estimated by the Kaplan-Meier method. Cumulative incidence functions (CIFs) were used to estimate peritoneal recurrence, accounting for death as a competing risk. **RESULTS:** A total of 92 patients was stratified into benign (n=72, 78.3%), atypical (n=17, 18.5%), or malignant (n=3, 3.3%) groups based on peritoneal cytology results. Over a median follow-up of 24.6 months (range 0.1-136 months), OS did not differ significantly across groups (log-rank p=0.2). Median OS was 81 months for benign, 30 months for atypical (hazard ratio [HR] 1.79, 95% confidence interval (CI) 0.76-4.19; p=0.2), and 22 months for malignant (HR 3.23, 95% CI 0.74-14.0; p=0.12). Peritoneal recurrence rates were 25% (n=18) for benign, 53% (n=9) for atypical, and 100% (n=3) for malignant. At 12 months, the cumulative incidence of recurrence was 17.8% (95% CI 8.6-27%) for benign, 35.3% (95% CI 11.5-59.1%) for atypical, and 66.7% (95% CI 0-100%) for malignant (Gray's test, p=0.001). **CONCLUSIONS:** Atypical peritoneal cytology occurred in 18.5% of patients with locally advanced gastric cancer who underwent curative-intent surgery, and outcomes in the atypical group were intermediate between those of the benign and malignant groups, highlighting the underlying heterogeneity and diagnostic uncertainty of this category. Peritoneal cytology was strongly associated with peritoneal recurrence but not overall survival. Limitations include single-institutional data and small sample size, particularly for the malignant group; further studies are warranted to improve prognostication, stratify those at highest risk for peritoneal recurrence, and guide the optimal management of atypical peritoneal cytology.

EP146

Safety and Oncologic Outcomes of Arterial Resections for Abdominal and Pelvic Sarcomas

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INTRODUCTION: Venous reconstruction during abdominal and pelvic sarcoma resection is well described, but outcomes of arterial resection remain poorly defined. Our aim was to evaluate the safety and oncologic outcomes of arterial reconstruction for abdominal sarcomas. **METHODS:** Patients undergoing major vascular reconstruction during abdominal sarcoma resection from 2000 – 2024 were identified in an institutional database. Clinicopathologic features, perioperative outcomes, and survival were compared between venous-only and arterial/combined reconstructions using chi-squared tests and Kaplan-Meier estimates. **RESULTS:** Eighty-three patients underwent resection with 100 vascular reconstructions, 17 of which were arterial. Median age was 62 years (IQR 51.5–72.9), 71% were female, and 87% were white. Leiomyosarcoma predominated (75%), followed by dedifferentiated liposarcoma (15%) and others (11%). Half (51%) received neoadjuvant therapy including 41% who received radiation. Venous-only reconstruction was done in 80.7% (n=67) of patients, arterial-only in 6% (n=5), and both arterial/venous in 13% (n=11) for a total of 19% (n=16) who had arterial or combined reconstruction. The common (n=6/100, 6%) and external iliacs (6%) were the most commonly reconstructed arteries. Interposition grafts were used to reconstruct 58.8% of arteries (n=10/17), followed by primary repair (23.5%) and patch angioplasty (17.7%). Median length of stay (LOS) was 7 days (IQR 6–9). Severe complications (Clavien Dindo ≥3a) occurred in 33%. One patient in the venous group died within 90 days of surgery of a non-graft related complication; there were no deaths in the arterial group. With a median follow up of 30 months, primary patency rate was 89% (n=87/99 vessels), assisted patency rate was 5% (n=5/99), and 7% were occluded (n=7/99). Venous patency was 94% (n=63/67) at 1 year and 93% (n=40/43) at 3 years. Median time to occlusion was 1.5 months (IQR 0.77–63.6). There was no arterial occlusion or limb loss reported. Median disease-free survival (DFS) was 30 months, with local recurrence in 21.7% (n=18/83). Median overall patient survival (OS) was 95 months. There was no difference in LOS, severe complications, DFS, or OS between patients with venous and arterial/combined reconstructions (p >0.05, Figure 1). **CONCLUSIONS:** Arterial resection for abdominal sarcomas demonstrates equivalent short-term morbidity and long-term oncologic outcomes compared to venous resection when performed at a high-volume center. These findings support consideration of arterial resections in selected patients to achieve complete oncologic clearance.

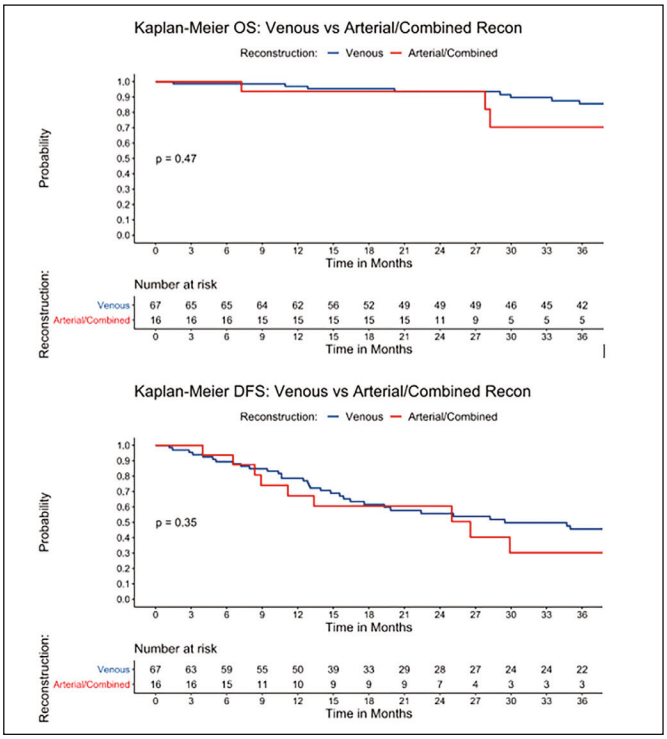

Figure 1. Overall survival and disease-free survival in patients with venous-only resections compared to arterial resections (including combined venous and arterial).

EP147

Mast Cell Density is an Independent Predictor of Favorable Outcomes in Appendiceal Cancer

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INTRODUCTION: Mast cells (MCs)—ubiquitous tissue-resident immune cells— exert diverse and context-dependent influences within gastrointestinal malignancies. While MCs' roles in colorectal cancer (e.g., angiogenesis, immune resistance, survival) are known, their function and density within the appendiceal cancer (AC) tumor microenvironment (TME) remain uncharacterized. The current study was undertaken to investigate the clinicopathologic and prognostic significance of MC density within the AC TME. **METHODS:** We analyzed 96 formalin-fixed, paraffin-embedded AC patient samples assembled into tissue microarrays. Mast cell density, identified by mast cell tryptase (MCT^+) staining via immunohistochemistry (IHC), was quantitatively assessed using digital imaging (QuPath). Statistical tests for association (Spearman's rank correlation, Kruskal-Wallis test, and Cox regression) were carried out between MCT^+ density and patient demographics, tumor characteristics, other immune cell densities (T cells, B cells, macrophages, and neutrophils) also assessed via IHC, and survival outcomes. **RESULTS:** MCT^+ cells constituted a minor fraction (0.08%) of the total cellular population within the AC TME. Mast cell density was significantly correlated with favorable clinicopathological features, including low-grade appendiceal mucinous neoplasm histology, primary vs. metastatic tumor site, lower tumor grade and stage, absence of nodal involvement, and patient age. Immunologically, mast cell infiltration was positively associated with increased B lymphocyte and negatively associated with M2-like macrophage density. Higher mast cell density predicted improved progression-free survival (HR 0.42, 95% CI 0.23–0.78, p=0.006) and overall survival (HR 0.28, 95% CI 0.12–0.63, p=0.002). Multivariate Cox regression analysis, adjusted for tumor grade, confirmed MCT^+ density as an independent predictor of favorable survival outcomes. **CONCLUSIONS:** Despite their low relative abundance in the TME, MCs exert a significant and favorable prognostic influence in AC. The consistent association of high MCT^+ density with advantageous clinicopathological features, reduced M2 macrophage presence, and augmented B lymphocyte infiltration suggests an overall protective role for MCs, potentially via modulating anti-tumor immunity. These findings establish MCT^+ cell density as a novel and independent prognostic biomarker in AC, underscoring the necessity for further investigation into the influence of MC biology in AC and its potential as a therapeutic target.

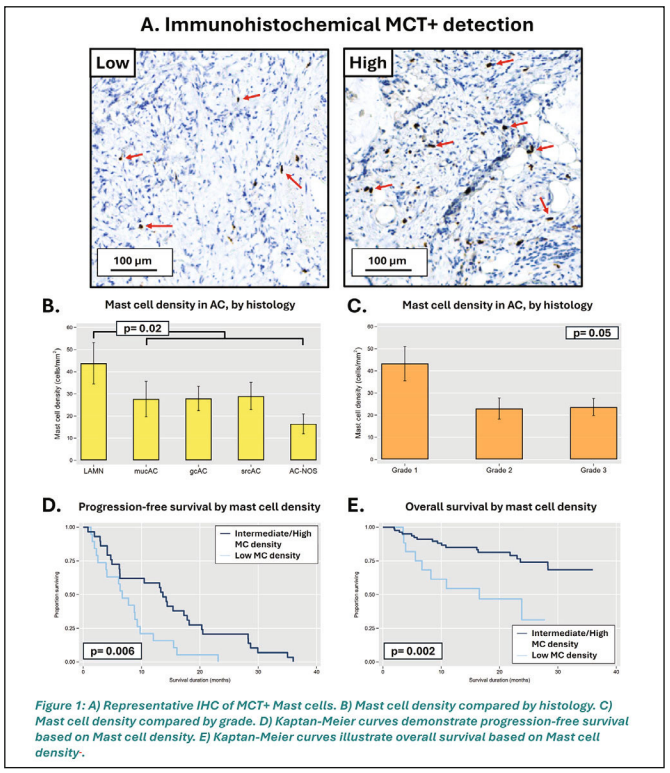

Figure 1: A) Representative IHC of MCT+ Mast cells. B) Mast cell density compared by histology. C) Mast cell density compared by grade. D) Kaptan-Meier curves demonstrate progression-free survival based on Mast cell density. E) Kaptan-Meier curves illustrate overall survival based on Mast cell density.

EP148

High Serum MDM2-DNA Levels Signal Worse Survival in Retroperitoneal Liposarcoma Utilizing the Sarculator Nomogram

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INTRODUCTION: Mouse double minute 2 (MDM2) is an oncogene whose over-expression is the hallmark of liposarcoma. Serum MDM2-DNA has been evaluated as a biomarker of retroperitoneal liposarcoma (RLPS). Its role in prognosis has not been defined. The Sarculator is a validated nomogram used for survival prognostication in soft tissue sarcoma. This study sought to evaluate if perioperative number of MDM2-DNA molecules correlated to Sarculator-derived prognostic outcomes in patients with primary RPLS. **METHODS:** MDM2-DNA was extracted from extracellular vesicles obtained from serum at the time of surgery in patients with RPLS. Utilizing the Sarculator nomogram, 5-year disease-free survival (DFS) and overall survival (OS) at high-volume centers was calculated using Sarculator. Linear regression analyses were performed with number of MDM2-DNA molecules as the independent variable and percentage survival as the dependent variable. Multivariate analysis controlled for age, tumor size, histology, grade, and

multifocality. Welch's t-test and one-way ANOVA were used to evaluate differences in MDM2 based on histology and grade. **RESULTS:** Twenty-three patients had evaluable MDM2-DNA levels and clinical data for calculating survival. The median age of the cohort was 59 [IQR 51-74], the mean tumor size was 23.8 cm +/- 13.4 cm; 30.4% (7/23) of patients had multifocal disease. 47.8% (11/23), 17.3% (4/23), and 34.7% (8/23) of patients had grade 1, 2, and 3 tumors, respectively. The mean number of MDM2-DNA molecules in well differentiated patients was 172161 +/- 134183 which was statistically higher than that of de-differentiated patients at 31704 +/- 20831 (p = 0.004). MDM2 values by grade were also statistically different (p=0.0117). Univariate regression showed a significant negative correlation between number of MDM2-DNA molecules and both 5-year OS [-3.71e-05 (95% CI: -2.13e-04 to -5.82e-05), p= 0.0015] and 5-year DFS [-4.45e-05 (95% CI: -2.35e-04 to -4.965e-05), p= 0.0043], see Figure. Upon multivariate analysis, this relationship was no longer significant for DFS [-5.55e-06 (95% CI: -2.80e-05 to 1.70e-05), p= 0.608] but trended toward significance for OS [-3.41e-05 (95% CI: -7.44e-05 to 6.29e-06), p=0.092]. **CONCLUSIONS:** In patients with primary RPLS, there is a possible negative correlation between perioperative MDM2-DNA levels and Sarculator-derived DFS and OS. MDM2-DNA may be considered as an independent variable to improve the fidelity of the Sarculator nomogram, adding to the prognostic value of MDM2 as a circulating biomarker in RPLS.

EP149

Surgical stress induces hepatic parenchymal neutrophil extracellular trap formation in patients with pancreatic cancer

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INTRODUCTION: Rapid recurrence of pancreatic cancer (rrPDAc, defined as within 6 months of surgery) remains a challenging problem in the field of surgical oncology. Recent studies have proposed several testable mechanistic possibilities (including the presence of occult synchronous lesions vs metachronous seeding), however the true mechanism is still unknown. Furthermore, our previous works have shown higher rates of rrPDAc after surgery. Current investigations in our lab involve the differential production of neutrophil extracellular traps (NETs) as an innate immune response leading to dissemination of occult cancer cells, specifically following the stress of surgical resection. **METHODS:** Opening (after incision) and closing (after removal of the cancerous lesion) liver biopsies have been collected from patients undergoing pancreatic resections within the past 2 years, each taken from the same hepatic segment at least 3cm apart. RNA sequencing, gene set enrichment analyses (GSEA), and cyclic immunofluorescence (cycIF) were used on these samples and on samples from the Oregon Pancreas Tissue Registry (OPTR). **RESULTS:** Current analyses were completed for 24 patients with PDAC on final pathology. The average time between biopsies was 463 minutes (7.5 hours). 13 patients (54%) recurred with an average time to recurrence of 153 days (~5 months). Recurrences were 23% local and 46% intrahepatic. 61% of these patients had rrPDAC and 26% of those patients underwent neoadjuvant chemotherapy. OPTR samples from rrPDAC patients showed upregulation of distinct transcriptional signatures for NETosis (CST6, HMGB1), escape from dormancy (KRT14), and immune evasion (MUC21, S100A2). CycIF showed active neutrophil upregulation near dormant cancer cells within pancreatic tissue from rrPDAC patients. GSEA found established NET gene signatures in post-operative patients with, NES = 1.73 ($p < 0.001$, FDR < 0.001) and several signatures were upregulated in closing biopsies compared to opening biopsies. RNA sequencing deconvolution showed an increased relative fraction of hepatic neutrophils in closing biopsies compared to open. **CONCLUSIONS:** These data have demonstrated how surgical stress may impact the tumor microenvironment and prime the dissemination of occult metastatic cancer cells via upregulation of gene signatures associated with NETosis, dormancy escape, and immune evasion. This preliminary mechanistic evidence allows for further investigation into the connection between surgically-induced NET formation and rrPDAC.

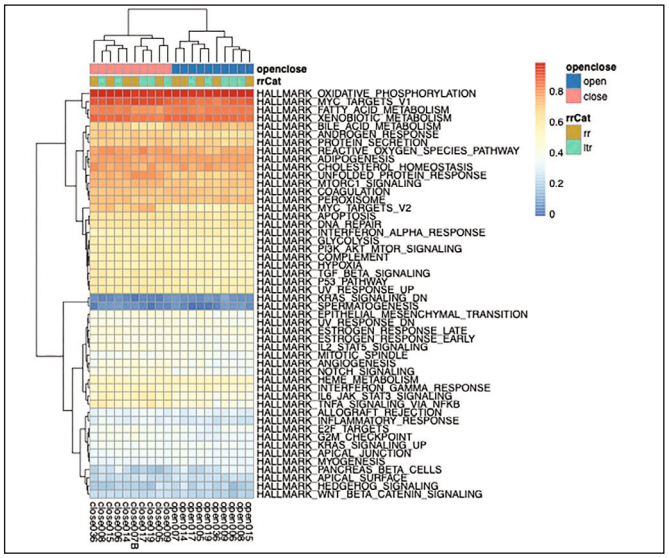

Figure. GSEA Opening and Closing Biopsy Results

EP150

Defining disparities in melanoma: an updated analysis of adoption rates of melanoma treatment guidelines in urban vs rural patient populations

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INTRODUCTION: Rural patients with melanoma have been shown to have a decreased likelihood of receiving standard of care treatment including sentinel lymph node biopsy (SLNB) for early-stage melanoma and immunotherapy for advanced stage disease. This likely contributes to increased melanoma-specific mortality for rural patients. As melanoma treatment guidelines have evolved rapidly in the recent past, we sought to compare adoption of new melanoma guidelines between rural and urban settings. **METHODS:** We reviewed data from the National Cancer Database (NCDB) from 2012-2022. Urban patients were defined as coming from counties with populations over 20,000 or adjacent to a metropolitan area. Rural patients were defined as coming from counties with populations under 20,000 and not adjacent to a metro area. Rates of SLNB for clinical stage IB/II and regional nodal dissection for pathologic stage III were evaluated from 2012-2022. The rates of adjuvant immunotherapy in both pathologic IIIB-IVC and high-risk stage IIB/IIC were evaluated from 2016-2022. **RESULTS:** The use of SLNB for clinical stage IB/II melanoma increased over time in both groups (Fig 1A; both $p < 0.0001$). From 2012-2019 there was no significant difference in the rate of SLNB procedure performed in urban populations compared to rural ($p > 0.05$). However, from 2019-2022, there is a statistically significant increased rate of SLNB in urban populations compared to rural (OR 1.14: 95% CI [1.03 – 1.26]; p=0.01). Conversely, decreases in regional nodal dissection for pathologic stage III were observed in each group across time (Fig 1B; both $p < 0.0001$). There was no statistical difference in the rate of nodal dissections between urban and rural populations ($p > 0.05$). Rates of adjuvant immunotherapy for stage IIIB/IVc (Fig 1C), as well as stage IIB/IIC (Fig 1D) melanoma increased across time (both $p < .0001$), but again no significant differences in the rates of use between urban and rural patients were seen ($p > .05$). **CONCLUSIONS:** In contrast to prior reports of care, this analysis of the most contemporary data available from a large national cancer database demonstrates no difference between urban and rural adoption of updated guideline-based care in melanoma. This suggests that factors beyond population density contribute to the worse outcomes seen in rural patients.

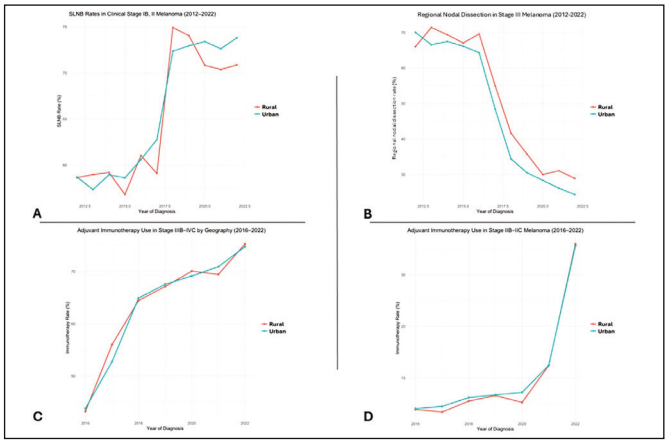

Figure. A) Rates of SLNB B) Rates of axillary dissection C) Rates of adjuvant immunotherapy in IIIC/IVB D) Rates of adjuvant immunotherapy in high risk stage II

EP151

Prevalence and Risk Factors for Failure to Rescue after Cytoreductive Surgery: A US HIPEC Collaborative Study

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INTRODUCTION: Cytoreductive surgery (CRS) with or without hyperthermic intraperitoneal chemotherapy (HIPEC) carries significant morbidity for patients with peritoneal surface malignancies even at high volume centers. Failure to rescue (FTR) is an important hospital quality metric, but the prevalence and associated risk factors for developing FTR in patients who undergo this procedure are poorly understood. **METHODS:** Patients who underwent CRS with or without HIPEC between 2000-2017 at 12 US-based, high-volume centers were identified from the US HIPEC Collaborative database. FTR was defined as in-hospital mortality following a major complication (Clavien-Dindo grade ≥3). Multivariable Firth logistic regression was used to identify demographic, perioperative, and postoperative predictors of FTR. **RESULTS:** Among 2,358 patients who underwent CRS-HIPEC, 1,328 (56.3%) experienced at least one postoperative complication, 443 (33.4%) of which were considered major. FTR occurred in 22 of these patients (5.0%) at a median time to death of 24 days (IQR [9, 44]). Patients with FTR were older (64 yrs IQR [55, 69] vs. 55 yrs IQR [48, 64], p=0.006), symptomatic at time of surgery (77.3% vs 55.0%, p=0.047) and more likely to have experienced cardiac arrest (30% vs 1.4%, p< 0.001), anastomotic leak (40% vs 16%, p=0.011), or a major respiratory complication (including unplanned intubation, and/or ventilator dependence >48hrs) (59.1% vs 12.6% p< 0.001) after surgery. There were no differences in race, BMI, baseline ECOG performance status, ASA class, primary disease histology, preoperative albumin level, operative time, estimated blood loss, PCI score, or cytoreduction score (p >0.05 for all). On multivariable analysis, increasing age (OR 1.06, 95%CI [1.06, 1.13], p=0.027), major respiratory complications (OR 4.41, 95%CI [1.50, 12.94], p=0.007), and cardiac arrest (OR 14.1, 95% CI [3.01, 65.87], p=0.001) were significant predictors of FTR. **CONCLUSIONS:** Failure to rescue occurs in approximately 1:20 patients who suffer a major complication after undergoing CRS+/-HIPEC even at high volume centers, yet few perioperative risk factors were identified in this large multicenter study. Research efforts to identify and mitigate FTR among at-risk patients undergoing CRS +/- HIPEC are urgently needed.

EP152

Prognostic Impact of Metastatic Site in Small Bowel Neuroendocrine Tumors

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INTRODUCTION: Small bowel neuroendocrine tumors (SBNETs) frequently present with distant metastases, yet the impact of metastatic site on survival remains poorly understood. There is currently no consensus on management strategies based on metastatic site, in part because it is unclear which sites most strongly influence patient outcomes. This study aims to evaluate the association between metastatic site and overall survival in SBNETs. **METHODS:** Patients diagnosed with SBNETs between 2004 - 2021 were identified from the National Cancer Database (NCDB). Patients were stratified according to metastatic site: no metastasis (NM), liver only metastasis (LM), lung only (LuM), bone only (BM), brain only (BrM), and distant lymph node only (dLN). Overall survival (OS) was estimated using Kaplan–Meier analysis and compared across metastatic sites. Subgroup analysis was performed by tumor differentiation (well vs. poorly differentiated). **RESULTS:** A total of 46,248 patients were included: 38,939 had NM, 6,838 had LM, 273 had dLN, 109 had BM, 79 had LuM, and 10 had BrM. Overall survival (OS) differed significantly by metastatic site ($p < 0.001$). Median OS was 161.8 months in NM, 114.3 months in LM, 69.5 months in BM, 54.3 months in LuM, 29.8 months in BrM, and was not reached in dLN. When stratified by tumor differentiation, well-differentiated tumors demonstrated markedly longer OS across all metastatic patterns. In well-differentiated SBNETs, median OS was 164.0 months (NM), 128.4 months (LM), 81.6 months (LuM), 29.8 months (BrM), and was not reached in dLN and BM groups. In contrast, among poorly differentiated SBNETs, survival was substantially worse. Due to limited sample size, analysis was restricted to NM and LM cohorts, with median OS of 42.8 months and 12.8 months, respectively. **CONCLUSIONS:** For patients with SBNETs, the site of metastasis is a significant determinant of OS. Among patients with metastatic disease, those with LM or dLN metastases experience the most favorable survival outcomes, followed by BM, while LuM and BrM are associated with the poorest prognosis. Tumor differentiation remains a powerful prognostic factor, with poorly differentiated tumors demonstrating significantly worse survival compared to well-differentiated tumors, even in non-metastatic patients. These findings emphasize the need to consider metastatic site in addition to tumor differentiation when risk stratifying patients and guiding management decisions.

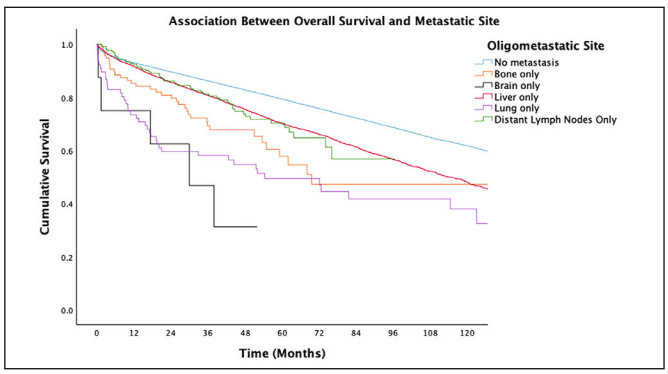

Figure. Survival Curve Showing the Association between Overall Survival and Metastatic Site in Small Bowel Neuroendocrine Tumors

EP153

Navigation, Survivorship, and Caregiving in Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy (CRS/HIPEC): A Thematic Analysis of Reddit Discussions

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INTRODUCTION: Patients undergoing cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) connect across different cancer types to advocate for their needs. Many seek support and information through Reddit, an anonymous online platform. We analyzed the content and communication patterns of Reddit discussions, which are often unknown to healthcare providers. **METHODS:** We conducted a qualitative analysis of open-access, anonymous CRS/HIPEC-related narratives on Reddit.com. Threads containing "CRS/HIPEC" or related terms were extracted (6/2012-6/2025) using the RedditExtractoR package (R/Rsudio). We analyzed transcripts from original posts (OPs), associated comments, and relevant metadata (posting date, comment count, and specific "subreddit" forum). For each OP, we identified the tumor site and user roles. A joint team of healthcare professionals and cancer survivors analyzed transcripts through iterative coding and theming using ATLAS.ti. **RESULTS:** Of 232 identified threads, the median comment count per OP was 9 (IQR: 5–17). OP volume increased over 13 years, with 33.2% (n=77) posted in 6/2024–6/2025. OPs were authored by patients/survivors (55.2%, n=128), spouses/partners (23.7%, n=55), children (10.8%, n=25), other caregivers (7.8%, n=18), and healthcare providers (2.6%, n=6). Primary tumors included colorectal (39.2%, n=91), appendix (20.7%, n=48), ovarian (9.1%, n=21), peritoneal mesothelioma (4.7%, n=11), gastric (4.3%, n=10), and other/unspecified (16.0%, n=37). OPs appeared primarily in general cancer (41.8%, n=97) or tumor-specific (33.2%, n=77) subreddits. We identified 5 communication patterns: sharing, asking, advising, relating, and supportive encouragement. Overall, 140 codes, grouped into 14 subthemes and 4 themes, were developed. The most frequent codes (40/237 coded quotations) addressed systemic treatments. Themes included (1) CRS/HIPEC Navigation, (2) CRS/HIPEC & Other Treatment Experience, (3) End-of-Life Planning, and (4) Caregiving (Figure 1). Users expressed varying attitudes toward CRS/HIPEC, particularly regarding its impact on survival and recovery. **CONCLUSIONS:** CRS/HIPEC discussions on Reddit are increasing, but fragmented across multiple subreddits. The platform facilitates exchanging navigational, survivorship, and caregiving experiences, which may not be addressed by healthcare providers or common information sources. A dedicated CRS/HIPEC subreddit could strengthen information exchange and community support.

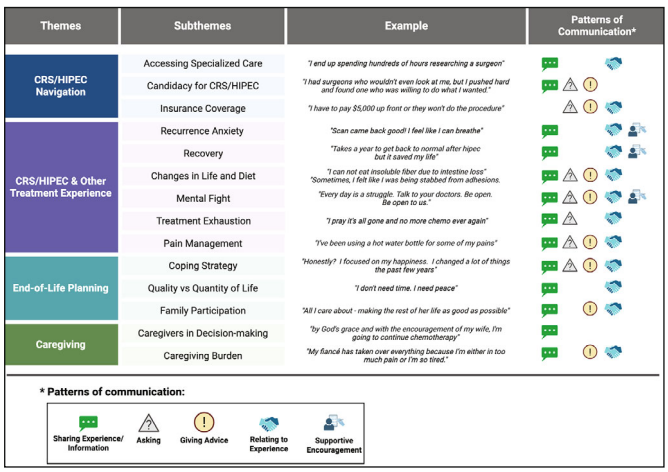

Figure 1. Thematic analysis of CRS/HIPEC-related discussions on Reddit

EP154

Integrating Molecular Profiling to Refine Prognostication and Treatment Sequence in Early-Onset Colorectal Cancer Peritoneal Metastasis Treated with Cytoreduction and Intraperitoneal Chemotherapy

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INTRODUCTION: Colorectal cancer (CRC) with peritoneal metastasis (PM) represents a biologically heterogeneous entity, with early-onset cases (< 50 years) demonstrating a higher prevalence of pathogenic germline variants. Cytoreductive surgery (CRS) combined with intraperitoneal chemotherapy (HIPEC) remains the standard of care for selected patients with CRPM, yet outcomes are highly variable, and recurrence rates remain substantial. Comprehensive analysis of genetic alterations in early-onset CRPM patients undergoing CRS-HIPEC is essential to refine prognostication, optimize patient selection, and guide the development of personalized therapeutic approaches. **METHODS:** A retrospective study was performed at a high-volume institution including patients with early onset CRPM (< 50 yrs) undergoing CRS-HIPEC between 2001 and 2025. Next-generation sequencing (NGS) was performed to identify key colorectal cancer driving genes. Associations between molecular alterations and tumor clinicopathological features, response to neoadjuvant chemotherapy, peritoneal cancer index (PCI), completeness of cytoreduction, disease progression and site of progression, and overall survival was evaluated. **RESULTS:** A total of 188 patients with early-onset CRPM who underwent CRS-HIPEC were identified. KRAS-mutant tumors were more frequently associated with moderately and well-differentiated histology and were less likely to exhibit signet ring cell features. TP53-mutant tumors were more commonly associated with non-mucinous histology. PCI and CC scores did not differ across molecular subgroups. Regarding response to neoadjuvant chemotherapy, only KRAS-mutant tumors were more likely to demonstrate disease progression during therapy compared to KRAS wild-type tumors. This finding was consistent with rising tumor markers following neoadjuvant therapy and radiographic evidence of progression. KRAS-mutant cancers were also associated with higher overall rates of disease progression compared to other molecular alterations. No specific molecular alteration was significantly associated with overall survival; however, KRAS-mutant tumors demonstrated reduced progression-survival when compared to KRAS wild-type tumors (31.9 months vs. 35.6 months, p=0.04). **CONCLUSIONS:** The results of this study underscore the heterogeneity of genetic alterations in early-onset CRPM and their relevance for risk stratification and therapeutic decision-making in the context of CRS-HIPEC.

EP155

Radiographic Response in Patients Treated with Hepatic Artery Infusion Placement

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INTRODUCTION: Hepatic artery infusion pump (HAIP) chemotherapy delivers high-dose floxuridine, improving hepatic progression-free survival and overall survival in patients with unresectable colorectal liver metastases (CRLM) and intrahepatic cholangiocarcinoma (iCCA). In the present study, we evaluated radiologic response in patients undergoing HAIP therapy. **METHODS:** All consecutive patients undergoing HAIP placement between April 2022 and September 2025 were analyzed. Radiographic response was assessed per RECIST 1.1 at 3-, 6-, 9-, and 12-month intervals on contrast-enhanced CT or MRI as indicated. Partial response (PR) was defined as ≥30% decrease in target lesion diameters, progressive disease (PD) as ≥20% increase or appearance of new lesions, and stable disease as changes insufficient for PR or PD. Imaging studies were analyzed by fully trained radiologists. Seventy percent of patients remained on concurrent systemic chemotherapy while receiving HAIP therapy. **RESULTS:** Forty patients, who underwent HAIP for CRLM (90%) and iCCA (10%), were included in the final analysis. At 3 months, 20% of patients demonstrated PR, 45% had stable disease, and 35% showed PD. By 6 months, the rate of PR remained unchanged at 20%, while stable disease decreased to 38% and PD increased to 42%. At 9 months, PR rose slightly to 25%, stable disease decreased to 5% and PD rose to 70%. Overall, PD became more common over time, while PR remained low and relatively stable. Stable disease fluctuated modestly across timepoints. **CONCLUSIONS:** HAIP therapy provided early radiographic disease control, with 65% of patients achieving PR or stable disease at 3 months. However, PD increased over time, reaching 70% by 9 months. Partial responses remained low (20–25%), and stable disease was not durable. These findings indicate that HAIP offers short-term control but limited sustained radiologic benefit, underscoring the need for strategies to prolong response such as alternative chemotherapy agents.

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Clinical and survival differences in young-onset vs late-onset small intestine cancer

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INTRODUCTION: The incidence of small intestine cancers (SIC) among young patients is increasing. There is limited data for SIC comparing age groups. The aim of this study is to evaluate characteristics of this cancer in early age onset (EOSIC) compared to late age onset (LOSIC). **METHODS:** A retrospective analysis of data from the National Cancer Database (NCDB) from 2010–2017 was done. SIC patients were stratified by EOSIC (< 50 years) and LOSIC (≥50 years) groups. Descriptive statistics were used to compare demographic and clinical variables; continuous variables were analyzed using the Wilcoxon rank-sum test, and categorical variables using chi-square tests. Vital status and short-term mortality outcomes were assessed at 30- and 90-days post-treatment. Statistical significance was defined as $p < 0.05$. **RESULTS:** Among 5,804 patients with small intestine cancer, 987 (17%) had EOSIC (< 50 years). The EOSIC patient group had more females (52.8% vs 49.2%, $p = 0.04$), a higher private insurance rate (69.2% vs 34.6%, $p < 0.0001$), and higher median income levels ($p = 0.037$). Compared to LOSIC patients, EOSIC patients had fewer comorbidities (Charlson-Deyo 0: 79.6% vs 67.6%, $p < 0.0001$). Clinical stage distribution was similar between groups ($p = 0.23$), with most patients in both cohorts presenting at stage I (81.9% < 50 vs 84.1% ≥50), EOSIC patients had more well-differentiated tumors (50.3% vs 47.0%, $p < 0.0001$), while LOSIC patients had more moderately or poorly differentiated tumors (15.8% and 6.5%, respectively). EOSIC had higher primary-site resection rates (89.2% vs 79.6%, $p < 0.0001$) and overall surgical treatment (89.6% vs 80.1%, $p < 0.0001$). Minimally invasive approaches were more common in EOSIC patients (37.9% vs 33.1%, $p < 0.001$), and they had more chemotherapy use (17.7% vs 13.3%, $p = 0.001$). LOSIC patients had more open procedures (41.54% vs 37.8, $p < 0.0001$). EOSIC patients were more likely to have lymph node evaluation (42.7% vs 33.8%, $p < 0.0001$) and node-positive disease (16.0% vs 12.6%, $p < 0.0001$) compared with LOSIC. They also demonstrated higher rates of complete (R0) resection (74.5% vs 64.4%, $p < 0.0001$). EOSIC patients had lower 30-day (0.23% vs 1.91%, $p = 0.001$) and 90-day mortality (0.69% vs 3.49%, $p < 0.0001$). Survival outcomes at last follow-up favored EOSIC patients (alive 89.3% vs 61.7%, $p < 0.0001$). **CONCLUSIONS:** EOSIC patients had better short- and long-term survival than LOSIC, likely due to more favorable sociodemographic factors, tumor characteristics, and more aggressive treatment strategies. These findings underscore the importance of age-specific considerations in the management of small intestine cancer.

Table. Descriptive Characteristics of Small Intestine Cancer Patients by Age Group.

Variable	Early-Onset < 50 yrs n = 987 (%) / Median [IQR]	Late-Onset ≥ 50 yrs n = 4,817 (%) / Median [IQR]	*p*-value
Continuous variables			
Age (years)	44 [39 – 47]	64 [57 – 68]	< .0001
Crowfly distance (miles)	22.5 [11 – 33.5]	18.0 [8.5 – 26.5]	0.3464
Post-op length of stay (days)	7 [5 – 10]	7 [5 – 9]	0.6407
Categorical variables			
Sex			0.0413
Male	466 (47.21)	2,446 (50.78)	
Female	521 (52.79)	2,371 (49.22)	
Race / Ethnicity			0.0514
Non-Hispanic White	662 (67.07)	3,442 (71.46)	
Non-Hispanic Black	191 (19.35)	812 (16.86)	
Hispanic White	56 (5.67)	245 (5.09)	
Other / Unknown	78 (7.90)	318 (6.60)	
Charlson–Deyo Comorbidity Score			< .0001
0 (score 0)	786 (79.64)	3,257 (67.61)	
1 (score 1)	162 (16.41)	1,046 (21.71)	
2 (score 2)	24 (2.43)	345 (7.16)	
> 2 (score > 2)	15 (1.52)	169 (3.51)	
Insurance Status			< .0001
Not insured / unknown	80 (8.11)	190 (3.94)	
Private insurance	683 (69.20)	1,667 (34.61)	
Medicaid	113 (11.45)	192 (3.99)	
Medicare / Other govt	111 (11.25)	2,768 (57.46)	
No High-School Education			0.8537
≥ 29 %	182 (21.14)	894 (21.13)	
20–28.9 %	238 (27.64)	1,139 (26.93)	
14–19.9 %	246 (28.57)	1,182 (27.94)	
< 14 %	195 (22.65)	1,015 (24.00)	
Median Income Quartile			0.0366
< $30,000	86 (10.24)	549 (13.25)	
$30–34,999	169 (20.12)	717 (17.31)	
$35–45,999	225 (26.79)	1,148 (27.71)	
≥ $46,000	360 (42.86)	1,729 (41.73)	
Grade			0.0002
Well differentiated	496 (50.25)	2,266 (47.04)	
Moderately differentiated	130 (13.17)	762 (15.82)	
Poorly / de-differentiated	32 (3.24)	314 (6.52)	
Undifferentiated / anaplastic	6 (0.61)	27 (0.56)	
Unknown	323 (32.73)	1,448 (30.06)	
TNM Clinical Stage			0.2267
Stage I	808 (81.86)	4,050 (84.08)	
Stage II	119 (12.06)	480 (9.96)	
Stage III	24 (2.43)	127 (2.64)	
Stage IV	36 (3.65)	160 (3.32)	
UR_CD_13			0.3465
Metropolitan	834 (87.42)	4,016 (86.57)	

(Table continued)

Urban	106 (11.11)	573 (12.35)	
Rural	14 (1.47)	50 (1.08)	
Surgical Approach at Facility			< .0001
No surgery of primary site	142 (14.39)	1,186 (24.62)	
Robotic assisted	20 (2.03)	75 (1.56)	
Robotic → Open	3 (0.30)	11 (0.23)	
Minimally invasive	374 (37.89)	1,595 (33.11)	
Converted to open	36 (3.65)	125 (2.59)	
Open / unspecified	410 (41.54)	1,819 (37.76)	
Unknown	2 (0.20)	6 (0.12)	
Primary-Site Surgery Performed			< .0001
No surgery to primary site	102 (10.33)	967 (20.07)	
Surgery to primary site	880 (89.16)	3,834 (79.59)	
Unknown	5 (0.51)	16 (0.33)	
Chemotherapy			0.0013
Negative	791 (80.14)	4,062 (84.33)	
Positive	175 (17.73)	641 (13.31)	
Unknown	21 (2.13)	114 (2.37)	
Immunotherapy			0.8337
Negative	983 (99.59)	4,801 (99.67)	
Positive	2 (0.20)	10 (0.21)	
Unknown	2 (0.20)	6 (0.12)	
30-Day Readmission			0.8097
No readmission	939 (95.14)	4,588 (95.25)	
Readmission ≤ 30 days	29 (2.94)	141 (2.93)	
Planned readmission	9 (0.91)	51 (1.06)	
Planned & unplanned readmission	1 (0.10)	8 (0.17)	
Unknown	9 (0.91)	29 (0.60)	
30-Day Mortality			0.0011
Alive / > 30 days	862 (98.74)	3,712 (97.35)	
Died ≤ 30 days	2 (0.23)	73 (1.91)	
Alive < 30 days	9 (1.03)	28 (0.73)	
90-Day Mortality			< .0001
Alive / > 90 days	853 (97.71)	3,639 (95.44)	
Died ≤ 90 days	6 (0.69)	133 (3.49)	
Alive < 90 days	14 (1.60)	41 (1.08)	
Reason for No Surgery			< .0001
Surgery performed	880 (89.61)	3,834 (80.06)	
No surgery performed	102 (10.39)	955 (19.94)	
Vital Status at Last Follow-Up			< .0001
Alive	881 (89.26)	2,972 (61.70)	
Deceased	106 (10.74)	1,845 (38.30)	

EP157

Facility type and racial disparities in the deimplementation of axillary lymph node dissection for early-stage breast cancer following Z0011

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INTRODUCTION: ACOSOG Z0011 supported omission of axillary lymph node dissection (ALND) in select early-stage breast cancers with limited sentinel node metastasis. We examined national patterns after Z0011, focusing on disparities in the deimplementation of ALND by facility type and race/ethnicity. **METHODS:** We performed a retrospective cohort study using the National Cancer Database. We included women aged ≥40 with invasive breast cancer diagnosed 2011–2020, 1 to 5 positive nodes, and recorded axillary surgery. Multivariable logistic regression estimated adjusted odds ratios (aOR) for ALND by facility type, race/ethnicity, year, tumor size, nodal burden, age, comorbidity, grade, income quartile, and hormone receptor status. Cox regression evaluated three-year overall survival (OS) by axillary surgery type, with a sensitivity analysis including stage. A Z0011-eligible subset was defined as tumor ≤5 cm, 1 to 2 positive nodes, breast-conserving therapy, whole-breast radiation, and hormone receptor positivity. **RESULTS:** Among the analytic cohort of 286,825 patients, 41.8% underwent sentinel lymph node biopsy (SLNB) alone and 58.2% underwent ALND. Compared with community programs, integrated network (aOR 0.69, 95% CI 0.68–0.70, p< 0.001), academic/research (aOR 0.76, 95% CI 0.74–0.77, p< 0.001), and comprehensive community programs (aOR 0.80, 95% CI 0.78–0.81, p< 0.001) had lower odds of ALND. Non-Hispanic Black (NHB) (aOR 1.19, 95% CI 1.17–1.20, p< 0.001) and Hispanic patients (aOR 1.27, 95% CI 1.25–1.29, p< 0.001) had higher odds of ALND compared to Non-Hispanic White (NHW) patients. Patients from lower-income zip codes had higher odds of ALND (< $46,277 vs ≥$74,062: aOR 1.22, 95% CI 1.18–1.25, p< 0.001). These findings remained significant after adjustment for analytic stage. In the Z0011-eligible subset (n=83,354), 67.3% underwent SLNB alone and 32.7% underwent ALND. NHB (aOR 1.32, 95% CI 1.26–1.38, p< 0.001) and Hispanic patients (aOR 1.33, 95% CI 1.24–1.42, p< 0.001) remained more likely to receive ALND, while integrated network (aOR 0.76, 95% CI 0.74–0.79, p< 0.001), academic/research (aOR 0.75, 95% CI 0.73–0.78, p< 0.001), and comprehensive community programs (aOR 0.83, 95% CI 0.80–0.85, p< 0.001) had lower odds. **CONCLUSIONS:** After Z0011, ALND deimplementation progressed but varied by facility type, race/ethnicity, and neighborhood income. Community programs and patients who are NHB, Hispanic, or from lower-income areas were more likely to receive ALND despite eligibility for SLNB alone, suggesting potential gaps in guideline adherence.

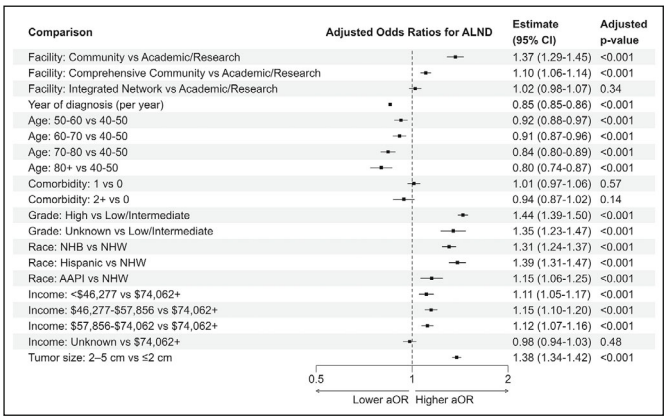

Figure. Predictors of ALND (vs SLNB) in Z0011-eligible Patients

EP158

Clinical Understaging in Early Gastric Cancer: A Common and Significant Problem

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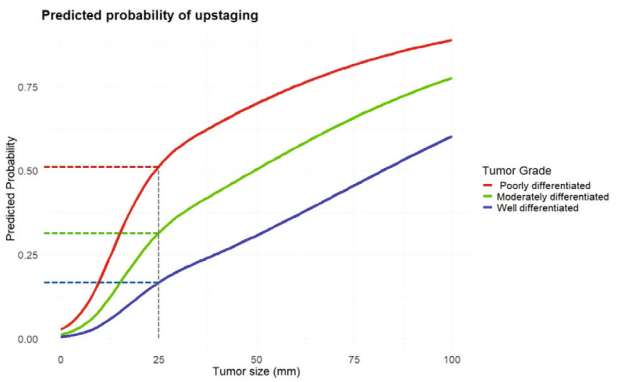
INTRODUCTION: A portion of clinical stage I gastric cancer (GC) patients who undergo upfront surgery are understaged preoperatively and found to be higher stage based on final pathology, which can affect the treatment algorithm and GC outcomes. We sought to identify the incidence of understaging in this cohort and variables associated with increased risk of being understaged.

METHODS: Patients with clinical stage I (T1/2 N0) GC undergoing oncologic resection without neoadjuvant therapy from 2013-2020 were identified in the National Cancer Database (NCDB). Clinicopathologic predictors of understaging were identified using multivariable logistic regression. The relationship between identified variables and understaging was then modeled using logistic regression with natural cubic splines to allow for a flexible, nonlinear analysis. Cox proportional hazards analysis and Kaplan-Meier curves evaluated survival outcomes. **RESULTS:** 4,370 clinical stage I GC patients were identified, of which 36.0% were initially understaged on clinical staging. Tumor size (per millimeter increase OR: 1.05, 95% CI 1.04-1.05, p< 0.001), higher grade (moderate: OR 2.76, 95% CI 1.99-3.84; poor/anaplastic OR: 5.99, 95% CI 1.99-3.84, p< 0.001), and non-academic treatment facilities (OR 1.19, 95% CI 1.03-1.38, p=0.017) were associated with increased risk of understaging. Spline analysis showed increased risk of understaging based on tumor size. This was compounded when tumor differentiation was considered, such that a tumor measuring 2.5cm was associated with 16.9%, 31.8%, or 51.6% likelihood of clinical understaging if the tumor was well, moderate, or poorly differentiated, respectively. Understaging was associated with increased mortality (OR 2.31, 95% CI 2.10-2.95, p< 0.001). **CONCLUSIONS:** More than a third of patients with clinical stage I GC are understaged and found to have higher stage on final pathology. Early GC with higher grade and larger size are at risk of being understaged using existing components (T-tumor depth, N-lymph node, M-metastasis) to determine clinical stage. Tumor grade and size should be considered on pre-operative evaluation of early GC to improve identification of patients at risk for understaging.



Tumor Size (cm)	Probability of upstaging		
	Well-differentiated	Moderately-differentiated	Poorly-differentiated
1.0	4.0%	8.7%	17.9%
2.0	12.7%	25.1%	43.4%
3.0	20.3%	36.8%	57.1%
4.0	25.5%	43.9%	64.2%
5.0	30.7%	50.4%	69.9%
6.0	36.3%	56.6%	74.9%
7.0	42.4%	62.7%	79.4%
8.0	48.5%	68.3%	83.2%
9.0	54.5%	73.3%	86.3%
10.0	60.2%	77.6%	88.8%

Figure. Predicted probability of upstaging

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Genetic biomarkers of preoperative radiation treatment efficacy for pancreatic ductal adenocarcinoma

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INTRODUCTION: Preoperative radiation therapy (RT) after induction chemotherapy for localized pancreatic ductal adenocarcinoma (PDAC) is controversial; administering RT is associated with increased rates of margin-negative resection but also worse survival. Multimodality therapy incorporating RT may benefit from enhanced patient selection using comprehensive molecular profiling to identify clinical and molecular heterogeneity. **METHODS:** A retrospective cohort study was conducted of 226 patients at five centers with localized PDAC who received neoadjuvant FOLFIRINOX or gemcitabine/nab-paclitaxel and underwent curative intent resection (2010-2024). Alterations in driver (KRAS, TP53, CDK2NA, SMAD4) and homologous recombination deficiency (HRD) genes were assessed by targeted next-generation sequencing of pre-treatment tumor tissue. Association of genomic alterations with major pathologic response (MPR), defined as < 10% viable cells in the primary tumor after neoadjuvant therapy, was assessed using Fischer's exact test and Firth's penalized logistic regression controlling for patient (age, sex) and tumor (location, resectability) characteristics, and receipt of chemotherapy and RT. Inverse probability treatment weighting adjusted for each patient's propensity to receive RT. **RESULTS:** Of 226 patients, 170 received neoadjuvant chemotherapy alone, and 56 received neoadjuvant chemotherapy followed by RT. Overall, 21 (9.3%) experienced MPR with the rate being higher after RT (16.1% vs. 7.1%). Adjusted odds of MPR were significantly higher with RT in multivariable analysis (aOR 3.60, 95%CI 1.27-10.66, p=0.015). Rates of alterations in driver genes or HRD genes did not significantly differ among patients with or without an MPR; adjusted odds of MPR were not significant for alterations in driver genes or alterations in HRD genes in multivariable analysis (Figure 1). **CONCLUSIONS:** The use of neoadjuvant RT following induction systemic chemotherapy was associated with greater rates of major pathologic response. However, such responses were independent of alterations in driver or HRD genes. Alternate biomarkers or genomic signatures are needed to optimize treatment selection.

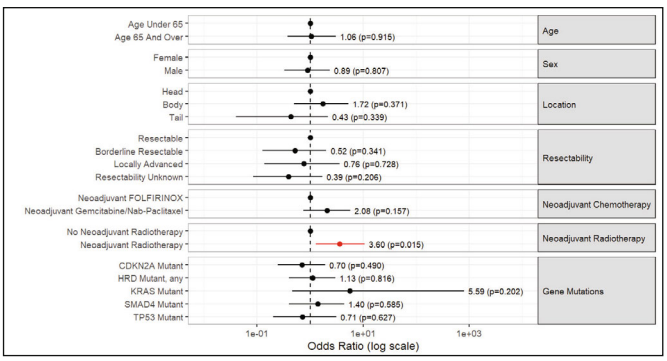

Figure. Adjusted Odds Ratios for Major Pathologic Response from Multivariable Logistic Regression

EP160

Time to Pump the Brakes? A Natural Experiment Revealing the Variability of Propellant-Driven Hepatic Arterial Infusion (HAI) Flow Rates as a Potential Source of Biliary Toxicity

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INTRODUCTION: Surgically implanted HAI pumps have been used for >40 years beginning with a propellant-driven pump chemotherapy delivery

system. Persistent concerns with treatment ending biliary toxicity have hampered widespread adoption of HAI liver-directed therapy. We report on the variability in the flow rate of the historical propellant-driven pump compared to battery-driven HAI models by way of a natural experiment resulting from the abrupt discontinuation of a propellant pump in 2018. **METHODS:** We prospectively collected data in patients treated with HAI at a single cancer center using a propellant- or a battery-driven pump. We compared clinicopathologic data including the type of malignancy treated, patient's home elevation (feet), difference (mL) of intended versus actual HAI dose, and treatment modifications from biliary toxicity. **RESULTS:** From 2019-25, we treated 20 patients with unresectable colorectal liver metastases and 20 patients with intrahepatic cholangiocarcinoma on a floxuridine dose-reduced protocol (propellant: n=10 and battery: n=10 for each cancer). The median age was 54 years (range 32-76), with 53% female (n=21), and patient's home elevation ranging 20 to 4229 feet. The battery pump was programmed at 1.0 mL/day in all 20 patients whereas 65% (n=13) with a propellant-driven pump had an intended flow of 1.3 mL/day and 35% with 1.2 mL/day. The mean number of HAI floxuridine cycles for battery pumps was 9.4 (range 2-26) and 9.2 (2-20) for propellant pumps. The mean difference between programmed and actual flow was 3.6% (SD 2.0) for battery and 16.1% (SD 9.5) for propellant pumps (P< 0.0001) (FIGURE). Of 290 HAI cycles delivered in the cohort, treatment in which patients received >10% of the intended dose occurred in 47% in propellant pumps compared to 7% for battery pumps (P< 0.0001). At 6 months of HAI floxuridine treatment, 70% of patients with propellant pumps had dose holds related to biliary toxicity compared to 40% in battery pumps (P=0.059). Patients with propellant-driven HAI pumps had a flow rate variation in delivery ranging from 64 to 146% of the intended dose versus delivery of 93 to 125% of intended dose for patients with battery pumps. **CONCLUSIONS:** Treatment with propellant-driven HAI pumps is inconsistent, with more than four times the variability in the intended dose to be delivered compared to battery-driven devices. The historical unpredictable toxicity of HAI floxuridine-based therapy may be related to the significant flow variability of propellant-driven HAI pumps.

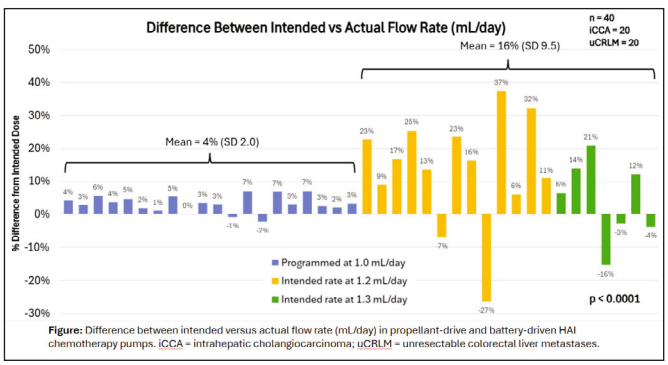

Figure. Difference between actual vs intended flow rate between propellant-based and battery-driven HAI pumps

EP161

Multimodal Artificial Intelligence to Predict Surgical Margins After Resection of Pancreatic Cancer

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INTRODUCTION: Negative surgical margins are associated with optimal outcomes in pancreatic ductal adenocarcinoma (PDAC), but preoperative margin prediction remains challenging. The objective of this study was to develop a multimodal artificial intelligence (AI) model to predict resection margin status (R0 vs R1) for patients with PDAC. **METHODS:** Patients undergoing PDAC resection at a tertiary care center from 2015-2022 were reviewed. An analytic pipeline integrating preoperative CT imaging with clinical data was developed. Machine learning was used to model clinical features (XGBoost). Pancreatic anatomy was delineated on contrast-enhanced CT scans and used to train EfficientNet-based convolutional neural network to extract complex visual patterns. Outputs were integrated by decision-level fusion to predict margin status. The dataset was split into 80/20 training-validation sets with 5-fold cross-validation. Model performance was evaluated by area under the receiver operating characteristic curve (AUC), sensitivity, and specificity. **RESULTS:** The cohort included 389 patients undergoing resection (314 head, 75 body/tail), of which 92 (23.7%) had an R1 resection. This included 282 (72.5%) patients with resectable (22.0% R1), 78 (20.1%) with borderline resectable (28.2% R1), and 22 (5.7%) with locally advanced disease (22.7% R1). Clinical features predictive of margin status included neoadjuvant chemotherapy (26.9% R1 versus 22.1% R1 without, P=0.34) and type of resection (24.2% R1 for pancreatoduodenectomy vs 21.3% R1 for distal pancreatectomy, P=0.03). The clinical-only model achieved an AUC of 0.69 (95% CI: 0.55-0.83), sensitivity of 0.50 (95% CI: 0.27-0.75), and specificity of 0.73 (95% CI: 0.62-0.84). The imaging-only model achieved an AUC of 0.59 (95% CI: 0.44-0.74), sensitivity of 0.55 (95% CI: 0.31-0.78), and specificity of 0.71 (95% CI: 0.60-0.83). The multimodal model incorporating imaging and clinical features achieved an AUC 0.70 (95% CI: 0.55-0.84), sensitivity of 0.56 (95% CI: 0.33-0.79) and specificity of 0.78 (95% CI: 0.67-0.88). Model performance was similar between multimodal and clinical-only models (P=0.96). **CONCLUSIONS:** Multimodal AI models integrating imaging and clinical data did not improve prediction of surgical margin status after pancreatectomy compared to clinical-only models. The lack of improvement with AI-based anatomic imaging assessment may reflect non-anatomic drivers of margin positivity. Future multimodal models should focus on biologically informed modeling to improve predictive capacity.

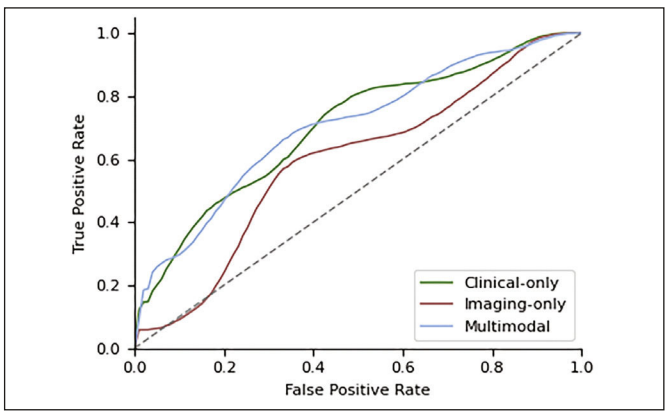

Figure 1. Receiver Operating Curves Comparing Model Performance for Predicting Surgical Margins

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Evaluating borderline resectable criteria as a predictor of surgical completion and survival in pancreatic ductal adenocarcinoma

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INTRODUCTION: Borderline resectable pancreatic ductal adenocarcinoma (BR-PDAC) is a heterogenous diagnosis that encompasses a range of anatomical

variations and disease characteristics. Owing to this heterogeneity, limited evidence exists regarding which features most strongly influence patient outcomes. In this study, we evaluated the hypothesis that specific borderline resectable criteria defined at diagnosis could predict resectability and oncologic outcomes. **METHODS:** All patients diagnosed with BR-PDAC between 2017–2024 at our tertiary care center were retrospectively reviewed. BR criteria were defined according to the 2017 International Consensus definition, which integrates three dimensions: (A) anatomic, defined as limited superior mesenteric vein, portal vein, or arterial involvement permitting reconstruction; (B) biologic, defined as CA19-9 >500 U/mL or suspicious/confirmed nodal disease; and (C) conditional, defined as poor performance status with Eastern Cooperative Oncology Group (ECOG) Performance Status ≥2. Patients who elected hospice care at diagnosis were excluded. Chi-squared/Fisher's exact tests, multivariable logistic regression, and Kaplan–Meier survival analyses were performed. **RESULTS:** Ninety-four patients met inclusion criteria (median age 68 years; 56% male). At diagnosis, 34% had venous involvement, 28% had arterial involvement, 48% had an elevated CA 19-9, 1% had confirmed nodal metastasis, and 20% had ECOG ≥ 2. Overall, 38 patients (40%) ultimately underwent curative-intent surgery, 84% of whom achieved R0 resection. Distribution of BR criteria included BR-A 35 (37.2%), BR-B 21 (22.3%), BR-C 7 (7.5%), BR-AB 19 (20.2%), BR-AC 5 (5.3%), BR-BC 6 (6.4%), and BR-ABC 1 (1.0%). Surgery rates did not differ significantly across these groups (p=0.22). On multivariable regression, only ECOG ≥ 2 predicted reduced odds of surgery (OR 0.23, 95% CI 0.05–0.94). Neither elevated CA19-9 nor venous or arterial involvement was predictive. Five-year survival did not differ by anatomic (p=0.96) or biologic (p=0.30) criteria, but was significantly worse among patients with ECOG ≥ 2 (p< 0.001). **CONCLUSIONS:** Among patients with BR-PDAC, decreased functional status was the only criterion at diagnosis that predicted both surgical completion and survival. These findings emphasize the central role of functional status in surgical selection. Incorporating patient optimization strategies such as structured prehabilitation into the neoadjuvant pathway may improve surgical candidacy and outcomes.

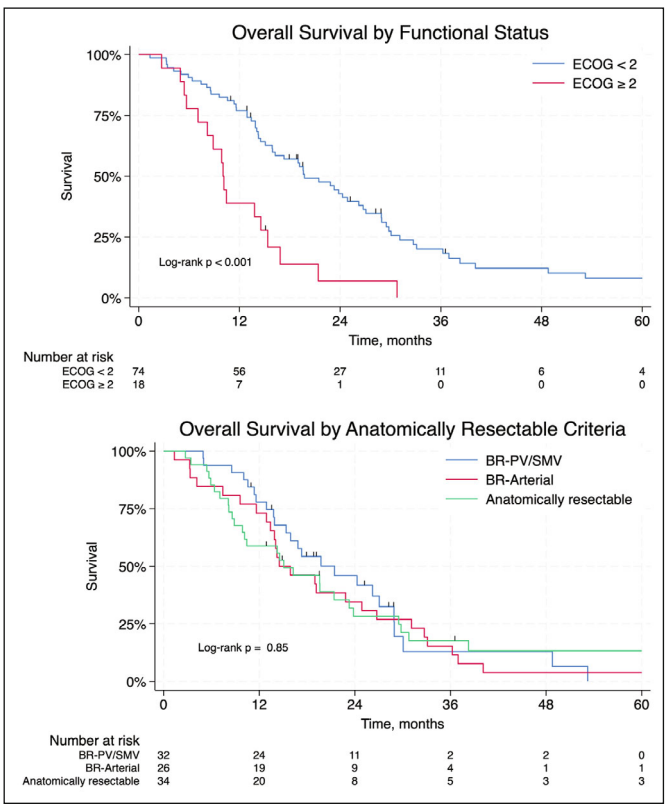

Figure 1. Kaplan-Meier survival curves by conditional status (top) and anatomic criteria (bottom). Poor performance status (ECOG ≥ 2) predicted reduced survival; anatomic subtypes according to the 2017 International Consensus definition were not predictive.

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Durable responses in desmoid patients after treatment with sorafenib

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INTRODUCTION: Non-operative management is the standard of care for desmoid-type fibromatosis (DT), but long-term outcomes after treatment with systemic therapy are not well defined. We evaluated the durability of response after sorafenib. **METHODS:** We retrospectively reviewed 112 DT patients treated with sorafenib between 2006-2023 from a prospectively maintained database. Progression-free survival (PFS) was measured from sorafenib initiation to the first clinical or radiographic progression or DT-related death, with discontinuation due to drug toxicity treated as a competing risk. Cumulative incidence functions (CIFs) were used to estimate progression probability, and Fine-Gray regression assessed risk factors with false discovery rate (FDR) adjustment. **RESULTS:** Sorafenib was first-line therapy in 63 (56%) and subsequent therapy in 49 (44%) patients. Median age was 37 years, 66 (59%) were female, and 81 (72%) had primary tumors before treatment started. DTs were most often located in the extremity (51%) and were predominantly sporadic (91%) rather than associated with familial adenomatous polyposis (FAP) (9%). Clinical or radiographic response occurred in 82 patients (73%). The 1-year cumulative incidence of progression was 17% (95% confidence interval [CI]: 11-25%). Sorafenib was discontinued for progression in 20 (18%) and drug toxicity in 29 (26%) patients. No clinical variables significantly predicted PFS; although FAP-associated DT showed a nonsignificant trend toward increased progression risk (HR=2.85, 95% CI: [1.00, 8.16], FDR-adjusted P-value=0.49). Among 51 patients with stable or responsive disease at the time of sorafenib cessation, median treatment duration was 17.4 months. At one and two years after stopping the drug, 84% (95% CI, 74-95%) and 70% (95% CI, 57-84%) of patients remained on active observation without additional therapy. Median observation to follow-up was 65 months, and only 22 patients required further treatment, including sorafenib rechallenge in 13 patients. **CONCLUSIONS:** Sorafenib therapy is associated with significant rates of clinical benefit in DT patients. After an initial period of treatment and subsequent management with active observation, approximately half of those patients experiencing upfront clinical benefit will have a durable response and require no short-term intervention.

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Artificial Intelligence-Powered Deep Learning Body Volumetrics Outperforms Frailty Indices in Predicting Chemotherapy Completion for Pancreatic Cancer

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INTRODUCTION: Optimal treatment for pancreatic ductal adenocarcinoma (PDAC) includes chemotherapy and surgery, but about 50% of patients fail to complete adjuvant chemotherapy. Traditional frailty indices poorly predict chemotherapy non-completion. Deep learning-based analysis of CT scans provides granular assessment of skeletal muscle and adipose tissue that may better capture physiologic reserve and frailty. We hypothesized that body composition metrics are more strongly associated with chemotherapy completion than conventional frailty indices. **METHODS:** Pre- and post-neoadjuvant chemotherapy (NAT) CT scans from patients undergoing resection

for PDAC were analyzed using Comp2Comp, an automated deep-learning segmentation pipeline (Figure 1A). Skeletal muscle and adipose compartments were quantified and normalized by height to derive indices (skeletal muscle, visceral adipose tissue index [VATI]). Skeletal muscle gauge (SMG) was assessed using sex-specific Youden Index cutoffs. Changes in body composition after NAT were analyzed as continuous variables. Frailty was assessed using the modified 5-item frailty index. Chemotherapy completion was defined as ≥6 months. Multivariable logistic regression, adjusted for age, comorbidity, and pathologic stage, assessed associations between body composition, frailty, and chemotherapy completion. **RESULTS:** Among 78 patients (median age 64.5 years), 36 (46.2%) had low baseline SMG compared to 42 (53.8%) with normal/high baseline SMG. Low SMG patients had higher frailty scores than normal/high SMG patients (45.2% vs 26.1% with frailty score ≥2, p=0.04). Overall chemotherapy completion rate was 50%, with higher completion rates among patients with normal/high SMG (66.7% vs 30.6%, p=0.003). Frailty had an inverse correlation with SMG (Spearman ρ=-0.28, p=0.014, Figure 1B). In multivariable analysis, low baseline SMG, increases in the ΔVATI (OR 0.95, p=0.014), and stage 3 disease (OR 0.08, p=0.047) were associated with not completing chemotherapy (OR 0.27, p=0.029, Figure 1C). Frailty scores were not associated with chemotherapy completion. **CONCLUSIONS:** Low baseline SMG and increased ΔVATI after NAT, but not frailty, were independently associated with chemotherapy non-completion. These findings suggest that objective body composition measures better capture factors influencing treatment tolerance pre- and post-NAT. Validation in larger cohorts is warranted to guide prehabilitation and treatment planning.

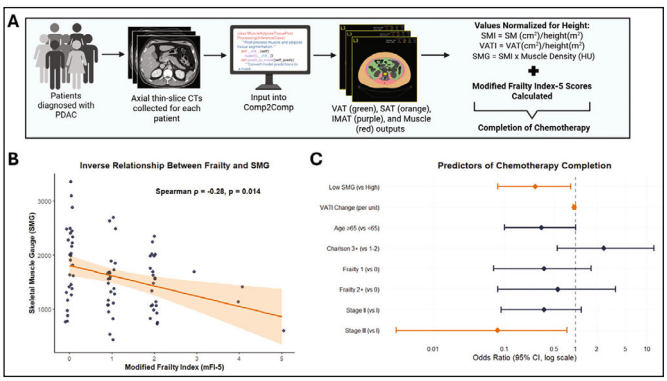

Figure. Association of body composition and frailty with chemotherapy completion in PDAC. (A) Study design of CT-based body composition analysis using Comp2Comp quantified skeletal muscle and adipose tissue compartments. (B) Frailty is inversely correlated with SMG (ρ=-0.28, p=0.014). (C) Forest plot of multivariable logistic regression.

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Manufacturing success rate following tumor harvest for tumor infiltrating lymphocyte therapy from acral and mucosal melanoma subtypes

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INTRODUCTION: Adoptive cell therapy with tumor infiltrating lymphocytes (TIL) is an effective therapeutic strategy for select patients with immune checkpoint inhibitor-resistant advanced melanoma. Conventional wisdom suggests the rare acral and mucosal melanoma subtypes may be inferior for tumor harvest given lower intrinsic levels of TIL within their tumor microenvironment. In this study we evaluated manufacturing standard of care TIL success rates following tumor tissue procurement (TTP) for acral and mucosal melanoma at a high-volume cancer center. **METHODS:** All melanoma patients who underwent TTP between March 2024-July 2025 were included in this study. Patient demographics and tumor harvest details in relation to TIL expansion were evaluated. **RESULTS:** Thirty-eight patients underwent tumor harvest. Median age was 66 years (range, 40-75); 53% were males. Twenty-one (54%) patients had primary non-acral cutaneous melanoma, 6 (16%) mucosal, 4 (11%) acral, and 7 (18%) unknown histology. Twenty-nine (74%) patients had stage 4 disease. Tumor harvest details are shown in Table 1. For all patients the most common location for harvest was the trunk (49%) while the most common site for acral/mucosal was the extremity (50%). The most common tissue type for resection in both the entire cohort and acral/mucosal subtype was lymph node. The median maximal tumor diameter was 3 cm (range, 1.5-5.9 cm). The median time from harvest to TIL infusion was 49 days (range, 45 to 98). Seven (18%) patients had outside of specifications (OOS) TIL product; acral and mucosal melanoma resulted in 1 OOS product (1/10, 10%) while other subtypes resulted in 6 OOS products (6/28, 21%). Five (71.4%) OOS products, including the acral/mucosal patient, were due to low total viable count (TVC) of less than 7.5 x109, one due to LAG3 overexpression, and one for failing potency assay. One patient's initial TIL harvest from a lymph node resulted in OOS product, but second harvest from splenectomy was successful for TIL expansion and infusion. On univariate analysis, age, tumor size, harvest site location and tissue type did not correlate with increased OOS rates. Wound complications were the most common postoperative morbidity; all infections were treated with outpatient oral antibiotics. No postoperative complications precluded TIL infusion. **CONCLUSIONS:** Manufacturing success from TTP for TIL is feasible from various anatomic sites and histologic subtypes of melanoma, including acral and mucosal melanoma. Further analysis is needed to identify factors which may contribute to TIL production specification.

Table 1: Patient demographics harvest details for all patients and acral/mucosal patient

	Total Harvest (n=39)(%)	Acral/Mucosal (n=10)(%)
Median Age (years) (range)	66 (40-75)	66 (48-79)
Gender:		
Males	20 (53)	2 (20)
Females	18 (47)	8 (80)
Stage of Disease:		
Stage III	9 (24)	5 (50)
Stage IV	29 (76)	5 (50)
Time from harvest to infusion (days) (range)	49 (45-98)	49 (48-52)
Median Harvest Diameter (cm) (range)	3 (1.5-5.9)	3 (1.5-4.8)
Location of Harvest:		
Head and Neck	5 (13)	2 (20)
Trunk	19 (49)	3 (30)
Extremities	15 (38)	5 (50)
Harvest Tissue Type:		
Lymph Node	18 (46)	5 (50)
Visceral	12 (31)	1 (10)
Skin/Subcutaneous	8 (21)	4 (40)
Brain	1 (3)	-
Number of lesions harvested:		
1 Lesion	30 (77)	8 (80)
2 Lesion	7 (18)	2 (20)
3 Lesion	2 (5)	-
Number of OOS	7 (18)	1 (10)
Median Length of Hospital Stay (days) (range)	0 (0-5)	0 (0-4)
Ambulatory Total	20 (51)	6 (60)
Non-Ambulatory Total	19 (49)	4 (40)
Post-Operative Complications:		
Wound Complications:	10 (27)	1 (10)
Other:	7 (18)	3 (30)

EP166

Confronting Inequality: The Stark Disparity of Female Representation in Surgical Oncology Journals' Editorial Boards

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INTRODUCTION: Inequitable representation on journal editorial boards may hinder the career advancement of females in surgical oncology leadership positions, A study from 2021 showed that editorial board (EB) members from 42 United States surgical journals had only 15% of their members been females. We aimed to evaluate female representation on EB of surgical oncology journals. **METHODS:** We performed a cross-sectional analysis, collecting data about EB positions of surgical oncology journals. Members were classified into "editor-in-chief", "seniors/deputy/or associate editor", "editorial/advisory board members", and "other positions". First names were used to predict female representation using R Statistical Software version 4.1.2. **RESULTS:** We included 24 journals and analyzed 2,120 names. Females held 32.4% (688/2120) of EB positions ($p < 0.001$; 95% CI: [45.7%-50.3%]). A chi-square analysis revealed a significant difference in gender representation across editorial roles ($X2(3) = 39.62$; $p < 0.001$). Females held fewer editor-in-chief roles (17.2%; 5/29) compared to advisory board members (29.1%; 461/1584), though both remain male-dominated. Senior vs. EB Member was the only with a highly significant difference in gender distribution ($p < 0.0083$), indicating that female representation is more concentrated in certain roles rather than being equally distributed. Journal policies were available only in 7/24 journals, and none of the journals described the process of becoming an EB member. The top five journal with the lowest female representation were – Surgical Oncology Clinics (n=0, 0%), World Journal of Surgical Oncology (n=4, 13%), Clinical Surgical Oncology (n= 4/, 15%), Surgery (n=5, 16%), and Clinics in Surgery (n=11, 16%). A linear regression analysis showed that journal impact factor did not have any influence on the number of females in the EB ($p = 0.593$). Overall, 4/24 journals had a statement about diversity/equity on the EB, despite none of them showing equal proportion. A subgroup analysis of female academic positions showed that the main career positions occupied by women present on the editorial boards were professors (24.6%,171/694), followed by chiefs (19.6%, 136/694), and associate professors (10.9%, 109/694). **CONCLUSIONS:** Females remain underrepresented in leadership positions, underscoring the need to improve equity and females' advancement. Journal statements about gender/equity have no difference in the journal's editorial equality.

Table. Gender Distribution of Editors-in-Chief and Editorial Board Members in Oncology Journals

Journal	Country	Impact Factor	Editor-in-chief gender	Women on editorial board N (%)
Nature Cancer	United States	23.5	female	6/9 (66.7)
The Lancet Oncology	United Kingdom	41.6	male	21/39 (55.8)
Cancer	United States	6.1	male	37/98 (37.8)
Journal of Clinical Oncology	United States	42.1	male	13/26 (50.0)
JAMA Oncology	United States	28.4	female	11/31 (35.5)
Journal of the National Cancer Institute	United Kingdom	10	male	75/164 (45.7)
Nature Reviews Clinical Oncology	United Kingdom	81.1	female	12/19 (63.2)
A Cancer Journal for Clinicians	United States	521.6	male	19/58 (32.7)
Annals of Oncology	United Kingdom	56.7	male	22/106 (20.8)
Annals of Surgical Oncology	United States	3.4	male	91/309 (29.4)
European Journal of Surgical Oncology	United Kingdom	3.5	male	31/112 (27.7)
Clinics in Surgery	United States	2.3	male	11/67 (16.4)
Annals of Surgery	United States	7.9	male	52/200 (26.0)
Clinical Colorectal Cancer	United States	3.1	male	9/30 (30.0)
Annals of Thoracic Surgery	United States	3.7	female	23/99 (23.2)
Heliyon	Netherlands	3.4	male	50/62 (80.6)
Surgery	United States	3.2	female	5/31 (16.1)
World journal of surgical oncology	United Kingdom	2.5	male	4/32 (12.5)
Journal of Surgical Oncology	United States	2	male	31/166 (18.7)
Clinical Surgical Oncology	China	N/A	male	4/26 (15.4)
Surgical Oncology Insight	United States	N/A	male	83/189 (43.9)
Surgical Oncology Clinics	United States	2.6	male	0/1 (0.0)
British journal of cancer	United Kingdom	6.4	male	29/88 (32.9)
Breast Cancer Research	United Kingdom	6.1	male	55/135 (40.7)

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Parenchyma-Sparing Operations for Pancreatic Insulinoma: A Multi-Institutional Analysis of Surgical and Oncologic Outcomes

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INTRODUCTION: Parenchyma-sparing operations are recommended by international guidelines for benign insulinoma. However, contemporary data on surgical techniques, surgical, and oncologic outcomes remain limited due to the rarity of the disease. This study aims to evaluate real-world surgical practice patterns and long-term outcomes for pancreatic insulinoma. **METHODS:** Multi-center, retrospective study of patients with histologically confirmed insulinoma who underwent curative-intent resection between 2000 and 2023 at five academic centers in the United States. Surgical approach, perioperative outcomes, recurrence, and disease survival were analyzed. **RESULTS:** Among 2024 pancreatectomies for pancreatic neuroendocrine tumors (PanNETs), 181 (8.9%) were for insulinoma. Median age was 56 years, with female predominance (51.9%). Most insulinomas were sporadic, and 8 (4.4%) were associated with MEN1. Median tumor size was 1.5 cm (IQR 0.9), mainly located in the pancreatic body/tail (56.9%). Anatomic resections were performed in 121 (66.8%) cases, and 60 (33.2%) underwent parenchyma-sparing procedures. Majority (n=149, 82.3%) were low-grade (G1) and no G3 tumors. High-risk features were rare: lymphovascular invasion (n=22, 12.9%), perineural invasion (n=11, 6.4%), lymph node metastasis (n=8, 4.4%). Anatomic resections were more common for larger (1.5 vs 1.4 cm, P=0.030) and multifocal tumors (10.8% vs 3.3%, P=0.027). Formal resections had a higher median number of harvested nodes (14 vs 2, P< 0.001) and lymph node metastases (6.6% vs 0%, P< 0.001). Parenchyma-sparing operations had shorter operative time (175 vs 227 min, P< 0.001), less blood loss (150 vs 200 mL, P< 0.001), and no transfusions. Severe complications (Clavien-Dindo ≥ III) occurred in 20.4% of patients with no significant differences between groups. After a median 74.3-month follow-up period, 6 (3.3%) patients recurred (5 distant, 1 local), all after formal resections. No recurrences occurred in the parenchyma-sparing group, despite fewer lymphadenectomies and more R1 resections (31.7% vs 3.3%, P< 0.001). Ten-year disease-free survival was 95.7% (95% CI, 91.8–99.8), similar between anatomic and parenchyma-sparing resections: 93.5% (CI, 87.7–99.7) vs 100% (CI, 100.0–100.0), respectively (P=0.054). **CONCLUSIONS:** This large, real-world study demonstrates that parenchyma-sparing operations are safe and oncologically equivalent to anatomic resections, and should be considered for small (< 3 cm), localized insulinomas.

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Correlation of DOTATATE PET-CT uptake with pathologic grade, and ATRX/DAXX loss of expression in localized non-metastatic pancreatic neuroendocrine tumors: A multi-institutional study

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INTRODUCTION: DOTATATE PET-CT imaging detects neuroendocrine tumors (NETs) based on their somatostatin receptor (SSTR) expression. High

tumor grade (determined by Ki-67 index & mitotic rate) and ATRX/DAXX loss of protein expression have been established as poor prognostic factors in pancreatic NETs (PNETs) and are indications for anatomic (segmental) pancreatic resections rather than parenchymal sparing operations. We evaluated whether a correlation exists between PNETs pathologic features, ATRX/DAXX expression, and SSTR uptake on DOTATATE PET-CT. **METHODS:** Patients with localized primary non-metastatic PNETs that underwent surgical resection between 2014 and 2024 at three high volume pancreatic centers and had preoperative DOTATATE PET-CT (either 68-Ga or 64-Cu) within a year before resection, were reviewed. Maximum standardized uptake values (SUVmax) of SSTR-PET from the resected lesions were measured and correlated with demographic parameters, pathologic features (tumor size, Ki-67 index, grade, and mitotic rate) and ATRX/DAXX protein expression, using the Spearman correlation coefficient & logistic regression analysis. The cohort was further stratified into two groups based on SUVmax values above & below the mean. **RESULTS:** Of 146 patients resected (59% male, median age 65), 39.4% had Ki-67 index < 3, mean mitotic rate was 1.99, and 60% were grade 1. The mean SUVmax was 40 and the mean size of the tumors was 2.8±2.2 cm. ATRX/DAXX loss of protein expression was more common in tumors with low SUVmax≤40 as compared to the group with SUVmax>40 (50% vs 23.1%, P=0.038). Similarly, ATRX/DAXX/MEN1 loss was more common in low SUVmax group (63.9% vs 26.9%, P=0.004). On Spearman correlation, SUVmax was negatively correlated with ATRX/DAXX loss (ρ=-0.255, P=0.046), MEN1 mutation (ρ=-0.277, P=0.026), & solid consistency of the tumor on CT imaging (ρ=-0.210, P=0.010). There was a positive correlation between tumor size and SUVmax (ρ=0.310, P< 0.001). On multivariate logistic regression analysis, SUVmax>40 was independently associated with ATRX/DAXX loss (OR = 0.15, P=0.010), MEN1 mutation (OR = 0.17, P=0.046), and larger tumor size (upper 25%) (OR = 5.15, P=0.003). **CONCLUSIONS:** Our analysis demonstrates an inverse correlation between SUVmax in DOTATATE PET-CT and ATRX/DAXX loss of protein expression and MEN1 mutation in localized non-metastatic PNETs. These data suggest that a low SUVmax≤40 on DOTATATE PET-CT may portend a more biologically aggressive PNET and help guide surgical management of localized disease.

Table 1: Differences in Clinicopathologic Characteristics by SUVmax

Variables	Total	SUV_{max} ≤40	SUV_{max} >40	P-value
	(N=146)	(n=87)	(n=59)	
Age	62.41 ±13.4	61.98 ±13.2	63.03 ±13.7	0.643
Sex (M)	86 (59.9)	51 (58.6)	35 (59.3)	0.933
Sex (F)	60 (41.1)	36 (41.4)	24 (40.7)	
CT-imaging (Solid)	119	68 (79.1)	51 (94.4)	**0.015***
(Cystic)	21(15)	18 (20.9)	3 (5.6)	
Ki-67	4.18 ± 3.6	413 ± 3.3	4.26 ± 3.6	0.83
Ki-67 ≤3%	83 (60.6)	49 (59.8)	34 (61.8)	0.809
Ki-67 >3%	54 (39.4)	33 (40.2)	21 (38.2)	
ATRX loss	12 (18.5)	9 (24.3)	3 (10.7)	0.207
DAXX	15 (24.6)	11 (31.4)	4 (15.4)	0.203
ATRX/DAXX loss	24 (38.7)	18 (50)	6 (23.1)	**0.038***
MEN1 mutation	13 (21)	11 (30.6)	2 (7.7)	0.055
ATRX/DAXX/MEN1	30 (48.4)	23 (63.9)	7 (26.9)	**0.004***
Size of primary tumor	2.85 ± 2.19	2.49 ± 1.72	3.37 ± 2.19	**0.008***
Mitotic rate/2mm²	1.99 (1 - 1.99)	1.99 (1 - 1.99)	1.99 (1 – 1.99)	0.874
Positive LN	0 (0-1)	0 (0-1)	0 (0-2)	0.309
Grade 0	1 (0.69)	1 (1.16)	0 (0)	1
1	87 (60)	51 (59.3)	36 (61.0)	
2	57 (39.3)	34 (39.5)	23 (39)	
LVI	51 (35.9)	29 (34.9)	22 (37.3)	0.859
PNI	46 (32.4)	30 (36.1)	16 (27.1)	0.28
Venous invasion	11 (14.3)	5 (11.1)	6 (18.2)	0.51
Margin +	27 (18.6)	18 (20.7)	9 (15.5)	0.517
T stage 1	61 (42.4)	41 (48.2)	20 (33.9)	0.085
2	49 (34.03)	30 (35.3)	19 (32.2)	
3	26 (18.1)	10 (11.8)	16 (27.1)	
4	8 (5.6)	4 (4.7)	4 (6.8)	
N stage	40 (31.5)	21 (30)	19 (33.3)	0.705
M stage	13 (18.9)	5 (14.3)	8 (23.5)	0.371

EP169

The Role Of Hyperthermic Intraperitoneal Chemotherapy In Newly Diagnosed And Recurrent Ovarian Cancer: A Time-To-Event Meta-Analysis Of Randomized Trials

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INTRODUCTION: The role of hyperthermic intraperitoneal chemotherapy (HIPEC) in epithelial ovarian cancer remains debated, with inconsistent results across clinical settings. This meta-analysis used reconstructed time-to-event data from randomized trials to provide a time-sensitive evaluation of HIPEC's therapeutic impact. **METHODS:** A systematic search of PubMed, Scopus, Web of Science, CENTRAL, and ClinicalTrials.gov (through June 2025) identified randomized controlled trials (RCTs) comparing cytoreductive surgery (CRS) with or without HIPEC in newly diagnosed or recurrent ovarian cancer. Time-to-event data were reconstructed from published Kaplan–Meier curves to generate pooled analyses for progression-free survival (PFS) and overall survival (OS), supplemented by restricted mean survival time (RMST) estimates. Subgroup analyses were performed by disease setting and HIPEC duration, and safety outcomes were synthesized using a random-effects model. **RESULTS:** Seven RCTs comprising 1,300 patients (CRS alone, n = 653; CRS + HIPEC, n = 647) met the inclusion criteria. In newly diagnosed epithelial ovarian cancer, HIPEC conferred a significant survival advantage, improving both progression-free survival (PFS; HR = 0.65, 95% CI 0.52–0.82, p < 0.001) and overall survival (OS; HR = 0.68, 95% CI 0.54–0.86, p = 0.001). In contrast, no statistically significant benefit was detected in the recurrent setting (OS: HR = 0.85, 95% CI 0.69–1.03, p = 0.10; PFS: HR = 0.95, 95% CI 0.81–1.12, p = 0.52). For recurrent disease, the restricted mean survival time (RMST) for PFS at 36 months was 2.25 years (95% CI 1.95–2.55) with HIPEC versus 2.27 years (95% CI 1.94–2.60) with CRS alone, yielding a ΔRMST of −0.02 years (95% CI −0.46 to 0.43, p = 0.94). Subgroup analyses suggested the most pronounced effect with 90-minute HIPEC protocols. Grade ≥3 adverse events occurred in 45.7% of patients receiving HIPEC compared with 36.4% in the control arm (RR = 1.17, 95% CI 0.87–1.58, p = 0.29). The most frequent toxicities were electrolyte disturbances and renal dysfunction, both typically mild and reversible. **CONCLUSIONS:** HIPEC significantly improves progression-free and overall survival when integrated with cytoreductive surgery for newly diagnosed ovarian cancer, particularly with a 90-minute perfusion, without a meaningful rise in severe toxicity. Its value in recurrent disease remains uncertain and requires further investigations.

EP170

Impact of Neoadjuvant Immunotherapy on Outcomes in Patients with High-Risk Stage II and III Melanoma

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INTRODUCTION: Melanoma remains one of the most aggressive skin cancers, with high-risk stage II and III disease carrying substantial risk of recurrence and mortality. Though recent literature demonstrates potential benefit of both neoadjuvant and adjuvant immunotherapy, there is a paucity of data demonstrating perioperative safety and survival outcomes in resectable disease. The aim of this study is to evaluate the impact of neoadjuvant immunotherapy on short- and long-term outcomes in patients with high-risk stage II and III melanoma. **METHODS:** A retrospective analysis of the National Cancer Database (NCDB, 2016-2022) was done for adults (18-90 years old) with clinical stage II to III melanoma who underwent definitive surgical resection. Patients were stratified by management type: neoadjuvant, adjuvant, or no immunotherapy. Demographic, pathologic, clinical, and treatment data were collected. Categorical variables were compared using the $\chi 2$ and Wilcoxon rank-sum tests. Overall survival (OS) analyses were done using Kaplan-Meier and log rank tests. Multivariate logistic regression was conducted to evaluate predictors of 30- and 90-day post-operative mortality and readmission.

Multivariate analysis was conducted using Cox proportional hazards regression to identify predictors of OS. **RESULTS:** Out of a total of 963,553 patients, there were a total of 61,103 adults with stage II and III melanoma. Of these, 0.4% (n=265) received neoadjuvant immunotherapy, 31% (n=18,997) adjuvant immunotherapy, and 69% (n=41,841) no immunotherapy. Mean age was 66 ± 15 years old and 62% (n= 38,157) were male. Thirty-day and 90-day mortality rates were 0.2% and 0.7%, respectively. After multivariate regression, adjuvant immunotherapy was shown to have a lower odds of 30- (OR 0.01, 95% CI 0.001–0.12, p < 0.001) and 90-day mortality (OR 0.16, 95% CI 0.06–0.57, p = 0.001) compared to neoadjuvant therapy. There was no significant difference in 30-day readmission rates between management type (Neoadjuvant vs. Adjuvant OR 1.50, 95% CI 0.48–6.64, p = 0.53; No Immunotherapy OR 1.76, 95% CI 0.57–7.82, p = 0.38). After multivariate Cox regression, there was no difference in survival based on management type (HR 1.07, 95% CI 0.89–1.29, p = 0.47). **CONCLUSIONS:** In patients with resectable, high-risk melanoma, neoadjuvant immunotherapy was shown to have higher odds of short-term post-operative mortality with no significant improvement in long-term survival. In contrast, adjuvant immunotherapy demonstrated comparable oncologic outcomes and lower odds of perioperative risk, aligning with current management practices.

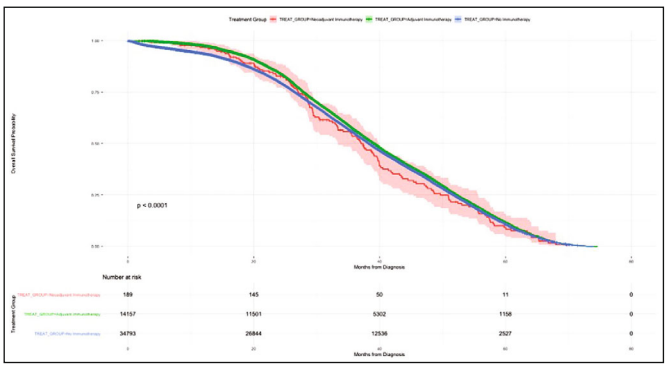

Figure 1: Overall Survival of High-Risk Stage II-III Melanoma by Treatment Group

EP171

Hybrid Genomic Landscape of Combined HCC-iCCA Defines a Continuum Between HCC and iCCA

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INTRODUCTION: Hepatocellular carcinoma (HCC) and intrahepatic cholangiocarcinoma (iCCA), represent two major primary liver cancers with distinct genetic profiles. Rarely, patients will present with mixed HCC and iCCA (HCC-iCCA), which is not as robustly characterized. The present study analyzed the world's largest clinico-genomic dataset to compare the demographic and genomic features of HCC, iCCA, and HCC-iCCA. **METHODS:** Samples of HCC, ICCA, and HCC-iCCA were identified from the AACR Project GENIE public cohort (v18.0). Demographic and genomic data was then analyzed. Mutation frequencies, fraction genome altered (FGA), and samples were compared using Fisher's exact and Kruskal–Wallis tests to calculate p-values, and the Benjamini–Hochberg procedure was used to derive q-values. **RESULTS:** A total of 2,416 samples were identified: HCC (n=964), iCCA (n=1,374), and HCC-iCCA (n=78). Male predominance was highest in HCC (72.3%) compared with HCC-iCCA (63.0%) and iCCA (48.0%) (p< 0.0001). 17.3% of HCC, 11.5% of HCC-iCCA, and 21.9% of iCCA were from metastatic samples. Median mutation counts were HCC=5 (IQR 3,9), HCC-iCCA =5.5 (IQR 4,9), iCCA =4 (IQR 2,7); median FGA was 0.20 (IQR .08, .34), 0.18 (IQR 0, .39), and 0.18 (IQR .04,.31), respectively. Cohorts were comprised predominantly from white patients (60.4%, 72.1%, and 74.0% of HCC, HCC-iCCA, and iCCA respectively), followed by asian patients (13.66%, 11.76%, and 9%) and black patients (8.01%, 2.94%, and 5.3%). Genetic analysis of HCC, HCC-iCCA, and iCCA showed CTNNB1 (27.7% vs 7.7% vs 1.5% , q< 0.00001) and TERT (34.5% vs 22.5% vs 5.0%, q< 0.00001) were HCC-dominant; TP53 was enriched in HCC (32.0%) and HCC-iCCA (32.1%) but lower in iCCA (19.8%, q < .00001). IDH1 (1.4% vs 10.3% vs 19.1%), FGFR2 (1.6% vs 7.7% vs 15.4%), BAP1 (2.8% vs 5.7% vs 18.9%), ARID1A (10.5% vs 7.1% vs 18.2%), and KRAS (2.4% vs 1.3% vs 12.6%) were enriched in iCCA (all q< 0.00001). **CONCLUSIONS:** HCC-iCCA represents a distinct genetic profile combining aspects of both HCC and iCCA. These findings refine our understanding of primary liver cancer genomics and reveal potential pathways for further research into HCC-iCCA treatment.

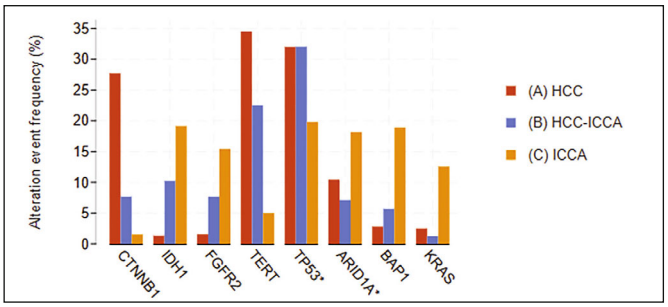

Figure. Alteration Frequency of Commonly Mutated Oncogenes in HCC, ICCA, and HCC-ICCA

EP172

Long term outcomes of surgically resected metastatic bronchopulmonary neuroendocrine tumors at a single institution

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INTRODUCTION: Bronchopulmonary neuroendocrine tumors comprise of a rare group of tumors. In the metastatic setting, these tumors often invade bone and liver tissue. There have been relatively few case series with limited follow up time published to date describing the long-term outcomes of these patients, especially those who have undergone some form of surgical intervention. We aim to better describe the clinical course of these patients. **METHODS:** A retrospective analysis was conducted to identify patients who were diagnosed with metastatic bronchopulmonary neuroendocrine tumors. Patient demographics, treatment modalities, and outcomes were queried. % survival was calculated from the time of curative surgery to death or last follow up. Survival was analyzed using a 1-tailed t-test with unequal variance. **RESULTS:** Out of the 146 patients with metastatic bronchopulmonary neuroendocrine tumors, 107 had sufficient data that was subsequently analyzed (median age of diagnosis of 52 [95%CI 42-63] years and 39% male). Median length of follow up was 10.8 [95%CI 6-18] years. 86% (n=92) underwent at least one surgical intervention while 14% (n=15) underwent non-surgical treatment only. At 5 years, 79% (n=73) of patients in the surgical cohort were alive compared to only 40% (n=6) who underwent only nonsurgical interventions (p=0.04). 89% of patients who underwent resection of their primary and metastasis were alive at 5 years compared to 76% of patients who had solely their primary resected. At 10 years, 58% (n=59) of surgical patients were alive compared to 7.6% (n=1) in the nonsurgical cohort (p< 0.001). **CONCLUSIONS:** Given the poor median overall survival of stage 4 bronchopulmonary neuroendocrine tumors, surgical treatment is associated with improved survival as compared to nonsurgical treatment alone. Surgical cytoreduction, while done in a minority of patients, offers some marginal benefit and should be performed in highly selective cases.

EP173

Sentinel Node Utilization and Associated Outcomes After Systemic Therapy for Clinically Node-Positive Cutaneous Melanoma

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INTRODUCTION: The role of sentinel lymph node biopsy (SLNB) alone without complete lymph node dissection (CLND) in patients with clinically node-positive melanoma who respond to systemic therapy remains unclear. **METHODS:** Patients with stage III cutaneous melanoma diagnosed between 2018–2021 who received systemic therapy and surgical excision of the primary tumor were identified. Surgical node management strategies included

SLNB, CLND , or SLNB followed by CLND (synchronous or metachronous). Propensity score matching was performed between SLNB and SLNB-CLND groups using clinical and demographic covariates. Kaplan–Meier analysis compared overall survival (OS) between matched groups. **RESULTS:** A total of 1,707 patients met inclusion criteria. Use of SLNB increased steadily from 2018 to 2021, reflecting evolving practice patterns. In the unmatched cohort, SLNB was performed in 595 patients (34.9%), CLND in 875 (51.3%), and SLNB-CLND in 139 (8.1%). 139 pairs of SLNB and SLNB-CLND were matched 1:1 based on clinical and demographic variables. All matched patients had positive SLNB, and the groups were balanced for the number of examined and positive nodes. Five-year OS was 44.8% for SLNB and 43.9% for SLNB-CLND (p=0.76). Median survival was similar between groups, and no OS advantage was observed with addition of CLND. **CONCLUSIONS:** SLNB alone achieves comparable 5-year OS to SLNB-CLND, suggesting that nodal basin preservation may be appropriate in selected responders. These results reinforce the importance of tailoring nodal surgery to systemic response in contemporary melanoma care, particularly in light of systemic therapy advancements.

EP174

Real-World Survival Benefits of Chemoimmunotherapy in Stage II–IV Gastric Adenocarcinoma

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INTRODUCTION: Gastric adenocarcinoma remains a leading cause of cancer mortality worldwide despite standard therapy, underscoring the need for improved treatment strategies. Although recent trials demonstrate survival benefits with the addition of immunotherapy in both metastatic and resectable settings, its impact in real-world populations remains uncertain. To address this gap, we conducted a retrospective cohort study using the National Cancer Database to evaluate trends in immunotherapy use and its association with survival in gastric adenocarcinoma. **METHODS:** We analyzed patients diagnosed with stage II–IV gastric adenocarcinoma between 2004 and 2022 who received chemotherapy, immunotherapy, and/or surgery. For stage II/III disease, we compared surgery plus chemotherapy versus surgery plus chemoimmunotherapy. For stage IV disease, we compared chemotherapy alone versus chemoimmunotherapy. We evaluated trends in immunotherapy use over time, compared demographic and clinical features using chi-square and t-tests, and estimated survival with Kaplan–Meier analysis and multivariable stratified Cox regression. **RESULTS:** We identified 66,117 patients (stage II/III: 29,889; stage IV: 36,228). Among stage II/III cases, 28,475 (95.4%) received surgery plus chemotherapy, and 1,414 (4.7%) received surgery plus chemoimmunotherapy. Among stage IV cases, 29,646 (81.8%) received chemotherapy alone, and 6,582 (18.2%) received chemoimmunotherapy. Immunotherapy use increased from < 1% in 2012 to 19.2% of stage II/III and 39.9% of stage IV cases in 2022. Median survival improved with chemoimmunotherapy: stage II/III, 55.6 vs. 42.8 months (p< 0.001); stage IV, 13.8 vs. 9.2 months (p< 0.001). Cox analysis showed lower mortality with chemoimmunotherapy in both stage II/III (HR 0.67, 95% CI 0.55–0.83, p=0.002) and stage IV disease (HR 0.68, 95% CI 0.64–0.70, p< 0.001). **CONCLUSIONS:** Patients with stage II–IV gastric adenocarcinoma who received chemoimmunotherapy achieved longer overall survival than those treated with chemotherapy alone. These real-world data highlight the expanding adoption and durable survival benefit of immunotherapy beyond clinical trial settings and underscore the need to refine treatment selection, sequencing, and duration to maximize therapeutic outcomes.

EP175

Leveraging AI-powered sentiment analysis to decode public opinion on HIPEC across disease sites and digital platforms

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INTRODUCTION: Despite increasing adoption of HIPEC for peritoneal surface malignancies (PSM), it is viewed as controversial by some in the medical community. It is unclear whether this sentiment extends to the public. Online forums may offer insight into patient and caregiver views. Understanding sentiment and whether it varies by disease site and digital platform may help clinicians better engage PSM patients and understand barriers to treatment. **METHODS:** A web scraping tool was used to identify comments on HIPEC and related therapies posted to general social media (Reddit) and a cancer-specific site (Cancer Survivors Network (CSN)). Sentiment analysis was performed on comments using a Zero-Shot Natural Language Inference model to assign sentiment probabilities. Aspect extraction using predefined keywords was performed to identify underlying reasons for positive, negative, and neutral sentiment. Statistical analyses were performed to compare sentiment and its underlying reasons by disease site and platform. **RESULTS:** After manual review of scraped comments, 1,732 comments met inclusion criteria (47% from Reddit, 53% from CSN; 16.5% related to appendix cancer, 10.6% colorectal, 16.2% ovarian, 6.6% gastric, 1.6% mesothelioma, and 48% unspecified). Overall sentiment analysis classified 17.2% of comments as positive, 26.7% as negative, and 56.1% as neutral. Stratified analysis revealed statistically significant differences in sentiment by platform and disease site (Figure). For example, negative sentiment was more common on Reddit vs CSN (33.1% vs 20.8%, p< 0.05). Similarly, negative sentiment varied across disease sites (appendix 33%, colorectal 27%, ovarian 21.3%, gastric 36.8%, mesothelioma 21.4%, other/unspecified 25.8%; p< 0.05). Survival was the most common theme underlying both positive and negative sentiment. Perceived efficacy of HIPEC also contributed to positive sentiment; complications were a common theme in negative sentiment. Themes driving positive, negative, and neutral sentiment varied across platforms and disease sites. **CONCLUSIONS:** Overall sentiment about HIPEC is largely non-negative, with survival and complications driving views that appear to align with clinical perspectives. This may suggest that barriers to PSM care lie less with patient resistance and more with factors like provider referral, care coordination, or other system-level challenges—especially among offline populations who may be less engaged or informed. Differences by disease site and platform underscore the need for targeted research and outreach.

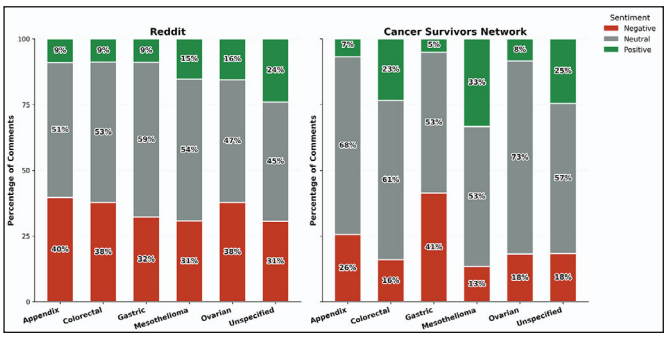

Figure. Sentiment by Disease Site - Stratified by Platform

EP176

Belzutifan induces tumor volume reduction in VHL-associated pNETs independent of genotype

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INTRODUCTION: Von-Hippel-Lindau (VHL) disease is a tumor syndrome caused by a germline mutation in the VHL tumor suppressor gene, resulting in impaired degradation and accumulation of hypoxia-inducible factor 2 alpha (HIF-2α). VHL disease can be further classified by clinical phenotype with variable levels of HIF-2α accumulation based on genotype. Belzutifan is an FDA-approved, selective HIF-2α inhibitor used in adult patients with VHL-related tumors. Thus, we aimed to investigate if VHL genotype is associated with response to Belzutifan in VHL-associated pancreatic neuroendocrine tumors

(pNETs). **METHODS:** A retrospective review of patients at a single institution with pNETS > 0.5 cm who received Belzutifan for any VHL-related tumors from the Natural History and Management of VHL Associated Pancreatic Neuroendocrine Tumor Protocol, ClinicalTrials.gov ID NCT04074135. An expert radiologist contoured the pNETs in both baseline and follow-up CT imaging. Total tumor volume change was measured on CT imaging and compared by VHL clinical subtype, VHL-genotype, and AlphaMissense scores, which predict the pathogenicity of the variants with missense mutations. **RESULTS:** 24 patients met the inclusion criteria with a median follow-up of 24 months (range=4-70 months). All patients demonstrated a reduction in tumor volume on CT-based volumetric analysis, with a median decrease in total tumor volume of 77.3% (range 6.6% to 100%, p< 0.001). No statistically significant differences in tumor volume change were observed across VHL subtypes, AlphaMissense scores, or mutation characteristics by type or exon. **CONCLUSIONS:** Belzutifan was highly effective in most patients with VHL-associated pNETs regardless of VHL subtypes, AlphaMissense scores, mutation types, and exons. Our findings suggest that therapeutic efficacy is independent of underlying genetic variation.

Table 1. Patient Characteristics

Patient Characteristics	n=24
Age, median (range)	
Last follow-up	52 (26-66)
At VHL diagnosis	24 (9-52)
Male, n (%)	13 (54)
VHL Manifestations, n (%)	
RCC	19 (79)
Retinal/CNS Hemangioblastoma	24 (100)
Pheochromocytoma/Paraganglioma	7 (29)
Previous Pancreatic Resection/Ablation, n (%)	4 (17)
Tumor Volume Percent Change, median (range)	-77.3 (-6.6 to -100)
VHL Subtype, n (%)	
1	10 (42)
2A	3 (12)
2B	11 (46)
Missense mutation, n (%)	13 (54)
Mutation Exon, n (%)	
1	7 (29)
2	3 (12)
3	8 (33)
AlphaMissense score, median (range)	0.987 (0.879-0.997)

EP177

Patient and caregiver reported outcome measures in patients undergoing pancreatic resections (PERSPECTIVE)

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BACKGROUND: The multidisciplinary treatment of pancreatic cancer, which includes pancreatectomy, chemotherapy, and possibly radiation, profoundly impacts quality of life (QoL), psychosocial well-being, and financial stability for patients and their caregivers. Although most cancer research focuses on survival, patient-reported outcome measures (PROMs) and caregiver-reported outcomes (CROMs) are increasingly recognized as key metrics. Established instruments such as European organization for research and treatment of cancer (EORTC) quality of life questionnaire (QLQ)-C30 and PAN26, PROM information system (PROMIS) domains, and comprehensive score for financial toxicity (COST-FACIT) have linked poor QoL and financial toxicity to decreased treatment adherence and worse outcomes. However, prospective data for PROMs and CROMs throughout the continuum of pancreatic cancer is limited. This trial integrates patient and caregiver perspectives to evaluate QoL, resilience, financial toxicity, and fear of recurrence throughout the treatment course for pancreatic cancer. **METHODS:** This multicenter, prospective, observational cohort trial (NCT07173257) was initiated on April 2023 and is currently enrolling adult patients undergoing elective pancreatectomy, including any surgical approach, for cancer and their caregivers. Patients are excluded if they are age < 18 or unable to consent. Patients who undergo a neoadjuvant approach or upfront resection for treatment are included. Surveys to assess PROMs and CROMs are administered at diagnosis, at 2-month intervals during neoadjuvant therapy, at the first postoperative visit, and at 3, 6, 12, 18, and 24 months postoperatively. Survey instruments for patients include the EORTC QLQ-C30, PAN26, PROMIS domains, brief resilience scale, short grit scale, Brehaut decision regret scale, shared decision-making, and COST-FACIT. Survey instruments for caregivers include the caregiver QoL index, COST-FACIT, and brief resilience scale. PROMs and CROMs will be summarized for each validated scale using mean ± standard deviation at each time point. Linear mixed-effects models will analyze longitudinal changes and assess how covariates (e.g., demographics, procedure type, surgical approach, type of neoadjuvant therapy, complications, recurrence) affect the trajectories of PROMs and CROMs. Dyadic analyses will also be performed to correlate patient- and caregiver-specific reported outcomes. To date, 133 patients and 40 caregivers are enrolled. The planned accrual is 300 patients and 300 caregivers (N=600).

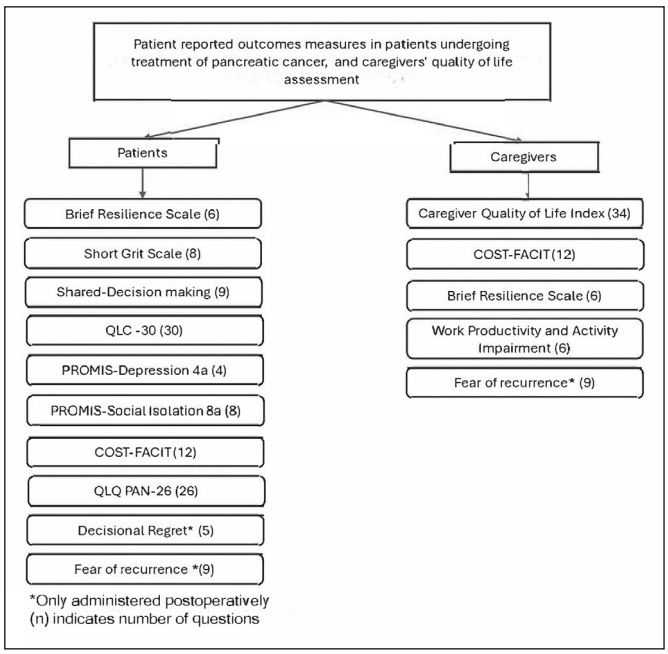

Figure. Validated survey questionnaire tools to assess patient- and caregiver-reported outcomes

EP178

Defining contemporary melanoma recurrence patterns using administrative data

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INTRODUCTION: Survivorship care for melanoma is focused on detection of recurrence, which is generally not directly captured in administrative databases. This study was undertaken to describe the patterns of recurrence following primary treatment for melanoma using population-level data from Ontario, Canada, for survivorship care planning. **METHODS:** Patients diagnosed with melanoma from 2007-2019 were identified through linked administrative data. Patients were included if they underwent surgery only within 6 months of diagnosis, or received both surgery and adjuvant therapy (radiation and/or systemic therapy, SAT) within 18 months of diagnosis, to correspond with expected receipt of treatment for their primary melanoma. Primary outcomes were the time to the first of four types of first melanoma recurrence following initial treatment – local/regional, distant, melanoma cause of death, and new primary melanoma, and estimation was performed using cumulative

incidence. **RESULTS:** Of 29,436 melanoma patients identified, 26,178 patients underwent surgery, and 3,258 underwent SAT. A first recurrence event was noted in 16.4% of the surgery group, and 43.8% of the SAT group. Melanoma cause of death, local/regional recurrence, distant recurrence and new primary melanoma was identified in 5.2%/6.7%/8.6% and 6.8% of the surgery group, and in 20.7%/16.2%/35.1% and 8.4% of the SAT group respectively. First recurrence (local/regional, distant, new primary) was equally distributed in the surgery group (28.3%, 34.4%, 36.7%) in contrast to the SAT group that was predominantly distant (23.2%, 63.1%, 13.0%). Cumulative incidence curves for time to local/regional and distant recurrence, and time to new primary melanoma are found in Figure 1. One year prior to recurrence, 73.4%, 53.0/44.7% and 34.0% of patients who had distant recurrence underwent body CT, MRI/CT brain or nodal ultrasound, compared with 65.1%, 36.4/30.3%, 41.8% who developed a local/regional recurrence. 55 % of patients who developed a new primary melanoma had a dermatologist visit in the year prior to the recurrence. **CONCLUSIONS:** This study presents a contemporary description of recurrence patterns following melanoma diagnosis at a population level. The pattern of recurrence was similar in patients in the surgery group, whereas distant recurrence dominated the SAT group. Almost half of patients with new primary melanoma did not have a dermatology visit in the year prior to recurrence. This study provides important information for development of future survivorship programs for patients with increasingly improved survival rates.

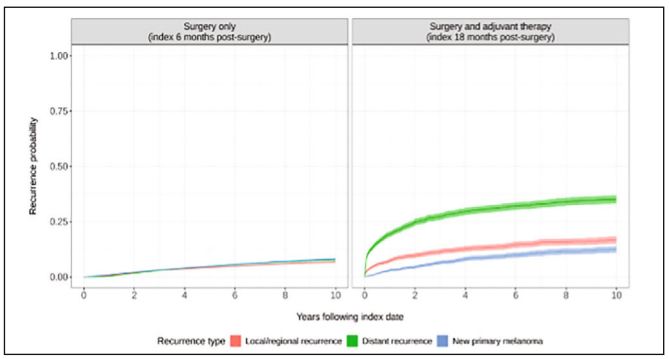

Figure 1. Cumulative incidence curves of recurrence from the start of the survivorship period,

EP179

The feasibility and outcomes of robotic hepatic artery infusion pump (HAIP) placement with concomitant surgery

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INTRODUCTION: The hepatic artery infusion pump (HAIP) has emerged as a promising therapy for patients with advanced liver malignancies by improving local response and decreasing systemic toxicity. Prior studies have shown that robotic HAIP surgery decreases in-hospital stay but may increase the risk of HAIP-specific complications and ultimately HAIP failure. Thus, the utility of robotic HAIP placement, particularly with concomitant hepatectomy or colectomy, remains unclear. We describe the real-world implementation and outcomes of open and robotic HAIP placement techniques. **METHODS:** We reviewed all patients who underwent either open (O-HAIP) or robotic HAIP (R-HAIP) placement at our institution from January 1, 2020 to June 1, 2025. Postoperative outcomes within 90 days of HAIP surgery were assessed. Major hepatectomy was defined as any liver resection ≥ 3 Couinaud segments. Statistical analysis was performed using R. **RESULTS:** 59 patients were included; 29 underwent O-HAIP placement and 30 R-HAIP placement. None of the robotic surgeries were converted to open. Age, comorbidities, and ECOG scores were similar between groups (Table 1). HAIP was placed for adjuvant therapy in 31 (53%) patients, with 79% undergoing O-HAIP. Concomitant procedures were regularly performed during R-HAIP placement (25 [83%], Table 1). Colectomy was more commonly performed in the R-HAIP group (3 [10%] O-HAIP vs 15 [50%] R-HAIP, p=0.002), whereas hepatectomy was more common in the O-HAIP group (27 [93%] O-HAIP vs 12 [40%] R-HAIP, p< 0.001). 90-day HAIP-specific complications were similar between the two approaches (7 [24%] O-HAIP vs 3 [10%] R-HAIP, p=0.1). There was no difference in HAIP complications with concomitant hepatectomy or colectomy (2 [33%] HAIP alone vs 8 [11%] HAIP+concomitant procedure, p=0.3). The most common HAIP-related complication was pocket seroma (6 [21%] O-HAIP vs 3 [10%] R-HAIP, p=0.3) with surgical revision being required in 1 patient in the O-HAIP group for a hematoma and in 2 patients for flipped HAIPs in the R-HAIP group. Median time to HAIP chemotherapy initiation was similar between open and robotic groups (35 vs 30 days, p=0.1). Patients with evidence of ascites at time of discharge (n=4) experienced significantly more HAIP complications after discharge (3 [75%] vs. 7 [13%], p=0.001). All patients had functioning HAIP at 90-days. **CONCLUSIONS:** Robotic HAIP surgery with concomitant hepatectomy or bowel surgery is feasible in patients with favorable anatomy and does not increase risk of HAIP-specific complications compared to open placement.

TABLE 1. Preoperative characteristics, operative features, and postoperative outcomes of patients undergoing either open or robotic hepatic artery infusion pump (HAIP) placement.

Variable	Open (N = 29)	Robotic (N = 30)	P-value
Sex (female)	9 (31%)	14 (47%%)	0.3
Median age (years, IQR)	51 years (41 - 62)	49 years (43 – 55)	0.4
ECOG score of 0 at time of surgery	21 (72%)	23 (77%)	0.6
Pre-operative anticoagulants	4 (14%)	5 (17%)	0.8
Chronic liver disease	1 (3%)	2 (7%)	0.5
HAIP Placed for Adjuvant Therapy	23 (79%)	8 (27%)	< 0.001
Bilobar liver lesions	23 (79%)	24 (80%)	>0.9
Replaced or accessory hepatic artery present	4 (14%)	4 (13%)	>0.9
Concomitant Procedures	29 (100%)	25 (83%)	0.1
Liver Resection	27 (93%)	12 (40%)	< 0.001
Major hepatectomy	10 (35%)	4 (13%)	0.07
Minor Hepatectomy	17 (58%)	8 (27%)	0.06
Primary tumor Resection	3 (10%)	15 (50%)	0.002
Low anterior resection (LAR)	3 (10%)	13 (43%)	< 0.001
Right hemicolectomy	0 (0%)	2 (6%)	0.5
Other			
Ostomy reversal	5 (17%)	3 (10%)	0.7
Diverting loop ileostomy	2 (7%)	1 (3%)	0.6
Concomitant hepatectomy and bowel surgery	3 (10%)	1 (3%)	0.5
HAIP-specific Outcomes			
30-day HAIP Complication	5 (17%)	1 (3%)	0.08
30-day HAIP complication (grade≥3)	1 (3%)	1 (3%)	>0.9
90-day HAIP complications	7 (24%)	3 (10%)	0.1
90-day HAIP complications (grade≥3)	3 (10%)	2 (7%)	0.6
Pocket seroma within 90 days	6 (21%)	3 (10%)	0.3
Drained in clinic	6 (21%)	3 (10%)	0.3
Pocket seroma within 90 days (grade≥3)	2 (7%)	2 (7%)	>0.9
Pocket infection	2 (7%)	0 (0%)	0.6
Flipped pump requiring surgical revision	0 (0%)	2 (7%)	0.6
Pocket hematoma requiring reoperation	1 (3%)	0 (0%)	0.8
Re-operation within 90 days	1 (3%)	2 (7%)	0.6
Median time to HAIP chemotherapy initiation (days, IQR)	35 days (28 - 48)	30 days (26 - 40)	0.1
All HAIP Surgery Outcomes			
30-day postoperative complications	14 (48%)	6 (20%)	0.03
30-day readmissions	7 (24%)	9 (30%)	0.8
90-day postoperative mortality	0 (0%)	1* (3%)	0.8

*This 90-day postoperative mortality was related to disease progression and not a consequence of surgery.

EP180

Assessing Surgical Treatment Delays in Asian Women with Breast Cancer: A National Cancer Database Analysis

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INTRODUCTION: The incidence of breast cancer continues to rise amongst

Asian women. Historically, Asian American and Pacific Islander (AAPI) populations have been aggregated, obscuring potential disparities in survival outcomes between subgroups. Delayed time to surgery (TTS), defined as >60 days, is a Commission on Cancer (CoC) quality metric associated with worse overall survival, increased tumor upstaging, and increased nodal involvement. Here, we sought to elucidate differences in TTS amongst AAPI subgroups to identify whether TTS is a possible targetable intervention. **METHODS:** The NCDB was used to identify AAPI women diagnosed with invasive breast cancer from 2004-2021 who underwent upfront surgery. They were disaggregated into geographically relevant populations: East Asian (EA), Southeast Asian (SEA), South Asian (SA) and Pacific Islander (PI). Descriptive statistics, log-rank tests, and multivariable Cox regression were used to identify differences in TTS between AAPI subgroups. **RESULTS:** A total of 76,517 AAPI women met inclusion: EA (41%), SEA (31%), SA (21%), and PI (7.6%). Median TTS in days was shortest for EA women at 33 days compared to 37 for SEA women, 35 for SA women, and 35 for PI women ($p< 0.001$). When examining the CoC metric of TTS within 60 days, SEA women had the largest percentage of patients with TTS >60 days compared to women in the EA, SA, and PI groups (29% vs 22% vs 27% vs 27%; $p< 0.001$). When compared to EA women on adjusted Cox regression, SEA women had the longest TTS (aHR 0.90; 95% CI: 0.89–0.91; $p< 0.001$) followed by SA women (aHR 0.97, 95% CI 0.95–0.99, p=0.002) (Table 1). There were no differences in TTS between PI women relative to EA women. Other Independent factors associated with delayed TTS included having non-private health insurance (Table 1). However, presentation at a comprehensive community cancer center showed better TTS (aHR 1.07, 95% CI 1.04–1.11. $p< 0.001$) compared to community cancer programs but there were no other differences observed based on treating facility. **CONCLUSIONS:** TTS was shortest in EA women and longest in SEA women, with SEA women having the highest proportion of AAPI groups with TTS >60 days. Efforts at improving TTS should focus on policy initiatives that expand insurance coverage and facility options to reduce TTS and ensure all AAPI women with breast cancer receive timely surgery. Further research is needed to identify the specific underlying factors associated with delayed TTS in SEA women.

Table 1: Factors Associated with Delayed TTS in AAPI Women with Breast Cancer in the NCDB from 2004–2021

Characteristic	aHR	95% CI	p-value
Race			
East Asian	*Reference*		
Southeast Asian	0.90	0.88–0.91	**<0.001**
South Asian	0.97	0.95–0.99	**0.002**
Pacific Islander	0.97	0.94–0.99	**0.017**
Primary payer			
Private	*Reference*		
Medicaid	0.76	0.74–0.78	**<0.001**
Medicare	0.93	0.91–0.95	**<0.001**
Other government	0.84	0.78–0.90	**<0.001**
Not insured	0.78	0.74–0.82	**<0.001**
Unknown	0.71	0.66–0.76	**<0.001**
Facility type			
Community cancer program	*Reference*		
Comprehensive community cancer program	1.07	1.04–1.11	**<0.001**
Academic/research program	1.03	1.00–1.06	0.062
Integrated network cancer program	1.03	1.00–1.07	0.086
Unknown	0.93	0.87–0.98	**0.010**

Abbreviations: CI = Confidence Interval, aHR = adjusted Hazard Ratio

EP181

NRAS Mutations Define a Distinct Molecular Subset of KRAS Wild-Type Pancreatic Ductal Adenocarcinoma

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INTRODUCTION: Activating KRAS mutations are present in over 90% of pancreatic ductal adenocarcinomas (PDAC) and are central to MAPK pathway activation. In contrast, NRAS alterations are rare, and their genomic context in PDAC is limited. Using a large clinico-genomic dataset, we characterized the molecular and clinical features of NRAS-mutant PDAC, focusing on samples with wild-type KRAS. **METHODS:** Genomic and clinical data were analyzed from the AACR Project GENIE public cohort (v18.0). PDAC samples were stratified into KRAS-wild-type/NRAS-wild-type, and KRAS-wild-type/NRAS-mutant groups. Sample level genomics were analyzed and compared using Fisher's exact and Kruskal–Wallis tests to calculate p-values. **RESULTS:** Among 9,273 PDAC samples, NRAS mutations were identified in 50 (0.54%). The most common type of mutation was Q61R missense mutation. Compared with KRAS-wild-type/NRAS-wild-type tumors, NRAS-mutant/KRAS-wild-type PDAC demonstrated a significantly higher median fractional genomic alteration (0.21 vs 0.01, p=0.02), slightly younger median age at sampling (63.5 vs 67 years, p=0.25), and a greater proportion of metastatic samples (29.4% vs 19.2%, $p< 0.001$). The NRAS-mutant/KRAS-wild-type subset was enriched for alterations in TP53 (41.2% vs 16.4%, $p< 0.00001$), CDKN2B (28.6% vs 2.1%, $p< 0.0001$), and ARID1A (21.4% vs 4.0%, p=0.017) compared with KRAS-wild-type/NRAS-wild-type tumors. **CONCLUSIONS:** NRAS-mutant PDAC represents a rare but distinct genomic subset within KRAS-wild-type pancreatic cancers that share similar genetic mutations to more common presentations of PDAC. Genetic profiling of this rare subgroup may help provide individualized prognostic and therapeutic value for these patients.

EP182

Alliance A022101/NRG-GI009: A pragmatic randomized phase III trial evaluating total ablative therapy for patients with limited metastatic colorectal cancer - evaluating radiation, ablation, and surgery (ERASur)

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BACKGROUND: Oligometastatic colorectal cancer (CRC) patients often experience long-term progression-free survival and overall survival (OS) following local treatment of isolated metastases, especially in the liver. However, the effectiveness of local ablative therapies, such as microwave ablation (MWA) and stereotactic body radiation therapy (SBRT), in patients with inoperable limited metastatic CRC or those with additional metastases outside the liver or lungs remains uncertain. This trial aims to address this clinical challenge by evaluating the safety and efficacy of adding total ablative therapy (TAT) of all disease sites to standard systemic treatment in patients with limited metastatic CRC. **METHODS:** A022101/NRG-GI009 is a randomized phase III study within the National Clinical Trials Network, set to enroll 364 patients with newly diagnosed metastatic CRC (BRAF wild-type, microsatellite stable, no liver-only metastatic disease). Patients without significant radiographic progression after 12-52 weeks of first-line systemic therapy, with 4 or fewer disease sites post-induction chemotherapy, will be randomized 1:1 stratified by the number of metastatic organ sites (1-2 vs. 3-4), timing of metastatic disease diagnosis (de novo vs. secondary), and the presence of metastatic disease outside the liver/lungs (yes vs no). Patients in Arm 1 will receive TAT, targeting all metastatic sites with a combination of surgical resection, MWA, and/or SBRT, followed by standard systemic therapy. Patients in Arm 2 will continue with standard systemic therapy alone. The choice of systemic therapy is at the discretion of the medical oncologist and may include continued therapy, maintenance chemotherapy, or observation. The primary endpoint is OS, with secondary endpoints including event-free survival, treatment-related toxicities, and time to local recurrence. Exploratory biomarker analyses will also be conducted. The study requires 346 evaluable patients across the two arms to demonstrate an OS improvement with a hazard ratio of 0.7, providing 80% power with a one-sided alpha of 5%. The trial employs a group sequential design with two interim analyses (at 25% and 50% of events) to assess futility. The trial began in January 2023, and patient recruitment is ongoing. Support: U10CA180821, U10CA180882;

https://acknowledgments.alliancefound.org. U10CA180820 (ECOG-ACRIN); U10CA180868 (NRG); U10CA180888 (SWOG); Clinicaltrials.gov identifier: NCT05673148

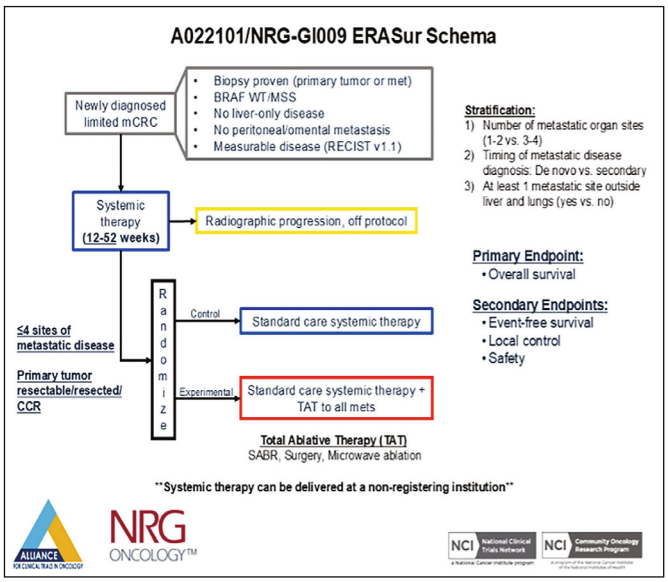

Figure. A022101/NRG-GI009 ERASur Trial Schema

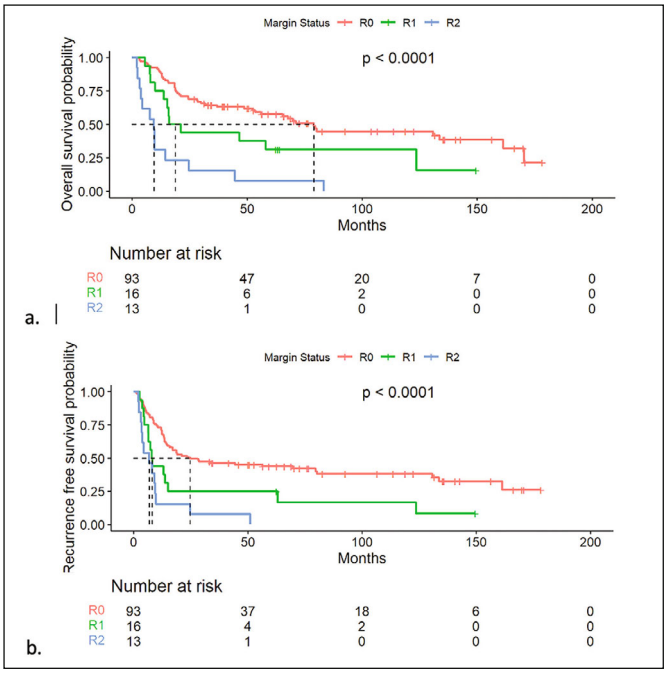

Figure. Kaplan-Meier curves of (a) overall survival and (b) recurrence-free survival based on margin status.

EP183

Pelvic exenteration for rectal and non-rectal malignancies: a single-center review of postoperative morbidity and survival outcomes

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INTRODUCTION: Pelvic exenteration for locally advanced pelvic malignancies can offer improved survival in select patients, but less data is available regarding the morbidity associated with this procedure. This study aimed to characterize postoperative complications and survival outcomes in a series of pelvic exenterations performed at a high-volume North American center. **METHODS:** A retrospective review was conducted of pelvic exenterations performed at Vancouver General Hospital, British Columbia, from 2011-2022. Data on primary tumor type, surgeries performed, postoperative complications, and recurrence-free (RFS) and overall survival (OS) were collected. Associations of patient, tumor, and surgical factors with risk of major postoperative complications and length of stay ≥30 days were tested using univariate logistic regression. Log-rank and multivariate Cox regressions were performed to identify factors associated with survival outcomes. **RESULTS:** From 2011-2022, 127 patients underwent pelvic exenteration for primary or recurrent pelvic malignancy. The most common primary tumor type was gastrointestinal (58.3%), followed by soft tissue (18.1%), urologic (14.2%), and gynecologic (7.9%). Seventy-six (59.8%) patients received neoadjuvant therapy. 30.7% of patients experienced a Clavien-Dindo grade III/IV complication and 19.7% required reoperation, most commonly for flap-related complications (7.9%). Median length of stay was 18.5 days (IQR 10-34), with 27.6% of patients hospitalized for ≥30 days. Age, sex, tumor type, neoadjuvant therapy, and flap reconstruction were not associated with an increased risk of reoperation, grade III/IV Clavien-Dindo complication, or prolonged length of stay. Median OS and RFS were 60.9 and 15.3 months, respectively. Amongst 63 patients who recurred during the study follow-up period, 60.3% had distant metastases. An R0 margin was achieved in 73.2%. An R1 margin was associated with significantly worse RFS (HR 2.24,95% CI 1.23-4.08, p=0.008) and OS (HR 2.01, 95% CI 1.05-3.85, p=0.035). **CONCLUSIONS:** Pelvic exenteration patients experience a relatively high rate of postoperative complications and prolonged hospital admission. In this study, patient, tumor, and surgical factors were not associated with increased risk of reoperation, major postoperative complications, or prolonged length of stay. Obtaining an R0 margin remains the strongest determinant of survival. The morbidity of this procedure should be weighed carefully against potential survival benefits.

EP184

'ThyroPredict': A Pioneering FNAC Slide-Based Genomic Assay and the First Indian Innovation for Indeterminate Thyroid Nodules

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INTRODUCTION: Molecular Assays are the standard of care in management of Indeterminant Thyroid Nodules but these tests are not available to the developing and developed economies. We have developed and validated NGS based molecular Assay - ThyroPredict, in India. The breakthrough is that this 524 gene assay can be run on FNAC (cytology) slides and no additional material is required. **METHODS:** A total of 36 consecutive patients between June 2023 to March 2025 (21 Months) with Bethesda III and IV Thyroid Nodules who underwent surgical management were included in this prospective cohort study conducted at HCG-Aastha Cancer Center, Ahmedabad. ThyroPredict Assay was run on FNAC slides with Triple blinding. ThyroPredict Risk stratification for each patient was correlated with Final HPE report and various statistical parameters assessed. **RESULTS:** [6 out of 36 patients failed the test due to low yield, hence analysis was done on 30 patients]. Average Age was 47.67 years. 9 out of 30 patients (30%) turned out to be harbouring Thyroid Malignancy on Post-operative Histopathology.

All 9 patients were found to have Well Differentiated Thyroid Carcinoma:

Histology	Number	Percentage
Papillary thyroid carcinoma (PTC)	7	77.8%
Minimally invasive follicular carcinoma (mi-FTC)	2	22.2%

ThyroPredict Result	Benign (HPE)	Malignant (HPE)	Total
Low Risk	21 (100.0%)	3 (33.3%)	24
High Risk	0 (0.0%)	6 (66.7%)	6
Total	21	9	30

All 21 benign cases had Low Risk Stratification

Maximum number of cases were Benign with Low risk stratification (70%)

Parameter	Total Cohort	Bethesda III	Bethesda IV
Sensitivity	66.7%	60%	75%
Specificity	100%	100%	100%
PPV	100%	100%	100%
NPV	87.5%	89.5%	80%
Accuracy	90.0%	90.9%	87.5%
p-value	0.0001	0.006	0.14

Genetic alteration		Number	Percentage
No reportable alteration		17	56.7%
BRAF V600E		5	16.7%
HRAS Q61R		4	13.3%
NRAS Q61R		2	6.7%
TP53		1	3.3%
EIF1AX/PLK2 (VUS)		1	3.3%

Benign Call Rate (BCR) was 70% (Bethesda 3 – 86.36%, Bethesda 4 – 62.5%)

Slide Failure Rate was 16.67% (6 out of 36). When a cut off of 200 cells/smear was applied to the study - slide failure rate was 0 % (number of cells per smear is a surrogate marker of nucleic acid content). **CONCLUSIONS:** There is a high Predictive and diagnostic value of ThyroPredict Assay. The fact that it is performed on FNAC slides can be game changer in the Indian scenario where still FNAC dominates and repeat FNA for NGS is a never accepted option. Also, this assay has demonstrated lowest Slide Failure rate of all the major assays applicable on FNAC slides. This Assay is a significant step towards bridging Health care accessibility Disparity.

Assay	Sensitivity	Specificity	PPV	NPV	Tissue Material Required
ThyroSeq v3	94–98%	~82%	~66%	~97%	FNA smear or preserved vial (e.g., ThinPrep, SurePath)
Afirma GSC	~96%	~53%	~63%	~96%	FNA in RNA-preserving solution (e.g., RNARetain)
ThyGeNEXT/ThyraMIR	93–98%	90–98%	74–75%	95–97%	FNA in proprietary solution (Afirma Collection Kit)
THYROPREDICT	66.67%	100%	100%	87.5%	FNAC Slides

Figure. Comparison of ThyroPredict with established assays for Indeterminate Thyroid Nodules

EP185

Comparative Analysis of Perioperative Outcomes: Pectoralis Block Versus Traditional Anesthesia in Breast-conserving Surgery with Axillary Sentinel Lymph Node Biopsy

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INTRODUCTION: The pectoralis (PECS) block is a regional anesthesia technique increasingly used in multimodal analgesia protocols to reduce opioid exposure in breast surgery. While prior studies have examined its role under general anesthesia with mastectomy, little is known about its application in breast conservation under sedation. This study evaluated whether PECS block with multimodal analgesia (MMA) reduces intraoperative opioid requirements in breast-conserving surgery (BCS) with sentinel lymph node biopsy (SLNB). **METHODS:** We conducted a retrospective cohort study of female patients undergoing BCS with SLNB between May 2024 and February 2025. Patients received either PECS block with MMA under sedation or standard anesthesia. The primary outcome was intraoperative narcotic use. Secondary outcomes included length of stay, postoperative nausea and vomiting (PONV), pain scores, and procedure duration. **RESULTS:** A total of 48 patients were analyzed, with 34 in the PECS with MMA group and 14 in the standard anesthesia group. The experimental group had significantly lower intraoperative narcotic use compared to the control group, 3% vs 93%. However, there was no statistically significant difference between the groups in postoperative narcotic use or in rates of PONV. Of note, no patients in the experimental group experienced vomiting postoperatively, whereas 7% of the control group did. Pain score analysis revealed no significant difference between groups in the immediate postoperative period or discharge pain scores. However, at follow-up, the experimental group reported significantly lower pain scores ($p = 0.007$). Surgical duration and recovery duration were similar between groups, with no significant differences. **CONCLUSIONS:** PECS block with MMA significantly reduced intraoperative narcotic use and improved longer-term pain control in patients undergoing BCS with SLNB under sedation. There was a trend toward less immediate postoperative pain and PONV in the experimental group that may become statistically significant in a larger cohort. These findings support the role of PECS block as an effective opioid-sparing strategy in breast surgery anesthesia protocols.

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Survival Among Patients with Breast Cancer Who Subsequently Underwent Solid Organ Transplant

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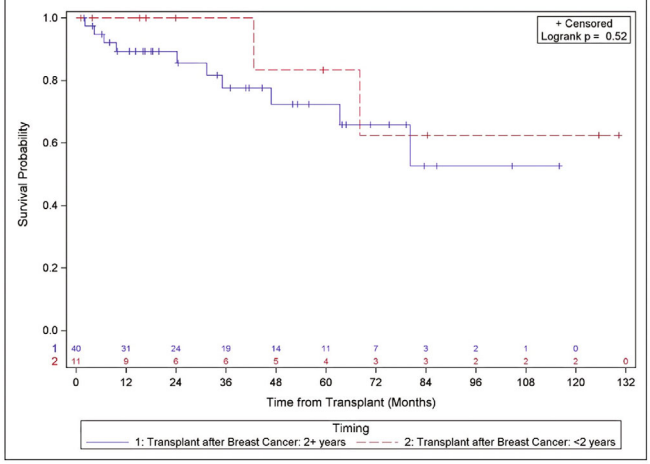
INTRODUCTION: Patients with breast cancer who later undergo solid organ transplantation (SOT) represent a complex clinical scenario, largely due to lifelong immunosuppression, which may increase recurrence and secondary malignancy risk. Although breast cancer is the most common cancer among women worldwide, data on survival outcomes post-SOT remain limited. This study evaluates clinical outcomes and overall survival (OS) in breast cancer patients who underwent SOT. **METHODS:** Patients with breast cancer who subsequently underwent SOT (heart, liver, kidney, or lung) were identified at a single academic institution. Patients were stratified by the interval between breast cancer diagnosis and SOT (< 2y vs ≥ 2y). OS was measured from transplant to death. Group differences were assessed with chi-square or Fisher's exact tests for categorical variables, Wilcoxon rank sum tests for continuous variables, and Kaplan-Meier with log-rank testing for unadjusted OS. **RESULTS:** A total of 51 patients were included: 11 transplanted < 2y after diagnosis of breast cancer and 40 transplanted ≥ 2y after diagnosis. Although not statistically significant, breast cancer tumors were slightly larger in the ≥ 2y cohort [15 mm (IQR 10.8-24) vs < 2y cohort, 9 mm (IQR 8-15); p=0.09]. There was no difference in the breast cancer subtypes based on receptor (ER/PR/HER2) status (p=0.64). Receipt of chemotherapy and radiation were similar between the cohorts (both p >0.05). Lumpectomy surgery was most common for both cohorts (< 2y, 63.6% vs ≥ 2y, 61.0%; p=1.0). However, endocrine therapy was more common among the < 2y cohort (81.8% vs ≥ 2y cohort, 18.2%; p=0.04). Median follow-up from SOT was 59.3mo (95% CI: 3.9-125.5) for patients transplanted < 2y and 44.7mo (95% CI: 19.9-64.9) for patients transplanted ≥ 2y after breast cancer (p=0.22). The < 2y cohort was older at the time of transplant (median 62y, IQR 54–67) compared to the ≥ 2y cohort (median 54.5y, IQR 48–59; p=0.01). Heart transplants were more common in the ≥ 2y cohort (29.3% vs < 2y cohort, n=0; p=0.05). At 3 years, OS was 100% in the < 2y cohort vs 77.6% in the ≥ 2y cohort; at 5 years, OS was 83.3% in the < 2y cohort vs 72.4% in the ≥ 2y cohort; differences were not statistically significant (p=0.52) (Figure). **CONCLUSIONS:** Among patients undergoing SOT after breast cancer, those transplanted within 2 years had similar OS to those transplanted after 2 years, suggesting that shorter intervals between a breast cancer diagnosis and SOT may not be adversely associated with survival.



Time from Cancer to Transplant	Total	Deaths (%)	Survival Rate (95% CI)		
			36-Month	60-Month	120-Month
≥2 years	40	10 (25.0%)	0.776 (0.580-0.889)	0.724 (0.511-0.857)	NE
<2 years	11	2 (18.2%)	1.000 (1.000-1.000)	0.833 (0.273-0.975)	0.625 (0.142-0.893)
All Patients	51	12 (23.5%)	0.819 (0.652-0.911)	0.743 (0.554-0.861)	0.556 (0.315-0.742)

Abbreviations: CI=confidence interval, NE=non-estimable.

Figure. Unadjusted overall survival from time of transplant for patients with breast cancer who subsequently underwent solid organ transplant

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AI-based automated assessment of superior mesenteric artery dissection in robotic pancreatoduodenectomy

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INTRODUCTION: Superior mesenteric artery (SMA) periadventitial dissection is critical to margin-negative pancreatoduodenectomy (PD) for pancreatic head cancer, whereas plexus preservation may prevent intractable diarrhea. No modality can objectively assess SMA dissection. This study aimed to develop an artificial intelligence (AI) model to evaluate SMA dissection from robotic PD (RPD) images. **METHODS:** This study used still images from recorded RPD videos for model development and validation. Board-certified pancreatic surgeons annotated 6 anatomical structures: exposed SMA (adventitial plane), unexposed SMA (plexus-preserved), SMA branches including inferior pancreatoduodenal artery (IPDA), dissected SMA plexus, hepatic artery and branches, and portal/superior mesenteric veins and branches. The model was trained to recognize these structures and was evaluated by intersection over union (IoU). SMA dissection extent was calculated as the proportion of exposed/total SMA area, divided into 4 classes (< 20%, 20-60%, 60-90%, >90%), and agreement with ground truth was assessed by Spearman correlation. **RESULTS:** The model was trained on 3541 still images from 37 RPD cases and validated on 487 images from 12 independent cases. It achieved clinically acceptable recognition for veins (IoU 0.74), hepatic arteries (0.46), and exposed SMA (0.43). IoU values were lower for small regions such as unexposed SMA (0.30), SMA branches (0.18), and SMA plexus (0.10). Representative overlays showed close alignment between AI predictions and anatomical structures (Fig. 1). The model accurately identified SMA branches including replaced right hepatic artery (Fig. 1b) and IPDA (Fig. 1d), supporting its anatomical recognition capability. Differentiating unexposed and exposed SMA regions (Fig. 1b, d) enabled visual assessment of dissection extent. Complete plexus dissection (≥90% adventitial exposure) and plexus preservation (≥80% of plexus preserved) were correctly classified in 70% and 75% of cases, respectively. The AI-derived classification of SMA dissection extent showed a moderate correlation with ground truth (Spearman ρ= 0.59). **CONCLUSIONS:** We developed the first AI model to identify key structures and SMA dissection planes in RPD. The model showed acceptable accuracy and quantified dissection extent. Automated visualization could aid decision-making, improve safety, and support training and quality assessment in RPD.

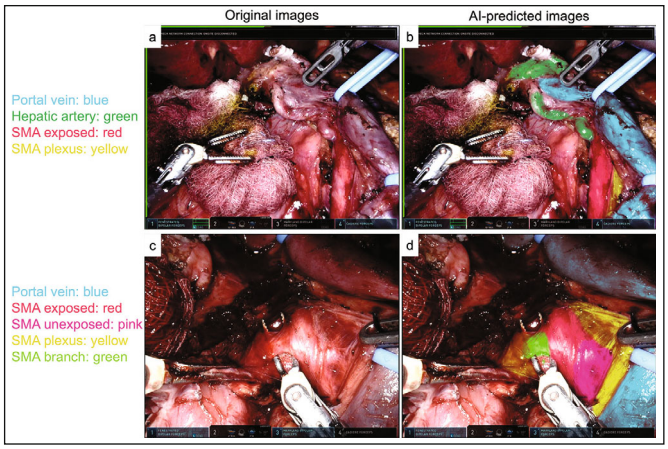

Figure 1: Artificial intelligence highlights vascular structures in intraoperative images

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Impact of sentinel lymph node biopsy (SLNB) on adjuvant treatment indications in patients with early stage clinically and imaging node-negative (cN0/iN0) luminal breast cancer undergoing breast-conserving therapy or mastectomy

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INTRODUCTION: The SOUND and INSEMA trials demonstrated the oncological non-inferiority of SLNB omission for patients with small, cN0/iN0, HR+/HER2- breast cancer (BC) after breast-conserving therapy (BCT). SLNB omission in the same population of patients undergoing mastectomy has not been studied. This study aimed to identify factors associated with nodal positivity and adjuvant treatment indications in this population after BCT or mastectomy. **METHODS:** Retrospective analysis of a prospectively maintained institutional database including patients with cT1-T2, cN0/iN0, HR+/HER2- BC who underwent upfront mastectomy or BCT including SLNB from 01/2014 to 12/2024). Adjuvant treatment indications based on node-criteria are summarized in table 1. Multivariable logistic regression was used to evaluate associations of nodal positivity and adjuvant treatment indications with clinicopathological features. **RESULTS:** In total, 454 patients were included, of whom 140 (30.8%) had cT2 tumors. 145 (31.9%) underwent mastectomy who were more likely to be premenopausal (31.0% vs 21.4%), have larger (cT2: 37.2% vs 27.8%), higher grade (grade 3: 20.0% vs 12.0%), and multifocal tumors (23.5% vs 9.7%), of lobular histology (22.1% vs 11.0%). The rate of nodal positivity did not differ between the groups (18.6% vs 14.9%, p=0.149), nor did the number of positive nodes (1: 13.1% vs 12.0%; ≥2: 5.5% vs. 2.9%). Indications for adjuvant treatments also did not differ between the groups: abemaciclib: 7.6% vs 6.2%, p=0.550; ribociclib: 9.7% vs 7.8%, p=0.586; nodal irradiation

absolute indication: 4.8% vs 4.5%, p=1.000; relative indication: 10.3% vs 9.4%, p=0.736. On multivariable analysis nodal positivity was associated with LVSI (odds ratio [OR] 6.8, 95%CI 3.7-12.9, p< 0.001) and premenopausal status (OR 2.0, 95%CI 1.0-3.8, p=0.034) but not with mastectomy (OR 1.1, 95%CI 0.6-1.9, p=0.719). CDK4/6i indication was associated with ≥pT2 tumors (OR 12.9, 95%CI 6.5-26.5, p< 0.001), Ki67 ≥20% (OR 5.3, 95%CI 2.9-10.0, p< 0.001), and LVSI (OR 5.1, 95%CI 2.6-10.1, p< 0.001), but not with mastectomy (OR 1.3, 95%CI 0.7-2.3, p=0.481). Nodal irradiation indication was associated with LVSI (OR 7.1, 95%CI 3.6-14.4, p< 0.001), but not with mastectomy (OR 1.0, 95%CI 0.5-1.9, p=0.996). **CONCLUSIONS:** In this SOUND/INSEMA population, type of surgery was not associated with nodal positivity or adjuvant treatment. Further investigation into extending SLNB omission to patients undergoing mastectomy is warranted.

Table. Adjuvant treatment indication based on node-criteria

Treatment	Indication
Abemaciclib *based on monarchE trial*	• ≥4 positive lymph nodes • 1-3 positive lymph nodes and either grade 3 disease, or tumor size ≥5cm, or Ki67 ≥20%
Ribociclib *based on NATALEE trial*	• pT1pN1 (excluding pN1mi) • pT2pN1*
Nodal irradiation *based on MA20 and EORTC22922/10925 trials, and international/institutional guidelines*	Absolute indication: Breast conserving surgery** • ≥3 macrometastatic nodes • 1-3 macrometastatic nodes and medially/centrally located tumor • 1-3 macrometastatic nodes and ≥pT2 and grade 3 Mastectomy** • ≥2 macrometastatic nodes Relative indication: Breast conserving surgery** • ≥1 macrometastatic node Mastectomy** • ≥1 macrometastatic node

* provided that no additional criteria would render the pT2 status per se eligible for ribociclib treatment (i.e., grade 3; or grade 2 plus Ki67 ≥20% or grade 2 plus Oncotype Dx RS of ≥26), irrespective of nodal status.
** provided that no non-nodal criteria would render the patient eligible for nodal radiotherapy (premenopausal and medially/centrally located tumor and grade 3 and ≥pT2; or premenopausal and medially/centrally located tumor and ≥pT3).

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Beyond the Physician Shortage: Infrastructure as a Rate-Limiting Step in Breast Cancer Care

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INTRODUCTION: Breast cancer is the most common cancer among women in the United States, yet early detection and survival vary widely across regions. Physician shortages and limited facility access are both implicated, but the relative impact of workforce versus infrastructure on outcomes remains uncertain. Clarifying this relationship is critical to guide policy and investment to ultimately improve outcomes. **METHODS:** A county-level analysis was performed by linking data from the Area Health Resource File, Behavioral Risk Factor Surveillance System and Centers for Disease Control and Prevention using FIPS codes. Provider density was defined as the number of primary care physicians and obstetrician-gynecologists (for screening) or surgeons and radiation oncologists (for treatment) per 100,000 women aged 50–74 years. Counties were stratified into tertiles based on provider density. Facility availability was defined as the presence of mammography services for screening, and both operating rooms and chemotherapy services for treatment. We developed a neighboring-county facility index to estimate regional access beyond county borders. Adjusted generalized linear models estimated differences in screening rates, late-stage diagnosis, and mortality, accounting for interactions between provider density and facility availability. **RESULTS:** Among 3,108 included US counties, 62.6% were rural and 37.4% were urban. High provider-density counties were more likely to be urban, socioeconomically advantaged, and have mammography facilities (p< 0.001). Screening rates increased across provider density strata (75.4% vs 73.2%, p< 0.001), while late-stage diagnoses (30.8% vs 33.3%, p< 0.001) and mortality (13.7% vs 16.1%, p< 0.001) decreased. In adjusted models, greater provider density was associated with increased screening (β=1.49, p< 0.001) and decreased late-stage diagnosis (β= −1.29, p< 0.001) and mortality (β= −1.09, p< 0.001), but this was only observed when facilities were available. Among counties lacking local facilities, a higher proportion of counties with screening or treatment resources was associated with higher screening (β=1.23, p=0.047) and lower mortality (β= −1.69, p=0.023). **CONCLUSIONS:** Provider density improved outcomes only when facilities were available, suggesting that healthcare infrastructure is a critical rate-limiting step in breast cancer detection, and impacts survival. These findings highlight the need to align workforce expansion with infrastructure investment to improve breast cancer care.

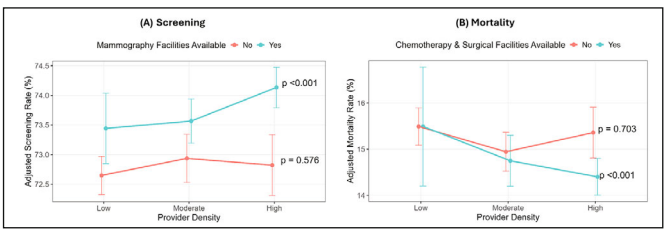

Figure 1. Adjusted Screening (A) and Mortality (B) Rates by Provider Density and Facility Access

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Factors Impacting Axillary Surgery in Clinically Node Negative Patients with an Ipsilateral Breast Tumor Recurrence

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INTRODUCTION: Data on axillary management for recurrent breast cancer (BC) is limited. We examine factors influencing axillary surgery(AS) in clinically node-negative (cN0) ipsilateral breast tumor recurrences (IBTRs). **METHODS:** An IRB approved retro-spective review of cT1-4c N0 M0 IBTRs (10/2008-5/2024) was performed. Re-recurrences were excluded. Associations between patient (pt) and tumor factors and planned IBTR AS were assessed with Chi-square, Fischer's exact and Wilcoxon tests. A multivariable logistic regression model predicting planned IBTR AS (SLN vs none) was performed. **RESULTS:** We identified 408 cN0 IBTRs . Index cancer AS were: 18.9% (77) none, 55.9% (228) SLN, 25.3% (103) ALND. IBTR planned AS were: 29.7% (121) none, 69.9% (285) SLN, 0.5% (2) ALND. Planned ALNDs were for T4 disease requiring extensive resection. Planned AS numbers relative to index AS are shown (Fig). When comparing planned IBTR AS (SLN vs none), pts undergoing a planned SLN were younger (age < 70 60.7% vs 39.7%, p=0.0003), had a longer disease-free interval (DFI (>5 yrs 71.2% vs 63.6%, p=0.043), more often had a prior SLN than prior ALND (planned SLN: prior SLN 62.1%, prior ALND 18.6% vs none: prior SLN 41.3%, prior ALND 40.5% p< 0.001), more often had in situ index BC (21.5% vs 12.1%, p = 0.037) and more often had mastectomy than repeat breast conservating surgery (78.9% vs 43.0%, p< 0.001). Index nodal status, index therapies (radiation, chemotherapy), IBTR tumor characteristics, year of IBTR surgery and IBTR neoadjuvant chemotherapy did not differ (p = NS). On multivariable logistic regression prior AS, DFI, age at IBTR, and IBTR breast operation were predictive of AS choices. Most notably, prior ALND (vs prior SLN) was less likely to have a planned SLN (OR 0.17, p< 0.001) while SLN surgery was associated with mastectomy over repeat breast conservation (OR 7.4, p< 0.001). Age 70+ (vs 50-69) were less likely to have a planned SLN (0.49, p=0.014). Tumor biology and year of IBTR surgery were not predictive. AS plan changed from SLN to ALND in 9.1% of SLN pts (4/26 due to failed mapping, 22/26 due to positive SLN), with final IBTR AS: 29.7% none, 63.4% SLN, 6.9% ALND.

There was no significant difference in recurrence free survival (86-87%) between planned SLN surgery and no AS (p=0.35). **CONCLUSIONS:** In cN0 IBTR, axillary management is influenced by factors including extent of prior AS, age at IBTR, disease-free interval, and IBTR breast operation. Our data demonstrates a personalized approach to AS for recurrent breast cancer is possible and underway.

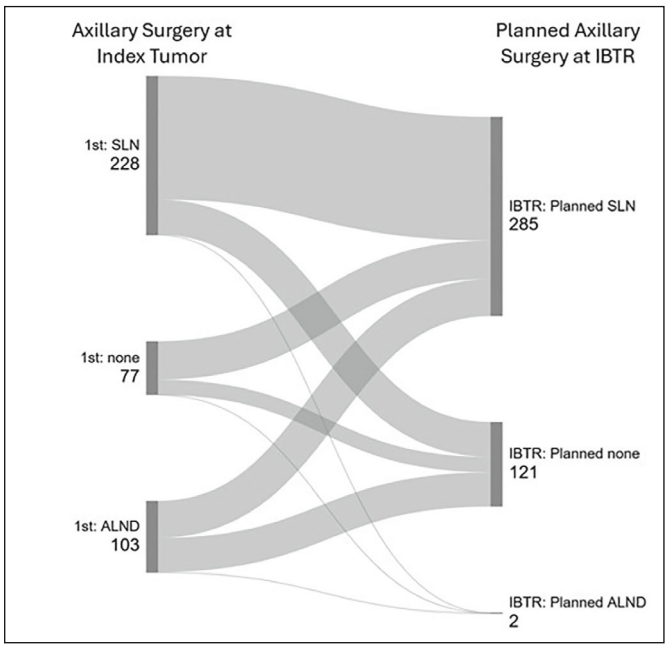

Figure. Prior axillary surgery and planned IBTR axillary surgery

EP191

Should the PREOPANC and JSAP-05 trials drive use of neo-adjuvant chemotherapy in patients with resectable pancreatic ductal adenocarcinoma? Assessing the evidence using the Robustness of

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INTRODUCTION: Two recent randomized trials, PREOPANC and JSAP-05, found that neoadjuvant chemotherapy (NAC) improved survival over up-front resection for patients with resectable exocrine pancreatic ductal adenocarcinoma (PDAC). However, only 40-50% of patients receive NAC in the present day, since there are concerns that the trial results are not robust and uncertainty about which patients are most likely to benefit from NAC. The purpose of this study was to use a novel method for sensitivity analysis to assess the strength of the trials' results. We aim to support more informed multidisciplinary discussions about the potential benefits of NAC versus upfront surgery for patients with resectable PDAC. **METHODS:** We evaluated the robustness of the PREOPANC and JSAP-05 trials using a novel method for sensitivity analysis called the Robustness of Inferences to Replacement (RIR). The RIR quantifies how much resampling from a null hypothesis population would be needed to change a study result (significant difference becomes non-significant). If the RIR is high, then a study is considered more robust because it is unlikely that repeating the study with a new sample would generate a different result. **RESULTS:** The main finding of PREOPANC (n=246) was that NAC increased overall survival (hazard ratio for death 0.73, 95% CI 0.56-0.96) compared to up-front resection. The RIR was 31 (out of 246), meaning that 31 NAC patients would have had to experience the same survival as up-front resection patients for the result to change. This is equivalent to saying that for the result to be wrong, 13% of the observed effect would have to be eliminated. The main finding of JSAP-05 (n=364) was that NAC increased overall survival (hazard ratio for death 0.73, 95% CI 0.56, 0.95) over up-front resection. The RIR was 52 (out of 364), so for the result to be wrong, 14% of the observed effect would have to be eliminated. **CONCLUSIONS:** The trial findings favoring NAC over up-front resection are robust. For the trial results to be reversed, so there would be no significant difference in survival, 13-14% of the observed difference between treatment groups would have to be eliminated. This suggests that if the trials were repeated under different circumstances, the results would likely be the same. This analysis supports the use of NAC for patients with resectable PDAC.

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Advanced preoperative planning for liver surgery (APPLY Study): A prospective randomized education trial in CGSO fellowship

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INTRODUCTION: Preoperative planning for hepatobiliary surgery is complex and can be particularly challenging for trainees learning to understand the relationship of three-dimensional (3D) anatomic structures extrapolated from cross-sectional imaging. The Advanced Preoperative Planning for Liver Surgery (APPLY) study is a single institution prospective study aimed to evaluate CGSO fellow preparedness comparing utilization of standard operative planning (SOP) or advanced operative planning (AOP) in preparation for hepatobiliary surgery. **METHODS:** CGSO fellows are randomized to either SOP or AOP which entail the use of CT/MRI or CT/MRI/Synapse 3D platforms, respectively (Fig 1). Synapse 3D is utilized to generate 3D reconstructions of liver anatomy, perform virtual resection, and liver volumetry on a shared laptop. Enrollment began 2/2025 with inclusion of patients undergoing a liver resection for primary or metastatic hepatobiliary cancers. Fellows utilize the assigned imaging platform to devise a comprehensive surgical plan which is reviewed with the faculty surgeon (JWD or DAA) the day of surgery. Faculty completes a survey of fellow preparedness, the primary outcome. This is a composite score of domains including vascular anatomy, tumor specific characteristics, and surgical plan with identification of critical operative steps. The secondary outcomes are autonomy, performance, and postoperative outcomes. **RESULTS:** Preliminary results demonstrate a total of 62 cases enrolled to date with 24 cases randomized to the SOP and 38 to the AOP arms. A median of 7 cases have been enrolled/month, 36 (58%) of which have been assigned to a 2nd year CGSO fellow. The distribution includes colorectal liver metastasis (53%), cholangiocarcinoma (15%), hepatocellular carcinoma (11%), and metastatic neuroendocrine tumors (10%). Of the 40 operations with complete data entry meeting inclusion criteria, 29 (73%) were completed via an open approach, with the remainder undergoing minimally invasive resection. The median IWATE difficulty index of all cases was 5 (interquartile range 4-8.5), with 14 cases receiving a score of ≥7 corresponding to a difficulty level of advanced/expert. 9 patients (23%) underwent at least one microwave ablation. **CONCLUSIONS:** The addition of an AOP platform incorporating 3D virtual hepatectomy is feasible in the education of CGSO fellows preparing for hepatobiliary surgery. Completion of the study will allow determination of whether 3D reconstructive imaging impacts fellow preparedness, operative autonomy/performance, or postoperative outcomes.

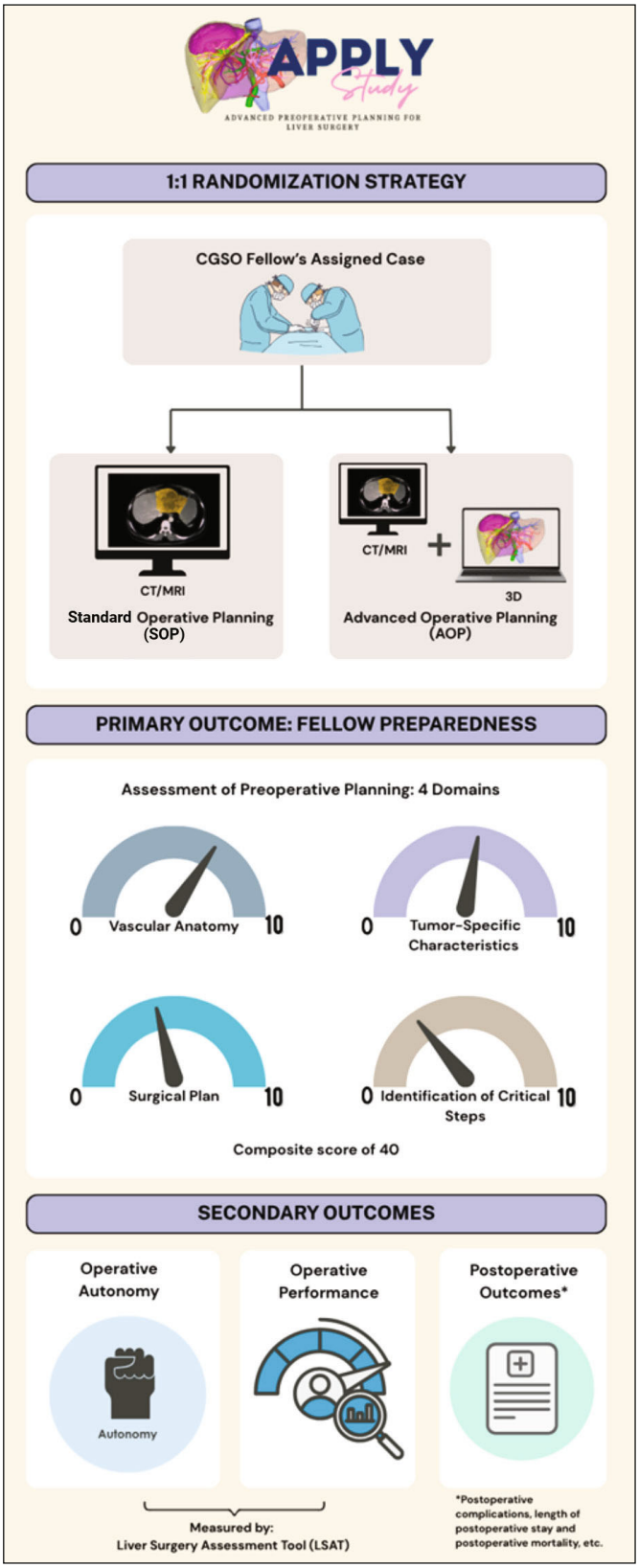

Figure 1. Study schema for the Advanced Preoperative Planning for Liver Surgery (APPLY) Study.

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Surgical and oncologic outcomes for rectal cancer: a rural–urban comparison

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INTRODUCTION: Though it has been well established that rural-residing patients have worse health outcomes than their urban counterparts, few studies investigate the intricacies of cancer care among rural patients. This work aims to highlight disparities in rectal cancer care among rural patients, enabling future measures to mitigate these disparities. **METHODS:** Data were obtained from the SEER Research Plus database using the Case Listing function. Patients aged 45–84 with rectal cancer and complete data for rural–urban continuum code and surgical treatment variables were included. Demographic and clinical characteristics were summarized descriptively. Differences in survival outcome by rural–urban status were analyzed using Kaplan–Meier and multivariable Cox regression. Models were adjusted for age, sex, race, surgery type, and time from diagnosis to treatment, with statistical significance defined as $p < 0.05$. **RESULTS:** A total of 165,166 patients with rectal cancer were included in this analysis. Compared to urban patients, those in rural areas were more likely to undergo total proctectomy, while urban patients were more likely to undergo local tumor excision. Rural patients also received chemotherapy and beam radiation at slightly higher rates ($p < 0.001$), though the lack of availability of radiation therapy was higher in rural areas (20.0% vs 16.2%, $p < 0.001$). The average time to treatment for rural patients was shorter than urban patients (30.5 vs. 32.2 days, $p < 0.001$). In the multivariable Cox regression model adjusted for key clinical and demographic factors, rural residence remained independently associated with higher cancer-specific mortality (HR 1.14; 95% CI, 1.11–1.17; $p < 0.001$) and all-cause mortality (HR 1.14; 95% CI, 1.11–1.17; $p < 0.001$). Rural patients were also more likely to be diagnosed with distant-stage disease (18.1% vs. 17.1%). Using ordinal logistic regression, which modeled stage at diagnosis as an ordered outcome (from in situ to distant), rural patients had 7% greater odds of presenting at a higher stage than urban patients (RR 1.07; 95% CI, 1.03-1.13; p=0.001). **CONCLUSIONS:** This analysis underscores that rural patients remain an at-risk group, with rising disease burden and persistent disparities in access to high-quality, multidisciplinary care for rectal cancer. Addressing these disparities will require targeted policy interventions to improve access to screening, facilitate timely referral to high-volume centers, expand the availability of radiation therapy, and support adherence to evidence-based treatment protocols.

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Single-Cell Profiling Reveals Peripheral Blood Immune Landscape Remodeling in Breast Cancer Lymph Node Metastasis

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INTRODUCTION: Axillary lymph node (LN) metastasis is a critical prognostic factor in breast cancer (BC), influencing staging and treatment decisions. While the local tumor microenvironment's role is recognized, the systemic immune landscape in peripheral blood and its contribution to metastasis remain poorly understood. This study investigates how LN metastasis reshapes the peripheral immune compartment to facilitate or suppress metastatic progression. **METHODS:** Peripheral blood mononuclear cells (PBMCs) from 6 BC patients with (Pos) and without (Neg) LN metastasis underwent single-cell RNA/TCR sequencing (scRNA/scTCR-seq). Key findings were validated through in vitro functional assays using HL-60-derived neutrophil-like cells and by analyzing scRNA-seq data from an additional 14 BC tissue samples. Bioinformatic analyses included differential gene expression, pathway enrichment, cell-cell communication, and pseudotime trajectory inference. **RESULTS:** ScRNA-seq revealed profound immune remodeling in Pos patients. Pro-metastatic neutrophils were enriched, notably Neutrophil_RSAD2 (expressing interferon-stimulated genes) and Neutrophil_MMP9 (expressing pro-angiogenic factors). T/NK cell compartments in Pos patients exhibited an immunosuppressive profile, with expansions of CD4Treg_FOXP3, cytotoxic-exhausted CD8Teff_

GZMH, and NKT_GNLY subpopulations. In contrast, the anti-metastatic CD8Teff_CCL5 subset was enriched in Neg patients. Pos patients also showed clonal expansion of T cells expressing GZMH/GNLY. Critically, LGALS9-HAVCR2 immune checkpoint interactions were elevated in the Pos group, forming an immunosuppressive axis from neutrophils/mononuclear phagocytes (MPs) to T/NK cells. In vitro experiments confirmed that interferon-stimulated neutrophil-like cells secreted LGALS9, particularly under IL-6 and lactate conditions mimicking the metastatic environment. These pro- and anti-metastatic immune signatures and the LGALS9-HAVCR2 axis were consistently observed in BC tissues. **CONCLUSIONS:** LN metastasis induces systemic immunosuppression by enriching specific pro-metastatic neutrophil and exhausted T/NK cell subsets and activating the LGALS9-HAVCR2 signaling pathway. These findings identify potential blood-based biomarkers for predicting metastasis and novel therapeutic targets for intervention.

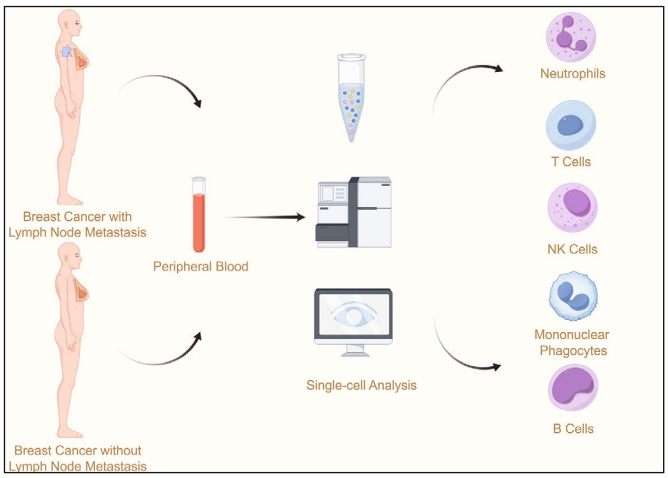

Figure. Single-cell analysis of peripheral blood immune cells (neutrophils, T cells, NK cells, mononuclear phagocytes, B cells) in breast cancer patients with versus without lymph node metastasis.

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Impact of Health Literacy on Clinical Trial Perception among Black and Hispanic Oncology Patients: A Multicenter Survey

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INTRODUCTION: Black and Hispanic patients remain significantly underrepresented in clinical trials, raising both scientific and ethical concerns. We aimed to evaluate the influence of health literacy (HL) on clinical trial perceptions in a multi-institutional cohort of minority oncology patients. We hypothesized that higher HL would be associated with more favorable perception that may inform opportunities for targeted interventions. **METHODS:** A previously validated survey was used to assess awareness about clinical trials, recruitment preferences, and perceptions about research integrity among self-identified Black and Hispanic adult patients seen in surgery clinics across four tertiary institutions between June 2023 and August 2025. HL level was determined using the BRIEF HL screening tool, with scores ≥17 classified as "Adequate HL" and < 17 as "Below Adequate HL". Group comparison was performed using Chi-square test. **RESULTS:** Among 243 respondents, 35% identified as non-Hispanic Black (NHB) and 65% as Hispanic. Patients with Below Adequate HL comprised 61%, of whom 72% were Hispanic. Overall, 16% of the cohort reported previous participation in a clinical trial, even though 56% indicated interest in participating in a trial. Interest in clinical trial participation was similar for both HL groups. Notwithstanding, acceptability of blinding was marginally significantly higher in the Adequate HL group (37% vs. 26% Below Adequate HL, P=0.06), whereas acceptability of randomization was similar for both. Additionally, trust in pharmaceutical company-sponsored trials was significantly greater in the Adequate HL group (77% vs. 52% Below Adequate HL, P< 0.001). Patients with Below Adequate HL also more frequently cited lack of trust of health systems as a barrier to clinical trial participation (29% vs. 17% Adequate HL, P< 0.05). **CONCLUSIONS:** While overall interest in clinical trial participation did not differ by HL, patients with lower HL demonstrated higher rates of reservation about trial integrity such as blinding and industry sponsorship. Tailored communication strategies that explicitly address these concerns may improve receptivity and enrollment among minority patients with lower HL.

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The effectiveness of neoadjuvant approaches in the elderly with high-risk breast cancer

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INTRODUCTION: Neoadjuvant chemotherapy is utilized less in elderly patients with breast cancer due to concerns of tolerance. Our study aimed to characterize the effectiveness of neoadjuvant chemotherapy in elderly with high-risk breast cancer. **METHODS:** A single institution prospective database was retrospectively reviewed for female patients ≥70 years old with a first-time diagnosis of HER2+ or triple-negative breast cancer (TNBC) from 2000-2023 who underwent surgery. The cohort was stratified into three groups: neoadjuvant chemotherapy, upfront surgery with adjuvant chemotherapy, and surgery alone. Groups were compared with chi square and Kruskal-Wallis tests. Temporal trends were analyzed with Cochran-Armitage trend test and time-to-event outcomes with Kaplan-Meier. **RESULTS:** Of 211 elderly with high-risk breast cancer, 56 (27%) received neoadjuvant chemotherapy, 51 (33%) underwent upfront surgery with adjuvant chemotherapy, and 104 (49%) had surgery alone. Comparing the neoadjuvant chemotherapy, surgery with adjuvant chemotherapy, and surgery alone groups, there was no difference in tumor markers (HER2+ 36% vs 55% vs 43%, TNBC 64% vs 45% vs 57%, p=0.13) or hormone receptor positivity (30% vs 39% vs 34%, p=0.62). At diagnosis, those with neoadjuvant therapy were higher stage (25% vs 48% vs 66% stage I, p< 0.001) and had larger tumors (median 2.3 vs 1.5 vs 1.4 cm, p< 0.001). Those receiving neoadjuvant chemotherapy were more likely to have high grade tumors (79% vs 57% vs 57%, p=0.02). There was no difference in age, race, BMI, comorbidities, histology, or type of surgery. The majority underwent lumpectomy (63% vs 63% vs 64%, p=0.96) and/or sentinel lymph node biopsy only (70% vs 71% vs 71%, p=0.07). Use of neoadjuvant chemotherapy increased over time, from 1% of patients in 2000-2009 to 68% in 2020-2023 (p< 0.001). Of those receiving neoadjuvant chemotherapy, 41 (73%) completed therapy. The remaining 27% ended therapy early due to cytopenia, sepsis, or neuropathy. Ten patients (18%) required dose reduction, and 14 (25%) were hospitalized due to therapy. After neoadjuvant chemotherapy, 20 patients (36%) had a complete response, 34 (61%) residual disease, and 2 (4%) in situ disease. In patients with nodal disease, 13 (50%) had a complete axillary response. **CONCLUSIONS:** As use of neoadjuvant chemotherapy has increased, most elderly patients tolerate their planned regimen, with over one-third having a complete response and lower stage disease at time of surgery than those undergoing upfront surgery. Elderly patients can benefit from neoadjuvant chemotherapy, and age should not be a barrier to its use.

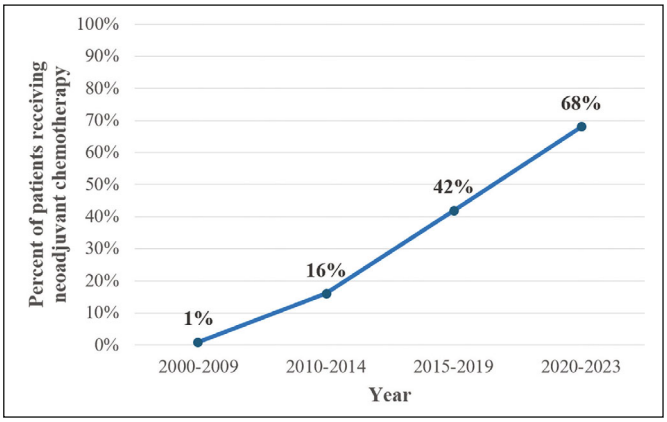

Figure. Temporal trends in the use of neoadjuvant chemotherapy in elderly female patients with high-risk breast cancer from 2000-2023 at a single academic institution. Use of neoadjuvant chemotherapy significantly increased in elderly females with HER2+ and triple negative breast cancer (p<0.001).

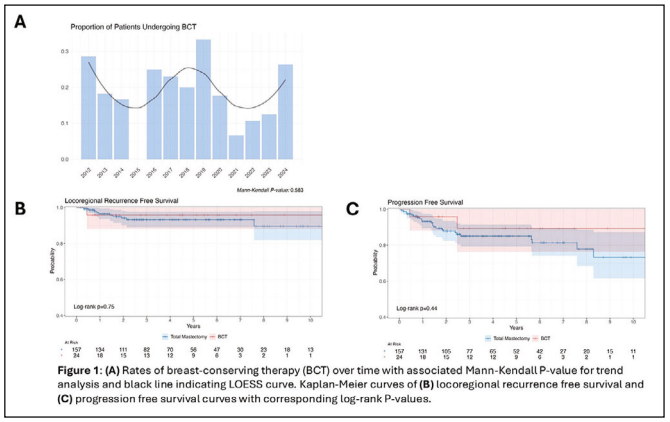

Figure 1: (A) Rates of breast-conserving therapy (BCT) over time with associated Mann-Kendall P-value for trend analysis and black line indicating LOESS curve. Kaplan-Meier curves of **(B)** locoregional recurrence free survival and **(C)** progression free survival curves with corresponding log-rank P-values.

Figure. BCT Trends and Outcomes in T3-4a-c Breast Cancer

EP197

Rethinking the safety of breast-conserving therapy in cT3-4a-c tumors

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INTRODUCTION: Breast-conserving therapy (BCT) has been instrumental in de-escalating treatment for breast cancer and limiting potential overtreatment; however, most studies in this area have focused on early staged, small tumors. As such, attention to larger or locally advanced tumors has been lacking, leaving most of these patients to face total mastectomy (TM). In this single institution study, we aimed to analyze the overall management trends and oncologic outcomes of T3-4a-c patients based on breast surgery performed. **METHODS:** A retrospective database was created for females with T3-4a-c breast cancer, excluding those with initial metastatic disease. Chi-squared analysis and Fisher's exact test were performed for categorical variables. Trends over time were analyzed with Mann-Kendall tests. Survival analysis was conducted through Kaplan-Meier curves. **RESULTS:** A total of 182 patients were included, and the clinical T-stage breakdown was 83.4% T3 and 16.6% T4, of which 81.2% underwent TM and 18.9% BCT, with a conversation to TM rate of 5.52%. T3 patients tended towards higher rates of BCT (21.2% vs 6.67% in T4, p=0.06). Overtime, there were minor variations in rates of BCT (12.8 +/- 8.6%), though no overall trend (p=0.58, Figure 1A). Otherwise, patients treated with BCT had similar tumor sizes (6.97 vs 6.91cm in TM, p=0.76), rates of estrogen receptor positivity (62.5% vs 78.1%, p=0.09), progesterone positivity (70.6% vs 64.8%, p=0.52), HER2 positivity (21.2% vs 14.1%, p=0.31), neoadjuvant therapy (61.8% vs 59.9%, p=0.84), pathologic complete response (35.0% vs 25.9%, p=0.41), though did tend towards higher rates of adjuvant radiation (88.2% vs 74.6%, p=0.09). There was no significant difference in locoregional (11.8% in BCT vs 4.7% in TM, p=0.13) or overall recurrence (17.7% vs 13.6%, p=0.59). Survival curves also demonstrated no difference in locoregional recurrence free survival (p=0.75) or progression free survival (p=0.44) (Figure 1B,C). **CONCLUSIONS:** Despite pushes for BCT in early staged breast cancer, these results demonstrate a low rate of BCT in locally advanced and large tumor disease, with only minor variations over the years. Despite this, there was no significant difference in either locoregional recurrence or progression free survival between the two groups. As such, these results suggest there may be a subset of patients with cT3-4a-c tumors for whom BCT could be a feasible and safe option.

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Predictors of peritoneal surface recurrence and quantitative association with time to relapse after complete CRS/HIPEC for colon peritoneal metastases

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INTRODUCTION: Peritoneal surface metastases (PSM) from colorectal cancer carry a high risk of peritoneal recurrence after cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC). Prior studies have assessed factors associated with recurrence using the outcome of a dichotomized "early" versus "late" recurrence using arb, however, few quantify how those same clinicopathologic factors directly influence the timing of peritoneal relapse. This study aimed to identify predictors of peritoneal surface recurrence and to quantify their association with time to recurrence following CRS/HIPEC. **METHODS:** Patients included in a prospectively maintained institutional database who underwent CRS/HIPEC for colorectal PSM between 2010–2024 and achieved CC-0 cytoreduction were retrospectively analyzed. The primary outcome was peritoneal surface recurrence. Variables included peritoneal cancer index (PCI), tumor location, histology, HIPEC regimen, and KRAS/BRAF/SMAD4 status. Significant factors on univariable analysis ($p< 0.10$) were included in multivariable logistic regression (recurrence yes/no) and linear regression (time to recurrence). **RESULTS:** Among 133 patients, 64 (48.1%) developed peritoneal recurrence. Median PCI was higher in patients with recurrence (11.5 vs 5.0, $p< 0.01$) and median time to recurrence was 41.4 weeks (IQR 24.9–74.0). Tumor stage, histology, HIPEC regimen, and molecular alterations were not associated with recurrence. On multivariable analysis, right- and sigmoid-colon primaries independently predicted recurrence when controlling for PCI (right (30/64): OR 7.18, 95% CI 2.24–22.96; sigmoid (25/64): OR 6.54, 95% CI 1.99–21.49; both $p< 0.01$). Among those who recurred, each one-point increase in PCI was associated with a 2.43-week earlier recurrence ($\beta = -2.43$, $p< 0.01$). There was no association between site of primary tumor and time to recurrence. **CONCLUSIONS:** Nearly half of patients with colorectal PSM who achieved complete CRS/HIPEC developed peritoneal recurrence, most within the first year. Tumor location (right or sigmoid) predicted recurrence, while increasing PCI independently shortened the time to relapse. By quantifying the continuous relationship between PCI and recurrence timing rather than using categorical early/late definitions, these findings refine postoperative risk stratification and could aid in tailoring postoperative surveillance strategies.

Peritoneal Surface Recurrence after CRS-HIPEC				
		Yes	No	p-value
	n	64	69	
Pathologic Tumor Stage (n (%))				0.67
	pT0	0 (0.0)	2 (2.9)	
	pT2	3 (4.7)	2 (2.9)	
	pT3	20 (31.2)	23 (33.3)	
	pT4	37 (57.8)	37 (53.6)	
	pTx	4 (6.2)	5 (7.2)	
Signet Ring Histology (n (%))				0.87
	Yes	5 (7.8)	7 (10.1)	
	No	59 (92.2)	62 (89.9)	
KRAS Status (n=102) (n (%))				0.69
	Detected	35 (61.4)	35 (61.4)	
	Not detected/Wild type	22 (38.6)	22 (38.6)	
BRAF Status (n=93) (n (%))				0.32
	Detected	9 (18.4)	4 (9.1)	
	Not detected/Wild type	40 (81.6)	40 (90.9)	
SMAD4 Status (n=37) (n (%))				1.00
	Detected	4 (23.5)	5 (25.0)	
	Not detected/Wild type	13 (76.5)	15 (75.0)	
HIPEC Regimen (n (%))				0.40
	Mitomycin-C	43 (67.2)	52 (75.4)	
	Melphalan	21 (32.8)	17 (24.6)	
Primary Location (n (%))				0.05
	Right colon	30 (46.9)	24 (34.8)	
	Transverse colon	3 (4.7)	7 (10.1)	
	Left colon	2 (3.1)	8 (11.6)	
	Sigmoid colon	25 (39.1)	17 (24.6)	
	Rectum	1 (1.6)	5 (7.2)	
	Multifocal	0 (0.0)	2 (2.9)	
	Unknown	3 (4.7)	6 (8.7)	
PCI Score (median [IQR])		11.00 [7.00, 16.00]	5.00 [3.00, 11.00]	<0.01

EP199

Impact of Tumor Focality on Pathologic and Clinical Outcomes in Young Women Treated with Neoadjuvant Therapy for Breast Cancer

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INTRODUCTION: The effect of tumor focality on outcomes in patients with breast cancer undergoing neoadjuvant chemotherapy (NAC) is not well established. This study evaluated outcomes in patients ≤50 years with unifocal (UF), multifocal (MF), and multicentric (MC) tumors who underwent NAC. **METHODS:** Women ≤50 years with stage I-III invasive breast cancer treated with NAC and surgical resection from 07/2011 to 12/2022 were identified from a prospectively maintained single-institution database. Demographics, tumor and treatment characteristics were compared by tumor focality. Outcomes included pathologic complete response (pCR), locoregional (LRR) and distant recurrence, and overall survival (OS). **RESULTS:** Of 360 women who underwent NAC, 292 (81.1%) had UF disease, 49 (13.6%) had MF disease, and 19 (5.3%) had MC disease. 128 (35.5%) had hormone receptor-positive (HR+), HER2-negative disease, 99 (27.5%) had triple negative disease, and 133 (36.9%) had HER2-positive disease. MC patients were more likely to have HR+, HER2-negative disease than UF or MF patients (UF 34.9% vs MF 34.7% vs MC 47.4%, p=0.03). MC patients were also more likely to have invasive lobular carcinoma at both primary and secondary sites (p=0.001). Overall, 125 (34.7%) presented with cT1 disease and 206 (57.2%) presented with cT2 disease, while 176 patients (48.9%) were cN+. There were no differences in cT size or cN status by group. No MC patients underwent lumpectomy, but MC patients had the highest rate of bilateral mastectomy (UF 60.3% vs MF 51.0% vs MC 68.4%, p=0.001). MF and MC patients were more likely to have pathologically involved lymph nodes (UF 27.8% vs MF 43.8% vs MC 44.4%, p=0.04) and tended toward higher rates of axillary lymph node dissection (UF 31.9% vs MF 32.7% vs MC 52.6%, p=0.18). There were no differences in margin status or pCR. MF and MC patients had a higher rate of adjuvant endocrine therapy (UF 56.2% vs MF 70.8% vs MC 79.0%, p=0.03), but no difference in receipt of other adjuvant therapies. At median follow-up of 50 months (IQR 34.3-78.7), there was no difference in LRR or distant recurrence by tumor focality. However, MF and MC patients had lower 5-year OS than UF patients (U 92.5% vs MF 84.7% vs MC 72.7%, p=0.004). On multivariable analysis, MF and MC disease were independent negative predictors of shorter OS (MF: OR 0.08, p=0.02; MC: OR 0.03, p=0.03). **CONCLUSIONS:** Young patients with MF/MC invasive breast cancer have a poorer prognosis than their UF counterparts, which may be explained by a higher nodal burden of disease and different tumor biological profiles at presentation.

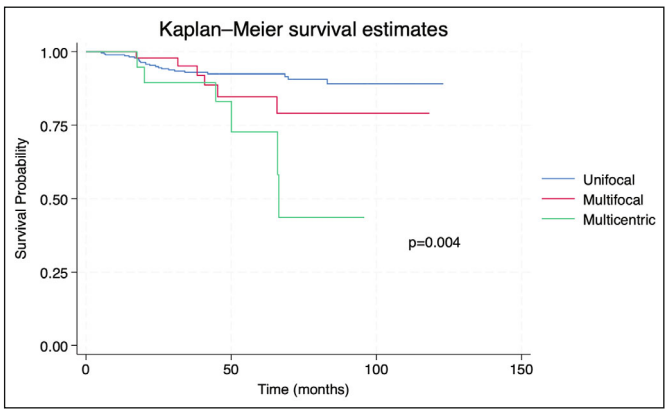

Figure. Kaplan-Meier survival curve of women

EP200

Development of a Predictive Tool for Survival Benefit Following a Pancreatectomy Among Elderly Patients with Resectable Pancreatic Ductal Adenocarcinoma: Insights from the NCDB

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is an aggressive malignancy with poor overall survival (OS). Surgical resection is the main treatment for patients with resectable PDAC. However, the rate of perioperative complications is high, especially among elderly patients. The aim of this study was to develop a risk-benefit assessment tool to optimize patient selection for surgery. **METHODS:** Using the National Cancer Database (NCDB), all patients with PDAC who were deemed to be surgical candidates and who were diagnosed between 2018-2021 were included. A stratification tool was developed using Cox regression analyses to assess OS potential benefit among elderly PDAC patients according to the treatment they received (e.g., pancreatectomy +/- adjuvant treatment or only chemotherapy, radiation, chemoradiation, or best supportive care). This tool categorized patients by prognostic factors and compared mortality risk across these treatment groups. **RESULTS:** Among 31,329 individuals who met the inclusion criteria, the rate of refusing surgery increased after age 75 (14.6% versus 2.4%). Multivariable analysis demonstrated that age, Charlson comorbidity index (CCI), clinical stage, and tumor location were associated with OS among elderly patients (≥75) who underwent a pancreatectomy. These variables were used to develop a tool to categorize patients into three groups in terms of the OS potential benefit (i.e., favorable, intermediate, and poor) following a pancreatectomy. Multivariable and sensitivity analyses demonstrated that all non-surgical treatment options were associated with a higher hazard ratio across all OS potential groups when compared to a pancreatectomy among elderly patients (Table 1). **CONCLUSIONS:** For elderly patients with PDAC, regardless of OS potential benefit, all non-surgical treatment options were associated with lower OS compared to receiving a pancreatectomy. These results highlight the critical role of surgery in optimizing outcomes across all patient subgroups, even in those with poor potential OS.

Table 1. Treatment patterns and survival of patients who were 75 years old and older with resectable PDAC who were recommended for surgery, stratified by potential survival benefit from a pancreatectomy.

Treatment	Multivariable			Treatment	Multivariable Sensitivity		
	HR	95% CI	*P*		HR	95% CI	*P*
Patients with favorable potential for survival benefit from pancreatectomy							
Pancreatectomy (2293)				Pancreatectomy (2293)			
CRT alone (38)	1.89	1.32-2.70	<0.001	CRT/CT/RT (alone) (92)	2.28	1.80-2.90	<0.001
CT alone (40)	3.25	2.28-4.63	<0.001				
RT alone (14)	1.74	0.92-3.27	0.08				
BSC (101)	3.57	2.83-4.50	<0.001	BSC (101)	3.56	2.82-4.49	<0.001
Patients with intermediate potential for survival benefit from pancreatectomy							
Pancreatectomy (2241)				Pancreatectomy (2241)			
CRT alone (63)	1.76	1.33-2.33	<0.001	CRT/CT/RT (alone) (162)	1.87	1.56-2.25	<0.001
CT alone (81)	1.80	1.39-2.33	<0.001				
RT alone (18)	2.95	1.80-4.84	<0.001				
BSC (198)	3.57	3.04-4.20	<0.001	BSC (198)	3.57	3.04-4.20	<0.001
Patients with poor potential for survival benefit from pancreatectomy							
Pancreatectomy (709)				Pancreatectomy (709)			
CRT alone (37)	1.35	0.94-1.93	0.10	CRT/CT/RT (alone) (114)	1.35	1.23-1.91	<0.001
CT alone (42)	1.48	1.04-2.09	0.03				
RT alone (35)	1.88	1.31-2.70	<0.001				
BSC (364)	3.32	2.86-3.86	<0.001	BSC (364)	3.32	2.86-3.86	<0.001

CRT: chemoradiation; CT: chemotherapy; RT: radiotherapy; BSC: best supportive care

EP201

Wonder treatment of stage III-IV cutaneous melanoma: who would say no to immunotherapy?

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INTRODUCTION: Immunotherapy in melanoma treatment has drastically improved patient outcomes. Our study aims to investigate factors associated with refusal and its impact on survival. **METHODS:** A retrospective cohort study using the National Cancer Database (2011–2019) evaluated the impact of immunotherapy refusal on outcomes in stage III–IV cutaneous melanoma. Factors associated with refusal were evaluated using multivariable logistic regression, and 3-year overall survival (OS) was analyzed with adjusted and propensity-matched Cox models. **RESULTS:** A total of 65,551 patients with stage III–IV cutaneous melanoma were identified; among stage III patients, 17,503 (41.1%) were offered immunotherapy with 2,019 (11.5%) refusing, while among stage IV patients, 9,734 (42.4%) were offered immunotherapy with 298 (3.1%) refusing. Propensity score matching produced 1,418 and 228 matched pairs for stage III and stage IV, respectively. Among stage III patients, refusal was not associated with OS (adjusted hazard ratio [aHR] 0.95, 95% CI 0.85–1.07, p=0.4; matched hazard ratio [HR] 1.06, 95% CI 0.92–1.23, p=0.43). Refusal was more likely among older patients (55–65 vs. 45–55 years: adjusted odds ratio [aOR] 1.63, 95% CI 1.25–2.15, p< 0.001; ≥65 years: aOR 2.98, 95% CI 2.25–4.00, p< 0.001), uninsured patients (aOR 1.41, 95% CI 1.00–1.94, p=0.043), and those with comorbidity index ≥2 (aOR 1.23, 95% CI 0.97–1.55, p=0.086). Refusal was less likely in 2016–2019 vs. 2011–2015 (aOR 0.28, 95% CI 0.25–0.32, p< 0.001). Among stage IV patients, refusal was associated with higher hazard of mortality (aHR 1.57, 95% CI 1.34–1.83, p< 0.001; matched HR 1.68, 95% CI 1.33–2.12, p< 0.001). Refusal was more likely with public insurance (aOR 1.59, 95% CI 1.08–2.37, p=0.019), higher comorbidities (≥2 vs. 0: aOR 1.77, 95% CI 1.19–2.58, p=0.004), lower income quartile ($57,856–$74,062 vs. $74,062+: aOR 1.61, 95% CI 1.14–2.28, p=0.007), and non-academic centers (aOR 1.47, 95% CI 1.09–2.01, p=0.013). Diagnosis in 2016–2019 vs. 2011–2015 was associated with lower odds of refusal (aOR 0.55, 95% CI 0.41–0.72, p< 0.001). **CONCLUSIONS:** Refusal of immunotherapy in melanoma is driven by social and demographic factors which impact mortality, leading to compromised survival rates, especially in stage IV disease. Tailoring treatment to higher-risk groups is essential for equitable and effective outcomes.

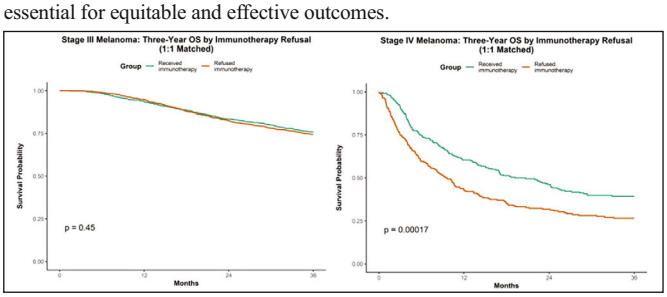

Figure 1: Three-Year OS for Stage III-IV Melanoma among patients who received and refused Immunotherapy

EP202

"We're all on the same team:" Multidisciplinary insights into gastrointestinal cancer care

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INTRODUCTION: Non-medical barriers, such as insurance coverage, transportation, and health literacy, influence the timeliness and equity of gastrointestinal (GI) cancer care. Our previous provider survey identified insurance and health literacy as the leading barriers, particularly during initial treatment planning. To expand on these findings, we conducted a second-phase study to characterize provider experiences further and identify system-level targets for intervention. **METHODS:** This qualitative study used semi-structured interviews with multidisciplinary GI cancer providers at a large academic health system. An interview guide was developed using findings from our previous provider survey and principles of appreciative inquiry, concluding with prompts about potential solutions. All interviews were transcribed, and reflexive thematic analysis was conducted; two independent reviewers coded transcripts and refined themes iteratively. Code co-occurrence and clustering were examined to explore the interconnectedness of inferred barrier directionality, enabling the mapping of primary, frequently observed pathways and secondary, context-dependent pathways through which barriers cascade. **RESULTS:** Thirty providers (eight physicians, two advanced practice providers, four nurses, eight dietitians, six social workers, and two care coordinators) were interviewed. Thematic analysis identified seven interconnected themes – (1) access & logistics, (2) communication & coordination, (3) health system barriers, (4) financial barriers, (5) patient knowledge & engagement, (6) provider capacity, and (7) social & emotional barriers – organized into three overarching domains: system-level, resource-based, and patient-level barriers. These barriers frequently cascaded (Figure 1), delaying surgery or adjuvant therapy. Despite these challenges, providers called for coordinated solutions and stronger communication, highlighting the importance of "that connection that we're all on the same team." **CONCLUSIONS:** This second-phase qualitative study builds upon our prior findings, demonstrating how systemic, financial, and social barriers converge to delay GI cancer care. Provider insights are being integrated with ongoing patient and caregiver interviews to co-design a multidisciplinary Cancer Access, Resources, Equity, and Support (CARES) Team, engaging patients early in the care continuum to address non-medical barriers and advance equitable, effective cancer care.

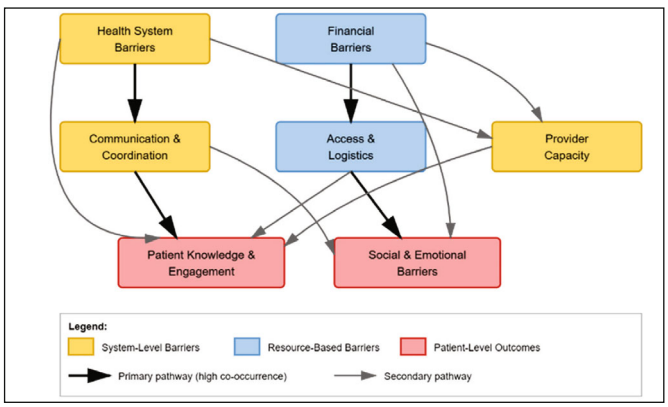

Figure. Directional Pathways of Barriers in Gastrointestinal Cancer Care

EP203

Association of Preoperative Systemic Therapy and Hepatic Artery Infusion (HAI) Floxuridine Dose Density: A Multicenter Analysis from the International HAI Consortium Research Network (HCRN)

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INTRODUCTION: Liver-directed chemotherapy with floxuridine (FUDR) via hepatic artery infusion (HAI) has become a useful tool in the treatment of unresectable intrahepatic cholangiocarcinoma (uIHC) and colorectal liver metastasis (CRLM). FUDR dose is typically adjusted based on hepatotoxicity; however, little is known about the impact of preoperative systemic treatment on FUDR dose density. **METHODS:** The HAI Consortium Research Network (HCRN) registry was queried for patients who underwent HAI pump placement for uIHC or CRLM between 2000-2024. Demographic, clinicopathologic, and treatment factors were collected. Dose density was calculated as the total FUDR dose given divided by the planned total dose over six doses. Univariate linear regression compared preoperative cycles of chemotherapy with FUDR dose density by HAI indication. **RESULTS:** We identified 1,608 patients who underwent HAI pump placement, of which 1,086 had available FUDR dosing data. Among these, indications for HAI included uIHC (8.4%), resectable CRLM (rCRLM; 28.1%), and unresectable CRLM (uCRLM; 63.5%). Of those with CRLM, 37.69% of patients had a KRAS mutation, and 51.67% of patients underwent concomitant hepatectomy at the time of pump placement. Median number of liver metastases was three for rCRLM and six for uCRLM. Median dose density was 0.63, 0.67, and 0.67 for patients with uIHC, rCRLM, and uCRLM, respectively. In those with rCRLM, increased number of cycles of epidermal growth factor receptor inhibitor correlated with higher FUDR dose density (n=33, p=0.034). In those with uCRLM, only increased number of cycles of trifluridine/tipiracil correlated with lower FUDR dose density (n=5, p=0.003). All other individual and pooled (i.e. oxaliplatin/irinotecan pooled) systemic agents did not correlate with dose density (all p >0.05). **CONCLUSIONS:** The number of pre-HAI cycles of hepatotoxic agents oxaliplatin and irinotecan was not associated with FUDR tolerance. Further study is needed to confirm an association of increased FUDR tolerance for patients with rCRLM who received pre-HAI EGFR inhibitors and decreased tolerance for patients with uCRLM who received trifluridine/tipiracil, which may reflect underlying disease biology.

Table. Univariate linear regressions evaluating the association of FUDR dose density with cycles of systemic therapy.

	n (%)	Beta	p-value
Intrahepatic Cholangiocarcinoma (n=91)			
Fluoropyrimidine (5-Fluorouracil or Capecitabine)	18 (19.78%)	0.0005	0.955
Oxaliplatin	22 (24.18%)	-0.0026	0.851
Irinotecan	11 (12.09%)	-0.0604	0.201
Gemcitabine	62 (68.13%)	0.0011	0.884
Cisplatin	54 (59.34%)	-0.0017	0.881
Nab-paclitaxel	12 (13.19%)	-0.0317	0.056
All Systemic Treatment	72 (79.12%)	0.0006	0.796
Resectable Colorectal Liver Metastasis (n=305)			
Fluoropyrimidine (5-Fluorouracil or Capecitabine)	267 (87.54%)	0.0016	0.622
Oxaliplatin	250 (81.97%)	-0.0037	0.533
Irinotecan	123 (40.33%)	0.0046	0.531
Vascular Endothelial Growth Factor Inhibitor	96 (31.48%)	-0.0084	0.211
Epidermal Growth Factor Receptor Inhibitor	33 (10.82%)	0.0149	**0.034**
Trifluridine/Tipiracil	2 (0.66%)	0.0208	NaN
All Systemic Treatment	271 (88.85%)	0.0003	0.785
Unresectable Colorectal Liver Metastasis (n=690)			
Fluoropyrimidine (5-Fluorouracil or Capecitabine)	669 (96.96%)	-0.0001	0.975
Oxaliplatin	601 (87.10%)	0.0026	0.754
Irinotecan	395 (57.25%)	-0.0023	0.238
Gemcitabine	4 (00.58%)	-0.0553	0.317
Cisplatin	2 (00.29%)	0.0730	NaN
Vascular Endothelial Growth Factor Inhibitor	337 (48.84%)	0.0030	0.661
Epidermal Growth Factor Receptor Inhibitor	124 (17.97%)	-0.0076	0.636
Trifluridine/Tipiracil	5 (00.72%)	-0.0455	**0.003**
Regorafenib	4 (00.58%)	-0.0202	0.456
All Systemic Treatment	677 (98.12%)	0.0001	0.934

EP204

Adrenal gland metastases of non-small cell lung cancer: resistance to immune checkpoint inhibition

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INTRODUCTION: Non-small cell lung cancer (NSCLC) is the most lethal malignancy in the United States and immune checkpoint inhibition (ICI) is increasingly used in the treatment of NSCLC. NSCLC frequently metastasizes to the adrenal gland, which is independently associated with worse overall survival (OS). The adrenal gland is the predominant source of glucocorticoids, exposing the microenvironment to high concentrations of this known immunosuppressant. As such, we hypothesized that NSCLC adrenal gland metastases (AGM) would be less responsive to ICI compared to primary lung tumors. **METHODS:** This retrospective cohort study included adult patients from a single tertiary academic center who had NSCLC with and without adrenal gland metastases and underwent treatment with ICI 2014–2024. Tumor size on the last axial imaging prior to ICI and first imaging following termination of ICI were measured by a radiologist. The primary outcome was organ-specific response to ICI by RECIST 1.1 criteria (complete response, partial response, stable disease, progressive disease), compared using Chi-squared testing. Patients were excluded if their imaging was unavailable, if their tumor was unmeasurable, or if they underwent surgical excision or external beam radiotherapy prior to post-immunotherapy imaging. **RESULTS:** Overall, 193 patients were included in this cohort study. Among those included, the population was primarily female (50.6%), Caucasian (88.1%) or Black (6.7%), and non-Hispanic (98.8%). The median age was 66 (IQR: 59-72). Most patients had adenocarcinoma (71.5%) or squamous cell carcinoma (26.5%). 67 (34.7%) were never smokers. Most patients received pembrolizumab (78%), nivolumab (10%), atezolizumab (6%), or durvalumab (6%). Patients received a median 6.3 (2.0-12.8) months of ICI therapy. Oncogenic drivers were most commonly KRAS G12C (N=47), KRAS G12D (N=22), EGFR (N=24), and KRAS G12V (N=30). Percent PDL1 expression was 5% (0-65). Of the 69 (35.8%) with AGM, the three-year OS was 47.8%. AGM compared to primary lung tumors were more likely to have progressive disease (63% vs. 29%, p< 0.005, Figure) and less likely to have a partial response (13% vs 35%, p< 0.005) to ICI. **CONCLUSIONS:** NSCLC AGMs are common and associated with high lethality. Compared to primary lung tumors, AGMs show worse radiographic response to ICI. Further study is ongoing to investigate the local immune environment in the glucocorticoid-rich adrenal gland in response to ICI to inform targeted therapies and personalized treatment pathways.

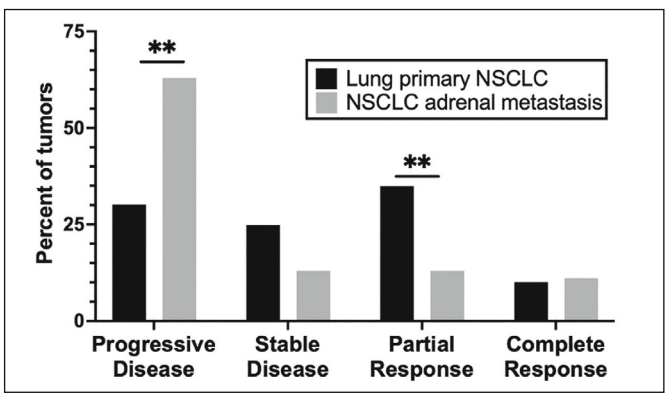

Figure. Organ-specific radiologic response to systemic immune checkpoint inhibition for patients with NSCLC measured by RECIST 1.1 criteria **p<0.005

EP205

Compliance with Recommended "Watch and Wait" Surveillance for Patients with Locally Advanced Rectal Cancer

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INTRODUCTION: Nonoperative management, or watch and wait (WAW), is increasingly utilized for patients with locally advanced rectal adenocarcinoma who achieve a complete or near-complete clinical response after total neoadjuvant therapy (TNT). This approach requires intensive surveillance, as recommended by the National Comprehensive Cancer Network (NCCN). Adherence to this protocol in real-world practice has not been well-described. **METHODS:** We conducted a retrospective cohort study of patients with locally advanced rectal adenocarcinoma treated with TNT between 2019 and 2024 at a single institution. Patients with complete or near-complete response who elected WAW were included. Surveillance followed NCCN guidelines: periodic history and physical examination (HPE), carcinoembryonic antigen (CEA) testing, endoluminal evaluation, and imaging. Adherence was defined as the percentage of recommended examinations completed annually or until recurrence. **RESULTS:** Sixty-six patients were enrolled in WAW surveillance. The number of patients completing surveillance each year was 41, 26, 14, and 6 for Year 2, 3, 4 and 5, respectively (Y2-Y5). Mean adherence for HPE was 211% in Y1, dropping to 117% in Y4, and 125% in Y5. CEA adherence decreased to 86% in Y4 from 139% in Y1, increasing to 125% in Y5. Adherence for MRI dropped from 108% in Y1 to 53% in Y4, rising to 58% in Y5. CT adherence also decreased between Y1 and Y4 from 129% to 82%, increasing in Y5 to 100%. Endoluminal exam adherence was the lowest, ranging from 73% in Y1 to 49% in Y4, with a rise to 75% in Y5. **CONCLUSIONS:** Adherence to an NCCN-recommended surveillance protocol for WAW after TNT for rectal cancer decreased during the first four years of surveillance, with a modest increase in Y5 among the remaining cohort. Fewer than half of the patients maintained complete compliance by Y3. These findings underscore the need for strategies to support long-term surveillance, balancing frequency of recommended examinations with oncologic safety. Studies with larger sample sizes evaluating adherence with WAW across institutions and exploring contributing factors to nonadherence are warranted.

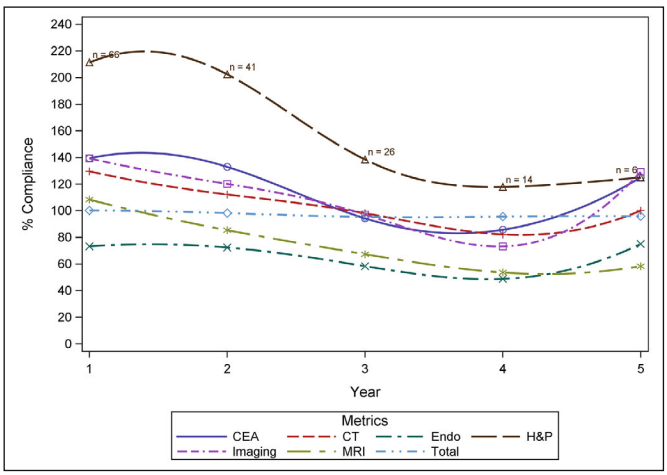

Figure. Rectal Cancer Surveillance Compliance Over 5 Years

EP206

Difficult Conversations in Surgical Oncology: A Physician's Perspective

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INTRODUCTION: Conversations about cancer prognosis, treatment course, and end of life are common in surgical oncology. In this study, we aim to identify challenging aspects of interacting with cancer patients and explore experiences from the oncologist's perspective. **METHODS:** Surveys and semi-structured interviews were conducted with cancer surgeons and medical oncologists at a tertiary center. Interviews were transcribed and coded, and qualitative analysis was performed. **RESULTS:** 21 cancer physicians were interviewed: 14 surgeons (Surgical Oncology/Hepatobiliary, Colorectal, Thoracic, Gynecologic Oncology, Orthopedic Oncology) and 7 medical oncologists. Median experience in practice was 14 years. Physicians identified "helping patients understand their cancer" and "managing treatment expectations" as the hardest topics to discuss with patients (Table). Factors including young age, high symptom burden, unresectable disease, and discordant understanding of prognosis made these discussions particularly difficult. Only 52% of physicians believed that patients generally have a reasonable sense of curability and life expectancy. While all medical oncologists and 57% of surgeons routinely discussed prognosis with patients, most (79%) preferred not to bring it up during the first visit. They described prognosis as a "graded process" and "ongoing conversation" that evolves with time. Surgeons in particular struggled to convey poor prognosis due to uncertainty and fear of taking away hope. All medical oncologists and 50% of surgeons routinely discussed end of life care and hospice with patients. Despite recognizing palliative care as a valuable resource, cancer physicians expressed a strong sense of personal responsibility to prepare their patients for transition to end of life. Physicians emphasized wanting to be a steady presence in their patients' care in order to minimize feelings of abandonment when broaching topics of palliative care and hospice. **CONCLUSIONS:** Discussions about cancer prognosis and death are difficult, yet these are the most impactful physician-patient interactions. As surgery represents a major decision point in cancer treatment, surgical oncologists play an integral role in balancing hope and realistic outlook when offering surgery for cancer, managing postoperative expectations and burden of recurrence, and discussing transition to end of life when treatment options are exhausted. Programs directed at enhancing these communication skills should be integrated in training and continuing medical education to aid surgeons in effectively navigating these challenging topics.

Table. Difficult conversations with patients in surgical oncology

Theme	Representative Quotes
1. Navigating discussions about prognosis	
	I try to present prognosis as a continuum. We are constantly reassessing, seeing how things are going.
	When patients ask, "Can I beat this?" you have to be open-ended enough that you give them hope, but never exclude the possibility of recurrence.
	I have a moral obligation to be honest with my patients about their disease and prognosis. When I feel that I have that information, I will share it with them. But if I don't feel like I have enough confidence to answer, I will tell them "I don"t know yet, it's too early."
2. Managing transition to end of life care	
	Most patient are pretty grateful when I bring it up. "I'm really sorry, but it's time for us to have this discussion about end of life..." I think patients almost feel relieved that someone is willing to talk to them candidly about what's going on, that it is okay to stop [treatment].
	I tell them that we really have four tools in cancer: surgery, chemo, radiation, and we always have supportive care and symptom management to make them feel as best as possible... That's how I introduce the concept of palliative care and hospice.
	I say very explicitly, "This disease is going to get the better of you, we just don't know how long it's going to be." I also make it clear that patients get to choose how hard and how long they push with chemo, and when they decide enough is enough.

EP207

Impact of colostomy on technical feasibility and morbidity in hepatic artery infusion pump placement

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INTRODUCTION: Hepatic artery infusion (HAI) pumps are utilized in both the unresectable and adjuvant disease settings for colorectal liver metastases (CRLM). The presence or formation of an ostomy raises concern for infectious complications in the setting of placement of a foreign body and has traditionally warranted special consideration for patient selection and perioperative planning for HAI pump placement. There remains limited evidence regarding the implications of colostomies on the technical feasibility and postoperative infectious morbidity in hepatic artery infusion pump placement. **METHODS:** A retrospective review was conducted of consecutive patients who underwent HAI pump placement for CRLM at a single academic institution. A separate cohort of patients was identified that either had an existing colostomy or underwent concurrent colostomy creation during HAI pump placement. Outcomes in the

90-day postoperative period, including infectious complications, length of stay, readmission, and time until first cycle of HAI were recorded. **RESULTS:** Of the last 53 consecutive patients who underwent HAI pump placement by a single surgeon, 7 (13%) had a preexisting colostomy (female 43%, median age: 50 years). Most patients (86%) had a colostomy in the left lower quadrant that required HAI pump placement in the right abdomen, except a single patient who a midline transverse colostomy that received a pump in the left abdomen. All colostomy patients had primary disease in the distal large bowel (rectum 57%, sigmoid colon 29%, or rectosigmoid junction 14%; p=0.04, compared to non-colostomy). The vast majority (86%) of colostomy patients underwent liver resection in addition to HAI pump placement; and two (29%) colostomy patients received simultaneous liver and colon resections. Compared to patients without colostomy, there were no differences in surgical site infections (0% vs. 0%), pump-related complications (0% vs. 2%), overall morbidity (0% vs. 9%), readmission (0% vs. 2%), or length of stay (5 vs. 4 days) (all p >0.05). Pump utilization was achieved in all colostomy patients, and there was no difference in median time to first cycle of HAI (29 vs. 28 days, p=0.63), compared to non-ostomy patients. **CONCLUSIONS:** Placement of hepatic artery infusion pump in the context of colostomy is technically feasible and was not associated with additional infectious risk or delayed receipt of HAI treatment.

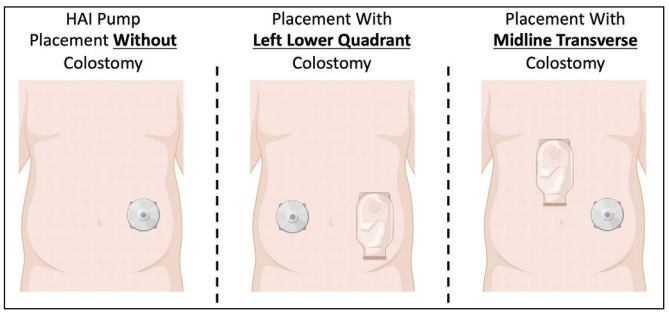

Figure. Hepatic artery infusion pump placement with consideration of colostomy location

EP208

Postoperative pancreatic fistula in pancreaticoduodenectomy for sarcoma: a multi-institution retrospective cohort study

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INTRODUCTION: Postoperative pancreatic fistulas (POPF) after pancreaticoduodenectomy (PD) are a common and difficult complication to manage. Patients undergoing PD for sarcoma are more likely to have a soft pancreas, which may increase their risk of POPF. This study aims to evaluate the frequency and management of postoperative pancreatic fistulas in patients undergoing PD for primary or recurrent sarcomas. **METHODS:** We identified all patients who underwent PD for sarcoma treated at two large academic hospitals between 1994 and 2025. Patient and tumor characteristics, surgical management, presence of Grade B or C POPF, and subsequent management were analyzed. **RESULTS:** Our study cohort included 60 patients who underwent PD for primary or recurrent sarcoma. The median age at time of surgery was 59, and 57% of patients were female (n=34). There were 42 patients (70%) who underwent resection for primary sarcomas. Of the histologic subtypes, the majority comprised of 31 (51%) GIST, 13 (21%) leiomyosarcoma and 6 liposarcoma (10%). There were 48 (80%) R0 resections, 11 (18%) pylorus-preserving PDs, and 29 (48%) included multi-visceral resections. Pancreatic stents were used in 38 cases (63%). 17 patients (28%) had postoperative pancreatic fistula (POPF). There were 16 (94%) grade B POPF. There were 13 POPF patients (76%) had a superimposed infection requiring antibiotics and 13 POPF patients (76%) had associated fluid collections, of which 10 patients (77%) required drainage. 1 patient (6%) required surgical intervention. Postoperative somatostatin was used for 4 patients (24%). Median follow-up was 55 months with 35 patients (58%) alive at time of last follow-up. **CONCLUSIONS:** This is the largest study to report POPF outcomes after pancreaticoduodenectomy for sarcoma. The rate of clinically significant POPF is similar to what has previously been reported for sarcoma patients after pancreaticoduodenectomy, though more frequent than rate of POPF for patients with primary pancreatic lesions. Management of clinically significant POPF in sarcoma patients could be achieved with conservative measures, only rarely requiring surgical intervention.

Table. Postoperative pancreatic fistula

Characteristic (n=17)	n	%/range
Postoperative pancreatic fistula grade		
B	16	94
C	1	6
Associated fluid collection		
Yes	13	76
No	4	24
Need for drainage of fluid (n=13)		
Yes	10	77
No	3	23
Superimposed infection		
Yes	13	76
No	4	24
Diet medication needed		
Yes	7	30
No	10	70
Total parenteral nutrition		
Yes	10	70
No	7	30
Postoperative somatostatin use		
Yes	4	24
No	13	76
Surgical intervention needed		
Yes	1	6
No	16	94

EP209

Tumor Engraftment Success of Patient-Derived Xenograft Models Across Solid Malignancies

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INTRODUCTION: Patient-derived xenograft (PDX) models serve as clinically relevant translational tools for investigating tumor biology and therapeutic response. However, determinants of successful engraftment are unknown, and there remains controversy about how much antitumor PDXs reflect molecular profiles in patients. This analysis sought to delineate correlates of successful PDX establishment across a large cohort of solid tumors. **METHODS:** Tumor specimens from 571 patients were implanted into immunodeficient murine hosts under standardized conditions. Engraftment outcomes were classified as "take" (successful propagation; n = 266) or "no-take" (n = 305). Clinical and pathologic characteristics, including primary diagnosis and histologic subtype, and genomic features were recorded. Engraftment frequencies were compared across cancer types and within molecular subgroups to identify trends associated with successful model generation. **RESULTS:** From 571 patients, 266 PDXs were generated for overall engraftment rate of ~47%. Pancreatic, triple-negative breast, and cholangiocarcinoma specimens exhibited the highest engraftment success, whereas indolent histologies such as thyroid and neuroendocrine tumors less frequently established PDXs. Within breast cancer there was variability by subtype (45% TNBC, 35% HER2 positive, 40.4% Hormone receptor positive. Among breast cancers, triple-negative subtypes demonstrated the highest take rate (~45%), followed by HER2-positive and hormone receptor–positive tumors. Ongoing molecular analyses aim to identify genomic and microenvironmental determinants of PDX establishment as well as concordance of actionable alterations in patients and matched PDXs. **CONCLUSIONS:** These findings validate feasibility of establishing PDX models as a robust framework for preclinical research. Future integration of molecular and therapeutic response

data will enhance the predictive utility of PDX platforms for precision oncology and translational studies.

EP210

Bridging Expectations: What Cancer Patients Seek from Their Surgical Oncologist

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INTRODUCTION: The growing emphasis on patient-centered care highlights the critical role of patient expectations in surgical oncology, as these perceptions directly affect treatment adherence and outcomes. This study aimed to assess surgical oncology patients' expectations regarding surgery, their surgeon, hospitalization, and discharge, and to identify discrepancies between patient and surgeon priorities. **METHODS:** A prospective study was conducted among consecutive patients (aged ≥18 years) undergoing curative gastrointestinal cancer surgery at a high-volume tertiary referral Center between September 2023 and March 2024. Patients and their surgeons completed a 39-item Likert-scale questionnaire assessing priorities related to surgical and perioperative care. Responses were analyzed according to patient demographics and compared between patients and surgeons to identify differences in perspectives. **RESULTS:** Among 145 surgical oncology patients (mean age 64.4 ± 14.5 years; 40% female), colon (36.6%) and rectal/anorectal (16.6%) tumors were most common. Patients prioritized recovery outcomes, emphasizing surgery type-open or minimally invasive (82%), effective pain management (73.1%), and avoidance of rehospitalization (94.4%). In contrast, surgeons valued procedural efficiency, including operative duration (50%) and preoperative planning (65%). Most patients sought clear and comprehensive surgical information (76.5%) but were less concerned with surgery length (66.9%) or time to oral intake resumption (48.9%). Surgeon experience was rated highly (91%), while titles held less importance (33.7%), and only 39.3% of patients wished to be informed of complication rates. Clean operating environments (88.9%) and timely medication administration (82%) were valued more than personal staff interactions (62.7%). Surgeons underestimated patients' interest in clinical research (44.8%). Age influenced perspectives: younger patients emphasized rapid pain relief and aesthetics, whereas first-time surgical patients prioritized returning to work. Among surgeons, younger respondents focused more on technical performance, while senior surgeons placed greater emphasis on patient-centered care. **CONCLUSIONS:** Distinct gaps exist between patient and surgeon priorities in surgical oncology, reflecting differing emphases on recovery experience versus procedural efficiency. Aligning these perspectives—through transparent communication, individualized counseling, and shared decision-making—may enhance satisfaction, trust, and overall care quality.

EP211

Treatment patterns and overall survival among adolescent and young adult populations with non-rhabdomyosarcoma soft tissue sarcomas

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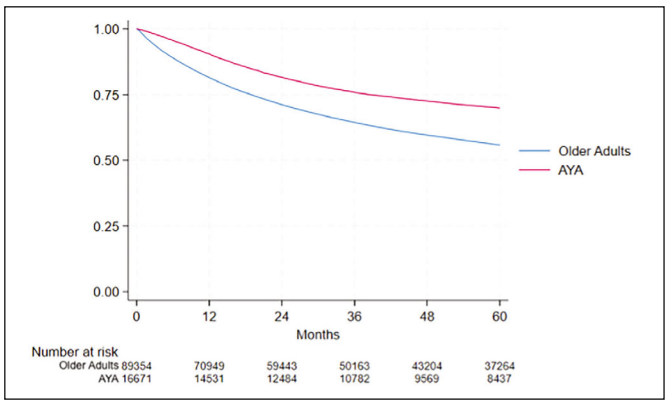
INTRODUCTION: Non-rhabdomyosarcoma soft tissue sarcomas (NRSTS) are a group of rare and heterogeneous tumors with evolving treatment paradigms. Among the adolescent and young adult (AYA) population, treatment patterns and outcomes are not well-characterized. **METHODS:** Patients older than 15 with NRSTS diagnosed from 2004-2022 in the National Cancer Database were included. Demographic, clinical, and treatment characteristics were compared between AYA (15-39) and older adult (>39, OA) populations. Factors associated with overall survival were evaluated with multivariable logistic regression. Kaplan-Meier analyses were performed to compare overall survival between AYA and OA populations. **RESULTS:** 111,716 patients were included, with 17,388 (15.6%) in the AYA group (median age 30, interquartile range [IQR] 15-39) and 96,041 (83.9%) in the OA group (median age 65, IQR 40-90). There was a higher percentage of Black patients in the AYA group (18.5% versus 10.9% in the OA group, p< 0.001) and of uninsured patients (7.5% versus 2.9%, p< 0.001). AYA patients had fewer comorbidities (93.0% with Charlson Comorbidity Index [CCI] of 0 versus 77.3% with CCI of 0 in the OA group, p< 0.001). The AYA group had higher percentage of well- and moderately-differentiated tumors (23.5% and 23.8% versus 19.7% and 18.8% in the OA group, p< 0.001) and higher rate of metastasis (17.2% versus 15.7% in the OA group, p< 0.001). AYA patients had lower rate of chemotherapy (97.7% versus 98.0%, p=0.002), radiation therapy (41.5% versus 45.7% in the OA group, p< 0.001), and immunotherapy (0.9% versus 1.2% in the OA group, p=0.01), but a higher percentage underwent resection (83.6% versus 81.6% in the OA group, p< 0.001). After adjusting for sociodemographic factors (race, place of residence, insurance status), clinical characteristics (CCI, tumor grade, metastasis), and treatment regimens (chemotherapy, radiation, surgery, and immunotherapy), AYA populations had significantly higher odds of survival (odds ratio 2.24, 95% confidence interval 2.12-2.35). Five-year overall survival was better in the AYA group (figure 1). **CONCLUSIONS:** AYA compared to OA patients with non-rhabdomyosarcoma soft tissue sarcomas are more likely to have metastasis at time of diagnosis but have higher odds of overall survival after adjusting for sociodemographic factors, clinical and tumor characteristics, and treatment regimens. These findings suggest that AYA populations may have tumors that behave differently than those in OA populations, warranting further investigation. 5-year overall survival among adolescent and young adult (AYA) and older adult (OA) patients with non-rhabdomyosarcoma soft tissue tumors



EP212

Predictors of early recurrence after curative-intent gastrectomy for gastric adenocarcinoma

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INTRODUCTION: Early recurrence after curative-intent gastrectomy for gastric cancer (GC) is associated with dismal outcomes. Identifying patients at risk for early recurrence is essential to optimizing patient-tailored treatment and surveillance strategies. This study aimed to define factors associated with early recurrence in a real-world cohort. **METHODS:** We performed a single-center retrospective analysis of patients who underwent curative-intent gastrectomy for gastric adenocarcinoma at a U.S. comprehensive cancer center from 1/1/2010 to 7/1/2024. Early recurrence was defined as recurrence within one year of surgery. Clinicopathologic characteristics, treatments, and outcomes were compared between patients with and without early recurrence. **RESULTS:** Among 335 patients, 30 (9%) experienced recurrence within one year. Early recurrence was associated with aggressive tumor biology, including poorly differentiated or signet ring cell histology (70.0% vs. 56.6%, p=0.020), higher pathologic T stage (pT4: 46.7% vs. 18.4%, p=0.001), and N stage (pN3: 46.7% vs. 16.1%, p=0.003), and stage III disease (57.7% vs 34.9%, p=0.029). Molecular features, including MSI-high status (16.7% vs. 7.2%, p=0.028) and PD-L1 expression (CPS ≥1 50.0% vs. CPS < 1 27.2%, p=0.033) were also associated with early

recurrence. Patients with early recurrence were more likely to have higher 30-day (30.0% vs. 9.5%, p=0.003) and 90-day readmission rates (26.7% vs. 11.8%, p=0.041). Serious complications (Clavien-Dindo ≥3) at 30-days were higher in the early recurrence group (50.0% vs 18.7%, p< 0.001). On univariate analysis, stage III disease was associated with early recurrence (OR 4.14, 95% CI 1.33-12.88). Multivariate analysis controlling for stage and histology found stage III disease to be an independent predictor of early recurrence (OR 3.94, 95% CI 1.26-12.32). Subgroup analysis of MSI-high patients that received neoadjuvant chemotherapy without immunotherapy found a trend towards higher rates of early recurrence (18.8% vs. 3.4%, p=0.059). Overall survival was significantly worse for those with early recurrence (median 8.4 months vs 21.1 months, p< 0.001). **CONCLUSIONS:** Early recurrence after curative-intent gastrectomy is associated with aggressive tumor biology, stage III disease, MSI-high status, PD-L1 positivity, and worse outcomes. These factors identify high-risk GC subgroups warranting intensified surveillance and support precision oncology-based patient-tailored tumor specific perioperative strategies.

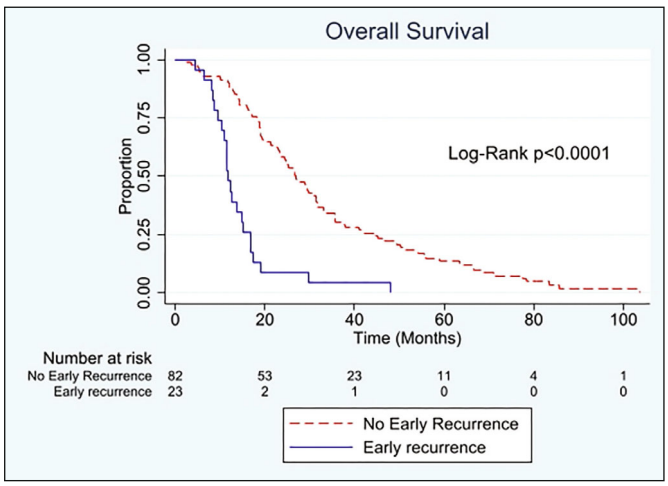

Figure 1. Overall Survival by Early Recurrence Status

EP213

Nodal surgery in locally advanced breast cancer patients – institutional outcomes

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INTRODUCTION: At present, in patients with cT3-4c tumors, only a select subset undergoing upfront surgery or neoadjuvant chemotherapy (NAC) are eligible for sentinel lymph node biopsy (SLNB), and of those, axillary lymph node dissection (ALND) is often recommended for accurate nodal staging or regional control. Our study analyzed the rates of SLNB in subgroups of T3-4c breast cancer patients from a single institution to evaluate the overall oncologic safety of de-escalating nodal surgery in this population. **METHODS:** A single institution dataset was queried to identify female patients with clinical T3-4c non-metastatic breast cancer between 2012 and 2024. The patients were stratified into two cohorts, based on treatment: upfront surgery versus NAC; nodal status, intended axillary surgery, final axillary surgery, and local regional recurrence was analyzed in each cohort. **RESULTS:** Of the 181 patients who met study criteria, 151 (83.43%) presented with T3 tumors, and 30 (16.57%) with T4. There were 79 (43.65%) patients with cN0 disease and 102 (56.35%) with cN1-3 nodal involvement (cN+). Upfront surgery was performed in 72 (39.78%) patients and 109 (60.22%) received NAC. In the upfront surgery cohort, 43 (59.72%) patients were cN0; 25 (58.14%) were pathologically node negative (pN0), and 18 (41.86%) had pathologic nodal involvement with 15/18 (83.33%) having only 1-2 positive nodes. Of these 15 patients, 14 (93.33%) underwent initial SLNB, with 4 (28.47%) proceeding to completion ALND. The median follow-up was 5.56 +/- 3.25 years. In SLNB alone patients, there was 1 local regional recurrence (10.00%) and 2 distant recurrences (20.00%). In the NAC cohort, 35 (32.11%) patients were cN0; 26 (72.22%) were ypN0, of whom 22 (92.31%) underwent SLNB and 4 (7.69%) ALND. 63 (67.89%) patients were cN+; 35 (55.56%) remained ypN+ of whom 17 (48.57%) underwent initial SLNB and 11/17 (64.71%) underwent completion ALND. 28 patients were cN+ and converted to ypN0, of whom 16 (57.14%) underwent SLNB only. At a median follow-up of 3.44 +/- 2.25 years, no recurrences were observed in the SLNB only group. **CONCLUSIONS:** At our institution, most or all patients with cT3-4c tumors and minimal nodal disease in the upfront surgery and NAC settings underwent SLNB alone, and there were few recurrences. The low recurrence rates suggest that omitting ALND may be oncologically safe in carefully selected T3-4c patients. Larger studies are needed to confirm these findings and better identify patient and tumor characteristics that may allow for expanding axillary surgical de-escalation.

EP214

Timing and Sequence of Systemic Therapy and Cytoreductive Surgery in a National Study of Stage IV Colorectal Cancer with Isolated Peritoneal Metastases

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INTRODUCTION: Stage IV colorectal cancer (CRC) with isolated peritoneal metastases (PM) has classically been treated with systemic therapy alone, but the addition of colorectal resection with cytoreductive surgery (CRS) has emerged as a potential treatment. However, the optimal sequencing of systemic therapy and surgery is unknown. This study examined (1) current practice patterns for sequencing of CRS and systemic therapy, (2) factors associated with treatment sequence selection, and (3) the association between timing of treatment sequence on overall survival (OS). **METHODS:** Patients with stage IV CRC with isolated PM in the 2016-2021 National Cancer Database who underwent both chemotherapy and colorectal resection were analyzed. Treatment sequence timing was defined as the interval between induction chemotherapy or upfront surgery followed by surgery or adjuvant chemotherapy. A multivariable logistic regression model analyzed patient, tumor, and hospital factors associated with treatment sequence. Adjusted Cox proportional hazards modeling examined associations between treatment sequence and 5-year OS. **RESULTS:** Of the 242,581 patients with stage IV colorectal adenocarcinoma, 27,072 (9.0%) had PM. Among these patients, 6,217 (4.1%) had definitive surgical resection and chemotherapy. 1,666 (26.8%) patients received induction chemotherapy and 4,551 (73.2%) had surgery followed by adjuvant therapy. Compared to induction chemotherapy followed by surgery, patients were more likely to have upfront surgery if female, (OR 1.26, 95% CI 1.11-1.44; P< 0.001), Hispanic, (OR 1.37, 95% CI 1.05-1.78; P=0.019), uninsured (OR 2.22, 95% CI 1.59-3.10; P< 0.001) or covered by Medicare (OR 1.36, 95% CI 1.12- 1.65; P=0.002). Upfront surgery was also less likely to be performed at academic centers (OR 0.33, 95% CI 0.25-0.44; P< 0.001). Compared to upfront surgery, induction chemotherapy was associated with improved survival when CRS was performed after 3-6 months (HR 0.79, 95% CI 0.70-0.89, P< 0.001) or >6 months (HR 0.75, 95% CI 0.66-0.86; P< 0.001). CRS within 0-3 months was associated with worse survival (HR 1.51, 95% CI 1.28-1.78, P< 0.001). **CONCLUSIONS:** Only a quarter of patients received induction chemotherapy before surgery and those patients were less likely to be female or uninsured but more likely to be treated at academic centers. In this retrospective analysis, OS was improved in patients who had induction chemotherapy ≥ 3 months prior to CRS suggesting that a longer interval between induction chemotherapy and CRS for colorectal PM may be beneficial.

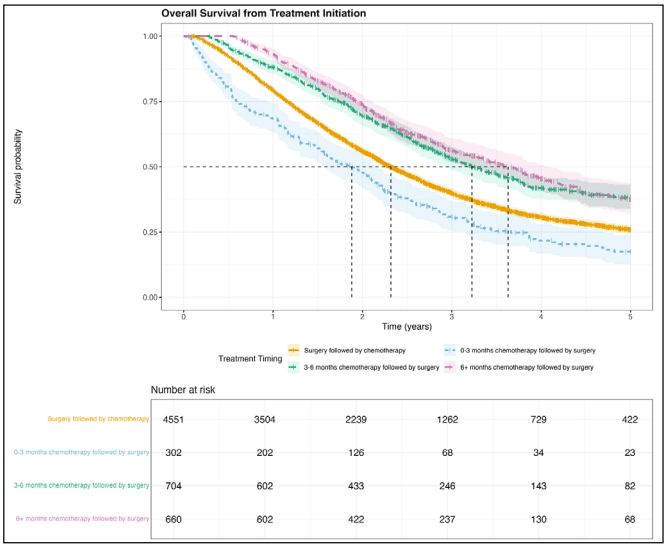

Figure 1: Kaplan-Meier Survival Curve. Survival was capped at five years and patients were followed from receipt of first treatment until death.

EP215

Recurrence Rates of Breast Cancer Treated with Breast-Conserving Surgery: A Retrospective Cohort

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INTRODUCTION: Breast-conserving surgery (BCS) followed by radiotherapy has become the standard treatment for early-stage breast cancer. The primary concern of breast-conserving therapy (BCT) remains the risk of in-breast local recurrence. This study aims to provide updated data on local recurrence rates following BCT in a large cohort and to identify predictors of local recurrence for improved patient selection. **METHODS:** This retrospective study included patients with primary early-stage breast cancer who were diagnosed between January 2010 and December 2016 and treated with upfront breast-conserving surgery. Data on clinicodemographic characteristics, preoperative imaging, tumor features, and oncologic outcomes were obtained from patient medical records. Follow-up was conducted through August 2024. **RESULTS:** A total of 320 patients were included, with a median age of 52 years (range: 29-88). The median tumor size was 1.5 cm, with 71.2% classified as T1 and 22.6% as T2. The majority had unifocal disease (n = 273; 85.6%). In terms of molecular subtypes, Luminal A comprised 48.6% (n = 155), Luminal B 37% (n = 118), and Her-2 and triple-negative subtypes accounted for 3.4% (n = 11) and 9.4% (n = 30), respectively. Wire localization of tumors was performed in nearly half of the cases (n = 148; 50.9%). Two-thirds of patients received adjuvant chemotherapy (n = 208; 65.2%), and a significant majority underwent adjuvant radiotherapy (n = 298; 95.5%), with a median interval of 116 days between surgery and radiotherapy. With a median follow-up of 102 months, the local recurrence rate was 1.9%. Multivariate analysis revealed a significant correlation between the number of positive nodes and overall recurrence, as well as between margin status and overall recurrence (p-value < 0.05). **CONCLUSIONS:** Local recurrence following breast-conserving surgery is becoming increasingly uncommon. Identifying predictors of cancer recurrence is crucial for the appropriate selection of candidates for BCT, ensuring better outcomes for patients.

EP216

Deep Learning Segmentation of the Parietal Peritoneum: Preliminary Validation

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INTRODUCTION: Hyperthermic intraperitoneal chemotherapy (HIPEC) often utilizes body surface area (BSA) as the basis for perfusate dosing. However, previous research has shown that BSA can be an inaccurate and unreliable measure for HIPEC's unique treatment target. A deep learning image segmentation model, developed using the nnU-Net framework, was created to segment the parietal peritoneum and support future research into a patient-specific HIPEC dosing method based on peritoneal surface area (PSA). **METHODS:** Using the nnU-Net deep learning framework, an image segmentation model was created to contour the parietal peritoneum. The training data set consisted of ten manual segmentations of the parietal peritoneum on computed tomography (CT) scans of patients who underwent HIPEC. Model performance was evaluated with Dice-Sørensen coefficients of three independent validation segmentations not included in model training. **RESULTS:** The model was trained with the nnU-Net framework using all ten manually segmented scans. Training and validation loss curves converged after 250 epochs, supporting true prediction rather than overfitting. The model achieved a mean Dice score of .93, with individual Dice scores of .93, .92, and .95 across the three validation cases. The mean PSA difference between automated and manual segmentations of the validation scans was 268 cm2 or 9.8% of total PSA, with the model providing a smaller segmentation. Qualitative assessment of the validation cases showed clinically accurate contouring of the parietal peritoneum. All cases had excluded the pancreas, kidneys, and adhered to the abdominal wall. Minor deviations occurred at the superior border of the peritoneum, where mediastinal structures were incorrectly included in 1/3 of the validation cases. Visual review of the segmentations by two independent physicians supported the clinical accuracy of peritoneal surface estimation. **CONCLUSIONS:** This study demonstrates preliminary validation of a deep learning model for peritoneal segmentation using the nnU-Net framework. Accurate PSA estimation will support research into a patient-specific dosing strategy that overcomes the limitations of BSA-based methods. Future work includes expansion of the training data set, along with an investigation of the pharmacologic properties of the peritoneal plasma barrier.

Figure 1. Axial view of automated segmentation with exclusion of the kidneys and great vessels

EP217

Is Routine Complete Mesocolic Excision Really Necessary for Right Colon Cancer? Long-term Outcomes of an Embryologically Based Oncologic Resection

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INTRODUCTION: Complete mesocolic excision (CME) incorporates an extended lymphadenectomy, central vascular high-ligation with resection of Henle's trunk, and preservation of mesocolic fascial integrity, which has

been proposed as a standard to enhance oncologic outcomes in right-sided colon cancer. While concerns regarding morbidity with routine performance of CME exist, the benefits over a properly executed embryologically based oncologic right colectomy remain debated. **METHODS:** From a prospectively maintained colorectal database, an analysis was conducted of all patients with right-sided colon cancer who underwent right colectomy between July 1998 - August 2025. We identified all patients with stage I–III colon cancer who underwent surgery with curative intent without the need for multiorgan resection. Outcomes including demographics, peri-operative variables, and oncological outcomes were assessed. **RESULTS:** A total of 290 patients were identified. 52.8% were women, mean age was 72.4 years (35–96), and mean body mass index (BMI) was 28.1 (17–53.8). The ASA classification was III in 55.9% and II in 30.3% of patients. Tumor staging showed 29% stage I, 39% stage II, and 32% stage III disease. Overall, 90% of procedures were performed laparoscopically and 10% robotically. The mean estimated blood loss (EBL) was 84.3 mL (0–650). Intraoperative complications occurred in 2% of cases. Conversion to open surgery was required in 0.7% of procedures. Postoperative complications of Clavien–Dindo grade ≥ II occurred in 11.7% of patients. The mean lymph node harvest was 27 (3–102), with 51% of patients having ≥24 nodes retrieved and no positive resection margins recorded. No local recurrences were observed. Distant metastases developed in 6.2% of patients. The five-year disease-free survival (5y-DFS) rate was 89.3% (CI 83.7-92.7). 5y-DFS by stage was: I 97.6%; II 97.3%; III 72%. Mean follow-up was 39.2 months (0-301). Overall Survival was 89.5%. **CONCLUSIONS:** The results argue that the essential components of an operation for right-sided colon cancer has to do with following the embryologic fusion plane and not carrying out routine ultra-high vascular ligation on the SMA/SMV and Henle's trunk. While the selective application of a more extensive dissection, such as CME, may be warranted based on radiographic and clinical findings, the routine performance of CME does not result in better outcomes than we show here with a standard embryologically based oncologic resection and avoids the potential morbidity of this extended dissection.

Table 1. Demographics, Intraoperative variables, and Oncological outcomes for Patients with Colon Cancer Stage I-III who underwent Right Colectomy (N = 290)

Age	65 and below	68 (23.5%)
	Between 65 - 69	39 (13.5%)
	Between 70 - 75	50 (17.2%)
	Between 75 - 85	92 (31.7%)
	Age >=85	41 (14.1%)
Sex	Male	137 (47.2%)
	Female	153 (52.8%)
BMI	30 and below	211 (72.8%)
	BMI 30 - 34.9	45 (15.5%)
	BMI 35 - 39.9	15 (5.2%)
	BMI >=40	19 (6.6%)
ASA	Class I	7 (2.4%)
	Class II	88 (30.3%)
	Class III	162 (55.7%)
	Class IV	33 (11.4%)
Staging	I	84 (29%)
	II	113 (39%)
	III	93 (32.1%)
Technique	Lap	239 (82.4%)
	SILS	19 (6.6%)
	SP	11 (3.8%)
	XI	21 (7.2%)
Node Harvest	12 and below	20 (6.9%)
	Between 12 - 16	17 (5.9%)
	Between 16 - 18	23 (7.9%)
	Between 18 - 24	82 (28.3%)
	24 and above	148 (51.0%)
Estimated Blood Loss (mL, range)		84.3 mL (0-650)
Intraop complications		6 (2.0%)
Conversion		2 (0.7%)
Postop complications	Total	45 (13.1%)
	Clavien–Dindo grade I	11 (3.8%)
	Clavien–Dindo grade II	22 (7.59%)
	Clavien–Dindo grade III	10 (3.45%)
	Clavien–Dindo grade IV	1 (0.34%)
	Clavien–Dindo grade V	1 (0.34%)
Local Recurrence		0 (0%)
Distant metastases		17 (6.6%)
5-year Disease Free Survival		259 (89.3%)
	Stage I	82 (97.6%)
	Stage II	110 (97.3%)
	Stage III	67 (72.0%)

EP218

Patterns of small bowel metastases: Impact on outcomes in appendix, colorectal, and ovarian cancer patients

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INTRODUCTION: Small bowel (SB) involvement determines the feasibility of complete cytoreduction in advanced cancers with peritoneal metastases (PM) and guides patient selection for cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS/HIPEC). While the peritoneal cancer index (PCI) captures overall SB tumor burden, it overlooks spatial patterns of spread, whose prognostic value remains unclear. We hypothesized that specific patterns of SB involvement reflect tumor biology and impact surgical and survival outcomes. **METHODS:** We conducted a single-center retrospective cohort study of patients with PM from high-grade appendix, colorectal, or ovarian primaries who underwent CRS/HIPEC (1/2018–5/2025). SB involvement was classified as bowel wall (BW), mesenteric border (MB), or mesentery (M). Multivariable logistic regression evaluated the association between SB involvement pattern and incomplete cytoreduction (CC-2/3), adjusting for PCI. Cox regression, stratified by primary tumor, assessed associations with progression-free (PFS) and overall survival (OS) after CRS/HIPEC. **RESULTS:** Of 258 patients, 72 (27.9%) had high-grade appendix, 65 (25.2%) colorectal, and 121 (46.9%) ovarian primaries. Median age was 59 (IQR: 50-67) years. Median PCI was 21 (IQR: 9-29). The prevalence of BW, MB, and M involvement was 69.4% (95%CI: 57.5-79.8), 56.9% (95%CI: 44.7-68.6), and 81.9% (95%CI: 71.1-90) in appendix patients; 63.1% (95%CI: 50.2-74.7), 38.5% (95%CI: 26.7-51.4), and 69.2% (95%CI: 56.5-80) in colorectal patients; and 33.9% (95%CI: 25.5-43), 33.1% (95%CI: 24.7-42.2), and 56.2% (95%CI: 46.9-65.2) in ovarian patients, respectively. Complete cytoreduction (CC-0/1) was achieved in 89.5% (n=231). Median follow-up was 46 (95%CI: 41-52) months. Median PFS and OS were 13 (95%CI: 11-15) and 50 (95%CI: 41-61) months, respectively. MB involvement was independently associated with incomplete cytoreduction (OR: 6.99 [95%CI: 1.58-31.04], p=0.011) and, in the appendix cohort, with worse OS (HR: 4.04 [95%CI: 1.11-14.72], p=0.034) (Figure 1). In CC-0/1 patients, no difference in OS or PFS between patterns was observed. Longer SB resection length was associated with higher 90-day readmission, but not major complication (Clavien-Dindo grade III/IV) rates. **CONCLUSIONS:** MB involvement was associated with incomplete cytoreduction in all primaries and worse OS in high-grade appendix cancer. Spatial SB patterns may refine patient selection beyond overall tumor burden.

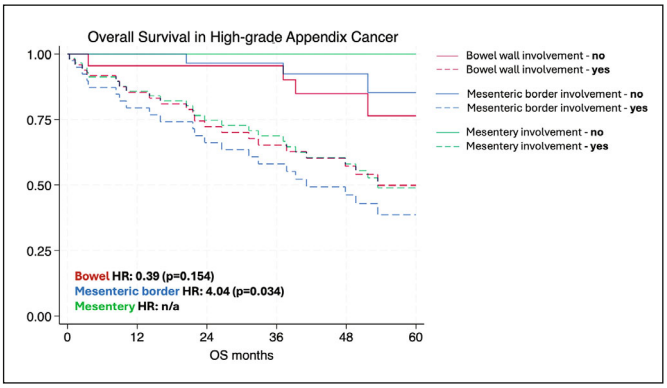

Figure 1. Kaplan-Meier overall survival after CRS/HIPEC in high-grade appendix cancer patients with peritoneal metastases stratified by small bowel involvement pattern.

EP219

First-in-human use of a real-time portable gamma camera for lymphoscintigraphy in melanoma

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INTRODUCTION: Sentinel lymph node biopsy (SLNB) for melanoma utilizes preoperative lymphoscintigraphy +/- SPECT/CT for accurate identification of draining lymph nodes. This gold standard of testing is time consuming, and the operating surgeon depends on these results for surgical planning. The Lymphocam, a mobile gamma camera, has been designed to image 99mTc tracer activity in a patient very quickly (less than 1 minute) and was tested in this first-in-human pilot study with the hypothesis that more expedient imaging, acquired in the operating room by the operating surgeon, could increase the efficiency and accuracy of the SLNB procedure. **METHODS:** This prospective feasibility study was designed for application of the Lymphocam technology during standard lymphoscintigraphy and SPECT/CT imaging performed during melanoma management. We sought to demonstrate feasibility of the Lymphocam to detect drainage in real-time with a primary objective to compare the time needed to identify all involved lymph nodes using SPECT/CT versus Lymphocam. **RESULTS:** : Five patients have undergone evaluation by the Lymphocam technology, showing reliable identification of radiotracer drainage within lymphatic vessels and sentinel lymph nodes. Whereas lymphoscintigraphy and SPECT/CT required 60 - 100 minutes to complete, the Lymphocam imaged drainage and location of lymph nodes for 4 of the initial 5 patients within 10 (±3) minutes from the time of radiotracer injection. For the fifth patient, a weak lymph node was found in the axilla with the Lymphocam only after the SPECT imaging was performed. **CONCLUSIONS:** The Lymphocam technology provides an alternative approach to identifying sentinel lymph node drainage during lymphoscintigraphy for melanoma. This current experience shows the possibility of an intraoperative approach to radiotracer imaging for SLNB planning. Further patient imaging and refinements to the use of the camera, as well as its utility in clinical practice, are currently under investigation.

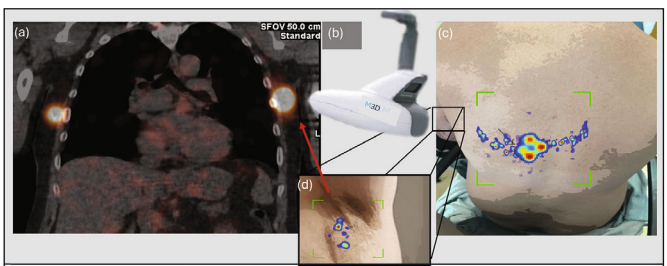

Figure 1: (a) SPECT/CT of bilateral lymph node involvement for a patient with melanoma on their back. (b) The relative positioning of the Lymphocam imager on the end of the articulating arm is shown. (c) Patient image of bilateral drainage from the radiotracer injection sites around melanoma on the back obtained 8 minutes after radiotracer injection. (d) Inset: Lymphocam image of the left axilla showing the presence of two lymph nodes; compared to the single hotspot in the SPECT/CT images.

EP220

National Trends in Preoperative Biopsy of Extremity Soft Tissue Sarcomas: A National Cancer Database Study

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INTRODUCTION: Preoperative biopsy (PBx) is strongly recommended for extremity soft tissue sarcomas (STS), as it provides critical information to confirm diagnosis and staging to facilitate appropriate treatment planning. Contemporary practice patterns in the use of PBx and its impact on treatment of extremity STS are not well characterized. **METHODS:** Malignant STS of the upper and lower extremities were identified in the National Cancer Database (2004-2022). Cases with Stage IV disease (i.e. N1 or M1), those that did not undergo surgical resection, and those with non-STS histology were excluded. Temporal trends in PBx were evaluated using logistic regression. Patient factors associated with PBx were assessed using multivariable logistic regressions. Treatment outcomes associated with PBx were assessed using multivariable logistic regressions controlling for pre-determined patient and tumor factors. **RESULTS:** Among 44,354 patients, 24,817 (56%) underwent PBx. PBx increased over time (OR 1.06 per year, p< 0.001), corresponding with an overall change from 46% PBx in 2004 to 69% PBx in 2022. The rate of PBx increased at a higher rate for tumors > 5cm (OR 1.07, p< 0.001) compared to tumors ≤ 5cm (OR 1.05, p< 0.001), and for histologies other than well-differentiated liposarcoma (WDLPS) (OR 1.06, p< 0.001) compared to WDLPS (OR 1.03, p< 0.001). Patient factors associated with PBx included facility types other than Community Cancer Programs (aOR 1.33-2.13, < 0.01), Charlson-Deyo comorbidity score ≥ 2 (aOR 1.28, p< 0.001), histology type (e.g. aOR for WDLPS 0.34 relative to all other sarcomas, p< 0.001), tumor size > 5 cm (aOR 2.29-3.93, p< 0.001), and high tumor grade (aOR 1.39, p< 0.001). Preoperative biopsy was significantly associated with reciept of neoadjuvant radiation (aOR 7.54, p< 0.001), receipt of neoadjuvant systemic therapy (aOR 5.92, p< 0.001), negative margins on surgical resection (aOR 1.70, p< 0.001), and radical resection rather than local excision (aOR 1.76, p< 0.001). **CONCLUSIONS:** In this large national cohort of patients with extremity soft tissue sarcomas, the rate of preoperative biopsy increased from 2004 to 2022, with higher rates among cases with high-risk features including high grade and tumor size > 5 cm. Preoperative biopsy was strongly associated with receipt of neoadjuvant radiation, neoadjuvant systemic therapy, radical resection, and negative margins. These findings suggest that standardization of biopsy practices may improve coordination of multimodal neoadjuvant therapy and achievement of complete surgical resection.

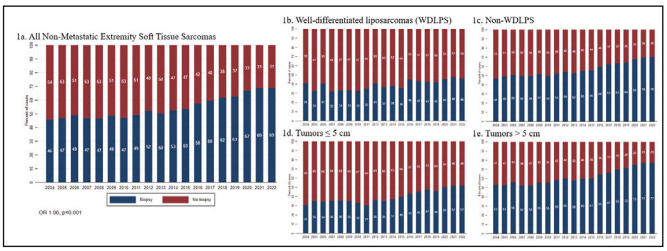

Figure. Trends in biopsy of non-metastatic extremity soft tissue sarcoma over time

EP221

Comparative Perioperative and Oncologic Outcomes of Robotic versus Open Pancreaticoduodenectomy with Portal and Superior Mesenteric Vein Resection: A Multi-Institutional Study.

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INTRODUCTION: Venous resection (VR) during pancreaticoduodenectomy (PD) enables margin-negative resection in borderline or locally advanced pancreatic cancer. These technically demanding procedures were traditionally performed through an open approach but are increasingly being undertaken robotically in high-volume centers. Comparative multi-institutional data remain limited. This study evaluates perioperative and oncologic outcomes of robotic versus open PD with venous reconstruction. **METHODS:** A multi-institutional retrospective review was conducted of adults (≥18 years) who underwent PD with venous resection or reconstruction between 2010 and 2023 at four high-volume centers. Patients were categorized as robotic PD with VR or open PD with VR; converted robotic cases were included in the open group. Exclusion criteria were arterial resection, emergent cases, and incomplete follow-up. Demographic, perioperative, and pathologic variables were compared. Overall survival (OS) and disease-free survival (DFS) were analyzed. Multivariable logistic regression was used for perioperative outcomes, and Cox proportional hazards models for survival outcomes. Entropy balancing was employed to adjust for baseline differences. **RESULTS:** Among 2,175 PDs, 323 (14.9%) required VR (78 robotic, 245 open including 21 conversions). Robotic cases had lower blood loss (250 [150–500] vs 665 [400–1,200] mL; p< 0.001), fewer transfusions (21% versus 43%; p=0.041), and fewer wound infections (10% versus 21%; p=0.041). Type of vascular reconstruction included lateral venorrhaphy (44%), end-to-end (35%), and graft (21%). Margin status was comparable between groups (R0: 71% open versus 67% robotic; p=0.50). Unadjusted OS and DFS did not differ significantly (HR 1.17, 95% CI 0.87–1.59; p = 0.29). Following adjusted Cox regression, robotic resection showed comparable OS and DFS (HR 0.74, 95% CI 0.44–1.24; p = 0.25). After entropy balancing, outcomes remained similar, with no significant difference in 2-year mortality (HR 0.71, 95% CI 0.36–1.40; p = 0.33). **CONCLUSIONS:** In our cohort, robotic and open PD with VR showed comparable perioperative, oncologic, and survival outcomes. Robotic cases had reduced blood loss and wound infections, supporting the safety and feasibility of robotic venous reconstruction in well-fit patients at experienced centers.

Table 1. Demographic and perioperative characteristics - Pancreaticoduodenectomy with venous resection(n=323)

Variable	Open (n=245)	Robotic (n=78)	p-value
Demographics			
Age (years)	68 (61–74)	68.5 (60–74)	0.902
Sex (Male)	131 (54 %)	35 (45 %)	0.186
BMI (kg/m²)	25.4 (22.1–28.0)	25.8 (23.9–28.9)	0.112
Prior abdominal surgery	138 (56 %)	48 (62 %)	0.438
Preoperative			
CT tumor size (cm)	2.9 (2.4–3.5)	2.5 (2.0–3.3)	**0.036**
EUS tumor size (cm)	3.0 (2.5–3.4)	2.7 (2.2–3.0)	**0.006**
Resectability			0.588
Resectable	83 (42 %)	21 (36 %)	
Borderline	20 (10 %)	4 (7 %)	
Locally advanced	3 (2 %)	1 (2 %)	
Neoadjuvant treatment			
Neoadjuvant chemotherapy	167 (68 %)	57 (73 %)	0.412
Neoadjuvant radiation therapy	80 (33 %)	10 (13 %)	**0.001**
Both chemo + RT	80 (33 %)	10 (13 %)	**0.001**
Surgical			
Type of venous resection†	143 (58 %)	45 (58 %)	
Side-bite	46 (32 %)	33 (73 %)	
End-to-end	56 (39 %)	8 (18 %)	
Graft	34 (24 %)	4 (9 %)	
Pancreas texture			
Soft	25 (10.2%)	8 (10.3%)	
Hard	79 (32.2%)	50 (64.1%)	
Intermediate	50 (20.4%)	3 (3.8%)	
Missing	91 (37.1%)	17 (21.8%)	
Estimated blood loss (mL)	665 (400–1200)	250 (150–500)	**< 0.001**
RBC transfused (any)	101 (43 %)	16 (21 %)	**0.041**
Post-op RBC transfusion	32 (86 %)	5 (14 %)	0.041
Wound infection	50 (86 %)	8 (14 %)	0.677
Fluid collection	27 (82 %)	6 (18 %)	0.677
Pathology			
Tumor size (cm, pathologic)	2.9 (2.2–3.7)	2.5 (2.0–3.4)	**0.041**
T stage			0.186
T1	112 (55 %)	41 (54 %)	
T2	65 (32 %)	14 (18 %)	
T3	41 (20 %)	19 (25 %)	
Margin status			**0.504**
R0	171 (71 %)	52 (67 %)	
R1	71 (29 %)	26 (33 %)	
Survival			
Median overall survival (months)	12.5 (95% CI 10.0–16.9)	11.5 (95% CI 8.9–16.5)	0.29

† Type of venous resection available for 181 of 323 patients (56%) across centers.

EP222

Exploring decisional ownership to support shared decision-making in neuroendocrine tumors care: multicentre international qualitative study.

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INTRODUCTION: Shared decision-making (SDM) has been associated with better outcomes, improved satisfaction, and reduced decisional regret in cancer care, but can be challenging to grasp and implement. In neuroendocrine tumors (NETs) care, decision-making is particularly complex due to lack of clear algorithms and multiple decision points over time. Moreover, 60% of patients report leaning towards a passive decision-making role, while remaining actively engaged in the process, thus maintaining some degree of decisional ownership (DO). We explored the experiences of DO among patients with NETs across three health systems. **METHODS:** We conducted semi-structured interviews with patients treated for locoregional and advanced NETs in the USA, Canada, and Australia. Participants were purposively sampled until thematic saturation. Narrative inquiry was used to explore DM and DO experiences. Data were analyzed inductively using thematic analysis with iterative coding and team member triangulation. **RESULTS:** We interviewed 24 patients, including 9 in the USA, 7 in Australia, and 8 in Canada. Distinct patterns of DO were identified. In the USA, high DO with patient-driven DM was described, especially when supported by personal research and time with physicians. In Australia, a mix of high and low DO with both patient and doctor-driven DM was reported, emphasizing self-efficacy, collaborative discussion, and team expertise. In Canada, low DO and doctor-driven DM was described, perceived as the expected pathway and constrained by system barriers. For both high and low DO, the major underpinning of the DM experience was trust. Patients viewed doctor-driven DM as appropriate when accompanied by trust. Across settings, the perception of patient-centred care was tightly linked to trust rather than decisional control. Trust was influenced by access to specialized centres and physicians, time with the team, honest communication, empathy and care continuity. We developed a framework for SDM in NETs centred on 3 interrelated constructs: ownership, choice (decision), and trust. **CONCLUSIONS:** DO in NETs care differs across health systems. All levels of DO can be experienced positively when trust is established. Care fragmentation and communication breakdowns undermine trust and DO experience. Eliciting patients' preferred degree of DO and strengthening access to specialized NETs teams, care navigation supports, and communication tools are actionable strategies to support SDM in NETs care.

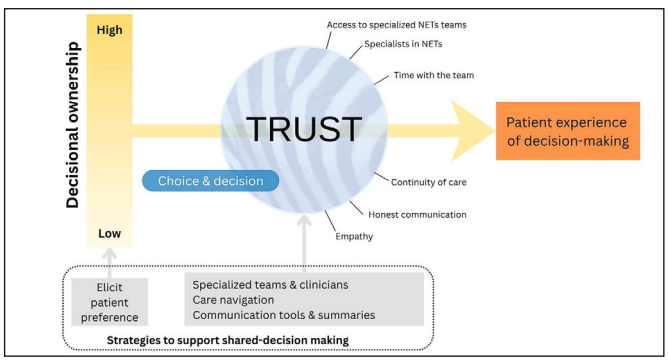

Figure. Framework for shared decision-making in NETs care along with actionable strategies for support.

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A pilot feasibility study to address global inequities in breast cancer genetic testing and counselling in Nigeria

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INTRODUCTION: Breast cancer (BC) is a significant health challenge in Nigeria, characterized by early onset, late-stage diagnosis, and high prevalence of triple-negative BC. Survival outcomes are significantly worse compared to North America (43.6% vs 90%). The prevalence of BRCA1/2 pathogenic variants (PVs) is higher, reported at 11.1%, compared to 4% among Black patients in North America. While genetic testing and counselling are widely accessible in North America to assess lifetime cancer risk and guide management, access in Nigeria is extremely limited. Barriers include lack of testing infrastructure, referral pathways, and shortage of trained genetic counsellors, hindering the integration of genetic services into routine care. To build local capacity, we developed a hereditary BC educational program that led to a 43% improvement in knowledge ($p < 0.001$). This program served as the foundation for our pilot study to assess the feasibility of BRCA1/2 genetic testing in Nigeria. Citation: Alatise, OI, et al. "The ACTION Study: Addressing Global Inequities in Breast Cancer Genetic Testing, Counselling, and Management among Breast Cancer Patients in Nigeria." Poster. AORTIC 2025 Conference, Tunisia, November 2-5, 2025. Abstract 920. **METHODS:** This prospective study enrolled 100 patients,18-60 years, with newly diagnosed invasive BC from three tertiary hospitals in Nigeria (North Central, Southwest, and Southeast). Saliva samples collected at enrollment were processed for BRCA1/2 germline analysis by a third-party provider. Participants received pre- and post-test genetic counselling from trained providers, culturally tailored education, and clinical follow-up to discuss results and management. Primary endpoints included BRCA1/2 prevalence, impact on clinical management, and patient-reported outcomes. **RESULTS:** All participants received BRCA1/2 results within three weeks. PVs in BRCA1/2 were identified in 16% of patients; 80% tested negative and 4% had variants of uncertain significance. Initially 15 samples failed due to insufficient DNA concentration, but retesting was successful. Among BRCA-positive patients, results informed risk-reducing surgery: four underwent bilateral mastectomy, two unilateral mastectomy, and two bilateral oophorectomies. Two patients discontinued treatment. **CONCLUSIONS:** This study is the first of its kind in Nigeria, offering genetic testing and yielding real-time results used in clinical decision making. Our findings underscore the importance of global, multidisciplinary collaboration in addressing disparities in cancer care.

EP224

Minimally invasive resection of colorectal liver metastases is associated with improved textbook outcomes

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INTRODUCTION: Treatment of colorectal liver metastasis (CRLM) involves a multimodal approach. Minimally invasive surgery (MIS) has revolutionized many surgical procedures and has become widely adopted for CRLM resections. We investigated achieving a textbook outcome (TO) specific to de novo CRLM resections between open and MIS approaches. **METHODS:** Patients who underwent CRLM resection between 2010-2025 were included. The primary endpoint was TO based on the 2023 International Delphi consensus for liver resections. TO is defined as the achievement of an R0 resection with the absence of intraoperative complications, 90-day major post-operative complications, bile leak (ISGLS B/C), liver failure (ISGLS B/C), 90-day postoperative related readmission, and 90-day mortality. Logistic regression analysis identified variables predictive of failure to achieve a TO. **RESULTS:** The cohort included 141 CRLM patients (open=77, laparoscopic=39, and robotic=25); 105 (74.5%) achieved a TO. Compared to open surgery, the MIS group was more likely to achieve a TO (84.4% vs 66.2, p = 0.019). Unadjusted analysis showed that TO was less likely to occur in patients with advanced age (p=0.028), a higher charlson comorbidity index (p=0.016), evidence of vascular invasion on preoperative imaging (p=0.029), who underwent a major resection (p=0.030), or had concurrent cholecystectomy (p=0.048); additionally, longer operative time ($p< 0.001$), higher EBL ($p< 0.001$), intraoperative transfusion ($p< 0.001$), and postoperative transfusion (p=0.007) resulted in a decreased likelihood of achieving a TO. On multivariable analysis predictors of failure to achieve a TO was advanced age (OR 1.05, CI 95% 1.01-1.10; p=0.009) and increased number of lesions (OR 7.00, 95% CI 1.25-39.17; p=0.027); additionally, an open approach (OR 3.32, 95% CI 1.28-8.59; p=0.014), and abnormal liver texture (OR 3.99, 95% CI 1.16-13.81; p=0.029) had increased failure to achieve a TO. There was no difference in TO between laparoscopic (31/39; 79.5%) and robotic (23/25; 92%) groups (p=0.292). However, patients who underwent robotic surgery had lower EBL (p=0.032), less intraoperative (p=0.004) or postoperative transfusions (p=0.002), and had a reduced median LOS (1 IQR [1-3] vs 6 [4-9]; $p< 0.001$) despite no significant difference in most pre-incision risk factors. **CONCLUSIONS:** Achieving TO was more likely in the MIS group with no significance between laparoscopic and robotic approaches. Robotic surgery demonstrated superior outcomes in reduced LOS and EBL without significantly increased operative time.

Table 1. Multivariable Analysis for Factors Associated with Failure to Achieve Textbook Outcomes

	Univariable		Multivariable	
	OR (95% CI)*	p-value	OR (95% CI)**	p-value
Age at Surgery, per year increase	1.03 (1.00-1.07)	0.0478	1.05 (1.01-1.10)	0.0087
BMI, per unit Increase	1.00 (0.95-1.06)	0.9572	-	-
Sex, Female vs. Male	0.79 (0.37-1.71)	0.5557	-	-
ECOG [N (%)]				
1 vs. 0	1.30 (0.59-2.90)	0.5174	-	-
2 vs. 0	1.81 (0.48-6.82)	0.3819	-	-
ASA Class [N (%)]				
3 vs. 2	0.67 (0.30-1.49)	0.3270	-	-
4 vs. 2	1.02 (0.18-5.67)	0.9832	-	-
Previous Abdominal Surgery, Yes vs. No	1.06 (0.45-2.52)	0.8871	-	-
Number of Lesions [N (%)]				
2 vs. 1	1.96 (0.81-4.74)	0.1333	2.16 (0.82-5.69)	0.1201
3-4 vs. 1	1.50 (0.43-5.19)	0.5239	0.84 (0.20-3.41)	0.8013
> 4 vs. 1	6.54 (1.42-30.12)	0.0159	7.00 (1.25-39.17)	0.0267
CCI AA, per unit Increase	1.31 (1.04-1.64)	0.0236	-	-
Preop CEA, per unit Increase	1.00 (0.99-1.01)	0.3724	-	-
MELD Score, per unit Increase	1.03 (0.90-1.17)	0.6926	-	-
Largest Lesion Size				
2.0-3.9 vs. 0.1-1.9 cm	1.56 (0.56-4.33)	0.3931	-	-
≥ 4.0 vs. 0.1-1.9 cm	2.54 (0.91-7.06)	0.0751	-	-
NAT Path Response Reduction [N (%)]				
Yes vs. No/Unknown	1.98 (0.73-5.35)	0.1777	2.29 (0.73-7.20)	0.1573
No NAT Given vs. No/Unknown	1.03 (0.36-2.93)	0.9585	1.00 (0.31-3.24)	0.9962
Liver Texture, Steatosis/Cirrhosis vs. Normal	2.29 (0.76-6.96)	0.1397	3.99 (1.16-13.81)	0.0286
Type [N (%)]				
Left Hepatectomy vs. Right Hepatectomy	1.23 (0.34-4.44)	0.7551	-	-
Sectionectomy vs. Right Hepatectomy	0.38 (0.13-1.11)	0.0755	-	-
Trisegmentectomy vs. Right Hepatectomy	1.00 (0.26-3.88)	0.9954	-	-
Minor vs. Right Hepatectomy	0.47 (0.17-1.31)	0.1483	-	-
Major Resection, Yes vs. No	2.32 (1.06-5.10)	0.0357	-	-
Simultaneous Intreop Ablation, Yes vs. No	1.76 (0.73-4.24)	0.2087	-	-
Simultaneous Cholecystectomy, Yes vs. No	2.15 (0.98-4.73)	0.0558	-	-
Simultaneous Colon Resection, Yes vs. No	1.89 (0.82-4.36)	0.1339	-	-
Surgical Approach, Open vs. MI	2.67 (1.18-6.04)	0.0183		0.0136

*OR < 1.0 indicates more likley to achieve textbook outcome
**OR > 1.0 indicates more likley to fail to achieve textbook outcome (ie. less likely to achieve textbook outcome)

EP225

Adherence and outcomes of nodal ultrasound surveillance in sentinel lymph node positive melanoma

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INTRODUCTION: Nodal surveillance with ultrasound (US) is recommended to monitor for nodal recurrence in patients with sentinel lymph node–positive (SLN+) melanoma. This study aimed to characterize adherence to nodal surveillance protocols with US and quantify recurrence during surveillance

intervals in SLN+ melanoma patients. **METHODS:** Among a retrospective, institutional cohort of SLN+ melanoma patients who underwent nodal surveillance between 2017–2022, we evaluated adherence to nodal US surveillance, defined as ≥1 US per six-month interval. Secondary outcomes included recurrence locations and method of detection (ultrasound versus cross-sectional imaging [CT, PET, or PET/CT]), reported using descriptive statistics. **RESULTS:** Among 171 SLN+ patients with a median follow-up 25 months (Interquartile Range [IQR 8–41]), 56% were male, and the mean age was 58 years (Standard deviation [SD]:15). Patients had tumors on the trunk (N=64, 37%), extremity (N=73, 49%), and head/neck (N=24, 14%). The mean Breslow depth was 3.9 mm (SD: 4.8) and 38 (22%) were ulcerated. Patients had a mean of 1.3 SLN+ (SD: 0.6) and 94 (55%) percent received adjuvant immunotherapy. Forty-four patients recurred, with 21 (12%) having a recurrence that included the SLN basin and 23 (14%) recurring elsewhere. Fifty-one patients (30%) adhered to recommended ultrasound intervals, of whom 18 (35%) underwent at least one nodal biopsy and 4 (8%) confirmed SLN-basin recurrence. Additional SLN-basin recurrences in ultrasound adherent patients were detected via cross-sectional imaging (N=3, 6%). Among patients who did not receive US surveillance at recommended intervals (N=120, 70%), 13 (11%) experienced SLN basin recurrence, detected by nodal ultrasound (N=2), cross-sectional imaging (N=8), and physical exam (N=1), or unknown method (N=2). **CONCLUSIONS:** Only one third of patients with SLN+ melanoma underwent nodal US surveillance at recommended intervals. As both US and cross-sectional imaging have demonstrated utility in detecting SLN basin recurrence and given the high risk of both in-basin and out-of-basin recurrence, optimal surveillance may include both nodal ultrasound and cross-sectional imaging.

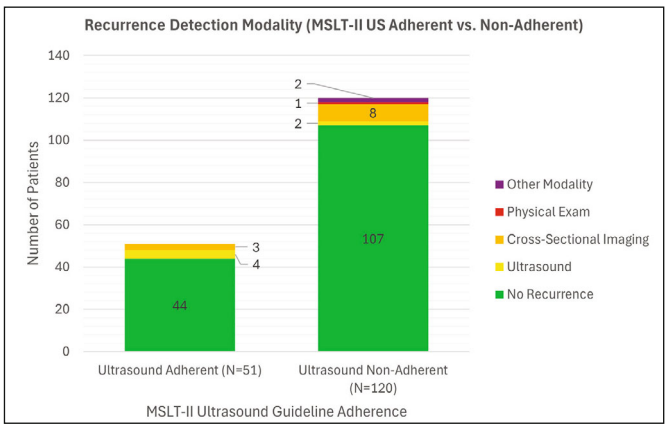

Figure 1. Imaging modalities implicated in the detection of recurrent melanoma during the nodal surveillance period based on compliance to MSLT-II ultrasound interval guidelines (defined as ≥1 US per six-month interval).

EP226

The evolving landscape of axillary lymph node dissection in breast cancer: A population based study

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INTRODUCTION: Indications for axillary lymph node dissection (ALND) have been decreasing in the management of breast cancer (BC) over the past 20 years, and this procedure is now largely performed in the most complex cases. The aim of this study was to examine trends in ALND over time and describe individual surgeon volume for this procedure. **METHODS:** We performed a population-based cohort study using linked health administrative data in Ontario, Canada. Using the Ontario Cancer Registry, patients diagnosed with Stage I-III BC between 2013 and 2024 were identified. Patients who did not have surgery within one year of diagnosis were excluded. Using comprehensive billing codes, we identified all ALNDs in this cohort. Patient and surgeon characteristics were described. **RESULTS:** After exclusions, 126,343 women had surgery for Stage I-III BC between 2013 and 2024 in Ontario, among whom 22,432 ALNDs were performed. The proportion of patients overall who underwent ALND decreased from 29% in 2013 to 12% in 2024. However, there was a post-pandemic increase in ALNDs performed in patients having upfront surgery, while dissections after neoadjuvant chemotherapy have dropped sharply (Figure 1). Of 4,525 dissections performed from 2022 to 2024, 2,286 (50%) were performed in patients who had surgery as first treatment. Further, only 37% of patients in this time period had a SLNB prior to ALND. 578 General Surgeons were identified who performed at least one breast procedure over the study period, of whom 212 (37%) did not perform an ALND. The majority (70%) of these 212 surgeons were non-breast surgeons (< 5% breast procedures in practice). Surgeons who performed at least one ALND (N = 366) were older than their colleagues who did not perform ALND (median 57 years vs. 49 years; $p < 0.001$) and had more years since graduation (median 31 vs 22; $p < 0.001$). Among these surgeons, the median number of ALNDs performed per year decreased from 4 in 2013 to 2 in 2024. The 75th percentile decreased from 9 procedures in 2013 to 5 in 2024. **CONCLUSIONS:** In this province wide study, ALNDs were performed in fewer BC patients from 2013 to 2024. However, we observed increases in ALND among upfront surgery patients since 2020, which may reflect presentations with more advanced disease or delayed diagnoses related to COVID-19. Most surgeons performing ALNDs are low-volume, which has important implications for familiarity with the procedure for new surgeons and residents. Further research is needed to determine if there is a volume-outcome relationship in these increasingly complex BC patients.

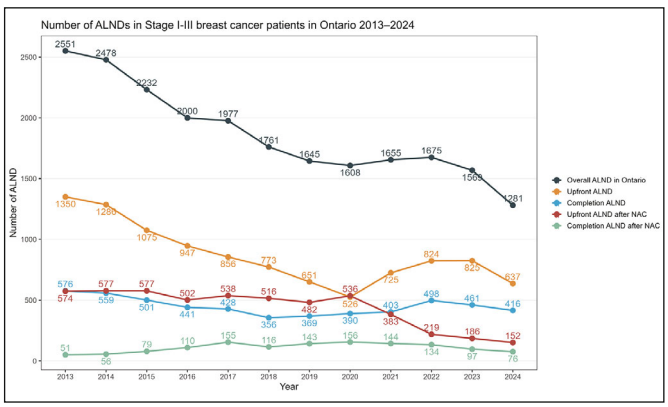

Figure 1. Number of axillary lymph node dissections performed in Stage I-III breast cancer patients in Ontario 2013–2024. ALND = axillary lymph node dissection, NAC = neoadjuvant chemotherapy.

EP227

Oncologic Outcomes of Localized Pancreatic Ductal Adenocarcinoma in Germline Pathogenic Carriers: A Single Institution Cohort Analysis

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INTRODUCTION: Patients with germline pathogenic variants (GVP) in cancer predisposition genes are at higher risk of developing pancreatic ductal adenocarcinoma (PDAC). However, GVP prevalence, specific associations, and oncologic outcomes have not been thoroughly assessed. We sought to evaluate clinicodemographic features, treatment paradigms and clinical outcomes in patients with localized PDAC and confirmed GPV using a large exome database. **METHODS:** Genomic and phenotypic data from 227,286 participants in the Geisinger MyCode project were queried to identify patients with PDAC (diagnosed between 2012-2024) with GPV from genes commonly associated with PDAC (ATM, BRCA1, BRCA2, CDKN2A, CHEK2, and PALB2). We estimated the frequency and calculated relative risks (RRs) of heterozygotes. Non-metastatic PDAC patients were matched to non-carriers for age, sex, and stage, and oncologic outcomes were analyzed using Cox regression analysis.

RESULTS: The combined frequency of heterozygous GPV carriers in the general population ranged from 1.53% for CHEK2 to 0.03% for CDKN2A. The frequency of GPV in PDAC cases varied from 1.37% (ATM) to 0.39% (BRCA1 and CDKN2A). The highest RR was observed for PALB2 (RR = 1.02, 95% CI 0.99-1.04), followed by ATM (RR = 1.01, 95% CI 1.01-0.02), BRCA2 (RR = 1.01, 95% CI 1.01-1.02), and CHEK2 (RR = 1.00, 95% CI 0.99-1.00). These RRs were significantly increased (p< 0.001) for ATM and BRCA2. Eighteen patients with GPV and diagnosed with non-metastatic PDAC were identified and then matched to non-carriers. Carriers and non-carriers were similar across all baseline factors: family PDAC history, personal cancer history, and ASA/ECOG status. Tumor characteristics (location, resectability status) and treatment paradigms (neoadjuvant, upfront resection and systemic therapy) were comparable. In this subset, 67% underwent a pancreatectomy. Among resected patients, there were no significant differences in margin status and nodal involvement. There was a trend towards improved overall survival for carriers compared to non-carriers (23 v 14 months, p=0.213). **CONCLUSIONS:** In this genome-first approach to analyze genomic and EHR-linked data, we found the highest prevalence of heterozygotes for GVP in CHEK2, followed by ATM and BRCA2. There was a trend towards better survival for GVP carriers but, was not statistically significant. This work expands our understanding of the frequencies of GPV heterozygous carriers and associations between PDAC and GPV in several important PDAC susceptibility genes and response to therapy.

	General Population (n=227286)		Patients with PDAC (n=53)		PDAC GPV carriers	
	Number of Heterozygotes for GPV	Prevalence of Heterozygotes for GPV	Number of Heterozygotes for GPV	Prevalence of Heterozygotes for GPV	Relative Risk (95% CI)	p-value
ATM	1079	0.47%	14	1.37%	1.0087 (1.0018-1.0157)	**0.0004**
BRCA1	374	0.16%	4	0.39%	1.0063 (0.9958-1.017)	0.0860
BRCA2	808	0.36%	13	1.27%	1.0119 (1.003-1.0209)	**<0.0001**
CDKN2A	74	0.033%	0	0%	N/a	N/a
CHEK2	3467	1.53%	17	1.67%	1.0005 (0.9981-1.0028)	0.6697
PALB2	241	0.11%	5	0.49%	1.0167 (0.9982-1.0355)	**0.0046**

Figure. Prevalence of heterozygotes for GPV in general population and PDAC cohort with corresponding relative risk of PDAC patients harboring a GPV for each gene.

EP228

Social determinants of health factors impacting return to intended oncologic treatment for pancreatic adenocarcinoma

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INTRODUCTION: Adjuvant therapy is standard-of-care for pancreatic adenocarcinoma (PDAC). Return to intended oncologic treatment (RIOT) of adjuvant therapy can be impacted by multiple factors after surgery. Previous studies have shown that inability to achieve RIOT is associated with reduced disease free and overall survival. This study aims to explore what factors may impact RIOT for PDAC. **METHODS:** This retrospective study utilized data from the National Cancer Database (NCDB) from 2010 to 2021. Adult patients (≥ 18 years) with pancreatic adenocarcinoma and pathological T1-T3, N0-N2 disease were included. Patients with metastatic disease were excluded. Only patients with primary tumors located in the pancreatic head, body or tail were analyzed. RIOT was defined as return to chemotherapy after surgery for pancreatic cancer. **RESULTS:** Among 40,632 eligible patients, RIOT was achieved in 61.7% of these patients (N=25,061). Due to the large sample size, multiple variables demonstrated statistical significance between positive and negative RIOT, although there is a range of numerical differences. Of these variables, type of insurance, education level, and income level showed notable disparities. For those patients with private insurance, 35.4% (N=8,867) of patients achieved RIOT compared with 24.8% (N=3,854) of patients who did not achieve RIOT. This is in contrast with patients who have Medicare, 65.3% (N=10,168) of patients did not achieve RIOT compared with 54.8% (N=13,737) who did achieve RIOT. Higher education level and income levels were also associated with greater likelihood of achieving RIOT (both p< 0.001). Patients who achieved RIOT had a shorter mean travel distance to the treating facility (44.4 vs 61.7 miles, p< 0.001). **CONCLUSIONS:** This large national database analysis identified several potential barriers to healthcare, including distance from healthcare facility, socioeconomic variables such as income and education level, and insurance status. Recognizing and addressing these socioeconomic and access-related disparities may improve achievement of RIOT for patients with PDAC.

EP229

Nationwide Trends and Predictors of Outcomes Following Total Pancreatectomy: A 14-Year Analysis from France

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INTRODUCTION: Total pancreatectomy (TP) is a complex surgical procedure associated with significant morbidity and mortality. Despite recent advancements in postoperative management, comprehensive analyses of postoperative outcomes following TP remain limited. This study aims to describe the postoperative outcomes following TP and identify predictive factors for 90-day mortality and adjuvant chemotherapy omission. **METHODS:** A retrospective analysis was conducted on 2,306 patients who underwent TP in France between 2009 and 2022. Data was extracted from the National Health Data System, encompassing patient demographics, clinical outcomes, and chemotherapy exposure. Multivariable analyses were performed to identify factors associated with mortality and omission of adjuvant chemotherapy. **RESULTS:** The 90-day mortality rate following TP was 8.3%. 83.8% of patients underwent TP for neoplasms, and 19.8% and 56.2% of patients received neoadjuvant and adjuvant chemotherapy, respectively. The median survival post-TP for pancreatic ductal adenocarcinoma was 34.8 months. Patients who received adjuvant chemotherapy had a higher survival and a lower mortality overall. The mean number of reinterventions was 0.8 and 80.7% of patients were rehospitalized within one year. 75.7% of patients experienced digestive complications, with diabetes complications affecting 71% of patients. Complications and re-interventions were identified as significant risk factors for 90-day mortality. Additionally, age >75, >7 complications, and >3 revision surgeries were risk factors for adjuvant chemotherapy omission. **CONCLUSIONS:** Despite advances in postoperative management, mortality and morbidity rates following TP remain high. Targeted management strategies are necessary to reduce the risks associated with chemotherapy omission and mortality to optimize post-TP outcomes.

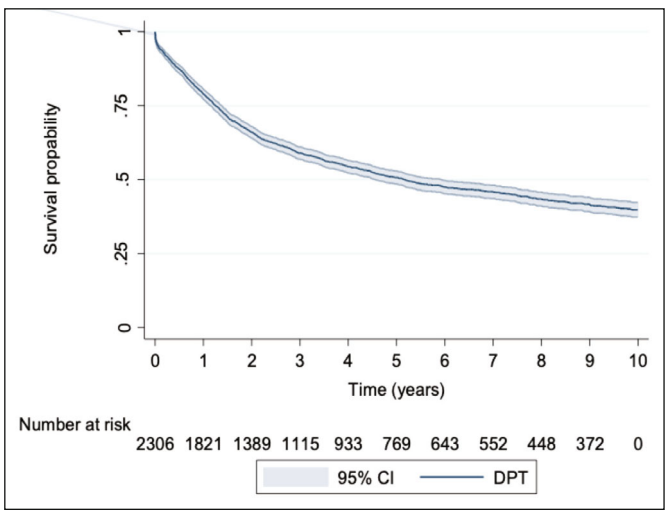

Figure. Survival Probability following Total Pancreatectomy

EP230

Delays in treatment initiation among patients undergoing neoadjuvant therapy versus upfront surgery for pancreatic cancer

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INTRODUCTION: The timely administration of treatment is crucial for the management of pancreatic adenocarcinoma. With the increasing use of neoadjuvant therapy, which requires enhanced coordination of care, it becomes even more critical to evaluate the factors that prevent patients from receiving timely treatment. The goal of this study is to assess the time to treatment in a large community cancer center. **METHODS:** A single-center, retrospective study was conducted. Patients aged 18 or older, diagnosed with Stage I-III pancreatic cancer, who were considered for surgery either with or without neo-adjuvant therapy, were included. Patients with a diagnosis of another primary cancer were excluded. The area of deprivation was calculated based on the Wisconsin deprivation index matched to zip codes. **RESULTS:** A total of 208 patients were included in the final analysis. A total of 61 patients included had neo-adjuvant therapy before surgery, and the remaining 147 patients had surgery upfront. The median time to treatment was 44 days, with no significant difference between the surgery-first approach (46 days vs 42 days, P=0.22). There was a substantial difference in time to treatment for patients aged 80 or older, with older patients having a delay in treatment when compared to younger patients (55 days for >80 vs 43 days for < 80, P< 0.017). This difference was more prominent in the surgery-first approach (60 days) compared to the neoadjuvant chemotherapy group (41 days). When evaluating the segment of care in the neoadjuvant group, the longest time was from EUS to port placement (22 days). Additionally, there was no significant difference found for other factors such as sex, race, symptoms at the time of presentation, location of mass, history of alcohol abuse, smoking, or family history of cancer. The area of deprivation based on zip code showed no significant difference in time to start treatment. A total of 83% had recurrence over time, and there was no significant correlation between time to start treatment and recurrence (P=0.99). **CONCLUSIONS:** Older patients require a longer time to start treatment compared to the younger group. However, despite the increased coordination of care necessary for neoadjuvant chemotherapy, elderly patients can still receive treatment in a timely fashion. Therefore, neoadjuvant chemotherapy is a viable option for elderly patients with good functional status and should be offered to this group of patients.

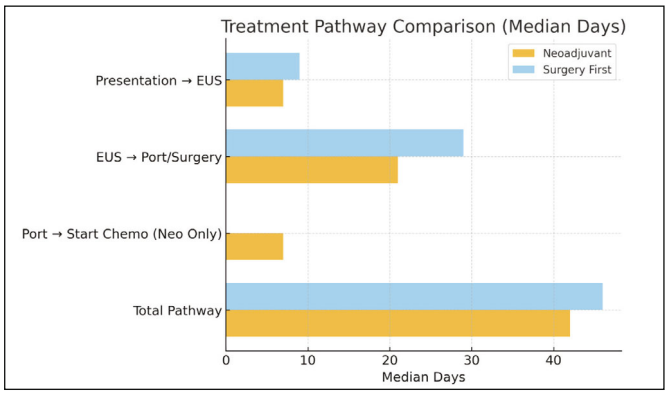

Figure. Treatment Pathway Comparison

EP231

Concentration-Based Mitomycin C Dosing During HIPEC Reduces Total Dose Without Compromising Oncologic Outcomes: A 15-Year Institutional Experience in Appendiceal and Colorectal Cancer

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INTRODUCTION: Intraperitoneal chemotherapy with mitomycin C (MMC) can be administered based on either body surface area (BSA) or drug concentration. Current guidelines from the American Society of Peritoneal Surface Malignancy advocate for a concentration-based dosing regimen, irrespective of BSA. However, there is limited clinical data to support one approach over the other. **METHODS:** This is a retrospective analysis of a prospectively maintained single institution database in North America. Patients with peritoneal carcinomatosis of appendiceal and colorectal origin who underwent cytoreductive surgery (CRS) and heated intraperitoneal chemotherapy (HIPEC) with a fixed dose – 40mg – of mitomycin C were included in the study. The difference between a calculated BSA-based dose (30mg/m2) and the actual administered fixed dose was defined as Delta. The primary outcome was recurrence free survival (RFS) and overall survival (OS). A cox regression analysis adjusting for potential confounders was performed. **RESULTS:** Between 2009-2024, 284 patients with appendiceal and colorectal primary cancer underwent CRS/HIPEC. All but one patient received less MMC than would be expected with a BSA derived regimen, with an average difference (Delta) of 18mg. Patients with high Delta (>26 mg) had a higher BMI, higher ASA score, were more likely to be male and less likely to be White. There were no other differences in comorbidities, histology, treatment history, and operative data. The median RFS for low grade appendiceal mucinous neoplasm, other appendiceal pathology, and colorectal cancer were 20, 12, and 7 months, respectively. The median OS for the same pathology were "not reached", 4.2, and 2.3 years. On Cox regression, after adjusting for potential confounders, Delta was not associated with recurrence free survival (HR=1.05, p=0.11) or overall survival (HR=1.00, p=.98). On multivariate analysis, Delta was not associated with overall morbidity (OR=1.04, p=0.243) or length of stay (Coef=1.9, p=0.218). **CONCLUSIONS:** Concentration based dosing of mitomycin C results in decreased total chemotherapy dose, especially in overweight, obese, and male patients. This, however, does not translate into worse oncologic outcomes, confirming its continued value as a preferred dosing methodology.

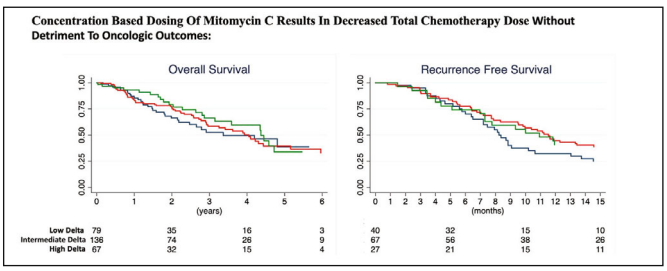

Figure 1

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Clinical Characteristics and Outcomes of In-transit Metastases in Merkel Cell Carcinoma

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INTRODUCTION: Merkel cell carcinoma (MCC) is a rare cutaneous malignancy with neuroendocrine features, in-transit metastases (ITM) present a rare and therapeutically challenging scenario. This study aimed to identify clinical factors associated with ITM and describe patient outcomes. **METHODS:** Patients with MCC presenting or recurring with ITM from 1994 to 2023 treated at Memorial Sloan Kettering Cancer Center were included. Clinicopathological factors were described. Cumulative incidence functions summarized disease specific death (DSD) and progression, with death from other causes considered a competing risk. **RESULTS:** Forty-eight patients were included; 36 (75%) were males, and median age was 71 (IQR, 63-81). Sixteen patients presented with ITM at diagnosis and 32 after primary treatment for MCC. Immunosuppression was observed in 25. For those presenting with ITM, 10 were solitary 10 and 6 were multiple; 14 patients were rendered disease-free with treatment. The majority of patients who recurred with ITM

presented with a solitary lesion (n=16), while the remainder (n=10) presented with multiple. 27 were rendered disease-free. For ITM at diagnosis, the 1-yr incidence of progression was 44% (95% CI 19-66), and the 5-yr incidence of DSD was 34% (95% CI 11-59). For ITM at recurrence, the 1-yr incidence of progression was 35% (95% CI: 19,52), and the 5-yr DSD was 55% (95% CI: 30,62). **CONCLUSIONS:** Progression of MCC is common after ITM, but many patients can ultimately be salvaged. Events occur early, with most progression and deaths from disease occurring within three years after ITM onset.

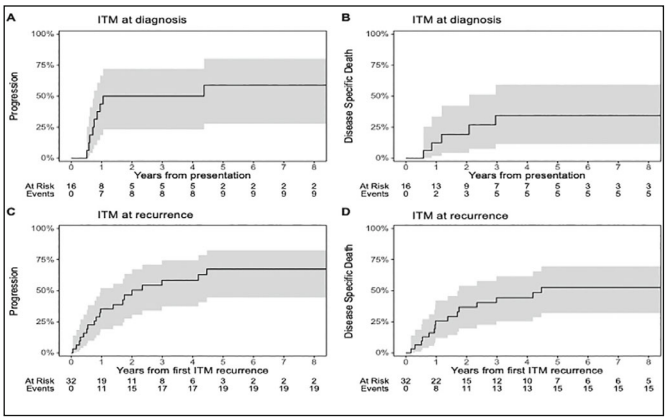

Figure 1: Cumulative incidence of progression and disease-specific death for patients with ITM at diagnosis and recurrence.

EP233

Recurrence patterns and method of detection in T4 colorectal cancer

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INTRODUCTION: Peritoneal recurrence of stage T4 colorectal cancer is common and associated with a poor prognosis. Low-volume peritoneal disease is difficult to detect by CT, PET, MRI, or ctDNA; however, diagnostic laparoscopy can provide an accurate assessment of the peritoneal cavity. Data on the utility of diagnostic laparoscopy for surveillance in post-resection T4 colorectal cancer patients is scarce. **METHODS:** A single-institution retrospective review was conducted for patients >18 years old who were diagnosed with stage T4 colorectal cancer and subsequently underwent surgical resection and postoperative surveillance from January 2014 to January 2024. Patients who underwent diagnostic laparoscopy following their index operation were identified. Outcome measures include peritoneal recurrence detected on diagnostic laparoscopy, time to peritoneal recurrence, and receipt of cytoreductive surgery/heated intraperitoneal chemotherapy (CRS/HIPEC). **RESULTS:** Overall, 525 patients were included. Patients were diagnosed with stage T4 colorectal cancer at an average age of 67.5 years. Most patients were female (53%), Caucasian (93%), with an ECOG score of 1 (46%). Surgical resection was mainly on an elective basis (70%) using minimally invasive techniques (62%). Stage T4a colorectal cancer diagnosis was given to 312 (59.5%) patients, and 213 (40.5%) patients were diagnosed with stage T4b. Two hundred fifty-three patients (48.2%) received FOLFOX adjuvant chemotherapy. Surveillance modalities, performed within five years postoperatively, included: cross-sectional imaging (88.4%), diagnostic laparoscopy (7%), CEA (65.9%), ctDNA (16.2%), and colonoscopy (46.3%). Among the patients who underwent diagnostic laparoscopy, 41% of the cases were for surveillance. In general, 175 (33.3%) patients experienced recurrence following surgical resection, with peritoneal recurrence (70 patients, 13%) occurring most frequently. The majority of recurrence events were detected on cross-sectional imaging (30%). Diagnostic laparoscopy detected 12.5% of recurrence events. The median time to peritoneal recurrence detection via laparoscopy was 10.5 months after the index operation. For those with peritoneal recurrence detected on laparoscopy, 77% underwent CRS/HIPEC, compared to 26% with detection on cross-sectional imaging ($p < 0.0001$). **CONCLUSIONS:** Peritoneal recurrence following stage T4 colorectal cancer resection is common. Routine implementation of diagnostic laparoscopy as part of surveillance may provide an opportunity for earlier diagnosis and surgical management of metachronous peritoneal metastases.

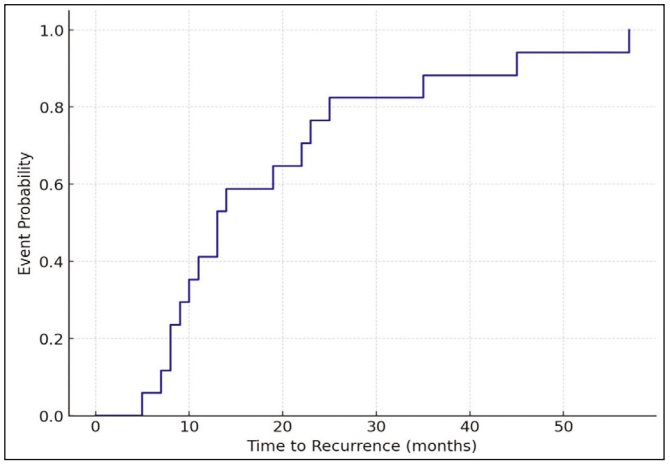

Figure 1. Event probability curve demonstrating time to peritoneal recurrence event, which was detected on diagnostic laparoscopy

EP234

Rates of breast and axillary pathologic complete response after neoadjuvant chemotherapy among germline pathogenic variant carriers

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INTRODUCTION: Clinical factors associated with improved rates of pathologic complete response (pCR) to neoadjuvant chemotherapy (NAC) in breast cancer include triple negative breast cancer (TNBC), HER2-positive cancers, and younger age. BRCA1 mutation-positive cancers have also shown increased sensitivity to NAC compared to sporadic cancers. This study examines rates of primary breast tumor and axillary nodal response to NAC in carriers of germline pathogenic variants (PVs) in breast cancer-associated genes and whether these responses may be driven by clinical versus mutation-specific factors. **METHODS:** This was an IRB-approved, retrospective cohort study. A tumor registry and electronic health record were used to identify patients who underwent NAC between 2016 and 2023. Demographics, tumor characteristics, and pathologic responses were assessed. Patients with genetic testing revealing PVs in BRCA1, BRCA2, PALB2, ATM or CHEK2 genes were identified. Propensity score matching was performed based on age, race, clinical stage, tumor subtype, and receptor status to compare responses to NAC between patients with PVs and sporadic cancer controls in a 1:1 ratio. **RESULTS:** Overall, 1642 patients underwent NAC during the study period. 126 patients with PVs in the genes of interest were identified (BRCA1: n=53, BRCA2: n=35, CHEK2: n=14, PALB2: n=12, ATM: n=15) and paired with 126 propensity matched controls. Breast pCR rates differed between most pathogenic variant groups versus matched controls (BRCA1 56.9% vs. 47.1%, p=0.66; BRCA2 28.57% vs. 54.3%, p=0.04; CHEK2 21.4% vs. 35.7%, p=0.43; PALB2 27.3 % vs. 45.5%, p=0.05; ATM 40% vs. 40%, p >0.99) but largely did not reach statistical significance. Axillary pCR rates, for those with node positive disease, were similar between BRCA1 and BRCA2-mutation carriers and matched controls (BRCA1 29.4% vs. 33.3%, p=0.07; BRCA2 31.3 vs. 34.3, p=0.5) but differed for other pathogenic variant groups (CHEK2 7.1% vs. 21.4, p=0.3; PALB2 45.5% vs. 9%, p=0.05; ATM 53.3 vs. 26.7%, p=0.37). **CONCLUSIONS:** Clinical factors may not account for all differences in pCR rates among patients with pathogenic variants versus non-carriers. Further investigation evaluating the influence of germline PVs on NAC response should be executed in a high-volume, multi-institutional setting to better personalize treatment for patients with breast cancer-associated gene mutations.

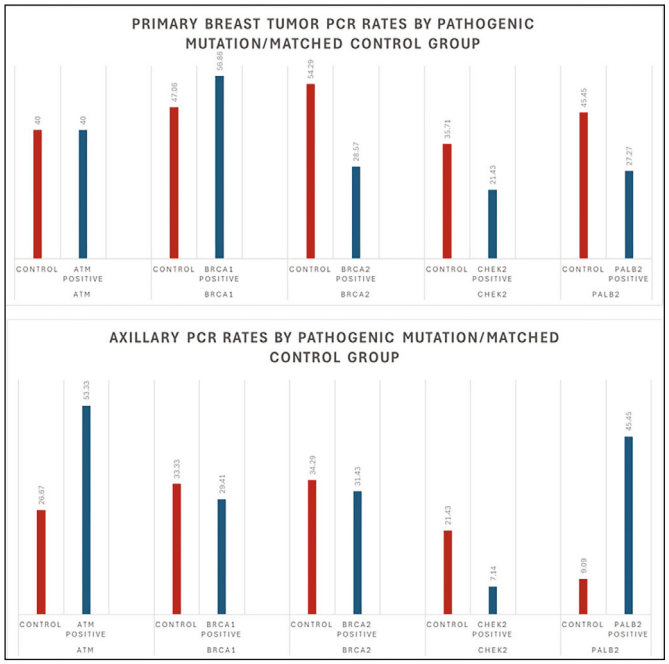

Figure. Breast and axillary pathologic complete response rates after NAC among germline pathogenic variant carriers versus matched controls

EP235

Impact of Shared Decision Making on Decisions for Contralateral Prophylactic Mastectomy

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INTRODUCTION: Surgeons play an important role in determining the type of breast surgery patients receive. As such, they can play a pivotal role in deimplementing low-value care such as contralateral prophylactic mastectomy (CPM). The objective is to determine whether greater use of shared decision making (SDM) was associated with CPM and to examine how surgeons discuss CPM with patients. **METHODS:** We identified women who enrolled in Alliance trial A231701CD, were ≤65 years, and had a transcript of their audio-recorded surgical consultation. We excluded women with clinical indications for bilateral breast surgery, genetic mutations, and who did not discuss CPM. Each transcript was reviewed by ≥2 researchers to code for SDM (OPTION-5, range 0-100), CPM decision at the end of the consult (no, yes/defer decision), candidacy for breast conserving surgery (BCS), and family history (FH). We used multivariable logistic regression to assess the association between SDM and CPM, controlling for patient sociodemographics, BCS candidacy, FH, patients' preferred breast surgery prior to consultation, surgeon fellowship training and years in practice, clustering by clinic. We categorized transcripts by how surgeons discussed CPM and assessed factors associated with the discussion categories. **RESULTS:** Of 164 women, the median age was 49 (range 28-65), 76% were white, and most (65%) were stage 0 or 1. The median OPTION-5 SDM score was 30 (range 5-65). Most patients were leaning against CPM at the end of the consult (62%), 15% were leaning toward CPM, and 23% deferred the decision. Higher OPTION-5 scores (OR=1.1, 95% CI 1.04-1.1), preference for mastectomy (OR=6.9, 95% CI 1.9-25.0), and not being a BCS candidate (OR=4.4, 95% CI: 1.7-11.5) were associated with a higher likelihood of CPM; no association was observed for age (OR=0.98, 95% CI: 0.93-1.02) or FH (OR=1.7, 95% CI: 0.6-4.8). How surgeons discussed CPM varied, with 39% "only if a genetic mutation", 29% presenting CPM as a comparable option, 18% suggesting against CPM, and 14% offering to perform CPM following a patient's request. Patients' preference or need for mastectomy was associated with how surgeons discussed CPM (Table). **CONCLUSIONS:** Surgeons strongly influence patients' decision for CPM, with higher SDM associated with greater likelihood to choose CPM. How surgeons discuss CPM varies, but the approach does not appear to be driven by patient factors associated with future cancer risk (e.g., age, FH). Future work will examine how patients' desire or need for mastectomy influences the nature of the CPM discussion.

Table. How Surgeons Discuss Contralateral Prophylactic Mastectomy

Patient Characteristics	Only if Genetics (n=64)	Comparable Options (n=47)	Suggestion (n=30)	Offer (n=23)	P value
Age (median, range)	49 (31-65)	49 (28-65)	48 (34-64)	52 (35-65)	0.68*
Family History	46%	25%	13%	15%	0.49**
Not a BCS Candidate	28%	37%	9%	26%	0.001**
Preference for Mastectomy	8%	37%	13%	42%	<0.001**
*ANOVA **chi-square test					

EP236

Hormone receptor expression defines molecular clusters and prognostic outcomes in pheochromocytoma and paraganglioma

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INTRODUCTION: The role of hormone receptor (HR) expression in pheochromocytomas and paragangliomas (PCPGs) remains unclear. Preclinical studies suggest that hormones may influence PCPG cell viability and catecholamine secretion. Given the therapeutic potential of targeting HRs, we investigated their expression patterns and prognostic relevance across molecular clusters of PCPG using The Cancer Genome Atlas (TCGA) dataset. **METHODS:** Bulk RNA-sequencing data from TCGA PanCancer Atlas were analyzed for normalized mRNA expression of ESR1, ESR2, GPER1, AR, PGR, and LHCGR. Expression was compared across molecular clusters, sex, and age. Associations with metastasis were evaluated using the Mann–Whitney U test, and overall survival (OS) was assessed using univariate and multivariate Cox proportional hazards models. **RESULTS:** ESR1 and PGR expression were higher, while LHCGR expression was lower in cluster 1 (pseudohypoxia) tumors compared with cluster 2 (kinase signaling) and cluster 3 (Wnt-altered) ($p < 0.001$). GPER1 and AR expression were significantly lower in cluster 2 than in clusters 1 and 3 ($p < 0.001$; $p=0.027$). Expression of GPER1, ESR1, and PGR decreased ($p < 0.05$) and LHCGR increased ($p=0.028$) with age; these trends were driven by male patients only, as no significant changes were observed in females. Low AR and LHCGR expression were associated with metastases within clusters 2 and 1, respectively ($p=0.04$; $p=0.013$). In cluster 1 PCPGs, multivariate Cox analysis revealed that ESR1 and AR expression were independently associated with OS (HR 2.88, 95% CI 1.23-6.74, $p = 0.015$; HR 0.36, 95% CI 0.15-0.86, $p = 0.022$). **CONCLUSIONS:** Hormone receptor expression varies by molecular cluster and demonstrates age- and sex-specific patterns in PCPG. LHCGR expression is uniquely low in pseudohypoxia cluster 1 tumors, despite being highly expressed in PCPG compared with all other TCGA solid tumor types, and its reduced expression is associated with metastasis. ESR1 and AR expression independently predict OS in cluster 1 PCPGs.

EP237

Stable but not static: breast density changes after bariatric surgery

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INTRODUCTION: Reduction in adipose tissue through metabolic and bariatric surgery (MBS) has been shown to decrease breast cancer risk. The effect on breast density remains unclear, and more research is needed on how to screen MBS patients. This study examined the relationship between weight loss and changes in breast density after MBS. **METHODS:** Through retrospective chart review using institutional registries, female adults (age 40-70) who underwent MBS between January 2016 and February 2024 were matched with mammography data, defined by Breast Imaging Reporting and Data System score, during the

same period. Patients were included if they have mammography within three years pre- and post-operatively. The primary outcome was breast density after MBS. The Gail Model assessed patients for 5 year and lifetime risk of breast cancer. Patients with unknown menarche (n=112) were assigned 14 years of age or older. **RESULTS:** Of 1303 eligible patients, 190 (14.6%) had both pre- and post-operative mammograms, with breast density data available for 174 patients (Median age 52[46,59]). Most patients (n=142, 81.6%) had stable breast density after MBS. Patients with lower baseline BMI (43 [40,45] v 46 [41,52], p=0.07) experienced greater reductions in BMI (15 [12,18] v 13 [9,16], p=0.02) and had higher breast density post operatively. Surgery type and age were not predictive of change in breast density. For the Gail Model, 7 of the 174 patients were excluded due to diagnosis of DCIS or IDC. In this cohort, when matched to population standards the risk at 5 years and lifetime was found to be on average lower (1.18 v 1.32 p=0.04) and (8.09 v 9.26 p=0.0004), respectively. **CONCLUSIONS:** The lower risk found is likely secondary to this model not accounting for BMI and limited by number of unknown menarche. Our data suggest women with lower baseline BMI who achieve significant weight loss have increased breast density post operatively. Breast density affects cancer risk and mammographic sensitivity, so these patients with lower baseline BMI achieving significant weight loss may benefit from increased screening. Future work should evaluate whether these density changes alter breast cancer incidence or detection patterns. In addition, with the improvements in BMI due to increased utilization of metabolic medications, future work should focus on how these medications impact breast density and individualized screening.

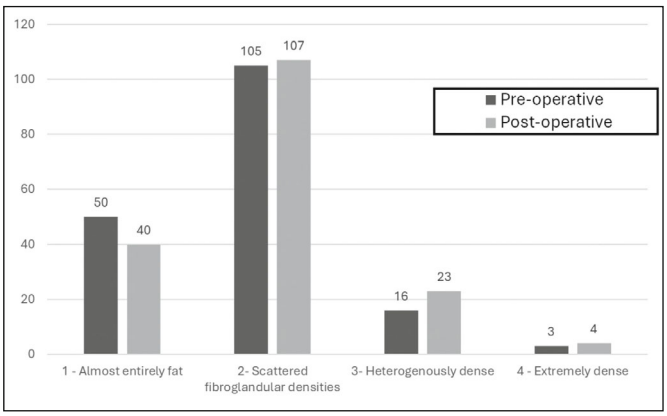

Figure 1. Mammography Breast Density in Bariatric Surgery Patients

EP238

Outcomes following resection of perihilar cholangiocarcinoma: differential prognostic impact of postoperative complications relative to preoperative CA19-9 levels

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INTRODUCTION: Despite resection of perihilar cholangiocarcinoma (pCCA) having a relatively high incidence of complications, the prognostic impact of surgical morbidity on long-term outcomes has not been defined. The objective of the current study was to define the prognostic impact of postoperative complications after curative-intent resection of pCCA relative to preoperative CA19-9 levels. **METHODS:** An international, multi-institutional database was used to identify patients with pCCA who underwent liver resection between 2000-2022. Patients who died within 90-days of surgery were excluded. Severe complications were defined as Clavien-Dindo Classification ≥3. CA19-9 was used as a surrogate of tumor biology and categorized as low (> 400 U/mL) versus high (≥ 400 U/mL). The primary outcome was recurrence free survival (RFS). **RESULTS:** Among 453 patients with pCCA, median age was 67 years (IQR 57–74) and 62% (n=282) were male; 133 (29%) patients had a high serum CA19-9 levels (≥ 400 U/mL)). Overall, 191 (42%) patients underwent an extended right hepatectomy, while 103 (23%) had a left hepatectomy. In the postoperative period, 166 (36%) patients experienced a severe postoperative complication. Of note, 3-year RFS was worse among patients who did versus did not have a severe complication (26.7% vs. 34.3%; p=0.022). The impact of complications varied, however, based on preoperative CA19-9 levels. Specifically, among patients who had a low preoperative CA19-9, RFS was worse among patients who experienced a severe postoperative complication (severe complication: 25.4% vs. no severe complication: 32.9%; p=0.014); in contrast, among patients with a high preoperative CA19-9, there was no difference in long-term RFS relative to the occurrence of a severe complication (severe complication: 28.3% vs. no severe complication: 24.9%; p=0.88) (Figure). On multivariable regression analysis, after adjusting other pathological findings, severe complications remained associated with RFS among patients with a CA19-9 < 400 U/ml (HR 1.34, 95%CI 1.01-1.77, p=0.043). In contrast, the occurrence of a severe complication was not associated with worse RFS among individuals with an elevated preoperative CA19-9 (HR 0.95, 95%CI 0.62-1.45, p=0.81). **CONCLUSIONS:** The impact of severe complications seems to be most pronounced among patients with a more favorable initial tumor biology. The data highlight the importance of perioperative outcomes to ensure optimal long-term oncologic outcomes.

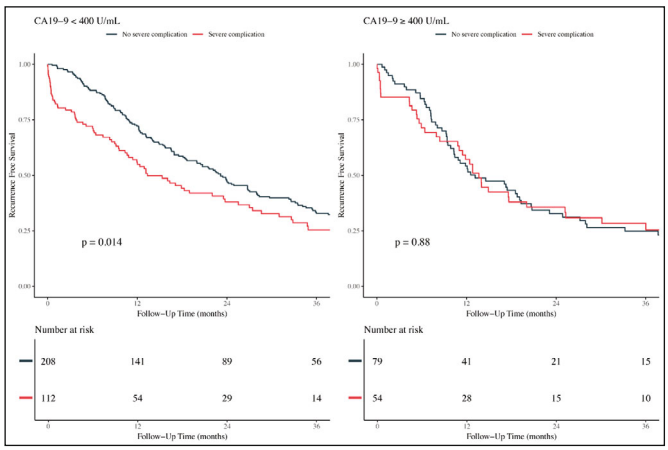

Figure. Kaplan Meier curves on recurrence free survival in relation to CA19-9 levels

EP239

The Role of Definitive Radiotherapy in Non-Operative Locally Advanced Pancreatic Adenocarcinoma

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INTRODUCTION: Patients with locally advanced pancreatic cancer (LAPC) are categorized at the time of diagnosis based on whether or not surgery may be technically possible: Type A (LA-A) vs Type B (LA-B) with degree of vascular involvement in B >A as previously published. The decision regarding surgery is re-evaluated after systemic therapy and prior to the start of radiation therapy (XRT), and this guides the intent of XRT: definitive > 50.4Gy (def-XRT) vs preoperative ≤ 50.4Gy (preop-XRT). In this study, we evaluated whether def-XRT confers a survival benefit compared to preop-XRT in patients with LAPC who did not undergo surgery. **METHODS:** Consecutive patients with LAPC (diagnosed 2009–2023) who completed all intended neoadjuvant therapy were identified from a

prospectively maintained database. Patients were categorized by XRT intent (preop-XRT vs. def-XRT) by radiation oncologists. Overall (OS) and progression-free (PFS) survival were analyzed using Kaplan–Meier estimates with log-rank test and multivariate Cox proportional hazards models. **RESULTS:** Among 211 patients, 52 (24.6%) received def-XRT and 159 (75.4%) received preop-XRT. At diagnosis, 104 patients (49.3%) were staged as LA-A, of whom 12 (11.5%) received def-XRT and 92 (88.5%) received preop-XRT. Of the 107 (50.7%) patients staged as LA-B, 40 (37.4%) received def-XRT and 67 (62.6%) received preop-XRT. Among those who received preop-XRT, 31 LA-B patients (46.2%) and 20 LA-A patients (21.7%) did not undergo surgery. Among those who received def-XRT, 37 LA-B patients (92.5%) and 7 LA-A patients (58.4%) did not undergo surgery. Reasons for not undergoing surgery included: inoperable tumor (LA-B 42/68 [61.8%] vs LA-A 2/27 [7.4%]), disease progression (LA-B 24/68 [34.3%] vs LA-A 18/27 [66.7%]) and patient factors (LA B 2/68 [2.94%] and LA-A 7/27 [25.9%] ; p< 0.001 all]. Among the 116 patients who underwent surgery, OS and PFS did not vary by XRT type. However, in the 95 patients who did not undergo surgery, def-XRT was associated with improved OS and PFS in patients with LA-B but not LA-A (Figure 1); on multivariate analysis controlling for age, gender, comorbidities, chemo-XRT type, and LA-A vs LA-B, def-XRT was independently associated with a reduced risk of death (HR 0.55, 95% CI 0.32–0.93) and disease progression (HR 0.61, 95% CI 0.38–0.99). **CONCLUSIONS:** Def-XRT conferred a survival benefit in patients with unresected LA-B. Our data suggests that determining operative candidacy and clear treatment intent (definitive versus preop) before initiating XRT is critical for delivering a higher dose of XRT and optimizing outcomes in non-operative LAPC.

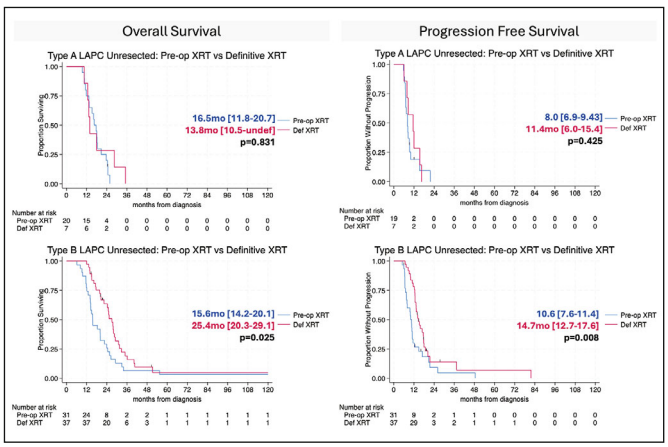

Figure 1: Overall and progression-free survival in patients with unresected Type A and Type B locally advanced pancreatic adenocarcinoma

EP240

Bleed vs. Leak: The risks and benefits of prophylactic proton pump inhibitor use after pancreaticoduodenectomy

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INTRODUCTION: Proton pump inhibitors (PPI) are commonly prescribed to reduce the risk of gastrointestinal (GI) bleeding after pancreaticoduodenectomy (PD), but the risks of routine postoperative use are underexplored. This study evaluated the association of prophylactic PPI use and postoperative outcomes after PD. **METHODS:** The TriNetX Global Network, which includes data from 160 healthcare organizations worldwide, was queried for adults undergoing PD (both classic and pylorus-preserving). Patients with preoperative PPI use within 30 days prior to surgery were excluded. In addition, patients who developed a postoperative GI bleed within the first 30 postoperative days and were treated with a PPI were also excluded. The remaining patients were divided into two cohorts: no prophylactic PPI use vs. prophylactic PPI use. A propensity score matched analysis was performed to control for baseline characteristics and preoperative risk factors (smoking, alcohol, and coagulation disorders). Primary outcomes were GI bleeding and marginal ulceration rates within 5 years; secondary outcomes were postoperative complications rates assessed at 90 days. **RESULTS:** After matching, each group contained 1,872 patients. Postoperative prophylactic PPI use was associated with a lower 5 year risk of GI bleeding (6.9% vs. 8.7%; RR 0.79, 95% CI 0.63–0.99; p=0.04; ARR 1.8%) and marginal ulcer (2.1% vs. 3.3%; RR 0.63, 95% CI 0.42–0.94; p=0.02; ARR 1.2%). However, prophylactic PPI users had significantly higher rates of organ-space infection (4.6% vs. 1.9%; RR 2.45, 95% CI 1.66–3.62; p=0.0001), delayed gastric emptying (DGE) (2.4% vs. 1.4%; RR 1.68, 95% CI 1.03–2.67; p=0.032), and POPF (32.9% vs. 27.8%; RR 1.18, 95% CI 1.07,1.30; p=0.0007). No significant differences were observed in bile leak, non-pancreatic anastomotic leak, C. difficile colitis, pneumonia, urinary tract infection, deep-vein thrombosis, bacteremia/sepsis or acute renal failure rates. There were no significant differences in GI bleed or marginal ulcer formation between classic PD and pylorus-preserving PD groups. **CONCLUSIONS:** Prophylactic PPI use after PD was associated with a reduced incidence of GI bleeding and marginal ulceration, but an increased risk of POPF, DGE and organ-space infection. The absolute rates of GI bleed/marginal ulceration were higher than rates of DGE/organ-space infection, suggesting that the benefits of PPI use after PD may outweigh the risks. Prospective studies are needed to determine the optimal timing and duration of therapy.

EP241

Management of R0 resected pN0 stage I-IIIA intrahepatic cholangiocarcinoma: a national perspective

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INTRODUCTION: Optimal management of patients with R0 resected pN0 stage I-IIIA intrahepatic cholangiocarcinoma (iCCA) is not well defined. This study investigates the impact of perioperative chemotherapy (CT) and chemoradiation (CRT) on overall survival (OS) in these patients. **METHODS:** The National Cancer Database "Liver" and "Intrahepatic Bile Ducts" 2022 datasets were used to identify patients with R0 resected pN0 stage I-IIIA iCCA. Factors associated with receipt of perioperative CT and CRT were analyzed with multiple logistic regressions. OS was analyzed using Kaplan-Meier analysis with logrank testing, and stage-stratified multivariable Cox regressions were used to assess the impact of perioperative CT and CRT on mortality. **RESULTS:** Among 2,023 patients included for analysis, 1,295 underwent resection alone (64.0%), 524 had resection + CT (25.9%), and 204 had resection + CRT (10.1%). Compared to those who received CT or CRT, patients who underwent resection alone were older (66.0 years vs. 63.0 years vs. 61.0 years, P< .0001), less often held private health insurance (38.1% vs. 48.3% vs. 57.8%, P< .0001), had more stage I disease (56.3% vs. 38.4% vs. 40.7%, P< .0001), and more often underwent wedge resections or segmental resections (34.5% vs. 31.9% vs. 23.5%, P< .0001). On multivariable analysis, receipt of CT was associated with stage II disease (Odds Ratio (OR) 1.918, 95% Confidence Interval (CI) 1.247 – 2.948; P=.0030), and stage IIIA disease (OR 2.278, CI 1.335 – 3.862, P=.0023), while receipt of CRT was associated with private health insurance (OR 4.555, CI 2.006 – 11.07, P=.0005) and stage IIIA disease (OR 2.278, CI 1.335 – 3.862, P=.0018). Time-to-event analysis demonstrated no benefit of CT or CRT to OS for patients with stage I disease (Figure 1A). For stage II disease, resection + CT was associated with improved OS compared to resection alone (logrank P=.0329) (Figure 1B). For stage IIIA disease, both resection + CT (logrank P=.0113) and resection + CRT (logrank P=.0455) were associated with improved OS compared to resection alone (Figure 1C). Receipt of CT was associated with decreased hazard of death for both stage II (HR 0.800, CI 0.651 – 0.978, P=.0313) and stage IIIA disease (HR 0.707, CI 0.538 – 0.921, P=.0112) on univariable Cox proportional hazards regression, but not multivariable time-to-event analysis. **CONCLUSIONS:** Perioperative CT and CRT did not improve OS for R0 resected pN0 stage I iCCA within the current retrospective analysis. However, these data suggest that stage II and IIIA disease may benefit from systemic therapy following complete resection.

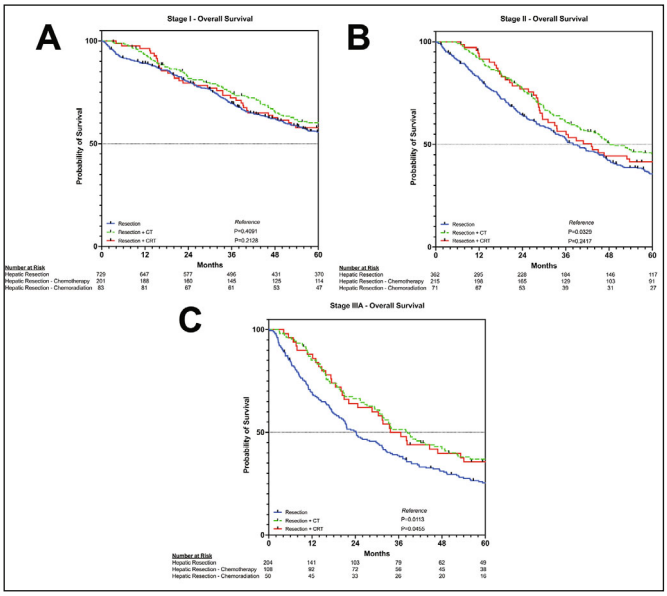

Figure 1. Kaplan Meier curves depicting overall survival stratified by treatment group for patients with (A) Stage I, (B) Stage II, and (C) stage IIIA R0 resected pN0 intrahepatic cholangiocarcinoma.

EP242

The effect of preoperative chemotherapy cycles and dose reductions on outcomes in patients with resectable colorectal liver metastases

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INTRODUCTION: While chemotherapy may improve disease control, the effect of preoperative chemotherapy (preop chemo) on perioperative morbidity and long-term survival in patients with resectable colorectal liver metastases (CRLM) is unclear. **METHODS:** A retrospective analysis of adults with CRLM who underwent hepatectomy from 2016 - 2023 was performed. Only patients who received ≤12 cycles of preop chemo were included. Patients were stratified by ≤6 vs >6 cycles of preop chemo based on receiver operating characteristic analysis for postoperative complications (POC). Primary outcome was POC. Secondary outcome was overall survival (OS). **RESULTS:** Of 153 patients, 57 (37%) received ≤6 and 96 (63%) received >6 cycles of preop chemo. Baseline demographics and comorbidities were comparable between groups. Tumor characteristics, including lesion number/size,CEA level, bilobar or extrahepatic disease, synchronous presentation, and primary tumor location were also similar. Dose reductions were observed in 60% of all patients; there was no difference in dose reductions between groups. Patients receiving >6 cycles were more likely to undergo open hepatectomy (68% vs 32%, p=0.019) and hepatic artery infusion pump placement (85% vs 15%, p=0.011), without differences in major hepatectomy oroperative time. On univariable analysis, >6 cycles of preop chemo was associated with POC (OR 2.82, p=0.036), as were diabetes, ECOG 2 vs 0, decreasing BMI, and operative time. On multivariable analysis, diabetes, ECOG 2 vs 0, and decreasing BMI remained associated with POC, while >6 cycles and operative time did not. There was no difference in OS between patients who received <6 vs >6 cycles of preop chemo; however, dose reduction during the pre-operative period was associated with worse OS compared to no dose reduction (Figure 1). **CONCLUSIONS:** Preoperative debilitation poses a significant risk for POC and survival in patients with resectable colorectal liver metastases. Although the number of preop chemo cycles was not independently predictive of POC, fewer preop chemo cycles was also not associated with worse overall survival. Understanding how underlying functional status, weight loss, the burden of chemotherapy, and the need for dose reductions affects patients' ability to withstand liver resection is imperative to optimizing outcomes for patients with colorectal liver metastases.

A

Variable	OR (95% CI)	P value	aOR (95% CI)	P value
>6 cycles of chemo	2.82 (1.072-7.408)	0.036	2.204 (0.745-6.515)	0.153
Decreasing BMI	1.096 (1.014–1.186)	0.021	1.153 (1.042–1.277)	0.006
DM	2.585 (1.072-6.232)	0.034	3.637 (1.183-11.185)	0.024
ECOG				
0	ref	-	-	
1	1.701(0.659-4.393)	0.272	1.483 (0.521-4.218)	0.460
2	12.00 (1.837-78.369)	0.009	21.588 (1.827-255.132)	0.015
Operative Time	1.005 (1.000-1.010)	0.046	1.005 (0.999-1.010)	0.093

OR = Odds Ratio from univariable logistic regression; aOR = adjusted Odds Ratio from multivariable logistic regression. BMI = Body Mass Index (kg/m^2). DM = diabetes mellitus. ECOG 2 = Eastern Cooperative Oncology Group performance status compared to reference ECOG status 0.

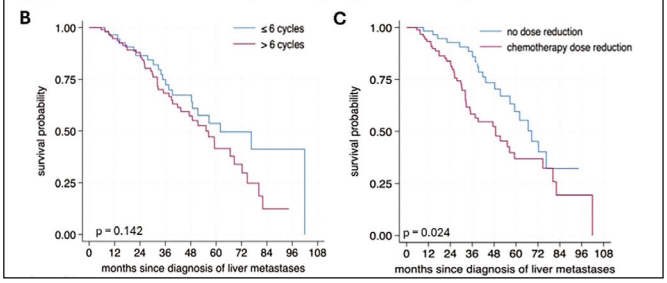

Figure 1. Analyses of post operative complications and survival in patients with CRLM who received ≤ 12 cycles of chemotherapy before hepatectomy. (A) Univariable and Multivariable Logistic Regression of Factors Associated with Postoperative Complications (n=153). (B) Overall survival stratified by preoperative chemotherapy exposure: ≤ 6 cycles versus > 6 cycles. (C) Overall survival stratified by chemotherapy dose reduction status: patients without dose reductions versus those who required dose reductions.

EP243

A Blind Spot in Cancer Quality? The Forgotten Window of Intermediate-Term Mortality after Colorectal Liver Metastasis Resection

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INTRODUCTION: Curative intent surgical treatment is the standard of care approach to colorectal cancer liver metastases (CRLMs). Little is known about intermediate-term mortality (ITM) (3-6 months) following resection. Our objectives were to (1) characterize the frequency of ITM, (2) identify patient and disease predictors of ITM, and (3) evaluate hospital-level variation in ITM among patients undergoing resection for CRLMs. **METHODS:** A retrospective cohort analysis was completed using the National Cancer Database for patients with CRLMs who underwent synchronous resection (2010-2019). Multivariable logistic regression identified predictors of intermediate-term mortality. Risk-adjusted hierarchical regression models were used to examine hospital ITM performance. **RESULTS:** Among 5,282 patients with CRLMs, 2,566 (48.6%) had right-sided colon cancer, 1,686 (31.9%) had left-sided colon cancer, and 1,030 (19.5%) had rectal cancer. Overall, 11.8% of patients died within 6 months of definitive surgery, while 37.8% of these deaths occurred in the intermediate-term. On multivariable regression, ITM was associated with right-sided colon cancer (vs. left-sided colon and rectal cancer) (OR 1.44, 95%CI 1.06-1.94), increasing age (OR 1.05, 95%CI 1.04-1.06), non-academic cancer center (vs. academic) (OR 1.49, 95%CI 1.02-2.18), surgical volume (vs. top quartile) (bottom quartile: OR 1.62, 95% CI 1.21-2.18), lack of neoadjuvant systemic therapy (OR 1.62, 95%CI 1.29-2.05), open surgical approach (OR 1.45, 95%CI 1.21-1.74), and positive margins (OR 2.31 , 95%CI 1.86-2.88). Hospital level performance for ITM varied widely, with 389 of 970 (40.1%) of hospitals performing worse than expected, and 274 of 970 (28.2%) performing better than expected. **CONCLUSIONS:** Greater than 11% of patients with CRLM who underwent resection died within 6 months of surgery, with nearly 40% occuring in the intermediate time period. Wide variation in hospital performance was observed. These data inform treatment recommendations and shared decision making for patients undergoing resection for CRLMs.

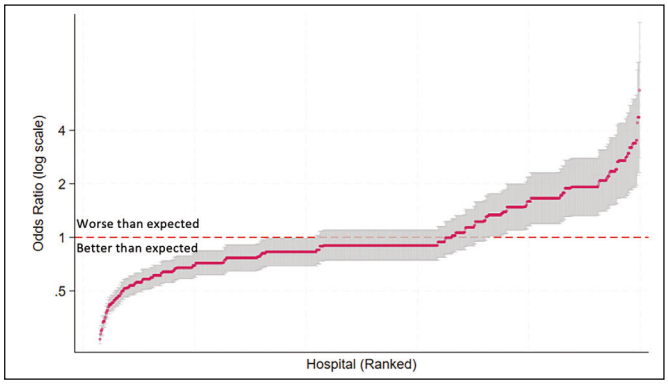

Figure. Comparative hospital level outlier status for rates of intermediate-term mortality for CRLM resection

EP244

Routine Biochemical And Biometric Parameters Predict Cancer Onset Years In Advance

Parnian Naji, n/a, Cleveland University Hospitals; Jordan Winter, n/a, Cleveland University Hospitals

INTRODUCTION: Early cancer detection is crucial for improving patient outcomes, yet validated screening options remain limited. This study explores whether routinely collected clinical data offer potentially actionable insights. **METHODS:** TriNetX is the largest global population dataset housing real-world data, covering 200 million individuals. We used this dataset to analyze common clinical variables in cancer patients and cancer-free controls. Trends of means across the population in the years preceding a cancer diagnosis were compared against gender and age-matched controls who did not develop cancer. Data associated with ten most prevalent cancers (breast, prostate, lung, colorectal, renal, uterine, pancreatic, melanoma, and non-Hodgkin's lymphoma) were examined. Variables included albumin, total protein, glucose, BMI, WBC, platelets, hemoglobin, CRP, and LDH; bicarbonate was also analyzed for pancreatic cancer. Linear regression and t-tests were used to determine statistical differences ($p < 0.05$). **RESULTS:** Significant alterations and trendlines were observed over time in mean serum albumin (reduced), CRP (increased), and hemoglobin (reduced) across the most lethal cancers, often 3 to 4 years before a cancer diagnosis (lung, pancreas, uterine, bladder, colorectal, renal). In contrast, slopes were flat in the control populations. BMI was also frequently reduced across these cancers. WBCs were generally elevated, suggesting chronic inflammation, but flat over time. Patients with the more indolent cancers (melanoma, breast, prostate) had almost no perturbations compared to controls. **CONCLUSIONS:** This large-scale dataset demonstrates that routine clinical variables hold clues to the eventual development of the most common cancers, before presentation. These insights may be potentially leveraged to identify at-risk patients prospectively.

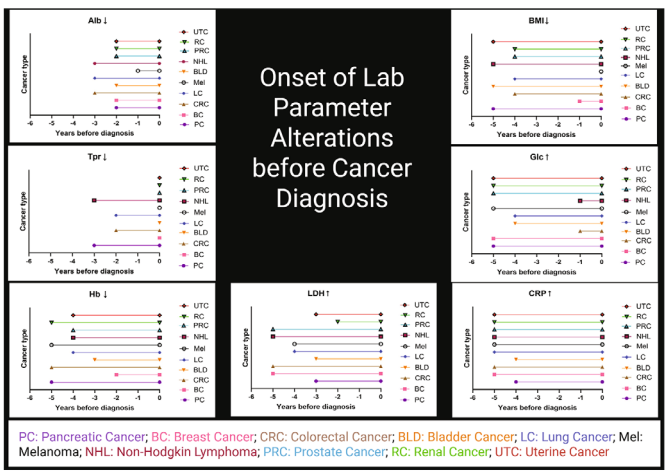

Figure. Onset of Lab Parameter Alterations Before Cancer Diagnosis

EP245

Effects of Different Radiation Techniques and Fields on Breast Cancer Related Lymphedema (BCRL) After Axillary Dissection and Simplified Lymphatic Microsurgical Preventive Healing Approach

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INTRODUCTION: Patients with breast cancer (BC) undergo axillary lymph node dissection (ALND) under certain indications. One of the main side effects of ALND is upper limb lymphedema (LE) that occurs in 15-40% 0f cases and can be debilitating. An objective measurement of LE is Bioimpedance spectroscopy (BIS), that produces an L-DEX Score and can detect subclinical lymphedema. There are several risk factors for developing lymphedema after AXLD, among them obesity, radiation therapy, wound complication and higher age. S-LYMPHA is a surgical prevention of BCRL, in which the breast surgeon is performing connection of lymphatic ducts from the upper limb to venous source. This method has been proven to reduce incidence of lymphedema to 10%. Our aim is to explore the effect of different radiation techniques and fields on the development of BCRL in patients after ALND and S-LYMPHA. **METHODS:** We established a retrospective database of all patients who underwent ALND and S-LYMPHA for breast cancer from 2014-2021, and collected demographic, clinical, surgical and radiation data. For each patient we observed L-dex measurement at pre-operative setting and 6,9,12,24 months post-operative setting as well as clinical examination for LE development. Binomial logistic regression was used to identify associations between clinical data, radiation methods and field, and LE incidence. **RESULTS:** Among 219 patients, 136 had L-DEX assessments, with 30 patients (13.6%) developing BCRL. Factors found to be related to elevated risk of LE included older age, higher BMI, recurrent cancer, reconstructive surgery and having N2/N3 nodal disease. Radiation therapy was found to be correlated with higher levels of LE, especially with radiation techniques such as Three-Dimensional Conformal Radiation Therapy (3DCRT) and Intensity Modulated Radiation Therapy/Volumetric Modulated Arc Therapy (IMRT/VMAT). Radiation to chest wall field and Comprehensive radiation excluding dissected axilla fields had a higher association with increased levels of LE. **CONCLUSIONS:** Patients undergoing ALND and S-LYMPHA with higher BMI, recurrent cancer, reconstructive surgery, N2/N3 disease, or adjuvant radiation treatment, as well as those receiving IMRG/VMAT or 3DCRT radiation techniques, have an increased risk of developing breast cancer related LE. De-escalation of radiation and better selection of radiation techniques and fields could contribute to a better LE free survivorship.

EP246

Ki-67 as a predictive biomarker for response to neoadjuvant chemoimmunotherapy in triple-negative breast cancer: a National Cancer Database study

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INTRODUCTION: Following the FDA approval of Pembrolizumab in combination with neoadjuvant chemotherapy (NAC) for high-risk TNBC as established in KEYNOTE-522, identifying predictive biomarkers for response remains crucial. These biomarkers can help guide treatment strategies, promoting de-escalation when response is favorable or escalation when necessary. This study evaluates Ki-67 as a predictor of response to NAC versus chemoimmunotherapy using the National Cancer Database (NCDB). **METHODS:** Using data from NCDB, we analyzed patients aged ≥18 with TNBC and available Ki-67 values diagnosed between 2018–2022. Ki-67 was categorized as low (0–10%), intermediate (11–30%), high (31–50%), and ultra-high (>51%) based on clinically relevant thresholds. Treatments included NAC alone or chemoimmunotherapy. Pathologic response (complete [pCR], partial, no response, or progression) served as the primary outcome. Associations between Ki-67, treatment type, and response were evaluated using logistic and multinomial regression analyses. **RESULTS:** Our study included a total of

5,560 TNBC patients, with 64.8% (n=3,603) receiving NAC alone and 35.1% (n=1,954) receiving chemoimmunotherapy. Among patients with ultra-high Ki-67 (>51%), chemoimmunotherapy achieved significantly higher pCR rates compared to NAC alone (57.7% vs. 48.9%; p< 0.001); representing an 8.8% absolute increase in pCR in this patient subset. (Fig.1D). Intermediate Ki67 levels also showed similar trends in those receiving chemoimmunotherapy compared to NAC (28.7% vs. 20.8%; p< 0.05) (Fig.1B). At high Ki-67 levels, chemoimmunotherapy continued to trend towards increased pCR compared to NAC, however, not significant (40.0% vs. 33.0%; p=0.059) (Fig.1C). Notably, chemoimmunotherapy resulted in fewer non-responders than NAC alone within intermediate (26.9% vs. 40.7%; p< 0.001), high (17.7% vs. 28.2%; p< 0.001), and ultra-high Ki-67 groups (15.0% vs. 20.1%; p< 0.001). These patterns were consistent across Ki-67 strata (Fig.1B,C,D). **CONCLUSIONS:** In TNBC, elevated Ki-67—particularly ultra-high (Ki-67 >51%)—predicts improved pCR to neoadjuvant chemoimmunotherapy compared with NAC alone. Ki-67 may serve as a practical biomarker to guide individualized systemic therapy selection and inform surgical planning, supporting treatment de-escalation when a strong response is anticipated. These findings highlight Ki-67's potential to personalize care in TNBC; however, further prospective validation is required to establish clinically actionable thresholds.

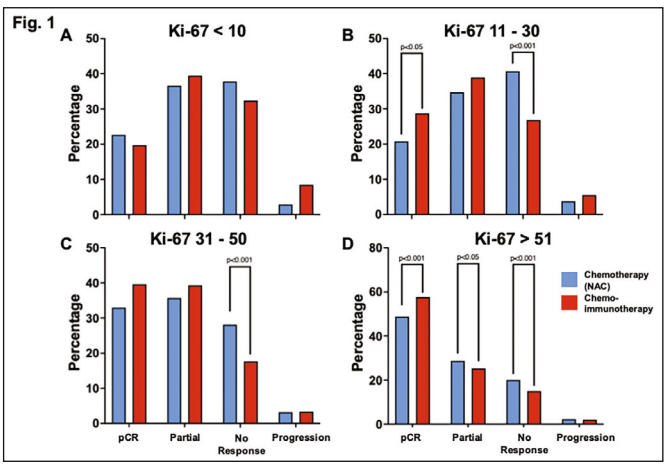

Figure 1

EP247

Thyroid cancer in children: from almost non-existent before puberty to very common in late adolescence

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INTRODUCTION: Thyroid cancer is a rare malignancy in children and accounts for only 0.7% of all cancers. The vast majority occur in the second decade with a peak by 15 - 19 years of age. At this age it is the second most common cancer. Because of its rarity cases are usually concentrated in only few internationals centers and epidemiological data don't necessarily represent specific populations. Slovenia with a population of only 2 millions has one of the oldest and best-quality population based cancer register worldwide with obligatory reporting since 1950. In addition, cancer register has a direct connection to Central population register of Slovenia which provides real-time information on the vital status of an individual. The aim of our study was to gain insight into the epidemiological data of children thyroid cancers in Slovenia based on data from the cancer registry for the last 60 years. **METHODS:** Data on thyroid cancer for the population aged 0-19 years were collected from the Slovenian cancer register for the period from 1961 -2020 and divided into groups of 0-4, 5-9, 10-14 and 15-19 years. The types of thyroid cancer were divided according to the international classification of the diseases, tenth revision (ICD 10). Stage of disease at the time of diagnosis was divided into localised, regional, distant and unknown. Information on vital status was obtained from the Central population register of Slovenia. **RESULTS:** There were 142 thyroid cancers in Slovenian children in the period from 1961-2020. The incidence steeply increased from only one case in a group of 0-4 years to four in 5-9, 46 in 10-14 and 91 in 15-19 years groups. Thyroid cancers were 2,64 times more common in girls (103 girls and 39 boys). The most frequent histopathological type was papillary cancer in 111 cases, followed by medullary cancer in 9 cases (8 in boys) and follicular cancer in 7 cases (all in girls). There were 6 cases of diffuse sclerosing cancer, four cases of cancer not otherwise specified (NOS) and two oncocytic cancers. In addition, there was one fibrosarcoma, one peripheral neuroectodermal tumour and one spindle epithelial tumour with thymus-like element. At the time of diagnosis 83 cases had localised, 55 regional, three distant and one unknown stage of disease. Only two patients died, both of medullary cancer. **CONCLUSIONS:** Thyroid cancer is extremely rare in pre-puberty children but one of the most common cancers in late adolescemce. Regional metastases are present in almost 40% at the time of diagnosis. Systemic metastases and death from thyroid cancers are only exceptional.

EP248

Chronicled experiences of breast cancer: Analyzing adjuvant endocrine therapy on TikTok

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INTRODUCTION: Women with breast cancer (WBC) face particular challenges related to adherence to adjuvant endocrine therapy (AET). The aim of this study is to evaluate how WBC describe their experiences with AET on TikTok. **METHODS:** Videos tagged with #tamoxifen and a range of related terms on TikTok were collected in 08/25. Video characteristics collected included: username, user profile, caption, length, date posted, number of followers, likes, views, shares, and comments, and creator demographics if available. Sentiments regarding AET-related experiences and potential discontinuation were collected. The Kruskal-Wallis test was performed to test the association between variables. **RESULTS:** 167 English language videos were included. Average video length was 2.3 minutes (SD 2.2). 24 used music; 10 used audio memes. Mean follower number was 20,170 (SD 68,260). Mean number of views, likes, and comments was 9,048 (SD 16,322), 194 (SD 279), 52 (SD 84), respectively. The majority were filmed at home (71%), 19% in the car. Most common age range was 30-39 years old (54%), followed by 40-49 (27%). In 87%, the creator had already initiated AET. 15% described initial hesitation, 13% described switching from one AET to another. Side effects included: physical (74%), psychosocial (21%), or general unwellness (33%). 38% described specific solutions attempted to address side effects; 23% felt listened to/understood by their healthcare professional (HCP). 20% felt the HCP was useful in addressing side effects. 18% of videos reported plans to discontinue AET, whereas 22% reported having already discontinued in the past. Of these, 28% reported confidence in their decision to discontinue. Videos primarily consisted of a general chronicling of the AET experience (37%), information on side effects (23%), proclamations about AET (14%), explicit opinions (9%), and a call for support (6%). The most common position regarding AET was that it is not a good medication (25%) whereas 21% characterized it positively, and 14% as challenging but necessary. Information was assessed as totally, mostly and only partly accurate in 41%, 52%, and 7% of videos respectively. Videos about general unwellness that were characterized as totally accurate had a larger number of followers (p=0.019). **CONCLUSIONS:** TikToks on AET by WBC describe the daily experience of managing side effects, including potential discontinuation reasons, and offer insights into patient perspectives. The emergence of TikTok communities related to symptoms of generalized unwellness with AET is notable.

EP249

Do Rates of Financial Toxicity Differ by Pathology for Patients with Abdominal Cancers? A Cross-sectional study from All of Us Program

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INTRODUCTION: Financial toxicity has a substantial impact on patient and caregiver experiences and has been associated with poor outcomes. Upper abdominal cancers (gastric, hepatopancreatobiliary (HPB), and small intestine)

often require care at specialized centers, which may magnify the impact of financial toxicity in this patient population relative to patients with colorectal cancer (CRC). Differing rates of financial toxicity may have implications for the design and implementation of interventions to address financial concerns and barriers to care. To explore this, we compared rates of self-reported financial toxicity based on pathology using the All of Us dataset. **METHODS:** Patients were identified from the All of Us Research Program Version 8 controlled tier using ICD, SNOMED, and CPT codes who answered the Health Care Access and Utilization survey. The upper abdominal cancers group included patients with HPB, gastric, or small intestine cancers, excluding those with esophageal cancer. Financial toxicity was defined as endorsing ≥1 of 9 survey questions regarding self-reported financial stress. Linked electronic health records were used to analyze receipt of treatment and outcomes. **RESULTS:** The upper abdominal cancers group included 1664 patients and the CRC group included 1865 patients. The median age at diagnosis was greater in the upper abdominal cancer group (63 years) compared with the CRC group (61.5 years, $p< 0.01$). The percentage of patients reporting annual income < $35,000 (approximately twice the federal poverty level for an individual) was similar between groups (20% for CRC, 21% for upper abdominal cancer; p=0.45). Rates of financial toxicity were similar: 25% in the upper abdominal group (n=418) and 24% in the CRC group (n=455; p=0.56). Treatment records are limited in All of Us, with ~20% available in both groups. Financial toxicity was not significantly associated with receipt of chemotherapy or surgery for both groups ($p >0.05$ for both). Median overall survival was 14.2 months for upper abdominal cancer patients and 43.8 months for CRC patients ($p< 0.01$), with no association with financial toxicity ($p >0.05$ for both groups). **CONCLUSIONS:** In the All of Us program, one in four patients with an abdominal malignancy reported financial toxicity. Patients with upper abdominal cancer report similar rates of financial toxicity to patients with CRC. These findings suggest that interventions to address financial stressors could be applied broadly across patients with intra-abdominal malignancies.

EP250

Development of a risk-stratified score for early drain removal in robotic distal pancreatectomy

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INTRODUCTION: Although clinical trials have shown that distal pancreatectomy does not always require drain placement, this approach remains controversial due to the difficulty of delayed drain placement and morbidity of clinically relevant postoperative pancreatic fistula (CR-POPF). Alternatively, early drain removal according to drain fluid amylase (DFA) level has gained popularity, but this has not been examined in robotic distal pancreatectomy (RDP). We aimed to identify early predictors of CR-POPF after RDP and to develop a risk-stratified score to guide early drain removal. **METHODS:** We identified all patients undergoing RDP at our center from 10/2018 to 2/2024 and collected clinicopathologic and 90-day outcomes data, including CR-POPF, defined as grade B or C as per International Study Group of Pancreatic Fistula criteria. A random forest model identified key preoperative and intraoperative predictors: gender, body mass index (BMI), age, pathologic diagnosis, pancreas texture, duct size, transection line, postoperative day (POD) 1 white blood cell count (WBC), DFA, and drain volume. Cutoff values were determined by variable distributions and clinical interpretability. A simple additive risk score was then created, assigning one point per threshold exceeded. Patients were classified as low or high risk for CR-POPF. **RESULTS:** Among 119 patients who underwent RDP (performed by 6 surgeons), median age was 62 years (IQR 53-70), median BMI 28.6 kg/m² (IQR 25.0-33.1), and pathologic diagnoses included pancreatic neuroendocrine tumor (34%), cystic disease (34%), and ductal adenocarcinoma (24%). The drain was removed in 3% of patients on POD1 and 34% by POD3. CR-POPF occurred in 17 patients (14%); 10 (8%) required percutaneous drain placement. Variables associated with CR-POPF included younger age, higher BMI, elevated POD1 white blood cell count (WBC), and elevated POD1 drain fluid amylase (DFA). Pancreas texture, duct size, and drain fluid volumes on POD 1 were not associated with CR-POPF. The simple risk score assigned 1 point for each of the following: age ≤40 years, BMI ≥30 kg/m², POD1 WBC ≥15×10≥/L, and POD1 DFA ≥4,000 U/L. A score ≥2 yielded a sensitivity of 70.6%, specificity 78.4%, positive predictive value 36.4%, and negative predictive value 94.2% for CR-POPF. For this risk score, 71% of patients are expected to have risk score < 2. **CONCLUSIONS:** We identified key factors associated with CR-POPF in RDP and developed a risk-stratification tool based on POD1 labs and patient data. This risk score could help select patients at lower risk for CR-POPF and potential candidates for early drain removal.

EP251

Do Patients who Undergo Right Hemicolectomy for Clinically Localized High-Grade Appendix Cancer at Low- and High-Volume Facilities Experience Similar Surgical and Survival Outcomes?

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INTRODUCTION: Patients who have rare cancers or require technically complex operations generally experience better outcomes at high-volume facilities (HVFs) compared to low-volume facilities (LVFs). Despite a right hemicolectomy (RHC) being considered a routine operation, there are nuances in the surgical management of clinically localized high-grade appendix cancer (AC). We investigated the effect of facility experience with AC on surgical and survival outcomes in patients with high-grade AC who underwent RHC at LVF versus HVF. **METHODS:** Using the National Cancer Database (NCDB, 2004-2022), we defined HVFs as facilities in the 97th percentile for appendiceal tumor cases (any histology). We then identified patients with clinically localized moderately or poorly differentiated AC who underwent RHC at HVFs and LVFs. The study outcomes were rate of R0 resection, rate of adequate lymphadenectomy (≥12 lymph nodes [LN]), 90-day postoperative mortality, and overall survival (OS). **RESULTS:** Of 990 facilities, 30 were HVFs (median 11.53 cases/year) and 960 were LVFs (median 1.95 cases/year). Among 12,377 patients who underwent RHC for high grade AC, 1,527 (12%) were treated at HVFs. Patients treated at LVFs were older, had a higher Charlson-Deyo comorbidity score, and were more likely to be self-pay or covered by public insurance. Adjusting for clinicopathologic and socioeconomic factors, patients treated at LVFs were less likely to have an R0 resection (Odds Ratio [OR] 0.68, 95% confidence interval [CI] 0.53-0.86) or adequate LN resection (OR 0.66, 95% CI 0.57-0.76). There was no significant difference in 90-day mortality (OR 1.22, 95% CI 0.73-2.19). Clinically occult distant metastases were less commonly identified at LVFs than at HVFs (2.1% vs 3.2%, $p< 0.001$). Patients treated at LVFs experienced significantly decreased 5-year OS rate of 71% (95% CI 70%-72%) compared 77% (95% CI 75%-80%) for those treated at HVFs (log-rank $p< 0.001$). By multivariable analysis, treatment at LVFs remained significantly associated with worse OS [HR 1.30, 95% CI 1.12-1.51]. **CONCLUSIONS:** Compared to HVFs, LVFs were associated with lower rates of R0 resection and adequate lymphadenectomy, as well as

decreased OS for patients undergoing RHC for high grade AC. Despite RHC being a routine surgical procedure, the rarity of AC may warrant referral to facilities with expertise in the nuances of AC histology, identification of subtle peritoneal disease, and oncologically appropriate surgical resection.

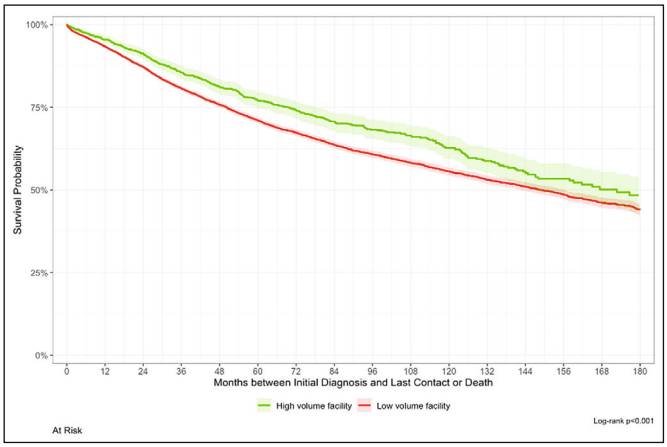

Figure. Kaplan-meier estimate of patient overall survival curves by facility volume

EP252

Settler Colonial Determinants of Surgical Oncology Access Among Indigenous Populations in South Africa, North America, and Occupied Palestine

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INTRODUCTION: Disparities in surgical oncology care for Indigenous populations persist across global settler colonial contexts. This study aims to examine how settler colonial determinants of health impact access to surgical oncology services in South Africa, North America, and occupied Palestine in comparison to their respective colonizing populations. **METHODS:** We conducted a comprehensive narrative review of oncology literature, with specific attention to surgical oncology studies, addressing barriers to care imposed by settler colonialism. Our framework for analysis encompassed nine domains: economic burden, mobility and access control, timeliness, service availability, provider experience, sociodemographic status, legal status and rights, health literacy, and data infrastructure. Following a PubMed search protocol, eight independent reviewers screened the resultant 7993 studies using the platform Covidence. Studies were included if they examined social determinants of health affecting cancer care access for Indigenous or colonized populations. For this particular analysis, only those studies focused on surgical oncology were included. **RESULTS:** Of the 438 studies that met the inclusion criteria for the full review, 38 focused specifically on surgical oncology. Across all three settler colonial contexts, structural barriers were evident at every stage of the surgical cancer care continuum. In Palestine, military checkpoints, border permits, and other mobility restrictions routinely delayed access to diagnostic and curative surgical procedures. In South Africa and remote Indigenous communities in Canada and the United States, surgical oncology services were often centralized in urban centers, while district hospitals remained under-resourced and ill-equipped to provide specialized care. Discriminatory referral systems and exclusions from national health programs further limited access for displaced or undocumented Indigenous populations. Compounding these challenges were significant data gaps in surgical outcomes, cancer staging, and mortality rates, contributing to the ongoing invisibility of Indigenous patients in oncology policy and planning. **CONCLUSIONS:** In the burgeoning field of settler colonial determinants of health, this study lays the groundwork for understanding how surgical oncology care is impeded for Indigenous populations. Addressing disparities in surgical cancer outcomes requires more than technical interventions; it demands a decolonial reimagining of healthcare rooted in equity, sovereignty, and structural accountability.

EP253

Racial and Ethnic Differences in Pancreatic Cancer Survival and Treatment at a High-Volume Center

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INTRODUCTION: Survival disparities by race and ethnicity in pancreatic cancer are often attributed to delayed access to specialized centers and differential treatment receipt. Whether these patterns persist among patients receiving care at high-volume centers remains unclear. **METHODS:** We identified patients with pancreatic adenocarcinoma diagnosed from 2016-2024 who received treatment at an NCI-designated Comprehensive Cancer Center. Data were harmonized from the institutional cancer registry, pharmacy database, and health record using Palantir Foundry. Treatment receipt by self-reported race and ethnicity was compared using chi-squared tests, and Cox models were adjusted for age, performance status, stage, comorbidities, and treatment-specific variables. **RESULTS:** Among 3249 patients (median follow-up 33.1 months), median OS from diagnosis across all stages was 20.7 months for non-Hispanic White (NHW), 18.6 for Hispanic, 26.6 for Asian, and 17.4 for Black patients ($p< 0.001$). Non-White patients were more likely to be seen within 3 months after diagnosis compared to White patients (adjusted ORs: Hispanic 1.72, Asian 2.06, Black 1.67; $p< 0.05$ for all). Among patients with metastatic disease, receipt of chemotherapy varied across groups ($p< 0.001$), highest for Asian patients (92%) and lowest for Black patients (83%). Median OS from initiation of chemotherapy ranged from 9.8 months in Black patients to 11.2 months in Asian patients ($p=0.120$). In patients initially diagnosed with localized disease, rates of pancreatectomy were similar: 33% for NHW, 26% for Hispanic, 28% for Asian, and 24% for Black patients ($p=0.074$). Median OS after pancreatectomy was 43.9 months for NHW, 48.7 for Hispanic, 57.7 for Asian, and 39.3 for Black patients ($p=0.570$). Interventional trial enrollment rates were lower for Black (25%; $p< 0.001$) and Hispanic patients (30%; $p=0.043$) compared to non-Hispanic white patients (38%). Post-treatment survival did not differ significantly after adjustment for first-line chemotherapy agents in patients with metastatic disease or tumor location in patients with localized disease. **CONCLUSIONS:** At a high-volume center, patients from minoritized groups receive timely evaluation and standard of care treatment at similar rates to NHW patients, yet survival disparities persist. After accounting for patient and disease characteristics, survival outcomes were largely similar across groups. However, lower chemotherapy rates among Black patients with metastatic disease and lower trial enrollment among Black and Hispanic patients highlight persistent treatment inequities.

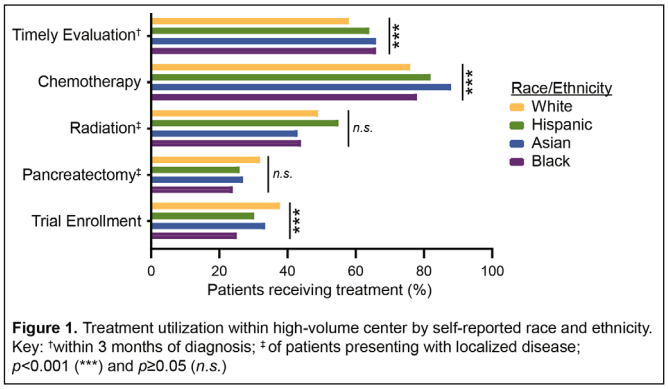

Figure 1. Treatment utilization within high-volume center by self-reported race and ethnicity. Key: †within 3 months of diagnosis; ‡ of patients presenting with localized disease; $p<0.001$ (***) and $p\geq0.05$ (*n.s.*)

EP254

Evolving Patterns and Determinants of Curative-Intent Therapy for Early-Stage Hepatocellular Carcinoma: A National Cancer Database Analysis of Ablation, Resection, and Robotic Adoption

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INTRODUCTION: Early-stage hepatocellular carcinoma (HCC) is potentially curable with transplant, ablation, or resection. Transplant offers excellent control but is limited by eligibility and organ supply. Minimally invasive ablation and minimally invasive hepatectomy (MIH—laparoscopic and robotic) have expanded from select centers to broader adoption. Treatment selection depends on liver function, tumor burden, and patient factors, but may also vary by sociodemographics and hospital type. We used the NCDB to (1) describe temporal trends in curative-intent therapy for stage I–II HCC; (2) identify predictors of ablation vs resection; and (3) evaluate factors associated with robotic vs laparoscopic MIH (among resections since 2014, given broader robotic availability). **METHODS:** Adults with stage I–II HCC (2010–2022) in the NCDB were analyzed. Primary analysis: ablation vs resection using multivariable logistic regression with bias-reduced fits as needed. Covariates included age, sex, race/ethnicity, Charlson–Deyo, insurance, income and education quartiles, residence, tumor size, AFP, facility type, region, and days from diagnosis to surgery. Secondary analysis: among resections ≥2014, robotic vs laparoscopic MIH using the same framework, plus hepatectomy extent and diagnosis year. Odds ratios (ORs) with 95% CIs were reported. **RESULTS:** Among 58,770 patients, transplant occurred in 23.3%, ablation 43.3%, and resection 33.4%. Transplant declined while ablation rose over the years. Excluding transplant (n = 45,081), ablation comprised 56.4% treatment modalities for HCC. Larger tumors favored resection (vs < 3 cm: 3–5 cm OR 0.43 [0.40–0.46]; >5 cm 0.28 [0.26–0.30]), while advanced fibrosis strongly favored ablation (7.20 [6.06–8.56]). Resection was favored in Asian (0.39 [0.33–0.45]) and Black (0.72 [0.67–0.77]) patients, and those with private insurance (0.67 [0.57–0.79]). The West (vs Northeast) favored ablation (1.36 [1.26–1.46]). Among MIH ≥2014 (n = 4,343), 26% were robotic. Later years favored robotic (OR/year 1.29 [1.24–1.35]). South vs Northeast (1.53 [1.26–1.86]) was more likely to be robotic, and the Midwest to be laparoscopic (0.59 [0.46–0.75]). Charlson–Deyo 1 vs 0 (1.25 [1.05–1.48]) favored robotic, while Hispanic (0.74 [0.56–0.96]) favored laparoscopic. **CONCLUSIONS:** From 2010–2022, ablation increased while transplant declined, and resection remained stable. Treatment selection reflected liver disease, tumor burden, and structural factors. Since 2014, robotic MIH has expanded rapidly with regional variation, highlighting the need to standardize selection and address access disparities.

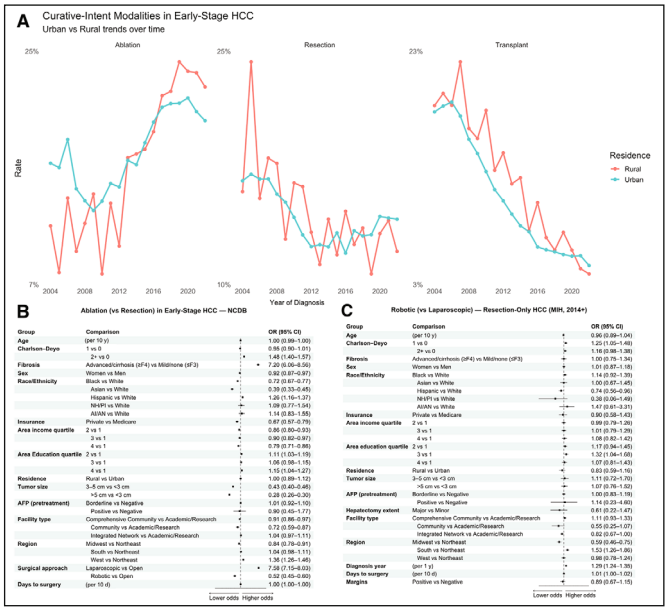

Figure. A–C. National patterns in curative-intent therapy for stage I–II HCC (NCDB 2010–2022): (A) modality trends by residence; (B) adjusted odds of ablation vs resection; (C) adjusted odds of robotic vs laparoscopic MIH for resections ≥2014.

EP255

Inferior vena cava replacement with cryopreserved aortic homograft for primary retroperitoneal leiomyosarcoma: a cohort study from a tertiary referral center

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INTRODUCTION: Primary leiomyosarcoma of the inferior vena cava (IVC) requires multimodal treatment including full-thickness IVC resection, yet the optimal reconstruction method remains debated. Aortic homograft may provide resistance to infection and compression, though antithrombotic management for an arterial conduit replacing a major vein is not standardized. We report results of a cohort study assessing safety and efficacy of cryopreserved aortic homograft reconstruction with a tailored antithrombotic protocol (weight-adjusted low molecular weight heparin, shifted to antiplatelet therapy at 3 months). **METHODS:** Consecutive patients undergoing IVC resection and aortic homograft reconstruction for primary leiomyosarcoma (September 2020-June 2023) were prospectively followed. Primary endpoints were graft patency and bleeding/thrombotic events during antithrombotic treatment. **RESULTS:** Twenty-five patients were included; 20/25 (80%) patients completed the protocol and were evaluable for long-term follow up on contrast-enhanced CT. Severe postoperative morbidity (Clavien-Dindo ≥3) occurred in 16%, with one major bleeding event during enoxaparin prophylaxis. Three patients (15%) required 3-month full-dose oral anticoagulation for early venous thromboembolism. At 12-month CT, graft patency was 90% (18/20). Two homograft occlusions occurred (day +7 and month +3), both in middle-aged females with rheumatic disorders and cardiovascular risk factors. Six patients (30%) had prior deep vein

thrombosis. Only 2 (10%) showed preoperative venous collaterals at CT scan; both occluded grafts presented without intraluminal clot but with graft collapse and collateral drainage. **CONCLUSIONS:** Aortic homograft represents a safe, effective option for IVC reconstruction, achieving high 1-year patency and acceptable morbidity. Prolonged anticoagulant prophylaxis followed by antiplatelet therapy appears safe and effective. Further studies should clarify the need for lifelong anticoagulation after graft occlusion, as collapse occurred without thrombosis.

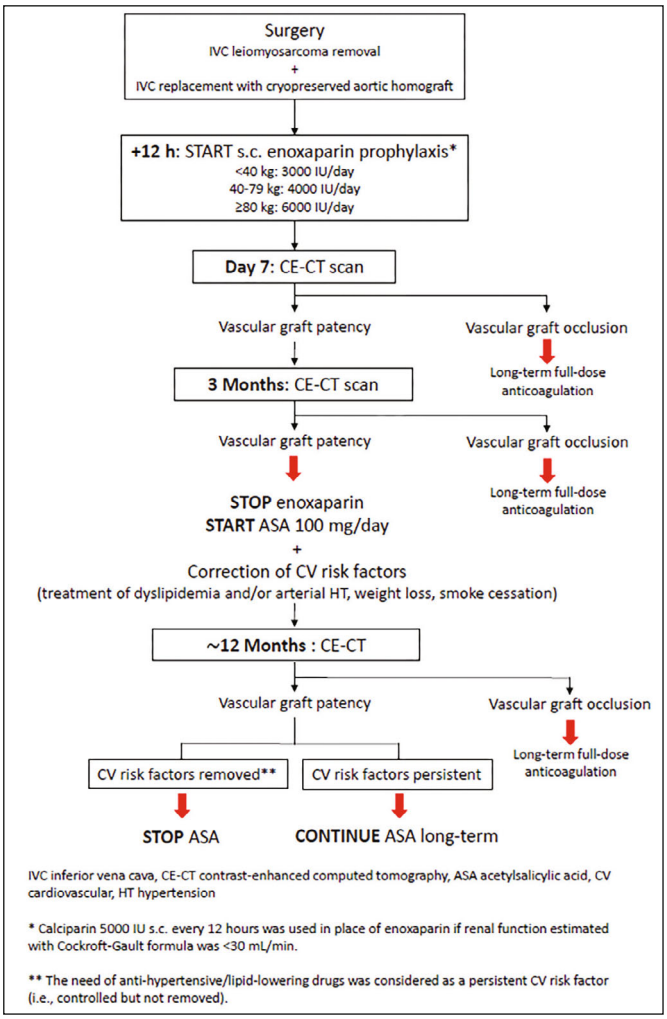

Figure 1. Details of study design and antithrombotic protocol.

EP256

A Population Based Analysis of Breast Cancer Outcomes among Disaggregated Asian Women

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INTRODUCTION: Breast cancer incidence continues to rise among Asian women, yet aggregation of Asian American and Pacific Islander (AAPI) populations may obscure subgroup disparities. This study evaluated overall survival (OS) among AAPI women with breast cancer as well as differences in patient, disease, and treatment factors. **METHODS:** Using the National Cancer Database, we identified AAPI females diagnosed with Stage I-III invasive breast cancer from 2004 - 2021. AAPI women were disaggregated into geographically relevant populations: East Asians (EAs), Southeast Asians (SEAs), South Asians (SAs) and Pacific Islanders (PIs). Descriptive statistics, log-rank tests, and multivariable Cox regression were used to compare sociodemographic, tumor characteristics, and treatments between subgroups. Kaplan-Meier survival estimates were used to compare OS across subgroups. **RESULTS:** A total of 76,517 (3.0%) Asian women were identified: EAs (40%), SEAs (30%), SAs (21%), and PIs (8%). Most PI women were diagnosed between the age of 50-69 (Table 1). PIs had more comorbidities, with 8% of patients having a Charlson Comorbidity Index ≥2, compared to 2.4% of SAs, 3.7% of SEAs, and 2.2% of EAs ($p< 0.01$). PIs and SEAs were less likely to be treated at academic hospitals compared to SAs and EAs ($p< 0.01$). Compared with other groups, PIs had lower rates of private insurance and the greatest travel burden, with nearly 30% living >20 miles from the treatment center (Table 1). Significant differences were also seen in tumor biology: PIs more often had low-grade Luminal A disease while SEAs had a higher prevalence of HER2+ tumors, and SAs had the highest rate of triple-negative disease (Table 1). PIs had higher rates of ≥pT2 tumors at diagnosis ($p< 0.01$) and higher nodal burden ($p< 0.01$) compared to the other groups. PI patients were more likely to receive endocrine therapy ($p< 0.01$) while SA women were more likely to receive chemotherapy and mastectomy ($p< 0.01$). Ten-year median OS was 84% for EAs, 86% for SAs, 84% for SEAs, but only 75% for PIs ($p< 0.01$). Adjusted Cox regression confirmed PIs had the highest mortality risk (HR 1.4, 95% CI 1.3-1.5, $p< 0.01$). **CONCLUSIONS:** Despite having a higher prevalence of favorable disease, PIs had the poorest OS of AAPI women with breast cancer. Additionally, given that PI women had a higher burden of disease at diagnosis, targeted efforts to improve early detection are needed. Findings suggested that non-biologic factors and screening rates may be the primary drivers of this OS disparity.

Table 1. Characteristics of Asian Women with Breast Cancer by Subgroup

Characteristic	Asian subgroups					
	East Asian N = 30,732[1]	Southeast Asian N = 23,251[1]	South Asian N = 16,375[1]	Pacific Islander N = 6,159[1]	Row p-value[2]	Overall p-value[3]
Age at diagnosis						<0.001
<50	9,215 (30%)	6,707 (29%)	5,822 (36%)	1,570 (25%)	<0.001	
50-69	14,610 (48%)	12,353 (53%)	7,944 (49%)	3,394 (55%)	<0.001	
70+	6,907 (22%)	4,191 (18%)	2,609 (16%)	1,195 (19%)	<0.001	
Primary payer						<0.001
Private	17,993 (59%)	13,908 (60%)	10,060 (61%)	3,373 (55%)	<0.001	
Medicaid	3,372 (11%)	2,833 (12%)	2,008 (12%)	736 (12%)	<0.001	
Medicare	8,193 (27%)	5,409 (23%)	3,111 (19%)	1,793 (29%)	<0.001	
Other government	237 (0.8%)	301 (1.3%)	92 (0.6%)	111 (1.8%)	<0.001	
Not insured	557 (1.8%)	542 (2.3%)	724 (4.4%)	102 (1.7%)	<0.001	
Unknown	380 (1.2%)	258 (1.1%)	380 (2.3%)	44 (0.7%)	<0.001	
Charlson-Deyo comorbidity index						<0.001
0	27,322 (89%)	19,616 (84%)	13,953 (85%)	4,683 (76%)	<0.001	
1	2,724 (8.9%)	2,784 (12%)	2,032 (12%)	985 (16%)	<0.001	
2	443 (1.4%)	531 (2.3%)	254 (1.6%)	275 (4.5%)	<0.001	
3+	243 (0.8%)	320 (1.4%)	136 (0.8%)	216 (3.5%)	<0.001	
Facility type						<0.001
Community cancer program	1,920 (6.2%)	1,850 (8.0%)	808 (4.9%)	476 (7.7%)	<0.001	
Comprehensive community cancer program	9,559 (31%)	8,321 (36%)	4,926 (30%)	1,823 (30%)	<0.001	
Academic/research program	12,060 (39%)	6,960 (30%)	6,450 (39%)	1,829 (30%)	<0.001	
Integrated network cancer program	5,203 (17%)	4,561 (20%)	2,421 (15%)	1,603 (26%)	<0.001	
Unknown	1,990 (6.5%)	1,559 (6.7%)	1,770 (11%)	428 (6.9%)	<0.001	
Distance between residence and hospital						<0.001
0-19.9 miles	25,724 (84%)	18,318 (79%)	12,584 (77%)	4,242 (69%)	<0.001	
20-39.9 miles	1,605 (5.2%)	1,526 (6.6%)	1,379 (8.4%)	514 (8.3%)	<0.001	
40-59.9 miles	281 (0.9%)	300 (1.3%)	278 (1.7%)	84 (1.4%)	<0.001	
60+ miles	656 (2.1%)	471 (2.0%)	422 (2.6%)	379 (6.2%)	<0.001	
Unknown	2,466 (8.0%)	2,636 (11%)	1,712 (10%)	940 (15%)	<0.001	
Molecular subtype						<0.001
Luminal A	16,872 (55%)	12,402 (53%)	9,232 (56%)	3,711 (60%)	<0.001	
Luminal B	561 (1.8%)	628 (2.7%)	383 (2.3%)	118 (1.9%)	<0.001	
HER2+	1,298 (4.2%)	1,308 (5.6%)	739 (4.5%)	222 (3.6%)	<0.001	
TNBC	2,308 (7.5%)	1,493 (6.4%)	1,581 (9.7%)	360 (5.8%)	<0.001	
Other/Unknown	9,693 (32%)	7,420 (32%)	4,440 (27%)	1,748 (28%)	<0.001	
Pathologic T						<0.001
pT0	396 (1.3%)	395 (1.7%)	389 (2.4%)	100 (1.6%)	<0.001	
pTis	61 (0.2%)	50 (0.2%)	35 (0.2%)	7 (0.1%)	0.436	
pT1	18,649 (61%)	12,438 (53%)	8,711 (53%)	3,196 (52%)	<0.001	
pT2	6,903 (22%)	6,042 (26%)	4,058 (25%)	1,635 (27%)	<0.001	
pT3	836 (2.7%)	907 (3.9%)	534 (3.3%)	298 (4.8%)	<0.001	
pT4	251 (0.8%)	290 (1.2%)	150 (0.9%)	81 (1.3%)	<0.001	
Unknown	3,636 (12%)	3,129 (13%)	2,498 (15%)	942 (14%)	<0.001	
Pathologic N						<0.001
pN0	15,514 (50%)	11,558 (50%)	7,948 (49%)	2,927 (48%)	<0.001	
pN1	8,806 (29%)	6,457 (28%)	4,541 (28%)	1,800 (29%)	0.017	
pN2	1,081 (3.5%)	997 (4.3%)	726 (4.4%)	272 (4.4%)	<0.001	
pN3	414 (1.3%)	452 (1.9%)	308 (1.9%)	126 (2.0%)	<0.001	
Unknown	4,917 (16%)	3,787 (16%)	2,852 (17%)	1,034 (17%)	<0.001	
Procedure type						<0.001
Lumpectomy	16,230 (53%)	10,821 (47%)	8,220 (50%)	3,279 (53%)	<0.001	
Mastectomy no reconstruction	9,057 (29%)	8,113 (35%)	4,826 (29%)	1,877 (30%)	<0.001	
Mastectomy with reconstruction	4,177 (14%)	3,400 (15%)	2,567 (16%)	733 (12%)	<0.001	
None	1,199 (3.9%)	881 (3.8%)	716 (4.4%)	251 (4.1%)	0.024	
Unknown	69 (0.2%)	36 (0.2%)	46 (0.3%)	19 (0.3%)	0.025	

[1]n (%)
[2]Chi-square test of row percentages
[3]Overall Chi-square test

EP257

Neighborhood-level Socioeconomic Status and Obesity-related Cancer Incidence among Postmenopausal Women in the Women's Health Initiative

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INTRODUCTION: Neighborhood-level socioeconomic status (nSES) has been linked to incidence of at least 13 different cancers: esophageal adenocarcinoma, gastric cardia, colorectal, liver, gallbladder, pancreas, postmenopausal breast, corpus uteri, ovary, renal cell, meningioma, thyroid, and multiple myeloma. We examined associations between nSES, obesity-related cancer (ORC) incidence, and potential effect modifiers in the Women's Health Initiative (WHI). **METHODS:** WHI enrolled 161,808 postmenopausal women, aged 50–79 years, from 1993–1998 which included four randomized clinical trials and an observational study across 40 US centers and followed through 12/31/24. Baseline addresses were geocoded and linked to 2000 U.S. Census and American Community Survey data to derive an nSES index using standardized z-scores, where higher values indicate greater neighborhood advantage. Our primary outcome was ORC incidence. Fine–Gray competing risk models estimated sub-distribution hazard ratios (SHRs) and 95% confidence intervals (CIs). Effect modifiers included race/ethnicity, smoking, healthcare access, prior screening, WHI geographic regions, and person-level household income. **RESULTS:** Among 158,015 cancer-free participants, higher nSES was associated with higher ORC incidence (SHR = 1.007; 95% CI = 1.004–1.010), persisting after adjustment for income (SHR = 1.005; 95% CI = 1.002–1.008). In stratified analyses adjusting for income, higher nSES was associated with higher ORC incidence among White women (SHR = 1.005; 95% CI = 1.003–1.008), current smokers (SHR = 1.02; 95% CI = 1.01–1.03), those with established healthcare providers (SHR = 1.005; 95% CI = 1.002–1.008) and/or a history of screening participation (SHR = 1.005; 95% CI = 1.001–1.008), and those residing in the Northeast (SHR = 1.009; 95% CI = 1.002–1.020) or South (SHR = 1.006; 95% CI = 1.001–1.011, all p< 0.05). These associations were stronger among those with higher incomes ($50–99K: SHR = 1.002; ≥$100K: SHR = 1.010). **CONCLUSIONS:** Greater neighborhood advantage was associated with increased ORC incidence, particularly among postmenopausal women who were affluent, self-identified as White, were current smokers, had access to healthcare, and underwent cancer screening. These findings suggest possible detection and diagnosis differences. As obesity and ORC rates fluctuate, future research should focus on analytic methods to discern the impact of multilevel SES factors on cancer incidence estimates.

EP258

Real-World Outcomes of Apixaban Versus Enoxaparin for Postoperative VTE Prophylaxis Following Major Abdominal Operations For Cancer

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INTRODUCTION: Venous thromboembolism (VTE) is a rare cause of postoperative morbidity but remains an important quality metric in patients undergoing complex major abdominal operations. The National Comprehensive Cancer Network recommends extended VTE prophylaxis in this subset of patients.Low-molecular-weight heparin (enoxaparin) or unfractionated heparin are the current standard for prophylaxis. Apixaban, an oral direct factor Xa inhibitor, offers a convenient alternative, but evidence is limited regarding efficacy and risk profile in this subset of patients. This study compares 30-day outcomes of apixaban versus enoxaparin for VTE prevention following high-risk gastrointestinal surgery. **METHODS:** A retrospective chart review was conducted of all patients undergoing high-risk gastrointestinal surgery between January 2024 and August 2025 and who received postoperative VTE prophylaxis with either enoxaparin or apixaban on discharge. Demographic, operative, and 30-day postoperative outcomes—including bleeding, symptomatic VTE, high-grade (Clavien-Dindo ≥III) complications, readmission, transfusion, and hospital length of stay—were compared between groups. **RESULTS:** A total of 86 patients were included, with 38 (44.2%) discharged on enoxaparin and 48 (55.8%) discharged on apixaban. The mean age was 65.7 years, with most patients being female (56.6%) and of White race (99%). Baseline characteristics, including comorbidities, body mass index, and frailty, were comparable between groups. The distribution of procedures differed between groups (p=0.019), with pancreas resections representing the most common operation overall (47.9%). On 30-day outcomes analysis of enoxaparin versus apixaban, one patient in the eliquis group developed a VTE (2.1% vs 0%, p=0.99). A single major bleeding event occurred in the enoxaparin group, with none in the apixaban group (2.6% vs 0%, p=0.44). There were no 30-day differences in major complications (Clavien-Dindo>3), length of stay, mortality, or readmission rates. **CONCLUSIONS:** Apixaban appeared safe and well tolerated for postoperative VTE prophylaxis among patients undergoing high-risk gastrointestinal surgery, with similar rates of thrombotic and bleeding complications compared to enoxaparin. Given the low incidence of VTE events, larger multicenter studies are needed to confirm these findings and determine whether apixaban may offer a practical and patient-centered alternative to low-molecular-weight heparin in the postoperative setting.

EP259

External validation of a dynamic prognostic nomogram for primary extremity soft tissue sarcoma in a US cohort

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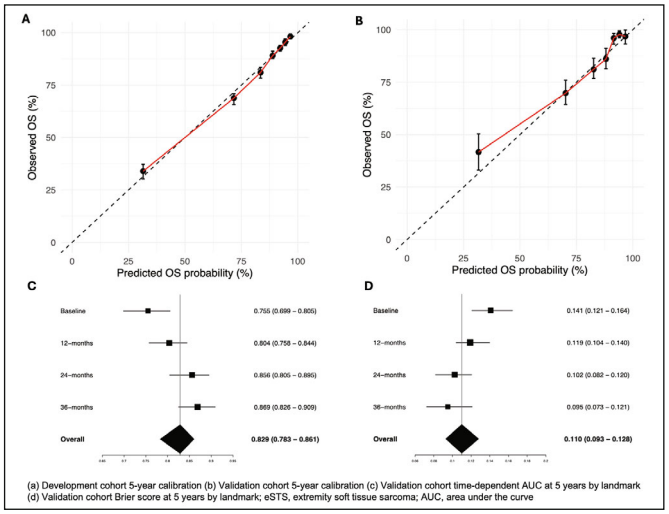
INTRODUCTION: Extremity soft tissue sarcomas (eSTS) are rare and heterogenous, making prognostication challenging. A European/Canadian multicenter landmark Cox model in 2019 produced the first dynamic nomogram to predict 5-year overall survival (OS) for primary eSTS. We conducted the first US external validation of this nomogram. **METHODS:** We performed a retrospective cohort study of patients ≥ 18 years old who underwent resection of primary eSTS with curative intent at a single US institution (2000-2021), constituting the validation set. Data were compared to the 2019 development set. Patients with macroscopically incomplete (R2) resection or < 3 months follow-up were excluded. Variables matched the nomogram: age, tumor size, included tumor grade, histology, first local recurrence, and first distant metastasis. We assessed the nomogram in terms of discrimination, with 5-year time-dependent area under the curve (AUC), and calibration, with 5-year Brier score. **RESULTS:** The development (n = 3740) and validation (n = 580) sets both had a median follow-up of 79 months (interquartile ranges 44-119 and 39-123 months, respectively). Five- and 10-year OS were 76.0% (95% confidence interval [CI] 74.6-77.5%) and 66.3% (CI 64.3-68.2%) in the development set, and 87.5% (CI 84.2-90.1%) and 80.7% (CI 76.4-84.2%) in the validation set. Histologic subtypes were similar except for myxofibrosarcoma, which was more common in the validation set (18.6 vs. 11.9%, p < 0.001). The validation set had more grade 3 (56.2% vs. 49.3%) and fewer grade 2 tumors (25.7% vs. 33.0%, p = 0.001). While chemotherapy use was similar, with 17.1% in the development and 16.6% in the validation set (p = 0.73), the validation set was more likely to receive radiotherapy (68.7% vs. 59.7%, p < 0.001). Time-dependent AUC at 5 years in the validation set was 0.755 (CI 0.699-0.805) at time of surgery, and improved to 0.804 (CI 0.758-0.844), 0.856 (CI 0.805-0.895), and 0.869 (CI 0.826-0.909) at 1, 2, and 3 years after surgery. Corresponding Brier scores declined from 0.141 (CI 0.121-0.164) at time of surgery to 0.119 (CI 0.104-0.140), 0.102 (CI 0.082-0.120), and 0.095 (CI 0.073-0.121) at 1, 2, and 3 years after surgery, indicating better calibration at later landmarks.
CONCLUSIONS: The nomogram provided reliable survival estimates in a US external cohort with a different histology and grade profile and improved in accuracy the longer the follow-up time. Performance was robust

despite differences in institutional practices. These findings support its more generalized use for patient counseling and personalized decision-making in primary eSTS patients.



Discrimination and calibration of the eSTS dynamic nomogram

EP260

Predictors of Positive Wide Local Excision Margins Among the Southern Arizona Population

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INTRODUCTION: Melanoma impacts skin cancer related mortality, and treatment often requires surgical intervention, such as a Wide Local Excision (WLE). This cross-sectional analysis examined possible predictors for positive margins after a WLE for melanoma treatment among the Southern Arizona community. **METHODS:** Through retrospective chart review 1382 primary biopsies were identified between January 2019 and December 2024. Included individuals were seen through the University of Arizona's Cutaneous Oncology Program in Tucson, underwent a wide local excision, and had complete margin-related data. The sample included 35% Female, 94% White, 3% Hispanic, and 78% were 62 or older. Backward stepwise logistic regression was utilized to determine any correlation between demographic characteristics and pathology results. **RESULTS:** Crudely, those with positive margins after WLE were more likely to be a race other than white (crudeOR= 2.44, $p < 0.05$), to have a lesion on the head or neck (crudeOR= 2.75, $p < 0.05$), or to have perineural invasion (crudeOR=6.18, $p< 0.05$). In addition, different histologic subtypes were more likely to have positive margins, such as acral (crudeOR=4.93, $p< 0.05$), desmoplastic (crudeOR= 5.60, $p< 0.05$), and lentigo maligna (crudeOR=2.67, $p< 0.05$). However, after adjustment, only head or neck site (adjOR= 3.35, 95% CI 1.53, 7.77) remained statistically significant. **CONCLUSIONS:** Differences in pathologic factors have been identified among patients with positive margins after WLE. These findings warrant further research to inform surgical planning and highlight predictive patterns. Further analysis is required with a larger sample size and dynamic statistical models.

Table. Backward Stepwise Logistic Regression Model for Positive Wide Local Excision Margin among the Southern Arizona Population (n=1,382)

Model Variables		Crude Odds Ratio (n=1382)	P-Value	Adjusted Odds Ratio* (n=975)	95% CI		P-Value
					Lower	Upper	
Race							
	White			Referent			
	Other	2.44	<0.05	2.58	0.81	6.83	0.08
	Missing	81					
Site							
	Extremity			Referent			
	Head and Neck	2.75	<0.05	3.35	1.53	7.77	<0.05
	Trunk	0.44	0.06	0.44	0.10	1.45	0.21
	Missing	0					
Subtype							
	Superficial Spreading			Referent			
	Acral	4.93	<0.05	4.27	0.83	16.94	0.052
	Desmoplastic	5.60	<0.05	2.86	0.56	10.94	0.16
	Lentigo Malinga	2.67	<0.05	1.49	0.62	3.48	0.36
	Nodular	0.87	0.78	0.36	0.08	1.23	0.14
	Other	1.87	0.41	2.12	0.30	8.99	0.36
	Missing	222					
Ulceration							
	Not Identified			Referent			
	Identified	1.70	0.12	2.03	0.85	4.54	0.10
	Missing	222					
Perineural Invasion							
	Not Identified			Referent			
	Identified	6.18	<0.05	3.44	0.68	13.36	0.09
	Missing	270					
Sex							
	Female	Referent					
	Male	0.74	0.24				
Age at Biopsy							
	<62	Referent					
	≥62	1.49	0.24				
Ethnicity							
	Non-Hispanic	Referent					
	Hispanic	1.52	0.49				
	Missing	52					
Breslow Thickness							
	T1 (≤1.0 mm)	Referent					
	T2 (>1.0–2.0 mm)	0.70	0.38				
	T3 (>2.0–4.0 mm)	1.63	0.20				
	T4 (>4.0 mm)	0.60	0.50				
	Missing	213					
Mitotic Rate (mitosis/mm2)							
	0	Referent					
	1	1.62	0.22				
	2	1.22	0.73				
	3	1.59	0.47				
	4+	0.74	0.50				
	Missing	270					
Lymph Invasion							
	Not Identified	Referent					
	Identified	1.25	0.83				
	Missing	250					

* Backwards stepwise selection included race, subtype, site, presence of ulceration, and perineural invasion

EP261

Building equity in oncologic surgery: 5-year outcomes of a Complex Abdominal and Pelvic Surgery (CAPS) program in an underserved population

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INTRODUCTION: A gap persists in delivering coordinated oncologic care across medical disciplines, especially for patients with financial and geographic barriers to tertiary healthcare access. We established a Complex Abdominal and Pelvic Surgery (CAPS) program in 2019 to provide personalized sequential treatment plans for each patient through the lens of cultural humility. We present our data from 5 years of the program's existence. **METHODS:** All patients undergoing complex oncologic abdominal and/or pelvic surgery at our Cancer Institute from 2019–2024 were enrolled in the CAPS program. Descriptive statistics summarized demographics, clinical features, and outcomes. Overall survival (OS) and 5-year disease-free survival (5Y-DFS) were estimated using Kaplan-Meier curves and log-rank tests. **RESULTS:** Seventy-nine patients were enrolled; 72 underwent resection. Mean age was 58.4 years; 61% were female. There was a mix of payor sources with 28% Medicaid and 19% uninsured supported by the hospital charity program. The mean travel distance to the hospital was 52.5 miles. The median Charlson Comorbidity Index was 5.1. Cancer diagnoses included rectal (44%), colon (26%), gynecologic (14%), anal (6%), and others (8%). The stage distribution was I (1%), II (14%), III (36%), IV (46%). Patients received a mean of 2.14 neoadjuvant therapies including chemotherapy (66%), radiation (33%), and immunotherapy (11%). Operations involved a median of 3 specialties (range 2–6) and 4 procedures per case. Intraoperative brachytherapy was used in 3 patients. Surgery intent was curative in 54% (R0: 74%, R1: 26%) and palliative in 46% (R0: 46%, R1: 36%, R2: 18%). Tumor downstaging occurred in 21%; 9% achieved pathologic complete response. Thirty-day mortality was 3% (2 patients). Median follow-up was 389 days (range 7–1820). Thirteen patients recurred, with a mean time to

recurrence of 307 days. Overall 5-year survival was 68%: R0 (79%), R1 (80%), R2 (0%). Median survival for R2 patients was 355 days. **CONCLUSIONS:** In our underserved population, an integrated multidisciplinary surgical approach extended survival for heavily pretreated, advanced cancer patients, especially for those who achieved at least an R1 resection. CAPS programs may expand access and equity in complex oncologic care.

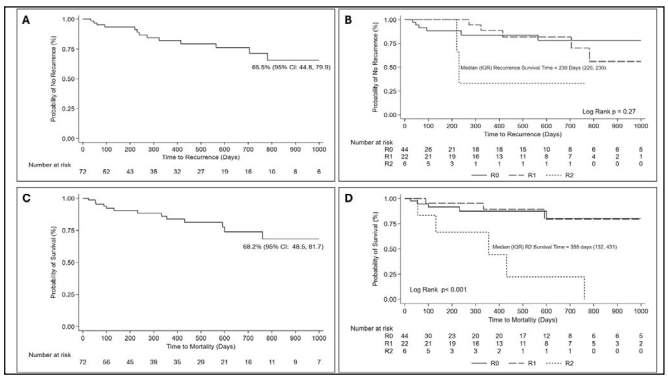

Figure 1: Five Year Disease Free Survival (5Y DFS) and Overall survival (OS). (A) 5Y DFS (B) Time to recurrence stratified by surgical resection margin (C) OS (D) Time to mortality stratified by surgical resection margin.

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Site of cytoreduction impacts outcomes in CRS/HIPEC: an analysis of 24-years of experience

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INTRODUCTION: Complete cytoreduction (CC0) is the most important predictor of survival in patients undergoing cytoreduction and hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) for appendiceal cancer. The peritoneal carcinomatosis index (PCI) is used to evaluate the extent of disease, but it does not account for the anatomic distribution of disease which can impact outcomes. In this work, we evaluate the impact of site of cytoreduction on outcomes in patients undergoing CRS/HIPEC for appendiceal cancer. **METHODS:** This is a retrospective review from 2001 to 2025. Patients with appendiceal cancer were included. Sites of cytoreduction were condensed into hepatobiliary, upper gastrointestinal (UGI), and lower gastrointestinal (LGI). These groups were not mutually exclusive. **RESULTS:** In total, 875 patients entered the analysis. Median PCI score was 18 (12-26). For HPB resection, rates of re-admission were lower (31.8 vs 36.4%, P=0.02). For UGI resection, there were higher rates of mortality (3.4 vs 0.9%, P=0.04), any complication (51.3 vs 32.7%, P< 0.001), ICU-readmission (8.9 vs 4%, P=0.02), percutaneous drain placement (18 vs 8.4%, P< 0.0001), re-operation (41 vs 24.7%, P< 0.0001), non-home discharge (11.5 vs 6.8%, P=0.02), and pLOS (32.8 vs 14%, P< 0.0001). For LGI resection, there were higher rates of any complication (49.1 vs 33.3%), ICU re-admission (8.4 vs 3.9%, P=0.04), percutaneous drain placement (16.7 vs 9.3%, P=0.01), readmission (39.3 vs 25%, P< 0.0001), and pLOS (29.2 vs 18.2%, P=0.001). After risk-adjustment, UGI resection was independently associated with any complication (OR: 1.7, 95% CI: 1.16-2.5), percutaneous drain placement (1.9, 1.1-3.4), unplanned re-admission (1.9,1.2-2.8), non-home discharge (2.2, 1.03-4.5) and pLOS (2.5, 1.5-4.1). LGI resection was independently associated with any complication (1.6,1.05-2.4). Both UGI and LGI resection were associated with worse survival with 89.2 vs 136.3 and 84.7 vs 173.1 months, respectively (P< 0.05). On cox-hazard regression, the site did not predict survival. CC0-1 (HR: 2.9, 95% CI: 1.9-4.2) and PCI (1.04, 1.02-1.05) were independent predictors of survival. The site did not predict CC0-1 and PCI >=25 remained the strongest independent predictor (OR:0.36, 95% CI: 0.2-0.7). In patients with PCI >=25, undergoing UGI resection was associated with higher rates of any complication (61.8% vs 38.9%, P=0.01). **CONCLUSIONS:** The anatomic site of cytoreduction influences short-term outcomes with UGI resections carrying the greatest morbidity. However, long-term outcomes remain driven by disease burden and CC0-1 status.

Table 1. Risk-Adjusted Analysis for Outcomes by Resection

	HPB Resection	UGI Resection	LGI Resection
Mortality	0.3 (0.07-1.5)	1.9 (0.5-8)	2.7 (0.5-14.2)
Any complication	0.9 (0.6-1.2)	1.7 (1.1-2.5)	1.6 (1.05-2.4)
ICU Re-admission	0.7 (0.3-1.4)	1.4 (0.6-3.1)	1.6 (0.7-3.7)
Percutaneous drainage	0.9 (0.6-1.6)	1.9 (1.1-3.4)	1.8 (0.9-3.4)
Reoperation	1.3 (0.74-2.4)	1.4 (0.7-2.9)	1.5 (0.7-3.3)
Readmission	0.7 (0.5-1.05)	1.9 (1.2-2.8)	1.5 (0.9-2.3)
Non-home discharge	1.7 (0.9-3)	2.2 (1.03-4.5)	0.9 (0.4-2.1)
Prolonged Length of Stay	1.4 (0.9-2)	2.5 (1.5-4.1)	1.2 (0.7-2)

***Risk adjusted for age, gender, bmi (kg/m2), asa class, ecog class, pre-op albumin, age adjusted CCI score, prior surgery, prior chemotherapy, site of cytoreduction**

EP263

Impact of radioactive agents on lymph node yield in sentinel node biopsies for melanoma: 99mTc-Tilmanocept vs. 99mTc-Sulfur Colloid

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INTRODUCTION: Technetium-99m Tilmanocept (TcTM) is a newer radiotracer used in sentinel lymph node biopsies (SLNBs) for melanoma.1 Our study compared the number of sentinel nodes excised using TcTM versus Technetium-99m Sulfur Colloid (TcSC), the first radiotracer used for SLNBs. We hypothesized that SLNBs with TcTM result in the excision of fewer total lymph nodes without compromising detection of positive nodes. **METHODS:** A single-institution retrospective review of patients who underwent SLNBs for melanoma was conducted between 1/1/20 -5/1/25. Our institution switched from TcSC to TcTm on 9/1/23, and this review was conducted on an equal but random subset of patents before and after this date. Data regarding demographics, melanoma characteristics, and operative details were collected from patient charts. Statistical analysis included independent t-test and Welch's t-test. **RESULTS:** There were 100 patients who underwent lymphoscintigraphy with TcSC and 101 with TcTM (median age: 65 years; sex distribution: 110 males). Significantly fewer total lymph nodes were excised using TcTM compared to TcSC (mean = 1.88 vs. 2.52; $p < 0.0001$). Lymph node yield was also analyzed per nodal basin and there was a significantly lower total node yield in the axillary basin with TcTM versus TcSC (mean = 1.91 vs. 2.6; $p < 0.0001$), with no statistically significant differences observed in other basins. Mean total nodes removed using TcTM were 1.48 in the inguinal basin (p=0.1583), 1.67 in the cervical basin (p=0.1527), and 1.14 in other basins (p=0.2444) compared to 1.81, 2.50, and 1.67, respectively, with TcSC. Overall, 18 positive nodes were identified using TcTM and 20 using TcSC, which showed no statistical difference despite the lower total node yield associated with TcTM (mean=0.18 vs. 0.20, p= 0.75). Mean positive nodes resected using TcTM vs. TcSC were 0.14 vs. 0.22 in the axillary basin (p=0.3018), 0.25 vs 0.16 in the inguinal basin (p=0.4833), 0.33 vs 0.00 in the cervical basin (p=0.4226) and 0.01 vs. 0.00 in other basins (p=0.3197). **CONCLUSIONS:** The results of this study indicate that performing SLNBs using TcTM may be more effective in reducing invasiveness of SLNBs and identifying positive nodes, potentially mitigating the risk of complications. These findings may inform and refine sentinel lymph node biopsy practice guidelines.

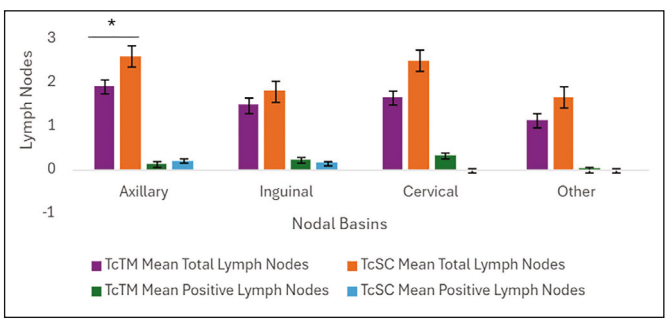

Figure. Effect of Radioactive Dye on Nodal Yield per Basin

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MAPK and Complementary Pathway Alterations Drive Therapeutic Vulnerabilities in Gallbladder Adenocarcinoma

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INTRODUCTION: Gallbladder adenocarcinoma is a rare malignancy with a poor overall survival. Available treatment options have limited efficacy. Characterizing genetic alterations across major molecular pathways may help inform targeted therapy development and clinical trial strategies. To uncover actionable drivers of disease, we characterized the genomic landscape of gallbladder adenocarcinomas and identified potentially targetable mutations. **METHODS:** A retrospective analysis was performed on a prospectively collected cohort of patients with gallbladder adenocarcinoma on final pathology from 2015-2025. Patients were required to have a pathology report for review. Tumor genomic profiling was performed using next-generation sequencing (NGS). Individual genetic alterations were mapped to a known molecular pathway for common grouping and potentially targetable groups. An overlapping molecular mutation heatmap was generated using R (version 4.5.1, R Core Team, 2025). **RESULTS:** Sixty total patients were identified with gallbladder adenocarcinoma on final pathology. 39 patients were excluded for lack of next-generation sequencing performed on the primary tumor. Three or more pathway specific alterations were identified in 61.9% of specimens with a median of 3 alterations per specimen (Range: 1-5). The most frequently altered pathways were MAPK (62%), TP53 (53%), HRD (38%), TERT promoter (29%), dMMR/Hypermutation (19%), and ARID1A/EZH2 (19%). Additional alterations are observed in a small subset of patients with the following: CDKN2A/B, PI3K-mTOR, and FGFR. MAPK alterations demonstrated the highest degree of overlap, most frequently occurring with TP53 mutations (n=7). Furthermore, the MAPK alteration had a high degree of overlap with TERT promoter region mutations (n=6) and HRD (n=5). FGFR, CDKN2A/B, and PI3K-mTOR mutations represented low-frequency events and showed minimal overlap with other pathways. **CONCLUSIONS:** Our study shows that gallbladder adenocarcinoma is biologically complex. The heatmap reveals a recurrent MAPK pathway driver mutation with coexisting alterations that generate complementary oncogenic dependencies. This molecular interplay suggests inherent resistance to single-agent approaches. Future investigations should be directed toward the development of dual-agent therapeutic regimens that leverage a potential mechanistic synergy.

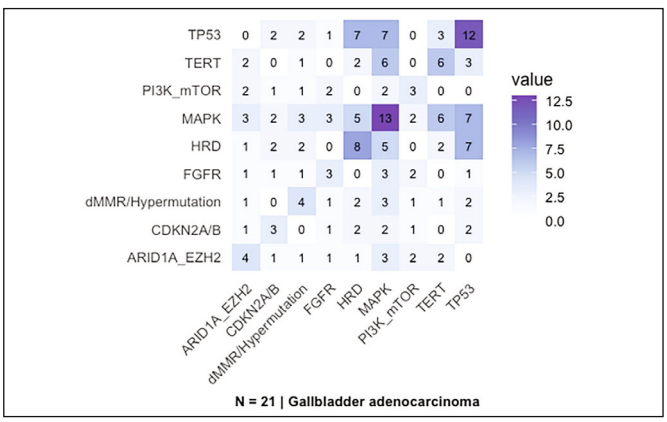

Figure. Overlapping molecular mutations in gallbladder adenocarcinoma specimens

EP265

Surgical management in HER2+ dnMBC: effects on progression and survival

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INTRODUCTION: Advancements in anti-HER2+ systemic therapy have significantly improved survival in patients with de novo metastatic HER2+ breast cancer (dnMBC).1 The role of breast surgery is debated given its potential to improve survival and local control and facilitate cessation of systemic therapy. In this context, we examined which HER2+ dnMBC patients undergo surgery and compared their outcomes to those treated with systemic therapy alone. **METHODS:** Single institution retrospective review of patients with HER2+ dnMBC diagnosed 2011-2023. Data included demographics, stage, histology, receptor status, metastatic burden, systemic therapy, surgical details, local and distant disease progression, and survival outcomes. Associations between surgery and disease progression were assessed using logistic regression. Survival was analyzed with Kaplan-Meier and Cox proportional hazards models. **RESULTS:** A total of 103 patients were identified. Of these, 42.7% (44/103) underwent breast surgery (70.5% mastectomy, 29.5% lumpectomy), 31.1% (32/103) underwent axillary surgery (38.6% ALND, 6.8% TAD, 27.3% SLNB). The median age at diagnosis was 48 years in the surgery group, 56 years in the no surgery group (p=0.10). The average number of metastatic sites was lower in the surgery group than the no surgery group (1.3 vs. 1.9, p=0.003). Indications for surgery included curative intent (44.2%), local control (34.9%), and research trial of anti-HER2+ therapy cessation (2.3%). The surgery group exhibited higher rates of local disease progression pre-operatively (39% vs. 23.5%, p=0.05). Post-operatively, there was no significant difference in repeat recurrence and local disease progression with surgery (17.1% vs. 23.5%, p=0.42). Surgical patients trended towards reduced distant disease progression compared to no surgery (43.9% vs 58.9%, p=0.12), but this was not statistically significant. After adjusting for age, sites of metastases, and number of metastatic sites, those who underwent surgery had improved overall survival (HR 0.33 (0.14-0.77), p=0.02) and breast cancer specific survival (HR 0.35 (0.15-0.82), p=0.03). **CONCLUSIONS:** Patients with HER2+ dnMBC with local disease progression and lower metastatic disease burden were more likely to undergo breast surgery. There was no significant difference in local disease control associated with surgery. The significant association between surgery and improved survival must be interpreted with caution due to the retrospective nature of this study and the effect of selection bias.

Table 1. Surgical management in HER2+ dnMBC

	No Surgery	Surgery	All	p-value
N	59	44	103	
Demographic Characteristics				
Median age at Diagnosis, years (range)	56 (41.5, 66)	48 (38, 60.75)	51 (39.5, 64.5)	0.10
Clinical Categories				
TX or T0	4 (6.8%)	1 (2.3%)	5 (4.9%)	0.10
T1	9 (15.3%)	2 (4.5%)	11 (10.7%)	
T2	23 (39.0%)	13 (29.5%)	36 (35.0%)	
T3	11 (18.6%)	14 (31.8%)	25 (24.3%)	
T4	12 (20.3%)	14 (31.8%)	26 (25.2%)	
N0 or NX	13 (22.0%)	6 (13.6%)	19 (18.4%)	0.66
N1	26 (44.1%)	24 (54.5%)	50 (48.5%)	
N2	6 (10.2%)	4 (9.1%)	10 (9.7%)	
N3	14 (23.7%)	10 (22.7%)	24 (23.3%)	
Histologic subtype				0.91
Invasive ductal	54 (91.5%)	40 (90.9%)	94 (91.3%)	
Invasive lobular	3 (5.1%)	1 (2.3%)	4 (3.9%)	
Mixed invasive ductal/lobular	2 (3.4%)	0 (0.0%)	2 (1.9%)	
Inflammatory carcinoma	0 (0.0%)	3 (6.8%)	3 (2.9%)	
Histologic grade				0.53
1	1 (2.1%)	1 (2.5%)	2 (2.3%)	
2	7 (14.6%)	4 (10.0%)	11 (12.5%)	
3	27 (56.2%)	27 (67.5%)	54 (61.4%)	
Other/unknown	13 (27.1%)	8 (20.0%)	21 (23.9%)	
HR status				
ER POSITIVE	41 (69.5%)	27 (61.4%)	68 (66.0%)	0.39
PR POSITIVE	24 (40.7%)	21 (47.7%)	45 (43.7%)	0.48
Metastases characteristics, n (%)				
Bone	33 (55.9%)	18 (40.9%)	51 (49.5%)	0.13
Lung	15 (25.4%)	4 (9.1%)	19 (18.4%)	0.04
Nodes (distant)	25 (42.4%)	15 (34.1%)	40 (38.8%)	0.39
Liver	23 (39.0%)	12 (27.3%)	35 (34.0%)	0.22
Brain	8 (13.6%)	1 (2.3%)	9 (8.7%)	0.08
Number of organs involved				
Mean (SD)	1.9 (0.9)	1.3 (0.6)	1.7 (0.9)	**0.003**
1 site, n (%)	26 (44.1%)	32 (72.7%)	58 (56.3%)	
2 sites	17 (28.8%)	10 (22.7%)	27 (26.2%)	
>2 sites	16 (27.1%)	2 (4.5%)	18 (17.5%)	

(Table continued)

Breast Surgery				
Mastectomy		31 (70.5%)		
Lumpectomy		13 (29.5%)		
Axillary Surgery				
ALND		17 (38.6%)		
SLNB		12 (27.3%)		
TAD		3 (6.8%)		
No axillary surgery		6 (13.6%)		
NA or unknown		6 (13.6%)		
Indication for surgery				
Curative		19 (44.2%)		
Local control		15 (34.9%)		
Research Trial (STOP HER2)		1 (2.3%)		
Unknown		8 (18.6%)		

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Immune microenvironment and spatial signatures of appendiceal goblet cell peritoneal metastases correlate with disease burden and poor survival

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INTRODUCTION: Appendiceal goblet cell adenocarcinoma (aGCA) is a rare and understudied malignancy that frequently presents with peritoneal metastases and variable disease burden. The immune microenvironment and spatial organization underlying these differences remain poorly defined. We sought to characterize the immune and transcriptional landscape of aGCA peritoneal metastases in relation to peritoneal cancer index (PCI) and 1-year survival. **METHODS:** Eight clinically annotated aGCA peritoneal metastasis specimens were prospectively banked. Bulk RNA sequencing was performed on six tumors to identify gene signatures associated with 1-year mortality. Multiplex immunohistochemistry (mIHC) was performed on two cases selected for their extreme disease burden to characterize $CD3^+$ T-cell composition and spatial distribution within the tumor microenvironment. **RESULTS:** The cohort (n = 8) included 5 females (62.5%) with a median age of 64 (IQR 48-68.5) years and median PCI of 22 (IQR 18-31). One-year mortality was 50% (3/6 patients with ≥1-year follow-up). All non-survivors had high PCIs (≥21). Transcriptional profiling revealed higher expression in non-survivors of genes associated with B-cell activation (IGHV3-48, IGHV3-20, IGLV3-19) and fibroinflammatory processes (SGK1 and COL11A1). By contrast, survivors exhibited higher expression of genes associated with antigen processing and anti-inflammatory signaling (MGST1, SPTAN1, PTPN6). mIHC of the selected high-PCI tumors revealed $CD3^+$ T-cell densities ranging from 0.042 to 0.092 cells/100 μm² and immune-to-tumor cell ratios ranging from 0.62:1 to 2.09:1. Approximately 47% to 56% of all T-cells were localized within 50 μm of tumor regions. However, the cases displayed highly divergent mean immune-tumor distances (49 μm and 129 μm), suggesting varied spatial organization. **CONCLUSIONS:** Advanced aGCA peritoneal metastases demonstrate dense $CD3^+$ T-cell infiltration that is often heterogenous and spatially clustered near tumor nests. Poor-survival tumors are characterized by B-cell activation and fibroinflammatory signatures. These findings suggest that immune dysregulation and exclusion are potential mechanisms driving disease progression and represent potential targets for therapeutic modulation in advanced aGCA.

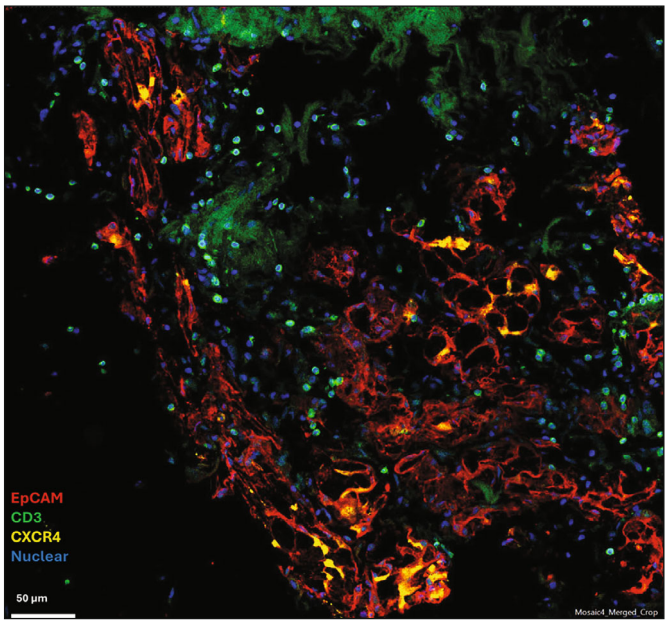

Figure. Multiplex Immunohistochemistry (mIHC) of Appendiceal Goblet Cell Carcinoma Peritoneal Metastasis (PCI 31))

EP267

Comparing radiologic imaging in assessing residual axillary disease in locally advanced breast cancer patients after neoadjuvant therapy

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INTRODUCTION: Prior studies comparing different imaging modalities in assessing axillary response after neoadjuvant systemic therapy (NST) in locally advanced breast cancer (LABC) are limited. This study evaluated the efficacy of different imaging modalities in identifying residual axillary disease after NST in LABC patients in a modern cohort. **METHODS:** A retrospective review was performed examining LABC patients undergoing NST followed by surgical axillary staging from 2018-23. Patients with LABC (T3-4,N1-3 or any T stage with N2-3 disease) were included. Inflammatory breast cancer was excluded. The efficacy of US, MRI, and PET/CT in evaluating residual axillary disease and the variables associated with radiologic-pathologic concordance were analyzed and compared. **RESULTS:** 101 patients meeting inclusion were identified. Median age was 51 (range 27-86), 51% post-menopausal, and 95% had invasive ductal carcinoma. A complete imaging response (CIR) of axillary lymph nodes after NST was observed with at least one imaging modality (US, MRI, PET/CT) in 60 (59%) patients. CIR was more commonly observed in HR-/HER2+ at 8/11 (73%), compared to TNBC 23/33 (70%), HR+/HER2+ 7/13 (54%), and HR+/HER2- 23/44 (52%). CIR with pathological complete response (pCR) was overall seen in 34/60 (57%) of patients. CIR-pCR concordance was highest in HR-/HER2+ at 7/8 (88%), followed by TNBC 14/22 (64%), HR+/HER2- 10/23 (43%), and HR+/HER2+ 3/7 (43%). PET/CT had the highest negative predictive value (NPV) of 70% in predicting pCR and a sensitivity of 70% in detecting residual axillary disease on final pathology (Table 1). MRI had the lowest NPV and sensitivity. Univariate logistic regression showed a significant relationship between CIR-pCR concordance and preoperative nodal status ($\chi 2(57)$ 8.9, p=0.01). Higher N stage was associated with CIR-pCR concordance with cN3 disease having the highest odds of concordance compared to cN1 disease (OR 6.2, p=0.006). The absence of lymphovascular invasion was significantly associated with CIR-pCR concordance (OR 9.2, p=0.008). Clinical T stage was not significantly associated with CIR-pCR in the axilla (p=0.06). **CONCLUSIONS:** Post-neoadjuvant axillary imaging provides

valuable information on treatment response in LABC patients, with PET/CT having the highest accuracy. However, complete imaging response should not preclude surgical evaluation of the axilla. Further studies investigating the relationships between preoperative nodal status in LABC patients and radiologic-pathologic complete response after NST is warranted.

Table 1. Diagnostic Performance of Radiologic Imaging Modalities Evaluating Residual Axillary Disease in LABC after NST

Performance Measure	Ultrasound (n=57)	MRI (n=53)	PET/CT (n=45)
Sensitivity	71%	49%	70%
Specificity	64%	55%	73%
Positive Predictive Value	76%	64%	73%
Negative Predictive Value	58%	39%	70%

EP268

Optimal timing of adjuvant therapy in treatment of cutaneous melanoma

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INTRODUCTION: The incidence of cutaneous melanoma has increased by 1.1% per year over the last 15 years. Traditionally outcomes for advanced melanoma were poor, but the 5-year survival of metastatic melanoma has improved with the use of immunotherapy. Numerous studies have demonstrated improved clinical outcomes with the use of immune-based therapy, however there is minimal guidance on optimal time interval between surgery and systemic therapy. This study aims to determine if the length of time from surgical resection to initiation of adjuvant immunotherapy for locoregional melanoma influences disease-free and overall survival. **METHODS:** This is an observational, retrospective cohort study conducted at a major cancer centre in Vancouver, Canada. Data was collected from patients with clinical stage I or II cutaneous melanoma who underwent wide excision and sentinel lymph node biopsy between 2021-2022. Patients who were candidates for adjuvant immunotherapy (pT3b-T4a/b or TxN1a-3a) were split into two groups based on time from surgery to adjuvant therapy: Group 1 initiated adjuvant therapy < 12 weeks and Group 2 > 12 weeks after surgery. Patients who received adjuvant therapy for recurrence were excluded. Demographics, tumor characteristics and recurrence timing and patterns were collected. **RESULTS:** 58/213 patients were identified that received adjuvant immunotherapy, 39 in Group 1 and 19 in Group 2. Median age of diagnosis in group 1 was 69 (IQR 59.5-75.5) and in group 2 was 68 (IQR 63-78) with female patients comprising 33.3% and 31.6%, respectively. The most common histologic subtypes were superficial spreading (25.6% Group 1, 15.8% Group 2) and nodular (23.1% Group 1, 52.6% Group 2). BRAF mutations were noted in 33.3% of Group 1, 36.8% in Group 2. Median time to adjuvant therapy was 7 weeks (IQR 4.2-9.5) in Group 1 and 15.7 weeks (IQR 14.1-20.4) in Group 2. Recurrence in any location was 38.5% for group 1 and 42.1% for group 2, p=0.91. Median time to recurrence in group 1 was 70.1 weeks (IQR 32.6-109.9) and 58.6 weeks (IQR 40.3-70.8) in Group 2, p=0.49. 3 yr overall mortality was 28.2% in Group 1 and 47.4% in Group 2. **CONCLUSIONS:** Immunotherapy plays an important role in treating advanced melanoma. There is minimal evidence guiding optimal time to initiation of adjuvant therapy. Our data suggests that delay in adjuvant therapy may not influence rate of recurrence, but in those that recur, there is a trend towards earlier recurrence with delayed adjuvant treatment. Other factors such as patient comorbidities and tumor biology may also contribute. Future larger studies are required to provide guidelines for the optimal interval between surgery and adjuvant therapy.

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Artificial Intelligence (AI)-based Clinical Summaries in Breast Surgical Oncology

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INTRODUCTION: Reviewing imaging, pathology, and relevant documents for oncology patients is time-consuming, especially when care is received at different facilities with varied file types (eg text, fax, PDF). We developed an artificial intelligence (AI) GPT-4o/Retrieval-Augmented Generation (RAG) agent to summarize radiology, pathology, and consultation reports. In this study, we evaluated its impact on clinical documentation workflow. **METHODS:** As part of usual workflow, outside records were compiled into a single PDF that physician assistants (PAs) review and summarize before surgeon consultation. In 50 sequential cases, 9 PAs used the AI agent to complete the summarization and completed a survey after each use to evaluate the quality of the AI summaries using a shortened Provider Documentation Summarization Quality Instrument (PDSQI-9) on a 1-5 Likert scale. At the end of the pilot period, 6 users completed a survey regarding overall experience with the AI agent. PDSQI-9 Likert ratings were reported as means and dichotomized by grouping (scores 1-3 as 'negative' and 4-5 as 'positive') and analyzed with binomial tests ($p< 0.05$). Free-text responses were coded by error type and criticality (treatment-impacting vs non-critical) by two clinicians. **RESULTS:** PDSQI-9 and survey results are detailed in the table. Overall, AI summaries scored positively in accuracy, usefulness, succinctness, and citing the source documentation. 50% of AI summaries scored negatively on thoroughness without omission. Comments regarding errors were reported in 23 (43%) surveys. 13 (26%) were classified as critical errors, for example, no mention of a displaced biopsy clip. The most common error was related to imaging, which was reported in 16 (32%) cases. One noted stigmatizing language. For the question regarding if the AI agent saved time in chart review, the median response was neutral with one reporting agreement and two reporting disagreement. Respondents described it as a "super helpful" and "good tool" and that it "saves time with actually typing out the findings". Several noted using it was an adjustment to their workflow - "great for straightforward cases" but needs improvement for more complex ones. **CONCLUSIONS:** In this pilot, we demonstrate that the AI agent produced breast cancer patient chart summarization is accurate, appropriate, and useful. However, it requires ongoing monitoring to capture errors, especially those critical to treatment decisions. While human review remains necessary, AI shows promise for summarization of oncologic reports.

Table. Provider Documentation Summarization Quality Instrument (PDSQI-9) survey results completed after each use of the AI agent by Physician Assistants

PDSQI-9 Question	Average Likert	Positive Score (Likert 4-5)	Negative Score (Likert 1-3)	P-Value	Qualitative Comments
Citations Present and Appropriate	4.2	42 (84%)	8 (16%)	P < 0.001	Cases 46, 47 and 49 reported no citations
Summary Accurate	4.4	41 (82%)	9 (18%)	P < 0.001	Two failed to report clip displacement, one had the laterality of the cancer incorrect, two reported detection of cancer incorrectly (palpable lump vs. imaging), one language error reported when a borderline lymph node was reported as enlarged
Summary Thorough and Without Omissions	3.4	25 (50%)	26 (50%)	P = 0.900	Sixteen reported missing imaging information, three noted missing medical history, two missed a genetics result and two included incomplete pathology reports
Summary Useful	4.1	38 (76%)	12 (24%)	P < 0.001	Six had issues with organization of the summary, one reported the missing information made the summarization process more time consuming
Summary Succinct	4.1	39 (78%)	11 (22%)	P < 0.001	Three mentioned duplicated information

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Prophylactic HIPEC for Non-metastatic T4 Low-Grade Mucinous Appendiceal Cancer

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INTRODUCTION: Prophylactic (adjuvant) hyperthermic intraperitoneal chemoperfusion (pHIPEC) is sometimes added to surgery for perforated appendiceal tumors without peritoneal spread; however, supporting evidence remains limited. We evaluated survival outcomes associated with adding pHIPEC to surgical treatment in patients with locally perforated, low-grade mucinous appendiceal cancer. **METHODS:** A multi-center retrospective cohort study was conducted using the National Cancer Database (2004-2021). Patients with T4, non-metastatic, low-grade mucinous appendiceal cancer were included. Overall survival (OS) was analyzed using the Kaplan-Meier method and Cox

regression, comparing patients treated with surgery alone versus surgery and pHIPEC. Factors associated with pHIPEC administration were assessed using logistic regression. **RESULTS:** Among 53,255 patients with all appendiceal neoplasms, 341 met the inclusion criteria: 46 received surgery with pHIPEC, and 295 underwent surgery alone. Median age was lower in the pHIPEC group (56 vs. 62 years; p=0.044). There were no significant differences by sex (p=0.051), race (p=0.680), insurance type (p=0.584), or comorbidity score (p=0.073). T4b tumors were in 23.9% vs 22.4% patients (p=0.973). pHIPEC was performed predominantly in academic centers (78.3% vs. 29.5%), whereas surgery alone was more common in community hospitals (15.2% vs. 45.6%), p< 0.001. Median hospital stay was longer after surgery with pHIPEC (8 vs. 5 days; p=0.001). After a median follow-up of 69.5 months, early OS benefit was observed with pHIPEC (5-year survival: 92.8% vs. 75.6%; Breslow p=0.011), though long-term survival benefit was uncertain (median OS: 165 months vs. not reached; Log-rank p=0.098) (Figure 1A). In the adjusted Cox regression model, pHIPEC was not associated with improved OS (HR 0.89; 95% CI: 0.39-2.06). There was no statistical difference in OS between pHIPEC and surgery alone within T4a (p=0.159) and T4b subgroups (p=0.245) (Figures 1B and 1C). Multivariable logistic regression identified treatment at an academic facility as the only significant factor associated with pHIPEC administration (OR 10.78; 95% CI: 4.52-25.69). **CONCLUSIONS:** In patients with T4, non-metastatic, low-grade mucinous appendiceal cancer, the addition of prophylactic HIPEC to surgery may improve early survival but does not appear to confer a long-term survival advantage. Larger, multi-institutional studies are warranted to define better the role of prophylactic HIPEC across appendiceal cancer subtypes.

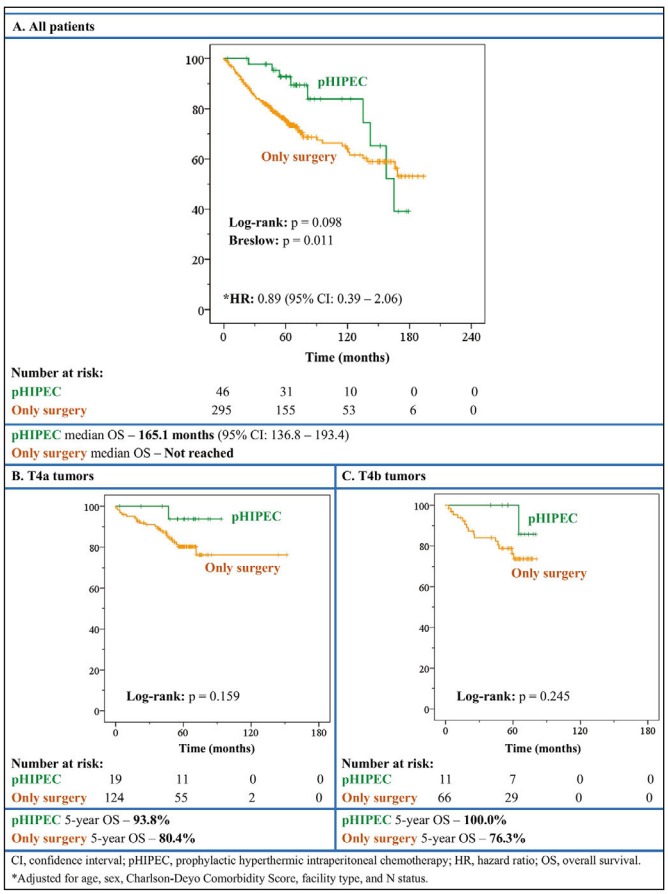

Figure 1. Overall survival

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AI-Powered Patient Education for Pancreatic Insufficiency: A Pilot Feasibility Study

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INTRODUCTION: Pancreatic exocrine insufficiency (PEI) adversely affects nutrition and quality of life across benign and malignant pancreatic disease. Patients often lack timely, reliable guidance on disease education, symptom management, and pancreatic enzyme replacement therapy (PERT) titration. **METHODS:** Chat-Generative Pre-trained Transformer (GPT) was utilized to create a custom artificial intelligence (AI)-powered agent trained exclusively on curated PEI education materials. The agent was designed to provide conversational, real-time responses to common patient questions encompassing diagnosis, symptoms, enzyme dosing, and dietary guidance. Usability and perceived value were assessed via semi-structured 1:1 interviews with five clinical staff who routinely manage PEI (two registered dieticians, two patient care resource managers, and one surgical oncology fellow). Interviews were followed by a survey including Net Promoter Scores (NPS), a modified System Usability Scale (SUS), and free-text feedback for evaluation of agent usability, accuracy, clarity, and suggested improvements. **RESULTS:** The agent received a NPS of +80 for both provider and patient use, indicating strong endorsement and perceived clinical value. Respondents estimated 95-100% of the agents' answers were accurate and evidence-based. Using 5-point Likert scales, scores were 4.2, 4.6, and 4 for ease of use, frequency of expected use, and confidence in using the agent, respectively. No user found the agent to be cumbersome or unnecessarily complex, and none felt technical support was necessary. Free-text answers highlighted "ease of use", "answers with additional tips provided", and "easy to understand language and formatting". All users agreed that the agent would reduce in-person clinical counseling on PEI. Suggested enhancements included embedded links to additional resources and more granular, patient-specific dosing recommendations. **CONCLUSIONS:** In this pilot evaluation, a PEI-focused AI agent demonstrated high usability, perceived accuracy, and potential clinical value. Next steps include broader internal validation followed by patient-facing implementation for real-time PEI education and PERT titration guidance with the goal of scalable patient implementation in resource-limited populations.

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Oncologic Outcomes in Patients Undergoing Robotic Esophagectomy

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INTRODUCTION: Esophageal cancer (EC) is associated with significant mortality worldwide. Robotic assisted minimally invasive esophagectomy (RAMIE) has been established to potentially decrease morbidity while potentially improving oncologic outcomes compared to other approaches. We sought to evaluate oncologic outcomes associated with a single surgeon's experience in this largest series of RAMIE. **METHODS:** Utilizing a prospectively maintained esophageal database, we identified patients who were diagnosed with EC and underwent RAMIE between 2010-2025. Baseline univariate comparisons were made for continuous variables using Mann-Whitney U and Pearson's Chi-square test for categorical variables. **RESULTS:** We identified 365 patients who underwent RAMIE with a median age of 69 (30-91). There were 291 (79.7%) males and 74 (20.3%) females. The mean BMI was 27 ± 6.3 and mean ASA score was 2.9 ± 0.6. Adenocarcinoma was the predominate histology at 302 (82.7%) while squamous cell carcinoma represented only 13.2% of patients. Locally advanced T3/T4 tumors were identified in 212 (58.1%) patients and 180 (49.3%) had clinical node + disease. Neoadjuvant therapy was utilized in 292 (80%) patients. The median, length of operation was 331 (275 – 401) minutes, estimated blood loss 100 (50 – 150) milliliters, lymph nodes resected 18 (14 – 23), and length of hospitalization 9 (7 – 11) days. R0 resections was performed in 362 (99.2%) of patients and the pathologic complete response rates were

36.4%. Post-operative complications occurred in 112 (30.7%) patients. The 30 and 90-day mortality were 9 (2.5%) and 17 (4.7%) respectively. The median and overall 5-year survival was 58.2 months and 48%. **CONCLUSIONS:** Robotic assisted minimally invasive esophagectomy continues to demonstrate exemplary outcomes. The R0 resection rates, lymph node harvest and overall survival continue to rival other approaches. Our data continue to support this approach as the standard for surgeons performing esophageal resections for malignancy.

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Margin re-excision rate as a function of tumor location in a large, uniform cohort of segmental mastectomies

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INTRODUCTION: Re-excision for positive margins is common in breast-conserving surgery. Tumor location within the breast may influence margin re-excision. Secondary factors may include tumor size, biology, and neoadjuvant chemotherapy (NACT) administration. We evaluated predictors of re-excision in nonpalpable, early-stage breast cancers (BC). **METHODS:** We retrospectively reviewed women ≥18 years with nonpalpable in situ or invasive BC (≤2 cm, cTisN0–T1N0) undergoing breast-conserving surgery with I-125 seed localization from 2015 to 2024. All cases underwent image-guided surgery, including preoperative seed placement, biplanar specimen radiography, and intraoperative margin assessment. Tumor location was categorized by quadrant, cardinal orientation, central, or overlapping (two adjacent quadrants). Re-excision rates and predictors were analyzed with chi-square and multivariate logistic regression. **RESULTS:** A total of 2809 patients were included. Median age was 64 years (IQR 55–71); 78.7% (n=2210) were postmenopausal. Overall re-excision rate was 9.3% (n=260). Rates were highest for medial (16.0%, n=25) and lowest for upper inner quadrant (7.2%, n=30) (p=0.024). In situ disease carried higher risk than invasive disease (14.3%, n=112 vs 7.3%, n=148; p< 0.001). Tumors >15 mm had higher rates than ≤15 mm (12.4%, n=42 vs 7.7%, n=152; p=0.003). In a multivariate model including in situ and invasive disease, central (OR 2.53, 95% CI 1.31–4.90, p=0.006), medial (OR 2.33, 95% CI 1.32–4.09, p=0.003), and >15 mm tumors (OR 1.74, 95% CI 1.21–2.51, p=0.003) remained significant. By invasive subtype, HER2+ had the highest risk (11.6%, n=32) of re-excision compared with luminal A (6.5%, n=37), luminal B (8.2%, n=67), and triple negative phenotypes (1.6%, n=2) (p=0.003). Lobular histology trended higher than ductal (10.2% vs 7.2%; p=0.147). NACT response was not associated with re-excision, and among patients with incomplete response, 2.8% (n=3) required re-excision (p=0.063). On multivariate analysis accounting for invasive disease alone, medial location (OR 2.79, 95% CI 1.18–6.59, p=0.019) independently predicted re-excision. **CONCLUSIONS:** Medial, central, and larger tumors independently predicted margin re-excision overall for nonpalpable, early BC, whereas medial location was an independent risk factor for margin positivity in invasive disease alone.

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Predictors and Outcomes of In-Hospital Opioid Overdose Following Gastrointestinal Cancer Surgery

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INTRODUCTION: Perioperative opioid overdose (OD) is a rare but serious complication, yet national data on trends, risk factors, and downstream outcomes among gastrointestinal (GI) cancer surgery patients remain limited. **METHODS:** The National Inpatient Sample (2016–2019) was used to identify adult patients undergoing a major GI surgical procedure for a malignant indication. Perioperative OD was defined using ICD-10 diagnosis codes for opioid poisoning or adverse events combined with pulmonary complications (e.g., respiratory failure, apnea). Multivariable logistic and linear regression models assessed risk factors and perioperative outcomes, including in-hospital complications, mortality, discharge disposition, length of stay (LOS), and hospitalization costs. Models were survey-weighted and adjusted for age, sex, race/ethnicity, insurance type, income quartile, admission type, procedure, comorbidity, substance use, weekend admission, and hospital characteristics. **RESULTS:** Among 1,562,770 patients, 1,434 (0.1%) experienced perioperative OD. The incidence declined from 0.12% in 2016 to 0.07% in 2019 (nptrend=0.002) (Figure). Patients with OD were more frequently female (65.5% vs. 48.2%), had Medicaid insurance (16.0% vs. 9.8%), drug abuse disorder (14.3% vs. 2.4%), and mental health illness (22.3% vs. 12.0%) (all p< 0.001). Independent predictors included emergent admission (AOR 1.99, 95% CI 1.49–2.67), esophagectomy (AOR 3.78, 95% CI 2.01–7.11), hepatectomy (AOR 2.08, 95% CI 1.13–3.83), pancreatectomy (AOR 1.90, 95% CI 1.10–3.26), drug abuse disorder (AOR 4.51, 95% CI 3.11–6.55), and weekend admission (AOR 1.42, 95% CI 1.04–1.94). OD was associated with higher odds of renal (AOR 2.77, 95% CI 2.07–3.72), sepsis (AOR 2.52, 95% CI 1.90–3.35), and infectious complications (AOR 2.57, 95% CI 1.97–3.35), as well as longer LOS (+3.0 days; 95% CI 1.67–4.28; p< 0.001) and increased hospitalization costs (+$14,320; 95% CI $9,110–$19,520; p< 0.001). Excess costs totaled approximately $20 million over the study period. **CONCLUSIONS:** Perioperative opioid overdose is uncommon but associated with significant morbidity, prolonged hospitalization, and increased costs. Modest temporal declines notwithstanding, persistent risk among vulnerable populations highlights the need for systematic perioperative substance use screening and opioid stewardship in surgical oncology pathways.

Table. Factors Associated with Development of Opioid OD Among Patients Undergoing GI Cancer Surgery.

Variables	Multivariable logistic regression	
	AOR (95% CI) *	*P* value
Age (y) (Ref: 18-34)		
35-49	1.08 (0.54–2.16)	0.820
50-64	1.14 (0.61–2.14)	0.689
≥65	0.83 (0.41–1.67)	0.595
Sex, female (Ref: Male)	2.10 (1.62–2.71)	<0.001
Race (Ref: White)		
Black	0.76 (0.51–1.13)	0.179
Other	0.87 (0.61–1.25)	0.442
Primary insurance (Ref: Medicare)		
Private	1.03 (0.70–1.52)	0.880
Medicaid	1.25 (0.80–1.95)	0.319
Other	0.63 (0.31–1.29)	0.209
Income quartile (Ref: 0-25th)		
75th-100th	1.12 (0.79–1.58)	0.532
51st-75th	0.89 (0.63–1.25)	0.493
26th-50th	0.86 (0.62–1.21)	0.386
Emergent admission (Ref: Elective)	1.99 (1.49–2.67)	<0.001
Type of procedure (Ref: Colectomy)		
Esophagectomy	3.78 (2.01–7.11)	<0.001
Hepatectomy	2.08 (1.13–3.83)	0.019
Pancreatectomy	1.90 (1.10–3.26)	0.021
Proctectomy	0.96 (0.68–1.36)	0.815
Multiple procedures (Ref: Single)	1.17 (0.80–1.71)	0.414
Elixhauser comorbidity index	1.22 (1.16–1.28)	<0.001
Drug abuse disorder (Ref: No)	4.51 (3.11–6.55)	<0.001
Mental health illness (Ref: No)	1.19 (0.88–1.61)	0.248
Admission on a weekend (Ref: No)	1.42 (1.04–1.94)	0.028

Abbreviations: AOR: adjusted odds ratio; CI: confidence interval; Ref: reference; y: year.

*Results are from a survey-weighted multivariable logistic regression model, adjusted for temporal trends. Other race: Hispanic, Native American, Asian or other; Other insurance: Self-pay or no insurance.

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Persistent inequities in access to immediate breast reconstruction following mastectomy for breast cancer: A population-based study in Ontario, Canada

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INTRODUCTION: Despite efforts to increase access to immediate breast reconstruction (IBR) for breast cancer (BC) in Ontario, Canada, equitable access remains a challenge even in a single-payer universal healthcare system. Patients from equity-deserving groups such as those living in rural areas or from low socioeconomic status have been shown to be less likely to receive IBR in the province. However, this has not been re-evaluated in the last decade. The objective of this study was to explore contemporary temporal trends, regional variations, and sociodemographic factors among BC patients receiving IBR in Ontario. This study was previously presented at the 2025 American Society of Breast Surgeons Annual Meeting in Las Vegas, Nevada. **METHODS:** A population-based cohort study was conducted using linked administrative datasets of patients who underwent mastectomy for BC with and without IBR between January 2018 and July 2023 by Ontario Health (OH) region (Figure 1). Multivariable logistic regression was used to assess association between clinical, geographic, and sociodemographic factors and receipt of IBR. **RESULTS:** Among 21,933 BC patients who underwent a mastectomy, 26.3% (n=5,758) received IBR. The proportion of IBR increased from 20.9% in 2018 to 30.0% by mid-2023. After adjustment, the odds of having IBR increased by 17% (aOR 1.17, 95% CI 1.14-1.19) with each increasing year. Patients who underwent IBR were significantly younger, healthier, and socioeconomically advantaged. There was also significant variability across the six OH regions, ranging from 10.5% to 36.3%. Patients residing in all other areas of the province were significantly less likely to receive IBR compared to patients who resided in the most populous city, OH region 3 – Toronto, with the lowest odds in OH region 5 – North East (aOR 0.22, 95% CI 0.18–0.28). Compared to patients who were most deprived (Q5), the odds of receiving IBR doubled in the highest material income quintile (Q1 aOR 2.07, 95% CI 1.85–2.31). Patients who were immigrants also had lower odds of receiving IBR compared to non-immigrants (aOR 0.70, 95% CI 0.65-0.77). **CONCLUSIONS:** Although there has been promising growth in IBR in Ontario, persistent gaps in access across geographic regions, socioeconomic status, and immigration background remain. These findings underscore that improvements in surgical capacity alone are insufficient; deliberate and targeted health system reforms will be needed to ensure equitable, patient-centered delivery of breast reconstruction.

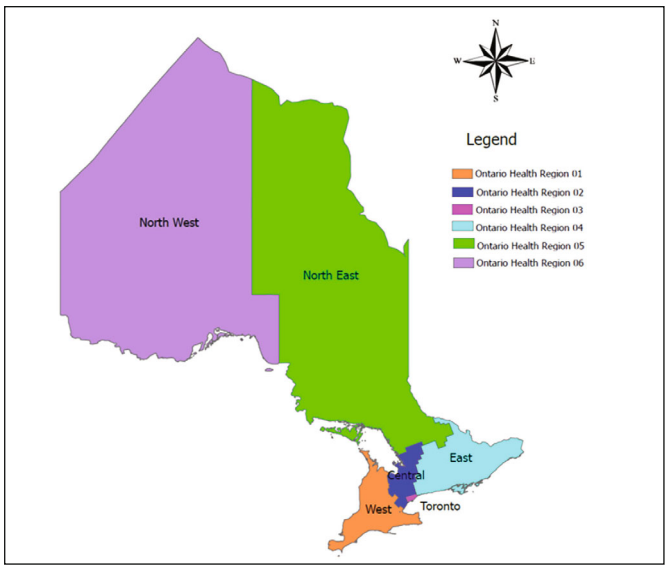

Figure 1. Map of Ontario illustrating geographic distribution of six Ontario Health regions (1- West, 2- Central, 3- Toronto, 4- East, 5- North East, 6- North West).

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Trends in utilization of intraperitoneal chemotherapy: a National Inpatient Sample study

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INTRODUCTION: The use of hyperthermic intraperitoneal chemotherapy (HIPEC) has evolved over the past decade, with ongoing investigation into its use for a range of intra-abdominal malignancies. To better understand changing practice patterns, we sought to assess trends in the use of HIPEC and normothermic intraperitoneal chemotherapy (NIPEC) across multiple cancers: colorectal, ovarian, appendiceal, gastric, peritoneal mesothelioma, and primary peritoneal carcinomatosis. **METHODS:** The National Inpatient Sample (NIS, Healthcare Cost and Utilization Project [HCUP], Agency for Healthcare Research and Quality; 2016-2021) was queried for use of HIPEC and NIPEC (ICD-10-PRS codes 3E0M30Y and 3E0M305, respectively) among adult patients. Hospitalizations were further categorized by ICD-10-CM codes. Nationally weighted summary statistics and average annual percent change (AAPC) were calculated for each group. Regression analyses assessed trends according to NIS guidelines. **RESULTS:** Of 208,109,925 inpatient encounters, 10,085 involved delivery of intraperitoneal chemotherapy for the selected cancers. Regardless of cancer type, nearly all (96.7% [95% CI 95.9-97.5]) had concurrent cytoreductive surgery. Colorectal cancer was the most common indication (45.5% [95% CI 42.9-48.0]) followed by appendiceal (31.8% [95% CI 29.5-34.1]) and ovarian cancers (13.5% [95% CI 11.6-15.4]), peritoneal mesothelioma (7.5% [95% CI 6.3-8.8]), gastric cancer (2.9% [95% CI 2.1-3.8]), and primary peritoneal carcinomatosis (2.5% [95% CI 1.9-3.2]). Hospitalizations rose from 1,080 in 2016 to 2,310 in 2021, driven by ovarian (AAPC 51.2), appendiceal (AAPC 14.7), and colorectal (AAPC 13.3) cancers. The cohort's mean age was 57.0 years [95% CI 56.5-57.6] and was majority female (62.9% [95% CI 60.7-65.2]). Nearly all hospitalizations took place at urban teaching centers (94.9% [95% CI 93.6-95.9]) throughout the study period. Mean length of stay was stable at 10.0 days [95% CI 9.6-10.4]. Mean in-hospital mortality peaked at 1.4% [95% CI 0-2.8] in 2018, decreasing to 0.2% [95% CI -0.2-0.6] by 2021 (P = 0.09). **CONCLUSIONS:** Utilization of intraperitoneal chemotherapy has continued to increase since 2016 across multiple cancer types. Colorectal cancer remains the most common indication, with overall increasing use. A notable uptake is seen for ovarian cancer, coincident with a growing body of evidence. Mean in-hospital mortality remains low with the majority of cases taking place at urban teaching centers.

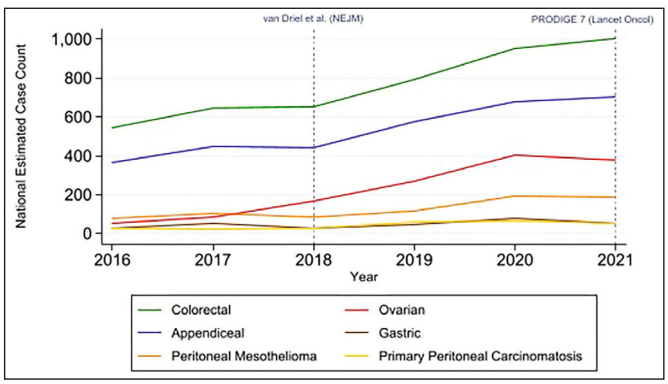

Figure 1. Estimated National Trends in Use of Intraperitoneal Chemotherapy by Cancer Type.

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Evaluating quality of life after treatment of neuroendocrine tumors using SF-36 and EORTC QLQ-GINET30

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INTRODUCTION: Surgical and medical therapies are commonly used in the treatment of patients with neuroendocrine tumors (NETs), yet our understanding of the long-term impact of these interventions on a patient's quality of life (QOL) remains incomplete. This study aimed to investigate the long-term effects on QOL for both interventions in patients with NETs. **METHODS:** Patients were identified and surveyed through social media-based support groups. General QOL was assessed using the SF-36 while NET-specific QOL was assessed using the EORTC QLQ-GINET30. Data was analyzed in SPSS via one-variable t-tests and ANOVA tests. **RESULTS:** Of 116 survey responses, 112 met the inclusion criteria. All participants were over the age of 35 with 16% males and 84% females. Of the responses, 79% received surgical intervention, 65% received non-surgical treatment (hormonal, radiation, or chemotherapy), and 46% received both. The mean time since surgery was 61 months. The SF-36 survey had high internal consistency across all categories with all Cronbach Alpha values above 0.7. There was significant impairment of energy/fatigue and general health ($p < 0.05$). There were also significant limitations in work or daily activities due to physical health ($p < 0.05$), though notably there were no limitations due to emotional problems ($p = 0.823$). There was improvement of physical and social functioning, emotional well-being, and pain ($p < 0.05$). Within the EORTC QLQ-GINET21 survey, the subscales for GI symptoms and disease-related worries demonstrated good reliability ($\alpha > 0.7$). In contrast, treatment-related symptoms, social functioning, and endocrine symptoms demonstrated poor internal consistency ($\alpha < 0.7$), suggesting that survey questions within these domains may not consistently measure the same constructs. Patients reported substantial symptom burden in endocrine symptoms, GI symptoms, treatment-related symptoms, and muscle/bone pain ($p < 0.05$). Functional recovery was variable: disease-related worries were low ($p < 0.05$), while decreased sexual functioning, social functioning, body image, and information provision ($p < 0.05$) indicated persistent limitations and unmet informational needs. **CONCLUSIONS:** Our findings demonstrate a number of previously unidentified factors that affect the long-term QOL in patients with NET. Future study is needed to better differentiate between how NET sites and intervention type impact symptoms and to investigate targeted therapies to help alleviate the lasting symptom burden. Such data may help patients to better understand the relative impact of various treatment alternatives.

Table 1. SF-36 and EORTC QLQ-GINET30 Cohort Symptom Burden vs Reference Values

		Mean	Reference Value	P-Value	Chronbach's Alpha
SF-36	Physical Functioning	70.06	50	<0.01	0.934
	Role Limitations Due To Physical Health	41.96	50	0.048	0.884
	Role Limitations Due To Emotional Problems	50.89	50	0.823	0.806
	Energy/Fatigue	39.02	50	<0.01	0.92
	Emotional Well-Being	67.87	50	<0.01	0.888
	Social Functioning	61.27	50	<0.01	0.851
	Pain	66.03	50	<0.01	0.887
	General Health	44.98	50	0.027	0.833
EORTC QLQ-GINET30	Endo Symptoms	28.17	73	<0.01	0.689
	GI Symptoms	38.07	71	<0.01	0.827
	Treatment Related Symptoms	35.74	49	<0.01	0.179
	Muscle/Bone Pain	56.06	87	<0.01	-
	Disease Related Worries	71.03	84	<0.01	0.815
	Sexual Functioning	45.02	90	<0.01	-
	Information Provision	19.18	87	<0.01	-
	Body Image	26.73	92	<0.01	-
	Social Functioning	51.88	62	<0.01	0.482

EP278

Evaluating Quality of Life after distal pancreatectomy: A dual-instrument assessment using PROMIS-29 and EORTC QLQ-PAN26

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INTRODUCTION: Distal pancreatectomies can be associated with significant changes in physical and psychosocial functions. We aimed to comprehensively evaluate long-term quality of life (QoL) after distal pancreatectomy. **METHODS:** Patients were identified from two global online support groups. General QoL was measured using standardized PROMIS-29 while pancreas specific symptoms were assessed using EORTC QLQ-PAN26. Data was analyzed across subgroups based on time after surgery and compared reference healthy populations. One-sample t-test was used to compare the health quality scores between reference and our patient population and ANOVA was used to test differences between the groups ($p = 0.05$). **RESULTS:** A total of 98 participants responded to the surveys, of which 77 met the inclusion criteria. Thirty-three responders had a neuroendocrine tumor, 21 had malignant and 21 had a benign tumor. Patients attended follow up equally; 45 responders had open surgery while 31 had minimally invasive surgery. Mean age was 46.6 ± 10.65 years. Patients had a median of 1.76 years after surgery. There was high internal consistency across all symptom domains within the PROMIS-29 survey (Cronbach $a > 0.7$). Anxiety and fatigue were the predominant psychosocial symptoms that patients faced between 6 months and 5 years from surgery. These did not correlate to cancer diagnosis, or reasons for going to the physician. Within the EORTC QLQ PAN26 survey there was also a high internal consistency (Cronbach $a > 0.7$). At 2 months post operatively, compared to the reference populations, patients reported significant worse problems with regards to, pancreatic pain (23 vs 54), bloating (25 vs 51), digestive symptoms (30 vs 50), indigestion (10 vs 31). At 24 months, pain (19 vs 32), bloating (23 vs 44), digestive symptoms (10 vs 42), indigestion (10 vs 31), flatulence (30 vs 50,7), and body image (14 vs 45) were more concerning to patients. Even at 36 and 60 months, responders were still complaining of pancreatic related pain, digestive symptoms and altered bowel habit ($p < 0.5$). **CONCLUSIONS:** This study highlights potentially persistent psychosocial challenges that patients report months to years after surgery. Proactively educating patients regarding potential symptoms and introducing emotional support staff could reduce patient concerns and enhance their well-being. Future prospective studies with larger, diverse cohorts are warranted to validate these findings and guide multidisciplinary strategies for optimizing long-term well-being in this patient population.

Table 1: Reference Population 1 (Quality of life after open versus laparoscopic distal pancreatectomy: Long-Term results from a randomized clinical trial) vs Our PAN-26 Data

PAN26 Domain	2 months Reference/Data	6 months Reference/Data	12 Months Reference/Data	24 Months Reference/Data
Pancreatic Pain	23/54	16/30	21/21	19/32
Bloating	25/51	20/43	27/33	23/44
Digestive Symptoms	30/50.0	12/41	12/19	10/42
Taste	33/31	7/33	9/15	6/11
Indigestion	20/40	11/38	10/22	10/31
Flatulence	23/36	28/52	35/33	30/50.7
Dry Mouth	33/36	27/10	29/19	24/24
Hepatic	32/12	24/14	25/11	17/15
Body Image	29/53	16/41	19/32	14/45

green represents $P < 0.05$

EP279

Assessing the Impact of Operative Volume at the Hospital and Surgeon Level for Pancreatic Cancer

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INTRODUCTION: The volume-outcome relationship for pancreatic surgery is well-established, but the relative contribution of surgeon and hospital volume remains poorly characterized. The objectives of this study were to assess the independent predictive abilities and interactions between surgeon and hospital volume on outcomes following pancreatoduodenectomy (PD) for pancreatic ductal adenocarcinoma (PDAC). **METHODS:** Patients with PDAC undergoing PD from 2008 to 2023 were identified using the National Cancer Database. Annual case volumes of ≥20 cases/year were considered high volume hospitals (HVH) and ≥12 cases/year were considered high volume surgeons (HVS). Those below those thresholds were considered low volume surgeons (LVS) and low volume hospitals (LVH). The primary outcome was 90-day mortality. Secondary outcomes included margin positive resection and readmission. Multivariable logistic regression was used to assess the associations with surgeon volume, hospital volume, and patient outcomes. **RESULTS:** The analytic cohort included 50,519 patients treated by 3,155 surgeons at 976 facilities. A total of 14,933 patients (29.6%) underwent surgery at a HVH and 9,918 (19.6%) were treated by a HVS. The majority of the cohort underwent surgery by a LVS at a LVH (n=33,371, 66.1%). The 90-day mortality rate for patients treated by a LVS at a LVH was 6.4% compared to 5.7% for HVS at a LVH, 4.0% for LVS at a HVH, and 3.5% for a HVS at a HVH (p< 0.001). On multivariable analysis, surgery by a HVS at a LVH [Odds Ratio (OR): 1.56, 95% Confidence Interval (95%CI): (1.10-2.20), p=0.012] and a LVS at a LVH [OR: 1.55, 95%CI: (1.20-2.01), p< 0.001] were both associated with an increased likelihood of mortality compared to a HVS at a HVH. Receipt of Whipple by a LVS at a HVH was not associated with worse mortality. There was no association between surgeon volume and readmission, but surgery at a LVH was associated with higher rates of readmission [OR: 1.92, 95%CI: (1.26-2.91), p=0.002]. Interaction between surgeon and hospital volume demonstrated that patients undergoing surgery by a HVS at a LVH [OR: 1.92, 95%CI: (1.27-2.91), p=0.002] or by a LVS at a LVH [OR: 1.59, 95%CI: (1.13-2.24), p=0.007] had a higher likelihood of readmission compared to those receiving surgery by a HVS at a HVH. There was no association between either surgeon or hospital volume and margin status. **CONCLUSIONS:** Associations between procedural volume and outcomes are more strongly associated with hospital volume than surgeon volume for patients undergoing PD for PDAC, highlighting the role of non-surgical and rescue services in delivering optimal surgical outcomes.

Table 1: Multivariable Logistic Regression of Predictors of 90-Day Mortality After Pancreaticoduodenectomy for PDAC

Characteristic	OR	95% CI	P-value
Age	1.04	1.04, 1.05	**<0.001**
Sex			
Male	Reference		
Female	0.87	0.79, 0.97	**0.011**
Race			
White	Reference		
Black	0.87	0.70, 1.06	0.2
Hispanic	1.10	0.82, 1.48	0.5
Asian	1.32	0.99, 1.75	0.058
Other	0.98	0.54, 1.78	>0.9
Year of Diagnosis			
2008-2012	Reference		
2013-2017	0.74	0.64, 0.87	**<0.001**
2018-2023	0.60	0.51, 0.71	**<0.001**
Facility Type			
Community	Reference		
Comprehensive Community	0.68	0.43, 1.06	0.088
Academic	0.37	0.23, 0.57	**<0.001**
Integrated Network	0.48	0.30, 0.75	**0.001**
Income			
<$46,277	Reference		
$46,277 - $57,856	0.86	0.72, 1.04	0.13
$57,857 - $74,062	0.85	0.71, 1.02	0.080
≥$74,063	0.68	0.57, 0.80	**<0.001**
Insurance Status			
Uninsured	Reference		
Private	0.47	0.33, 0.68	**<0.001**
Medicaid	0.64	0.42, 0.96	**0.032**
Medicare	0.60	0.41, 0.86	**0.006**
Other Government	0.33	0.18, 0.58	**<0.001**
Charlson Comorbidity Index			
0	Reference		
1	1.05	0.93, 1.19	0.4
2	1.38	1.15, 1.65	**<0.001**
≥3	1.62	1.30, 2.01	**<0.001**
Tumor Size (CM)	1.03	1.02, 1.04	**<0.001**
Clinical Stage			
1A	Reference		
1B	1.09	0.93, 1.27	0.3
2A	1.13	0.94, 1.37	0.2
2B	1.16	0.96, 1.41	0.12
3	1.22	0.94, 1.57	0.13
4	2.04	1.51, 2.76	**<0.001**
Surgical Approach			
Open	Reference		
Laparoscopic	0.90	0.78, 1.06	0.2
Robotic	0.86	0.66, 1.12	0.3
Neoadjuvant Therapy			
No	Reference		
Yes	1.62	1.40, 1.89	**<0.001**

Characteristic	OR	95% CI	P-value
Surgeon/Hospital Volume Group			
HVS/HVH	Reference		
HVS/LVH	1.56	1.10, 2.20	**0.012**
LVS/HVH	1.12	0.88, 1.43	0.3
LVS/LVH	1.55	1.20, 2.01	**<0.001**

Abbreviations: OR = Odds Ratio, CI = Confidence Interval, HVS = High Volume Surgeon, HVH = High Volume Hospital, LVS = Low Volume Surgeon, LVH = Low Volume Hospital

EP280

The Utility of Wearables for Surgical Oncology Perioperative Patient Monitoring

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INTRODUCTION: With shorter post-operative length of stay, there have been increasing efforts to monitor patients more effectively after discharge. Wearable technologies offer an opportunity to capture at-home physiologic and activity data. We aimed to evaluate the efficacy and clinical utility of continuous perioperative monitoring using commercial wearables. **METHODS:** Participants aged 18-75 years old undergoing elective oncologic or reconstructive surgery were enrolled in this prospective single arm study. Participants were asked to wear two devices (Oura Ring and Garmin Vivosmart 4) at least 2 weeks prior to their surgical procedure and up to 90 days post-surgery. The primary outcome was comparison of wear adherence hours between the two devices. Secondary outcomes included return to baseline or pre-op activity and resting heart rate (RHR) as well as post-operative complications. **RESULTS:** 52 participants were enrolled, 48 completed surgery. Participant median age was 50 years old (range 20 to 71). Participants underwent major operations including 11 DIEP flap, 26 colorectal, 9 GI or HPB, 1 CRS/HIPEC, and 1 pre-sacral tumor surgeries with a median postoperative length of stay of 3 days (range 1 to 21). The average device adherence was 17.6 (Garmin) and 21 daily hours (Oura) between the two devices with a significant decline in adherence for the Garmin watch device in the post-operative period. On average, participants returned to baseline RHR and activity at 35- and 46-days after surgery respectively. 17 (35%) of participants had a post-operative complication, with 10 participants having a major complication (Clavien-Dindo III or greater), occurring at a median of 13.5 days post-op. Patients who had a major complication had significantly higher average RHR (p=0.010) and sleep temperature (p=0.016) during the 5 days prior to their complication compared to patients with no complications in a representative timeframe (Figure 1). **CONCLUSIONS:** Commercial wearables are a feasible solution for perioperative monitoring of patients given high adherence amidst a group of participants of various ages, demographics, and surgery type. Participants often required more than 30 days to regain physiologic baseline status, thus longer post-op monitoring of up to 90 days may be needed. Wearable technology shows promise for identifying patients with a major complication prior to clinical recognition. Future work will be directed to developing a machine learning algorithm to identify high-risk patients in real-time.

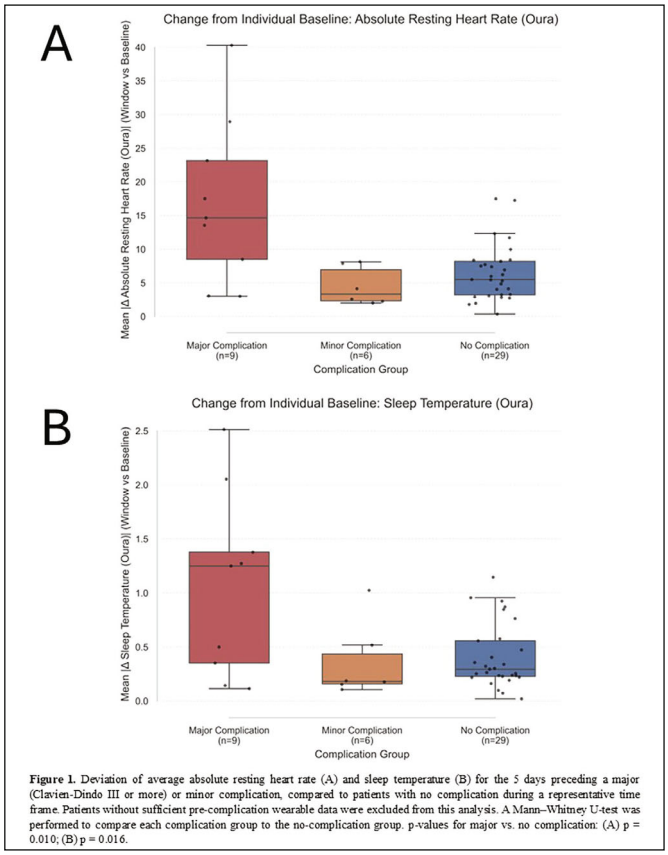

Figure 1. Deviation of average absolute resting heart rate (A) and sleep temperature (B) for the 5 days preceding a major (Clavien-Dindo III or more) or minor complication, compared to patients with no complication during a representative time frame. Patients without sufficient pre-complication wearable data were excluded from this analysis. A Mann–Whitney U-test was performed to compare each complication group to the no-complication group. p-values for major vs. no complication: (A) p = 0.010; (B) p = 0.016.

Figure. Deviation in physiologic baseline prior to complication

EP281

Added value of preoperative breast MRI in breast cancer patients aged 60 years and older

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INTRODUCTION: Use of preoperative breast MRI has increased, though its value in older patients with breast cancer remains unclear. This study evaluates how often preoperative breast MRI identifies disease not visualized on mammography or ultrasound in patients aged ≥60 years with biopsy-proven breast cancer. **METHODS:** A retrospective chart review was performed of 234 women aged ≥60 years with breast cancer who underwent preoperative breast MRI, in addition to conventional imaging, from 2018-2024 at a single academic center. Suspicious MRI findings were categorized as: larger extent of disease on MRI, additional lesion in the same quadrant, additional lesion in a different quadrant, and contralateral lesion. MRI findings were correlated with pathology. Logistic regression was used to evaluate independent predictors of additional disease detected by MRI. **RESULTS:** Among 234 women, 111 (47%) had new suspicious findings on preoperative breast MRI. After correlation with findings on pathology, MRI correctly identified additional disease in 88 patients (38% of entire cohort), including identifying ≥20% larger size of the primary cancer in 49 patients, multifocal disease in 15 patients, multicentric disease in 11 patients, and contralateral breast cancer in 3 patients. Of all patients with new suspicious findings on MRI, 28 patients (25%) underwent preoperative MRI-guided biopsy, most of additional sites of suspected disease away from the primary, and 82% of biopsies confirmed malignancy. The remaining patients had additional disease confirmed on surgical pathology. On multivariable analysis, lobular histology (OR 2.35, 95% CI 1.27-4.37) and triple negative subtype (OR 3.14, 95% CI 1.18-

8.39) were independent predictors of additional MRI-detected disease. **CONCLUSIONS:** Preoperative MRI correctly identified additional disease in 38% of women ≥60 years with breast cancer, providing a better estimate of the size of the primary tumor in 61% these patients and identifying other foci of disease in the remainder. Women with lobular carcinoma or triple negative breast cancer were more likely to have additional MRI-detected disease. MRI can be a useful adjunct in surgical planning in appropriately selected older patients.

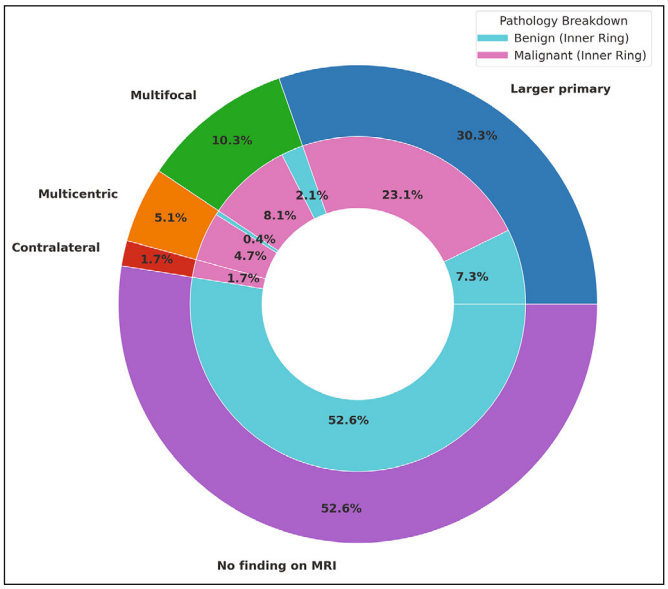

Figure. MRI findings and their correlation with pathology

EP282

Association of gene expression profile, adjuvant immunotherapy and survival in stage IIB-IIIA melanoma

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INTRODUCTION: The role of gene expression profiling (GEP) is evolving for cutaneous melanoma, with surveillance intensity and consideration of sentinel node biopsy the most common applications. We explore the association of GEP class, stage, adjuvant immunotherapy and outcomes in patients with stages 2b, 2c and 3a melanoma. **METHODS:** We performed a retrospective review of our prospective melanoma database. Basic demographics, detailed pathologic and treatment information, recurrence and vital status are recorded. GEP is performed per clinician preference and tracked in the database. The Kaplan-Meier method and log rank tests were used to evaluate recurrence rates and overall survival between groups. **RESULTS:** 196 patients were diagnosed with stage 2b, 2c or 3a melanoma between 2010-2025 with 105 patients receiving GEP results. 37 patients received adjuvant anti-PD-1 therapy, 68 recurred and 35 died. Recurrence rates were similar among the GEP classes, with 31%, 9.1%, 27% and 31% for class 1a, 1b, 2a and 2b respectively, p=0.55. Brain metastases occurred in class 1a (n=2), 2a (n=1) and 2b (n=1) patients. Overall survival was significantly higher in class 1 vs class 2, p=0.03. Receipt of anti-PD-1 therapy improved overall survival (p=NS) in the entire cohort and reduced recurrence rates in each stage and GEP class of patients. **CONCLUSIONS:** Recurrence rates were higher than expected in class 1 patients yet GEP strongly predicted survival. GEP did not correlate with location of recurrence; local, regional or distant. Adjuvant anti-PD-1 therapy is only recently approved for stages 2b and 2c thus the number of patients treated is small and statistics are limited. Future prospective studies are warranted to understand the role of GEP in predicting clinical outcomes and its ability to impact adjuvant treatment decisions for resected melanoma. Guidelines for surveillance should consider both stage and GEP class.

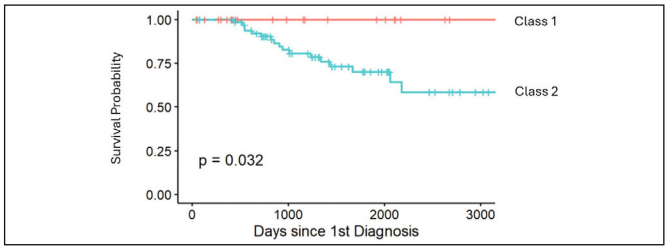

Figure. Overall survival Class 1 versus Class 2 GEP for stages IIB-IIIA melanoma

EP283

Axillary surgery for patients with pregnancy-related breast cancer: Feasibility and safety of sentinel lymph node dissection

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INTRODUCTION: Sentinel lymph node dissection (SLND) in pregnant patients with breast cancer remains controversial due to limited data regarding accuracy and concerns about fetal toxicity of lymphatic tracers. We aimed to characterize axillary surgical management patterns in this population and evaluate the feasibility and safety of SLND. **METHODS:** Using an institutional registry of patients treated for pregnancy-related breast cancer from 1989-2022, we identified those who underwent surgical treatment for de-novo invasive breast carcinoma during gestation. Retrospective chart review was performed to collect data on axillary surgical techniques, nodal pathology, oncologic outcomes, and fetal outcomes. **RESULTS:** Among 56 pregnant patients, the median age was 33 years (IQR 30-35). Clinical nodal status was cN0 in 26 (46.4%), cN1 in 10 (17.9%), and unknown (due to surgery at an outside institution) in 20 (35.7%) patients. Most underwent up-front surgery (n=54, 96.4%) while two (3.6%) received neoadjuvant systemic therapy (both cN0 and offered SLND). Overall, half (n=28, 50.0%) underwent up-front axillary lymph node dissection (ALND), 14 (25.0%) SLND + ALND under one anesthetic, 10 (17.9%) SLND, 3 (5.4%) axillary sampling without lymphatic tracers, and 1 (1.8%) no axillary surgery. Axillary surgery procedures and outcomes by cN status are presented in the Table. Notably, ALND was not performed for cN0 disease after 2011. SLND was attempted in 25 patients, with successful mapping in 24 (96%). Tracer techniques included radiocolloid only for 17 (68.0%) patients, vital blue dye only for 3 (12.0%), and dual tracer for 5 (20.0%). Median sentinel node yield was 5 (IQR 3-6) for radiocolloid only, 0 for methylene blue only, 1 (IQR 1-1) for isosulfan blue only, and 1 (IQR 1-2) for dual tracer. No adverse fetal outcomes were attributed to SLND tracers. Overall, two patients (1 SLND, 1 SLND + ALND) developed axillary seromas, which were managed nonoperatively. Nine developed lymphedema, all of whom underwent ALND. Over a median follow-up of 6.9 years (IQR 2.3-15.6) there were no axillary recurrence events. **CONCLUSIONS:** In this largest institutional cohort of pregnant patients with breast cancer undergoing axillary surgery, SLND demonstrated high mapping success, excellent regional disease control, and no adverse fetal outcomes. These results support SLND as a feasible and safe axillary staging procedure in pregnant patients, a unique population for whom prospective trials are unlikely to be feasible.

Table. Axillary surgery procedures and outcomes overall and by clinical nodal status.

	Overall (n=56)	cN0 (n=26)	cN1 (n=10)	cN unknown (n=20)
Axillary procedure				
None	1 (1.8%)	1 (3.8%)	0 (0.0%)	0 (0.0%)
Axillary sampling	3 (5.4%)	0 (0.0%)	1 (10.0%)	2 (10.0%)
SLND	10 (17.9%)	8 (30.8%)	0 (0.0%)	2 (10.0%)
SLND + ALND	14 (25.0%)	10 (38.5%)	2 (20.0%)	2 (10.0%)
ALND	28 (50.0%)	7 (26.9%)	7 (70.0%)	14 (70.0%)
Pathologic N stage				
pN0	16 (28.6%)	9 (34.6%)	0 (0.0%)	7 (35.0%)
pN1	27 (48.2%)	12 (46.2%)	8 (80.0%)	7 (35.0%)
pN2	11 (19.6%)	4 (15.4%)	2 (20.0%)	5 (25.0%)
pN3	2 (3.6%)	1 (3.8%)	0 (0.0%)	1 (5.0%)
Complications				
Seroma	2 (3.6%)	2 (7.7%)	0 (0.0%)	0 (0.0%)
Lymphedema	9 (16.1%)	3 (11.5%)	2 (20.0%)	4 (20.0%)
None	45 (80.3%)	21 (80.8%)	8 (80.0%)	16 (80.0%)

EP284

Pressurized Intraperitoneal Aerosol Chemotherapy (PIPAC): Real World Initial Experience of a U.S. Community Hospital

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INTRODUCTION: Pressurized intraperitoneal aerosolized chemotherapy (PIPAC) is a novel, minimally invasive method of delivering intraperitoneal chemotherapy to patients with peritoneal surface malignancies. It allows for repeated applications and objective assessment of tumor response. This study aimed to investigate the initial experience with PIPAC in a US community hospital setting. **METHODS:** All patients who underwent PIPAC at Endeavor Edward Hospital in Naperville, IL between March 2024 and September 2025 were included in this retrospective study. PIPAC was administered every six weeks with concurrent systemic therapy. **RESULTS:** 10 patients underwent 20 PIPAC procedures (range 1-4) equally distributed between males and females. Mean age was 62.7±11.9. BMI ranged from 22.62-33.83 (27.0±3.45). ECOG was 0 in 7 patients and 1 in 3. Nine patients had at least one prior treatment course with systemic therapy. There were 4 patients with appendiceal carcinoma, 3 with colorectal carcinoma, I pancreatic, and 2 unknown GI origin. Histology was mucinous in 3, signet cell in 3, adenocarcinoma in 3, and goblet in one patient. Oxaliplatin was used during 18 procedures (90%); Cisplatin/Doxorubicin in 1; and Mitomycin C in 1. Ascites volume ranged for 0-6650 ml at PIPAC#1 and did not significantly change during subsequent surgeries (P=0.099). Similarly, PCI ranged from 18-39 and remained stable (P=0.778). However, objective laparoscopic response occurred in 2 patients, one of whom proceeded with CRS/HIPEC and the other chose to remain on systemic therapy. Transient adverse events occurred in 4 procedures (20%) and included shortness of breath, tachycardia, pain, and acute kidney injury. In this small cohort of patients with a median follow-up of 8 months, overall survival from first PIPAC was 8.82 months ± 1.3 (95% confidence interval 6.2-11.4, median not reached). **CONCLUSIONS:** To our knowledge, this is the first reported PIPAC in a US community hospital. Our findings confirm that this innovative therapy is feasible and well-tolerated outside of academic institutions and can be safely integrated in non-academic community settings.

EP285

Impact of concurrent colectomy or proctectomy on postoperative infectious complications following hepatic ablation for colorectal liver metastases: A NSQIP analysis

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INTRODUCTION: Surgical management of colorectal liver metastases (CRLM) often involves multi-organ interventions, which can elevate the risk of postoperative infectious complications. While hepatic ablation is increasingly used as a parenchymal-sparing strategy, the infectious risk when performed with concurrent primary resection remains unclear. This study evaluated postoperative infectious outcomes of concurrent colectomy or proctectomy with hepatic ablation for CRLM using a contemporary NSQIP cohort. **METHODS:** Adults in the ACS-NSQIP database (2020–2023) undergoing hepatic ablation for CRLM, with or without concurrent colectomy or proctectomy, were identified. Patients with postoperative anastomotic leak were excluded. Demographic, operative, and postoperative characteristics were compared between those who underwent concurrent primary resection with hepatic ablation vs. ablation alone. The primary outcome was 30-day organ space infection, used as a surrogate for hepatic abscess. Multivariable logistic regression assessed the independent effect of concurrent primary resection, with model performance evaluated using ROC and Brier scores. Statistical analyses were performed using STATA 19 and R Studio. **RESULTS:** A total of 649 patients were identified with a median age of 59 (IQR 50-68) years, 58% male). Overall, 333 (51%) underwent concurrent primary resection with hepatic ablation. This group had higher rates of postoperative blood transfusion (13% vs. 3%, $p < 0.001$), myocardial infarction (2% vs. 0%, $p = 0.03$), and unplanned reoperation (4% vs. 1%, $p = 0.04$), and longer median hospital stay (5 vs. 2 days, $p < 0.001$). On multivariable analysis, concurrent primary resection was independently associated with hepatic abscess (OR 10.06, 95% CI 1.83-55.22, $p = 0.008$), wound complications (OR 4.76, 95% CI 1.61-14.08, $p = 0.007$), and serious complications (OR 3.65, 95% CI 1.30-10.24, $p = 0.01$). Insulin-dependent diabetes was associated with hepatic abscess and wound complications, while male sex and smoking within 1 year were associated with serious complications. Multivariable models demonstrated acceptable discrimination (ROC 0.79-0.86). **CONCLUSIONS:** Concurrent primary resection with hepatic ablation for CRLM is independently associated with increased risk of hepatic abscess, wound complications, and serious morbidity. These findings underscore the importance of careful patient selection and perioperative management to mitigate infectious risk, which is known to adversely affect long-term outcomes.

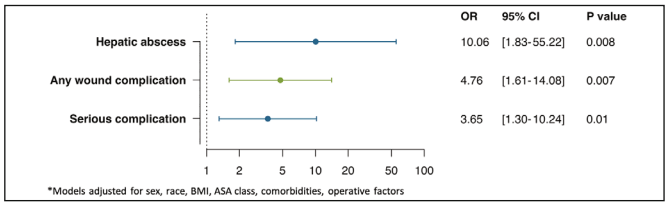

Figure 1. Multivariable logistic regression models for hepatic ablation + primary resection vs. ablation alone

EP286

Risk of Second Breast Cancer in Patients with Lobular Carcinoma in situ (LCIS)

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INTRODUCTION: Lobular carcinoma in situ (LCIS) is found in up to 4% of breast biopsies and is associated with a 1-2% annual risk of developing breast cancer (BC). However, whether LCIS found concurrently with a first BC impacts the risk of a second BC remains unclear. This study evaluates the incidence and clinicopathologic features of the development of a second BC in either breast among patients initially diagnosed with LCIS and invasive cancer or ductal carcinoma in situ (DCIS). **METHODS:** We identified all female patients diagnosed with LCIS and concurrent BC from two prospective institutional databases from 2009-2020. Patients with a BC diagnosis before LCIS or more than 6 months after LCIS were excluded. We analyzed differences in demographics, clinicopathologic features, and treatment between those who did and did not develop a second breast cancer. **RESULTS:** Of the 117 patients with LCIS and concurrent BC, 39 (33.3%) developed a second BC. Median age at first BC diagnosis was 50 years (IQR 45-60) for those who developed a second BC and 55 years (IQR 49-62) for those without ($p=0.058$). Of the 39 patients who developed a second BC, 24 patients (61.5%) initially presented with DCIS. 76.9% of these patients also underwent lumpectomy for the first BC, compared to 62.8% of those without a second BC who received a mastectomy ($p< 0.001$). Only 12.8% of patients with a second BC underwent a contralateral prophylactic mastectomy (CPM) for their first BC compared to 42.3% of those who did not develop a second BC ($p=0.002$). A comparable majority of both cohorts received endocrine therapy to treat the first BC. Median age at second BC diagnosis was 56 years (IQR 51-67). Second BCs were mostly invasive ductal carcinoma (IDC, 53.8%), pT1 (76.9%), node-negative (89.7%), and HR+/HER2− (89.7%). Of the second cancers, 43.6% of cases were ipsilateral relative

to the first BC, 35.9% were contralateral, and 10.3% were bilateral. Surgery for second BC included lumpectomy (48.7%) and mastectomy (41.0%), with half of the patients that underwent mastectomy also undergoing CPM. 59% of the patients received endocrine therapy for their second BC, while only 12.8% underwent chemotherapy. **CONCLUSIONS:** One third of patients diagnosed with concurrent LCIS and BC developed a second BC, suggesting increased risk in this population. Compared to those who did not develop a second BC, those who had a second BC had comparable rates of endocrine therapy use but higher rates of lumpectomy versus mastectomy. Our findings suggest consideration of enhanced surveillance strategies, and larger scale studies are needed to better evaluate second breast cancer risk in this population.

Table 1. Clinicopathologic Features of BC Patients with Concurrent LCIS Diagnosis

Patient Cohort N=117	No Second BC[1] N=78	Second BC[1] N=39	Overall[1] N=117	p-value[2]
Race/Ethnicity				0.22
Asian	2 (2.6%)	1 (2.6%)	3 (2.6%)	
Non-Hispanic Black	11 (14.1%)	10 (25.6%)	21 (18.0%)	
Non-Hispanic White	63 (83.3%)	28 (71.8%)	93 (79.4%)	
Genetic Mutation				0.64
BRCA1	0 (0.0%)	1 (2.6%)	1 (0.9%)	
BRCA2	1 (1.3%)	0 (0.0%)	1 (0.9%)	
Other	4 (5.1%)	2 (5.1%)	6 (5.0%)	
None/Unknown	73 (93.6%)	36 (92.3%)	109 (93.2%)	
Family History				0.28
Yes	52 (66.7%)	22 (56.4%)	74 (63.2%)	
No	26 (33.3%)	17 (43.6%)	43 (36.8%)	
Median Age at First BC Diagnosis (IQR)	55 (IQR 49-62)	50 (IQR 45-60)	54 (47-61)	0.055
Histology of First BC[3]				0.21
DCIS	40 (51.3%)	24 (61.5%)	64 (54.7%)	
IDC	17 (21.8%)	10 (25.6%)	27 (23.1%)	
ILC	18 (23.1%)	3 (7.7%)	21 (18.0%)	
Other	3 (3.8%)	2 (5.2%)	5 (4.2%)	
T Stage of First BC				0.41
pT0	34 (43.6%)	24 (61.5%)	58 (49.6%)	
pT1	29 (37.2%)	9 (23.1%)	38 (32.5%)	
pT2	8 (10.2%)	4 (10.3%)	12 (10.2%)	
pT3	2 (2.6%)	0 (0.0%)	2 (1.7%)	
Unknown	5 (6.4%)	2 (5.1%)	7 (6.0%)	
Nodal Status of First BC				1.00
Positive	11 (14.1%)	5 (12.8%)	16 (13.7%)	
Negative	67 (85.9%)	34 (87.2%)	101 (86.3%)	
Hormone Receptor Status of First BC				0.02
HR- (DCIS)	2 (2.6%)	2 (5.1%)	4 (3.4%)	
HR+ (DCIS)	35 (44.9%)	19 (48.7%)	54 (46.2%)	
HR+/HER2-	34 (43.5%)	8 (20.5%)	42 (35.9%)	
HR-/HER2+	0 (0.0%)	0 (0.0%)	0 (0.0%)	
HR+/HER2+	3 (3.9%)	3 (7.7%)	6 (5.1%)	
TNBC	0 (0.0%)	3 (7.7%)	3 (2.6%)	
Unknown	4 (5.1%)	4 (10.3%)	8 (6.8%)	
Surgery for First BC				<0.001
Lumpectomy	28 (35.9%)	30 (76.9%)	58 (49.6%)	
Mastectomy	49 (62.8%)	9 (23.1%)	58 (49.6%)	
None	1 (1.2%)	0 (0.0%)	1 (0.8%)	
Contralateral Prophylactic Mastectomy for First BC				0.002
Yes	33 (42.3%)	5 (12.8%)	38 (32.5%)	
No	45 (57.7%)	34 (87.2%)	79 (67.5%)	
Chemotherapy for First BC				0.80
Yes	14 (18.0%)	6 (15.4%)	20 (17.1%)	
No	64 (82.0%)	33 (84.6%)	97 (82.9%)	
Endocrine Therapy for First BC				1.00
Yes	47 (60.3%)	24 (61.5%)	71 (60.7%)	
No	31 (39.7%)	15 (38.5%)	46 (39.3%)	
Radiation therapy for First BC				0.076
Yes	28 (35.9%)	21 (53.9%)	49 (41.9%)	
No	50 (64.1%)	18 (46.1%)	68 (58.1%)	
Median Follow-Up in Months (IQR)	116 (92-143)	151 (111-185)	123 (100-157)	<0.001
Vital Status				1.00
Alive	75 (96.2%)	37 (94.9%)	112 (95.7%)	
Deceased	3 (3.8%)	2 (5.1%)	5 (4.3%)	

Second BC Cohort N=39	n (%); Median (IQR)
Laterality of Second BC Relative to First BC	
Ipsilateral	22 (56.4%)
Contralateral	14 (35.9%)
Bilateral	3 (7.7%)
Genetic Mutation	
BRCA1	1 (2.6%)
BRCA2	0 (0.0%)
Other	3 (7.7%)
None/Unknown	35 (89.7%)
Family History	
Yes	22 (56.4%)
No	17 (43.6%)
Median Age at Second BC Diagnosis	57 (IQR 51-67)
Histology of Second BC[3]	
DCIS	4 (10.3%)
IDC	21 (53.8%)
ILC	12 (30.1%)
Other	2 (5.1%)
T Stage for Second BC	
pTis	4 (10.3%)
pT1	30 (76.9%)
pT2	1 (2.6%)
pT3	0 (0.0%)
Unknown	4 (10.3%)
Nodal Status for Second BC	
Positive	3 (7.7%)
Negative	24 (61.5%)
Unknown	12 (30.8%)
Hormone Receptor Status of Second BC	
HR- (DCIS)	0 (0.0%)
HR+ (DCIS)	4 (13.8%)
HR+/HER2-	26 (89.7%)
HR-/HER2+	2 (6.9%)
HR+/HER2+	0 (0.0%)
TNBC	3 (10.3%)
Mixed/Unknown	4 (13.8%)
Surgery for Second BC	
Lumpectomy	19 (48.7%)
Mastectomy	16 (41.0%)
None	4 (10.3%)
Contralateral Prophylactic Mastectomy for Second BC	
Yes	8 (20.5%)
No	31 (79.5%)
Chemotherapy for Second BC	
Yes	5 (12.8%)
No	34 (87.2%)
Endocrine Therapy for Second BC	
Yes	23 (59.0%)
No	16 (41.0%)
Radiation Therapy for Second BC	
Yes	20 (51.3%)
No	19 (48.7%)

[1] n (%); Median (IQR)
[2] Fisher's exact test; Wilcoxon rank sum test; Pearson's Chi-Square Test
[3] DCIS, ductal carcinoma in situ, IDC, invasive ductal carcinoma, ILC, invasive lobular carcinoma

EP287

Balancing operative and hospitalization costs: An inflation-adjusted comparison of robotic and open distal pancreatectomy

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INTRODUCTION: Minimally invasive distal pancreatectomies have demonstrated reduced blood loss and recovery time compared to open distal pancreatectomies (ODPs). Robotic distal pancreatectomy (RDP) is increasingly favored over laparoscopic approaches due to operative advantages, including improved visualization, enhanced instrument control, and lower rates of conversion to open surgery. Despite this, the adoption of robotic approaches may be limited by provider or institutional perception of high material costs. This study aimed to compare the overall costs of RDP and ODP at our institution. We hypothesized that decreased ICU and hospital length of stay (LOS) with RDP would offset higher operative costs. **METHODS:** All patients who underwent RDP or ODP between 2018-2025 were retrospectively identified through operative records. Robotic converted to open procedures were categorized as RDP. Patient-level cost data were obtained from the hospital administrative finance database. Costs were aggregated to total hospitalization cost and stratified into categories including operating room/anesthesia, ICU/inpatient care, pharmacy, laboratory/pathology, imaging, rehabilitation, and blood products. Administrative records were also queried to obtain operative time and LOS. All costs were inflation-adjusted to 2025 U.S. dollars using the Consumer Price Index for Medical Care. Variables were compared using the Wilcoxon rank-sum test. **RESULTS:** One hundred patients were identified (43 ODP, 57 RDP). There was no significant difference in total cost between RDP and ODP (p=0.64). RDP had significantly higher operating room/anesthesia cost ($p < 0.001$). In contrast, ODP had significantly higher ICU/inpatient care costs ($p< 0.001$), pathology/lab costs ($p< 0.001$), and imaging/diagnostics costs (p=0.036) compared to RDP. Operating room time approached significance (p=0.055) with ODP having a higher median operative time (393 minutes [IQR: 323-441]) compared to RDP (332 minutes [IQR: 291-412]). ODP had a significantly longer LOS ($p< 0.001$) with a median of 6 days (IQR: 5-7) compared to 4 days (IQR: 3-5) for RDP. **CONCLUSIONS:** Despite higher operative costs, RDP had similar overall costs to ODP. Cost offsets are driven by shorter LOS and decreased inpatient resource utilization in RDP. These findings demonstrate that RDP can achieve cost comparability with open surgery while maintaining the perioperative advantages of minimally invasive techniques.

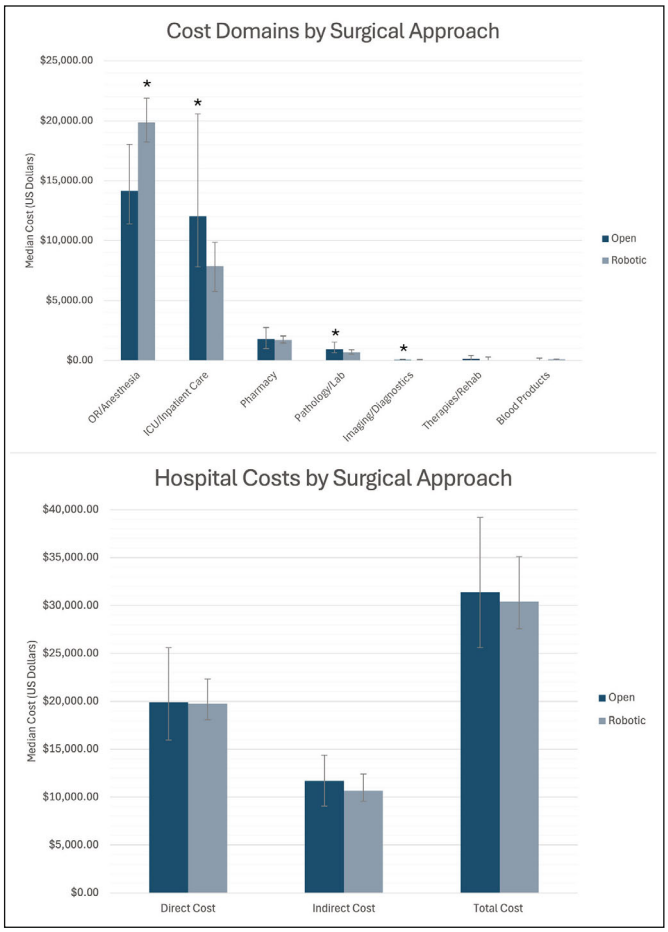

Figure 1. Cost domains and overall costs: open vs. robotic surgery. [Bars represent medians with interquartile ranges. Asterisks indicate statistically significant differences between approaches (p

EP288

Factors associated with fatal vascular events in patients undergoing gastrointestinal cancer resection

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INTRODUCTION: Surgical cancer patients experience increased incidence of thromboembolic events. However, uncertainty persists regarding appropriate screening and prophylaxis among these patients. This study sought to examine factors associated with fatal vascular events in patients who underwent resection of the most common gastrointestinal adenocarcinomas. **METHODS:** Patients age >24 who underwent oncologic resection of primary adenocarcinoma of the esophagus, stomach, pancreas, colon, or rectum from 2010-2021 were identified from the Surveillance, Epidemiology, End Results database, and stratified by mortality secondary to vascular event (Mv) or other causes (Mo). Mv=composite attributed to: aortic aneurysm rupture, arterial or cerebrovascular disease, or pulmonary embolism. Mo=all-cause mortality excluding aforementioned

categories. Baseline demographic, staging, and treatment characteristics were compared via chi-squared and ANOVA. A multivariate logistic regression model identified independent factors for Mv, and validated with propensity-matching. **RESULTS:** 157,989 patients met inclusion criteria, 2.57% (n=4,055) of whom suffered a vascular event as their primary cause of death. 54.7% of the total cohort were Male, 67.8% White, 11.3% Black, 11.9% Hispanic, 8.1% Asian/Pacific Islander, 54.2% aged 65-84, 28.3% 45-64, 14.1% >85, 3.4% 25-44. 74.2% colorectal primary site, 9.9% pancreatic, 9.2% gastric, 3.5% esophageal, 3.2% gallbladder. 48.2% had regional disease spread, 28.2% localized, 22.2% distant, 1.4% unknown. 43.3% received chemotherapy, 15.8% received radiation. Patients who underwent resection of their primary gastrointestinal adenocarcinoma with subsequent mortality due to vascular events were more likely to be female (OR 1.25, 95%CI [1.16, 1.35], p< 0.001), >65 at diagnosis (OR 1.77 [1.64, 2.16], p< 0.0001], Black race (OR versus White race=1.29, 95% CI [1.13, 1.47], p< 0.001), higher clinical stage (OR of regional vs localized=2.97, 95%CI [2.57, 3.43], p< 0.001), colorectal primary site (OR vs other sites 3.49, 95%CI [2.88-4.21], p< 0.0001). Patients who did not receive chemotherapy (OR 1.68, 95% CI [1.521, 1.863], p< 0.001) and those who did receive radiation therapy (OR 1.12, 95% CI [1.10, 1.535], p< 0.001 were at higher risk of Mv. **CONCLUSIONS:** Appropriate screening and prophylaxis for thromboembolic events among surgical cancer patients requires elucidation of high risk features. This analysis identifies age, gender, primary site, clinical stage, receipt of adjuvant therapies, and socioeconomic features as significantly associated with risk of fatal vascular events. These findings may inform a future screening tool for this high risk population.

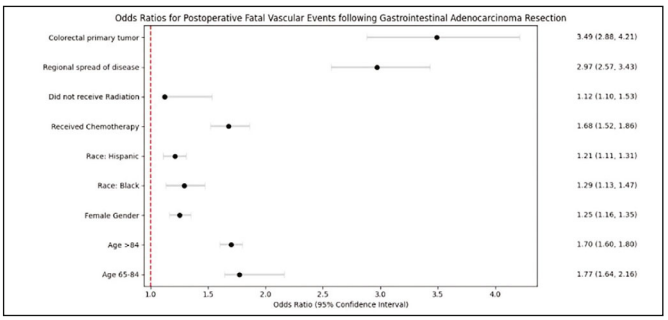

Figure 1. Odds ratios for postoperative fatal vascular events in patients undergoing gastrointestinal adenocarcinoma resection

EP289

Is the PrEsence of ciRculatIng TumOur cells in shed blood at colorectal caNcer rEsection or its associated liver metastases associated with positive peritoneal cytology? (PERITONEAL)

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INTRODUCTION: Peritoneal carcinomatosis is a terminal event in colorectal cancer (CRC). Besides lymphatic and hematogenous dissemination, transcoelomic spread can lead to peritoneal metastases (PM). This study investigates a novel hypothesis to determine whether PM may develop from circulating tumour cells (CTCs) in blood shed during surgery. **METHODS:** The study was designed as an observational cohort of patients undergoing potentially curative resection of CRC and/or liver metastases. Our goal was to enroll patients with early and advanced CRC to sample patients at low and high likelihood, respectively, to harbor CTC. Peritoneal lavage was performed and processed in routine fashion at the start and conclusion of the operative procedure. Conventional cytology (HE stain) and immunohistochemistry were used to determine the presence of free cancer cells in the fluid. **RESULTS:** 31 patients had potentially curative resection of CRC liver metastases with an average age of 64.2 (range 48 to 83) years balanced in gender distribution (48% male). No cancer cells were identified on cytology in any pre or post resection peritoneal fluid specimens. Therefore, analysis to link malignant cells from peritoneal lavage and CTCs in preoperative venous or intraoperative shed blood was not possible. CTC in venous and shed blood demonstrated poor agreement (Cohen's $\kappa = 0.019$, SE = 0.152, p = 0.903). Among patients with CTCs in shed blood, 29.4% had detectable venous blood CTCs, while the remainder had none. An analysis to correlate CTC and tumor stage was inconclusive. Correlation between CTC and tumor differentiation was weak (shed blood: Spearman's $\rho = 0.260$, p = 0.313; venous blood: $\rho = 0.303$, p = 0.124). Recurrence occurred in 32% of patients at a median follow-up of 27 months with no PM in any patient. The presence of intraoperative shed blood CTCs showed no significant association with recurrence (χ^2 (1) = 0.006, p = 0.936; Spearman's $\rho = -0.015$, p = 0.939). Venous blood CTCs demonstrated a weak, insignificant trend toward recurrence (Mann–Whitney U = 78.0, p = 0.643; exact p = 0.735). **CONCLUSIONS:** It was not possible to analyze whether CTC in shed intraoperative blood could lead to PM through peritoneal cytology or recurrence. The observed relationships between CTCs in venous and shed blood samples with clinical parameters such as tumor stage, differentiation, and recurrence were not statistically significant but warrant further investigation.

EP290

Leveraging large language models to extract treatment-specific variables in gastric cancer: A proof-of-concept study

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INTRODUCTION: Current oncology datasets are siloed, separating tumor biology and molecular drivers from treatment delivery, access, and social determinants of health. These dimensions shape outcomes and must be examined simultaneously to elucidate mechanisms of disease progression and treatment response. Large language models (LLMs) enable integration of granular clinical data by automating structured data extraction from unstructured text. This study evaluates the feasibility and face validity of LLM-based extraction of key treatment variables for gastric cancer as a foundation for scaling to a systemwide analytic repository linking molecular, clinical, and population data. **METHODS:** Medical and surgical oncology notes were processed using Anthropic Claude [anthropic.claude-3-5-sonnet-20241022-v2:0] in a HIPAA-compliant environment. The model was prompted to identify neoadjuvant, adjuvant, and immunotherapy use (yes/no); regimen (FLOT, FOLFOX, nivolumab, pembrolizumab, etc.); number of cycles; and adverse events (yes/no, by organ system). These variables were selected to test structured extraction and will be expanded to additional treatment, molecular, and outcome data. We used iterative refinement on a prior development sample until outputs were stable and schema-conformant. The final template was then run unchanged on the evaluation set (12 patients who underwent definitive resection for gastric adenocarcinoma at out institution, 2020-2024). No manual post-processing was applied. Manual abstraction served as the reference standard (metrics: sensitivity, specificity, precision, accuracy, and F1 score). **RESULTS:** For binary classification, the LLM achieved complete agreement (1.00) in detecting neoadjuvant chemotherapy and adverse events, with 0.83 accuracy for adjuvant therapy and immunotherapy status. For multiclass tasks, the model reached 1.00 accuracy in identifying specific regimens and adverse event categories and 0.83 accuracy for cycle count extraction. These early feasibility results are based on minimal tuning; we anticipate improved performance pending scale-up. **CONCLUSIONS:** LLMs can accurately extract complex treatment-level details from oncology documentation, providing a scalable foundation to integrate biologic, clinical, and social data for population-level analysis. This approach will enable unprecedented data synthesis to study gastric cancer, leveraging our region's uniquely high gastric cancer incidence and morbidity to advance understanding of treatment response and disease mechanisms.

Table 1: Performance metrics for binary classification variables

Variable	Sensitivity	Specificity	Precision	Accuracy	F1 score
Neoadjuvant chemo	1.00	1.00	1.00	1.00	1.00
Adjuvant chemo	0.75	1.00	1.00	0.83	0.86
Adverse event	1.00	1.00	1.00	1.00	1.00
Immunotherapy	0.50	1.00	0.50	0.83	0.50

EP291

Lymphedema and patient-reported outcomes following premastectomy radiotherapy and immediate autologous reconstruction

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INTRODUCTION: Lymphedema rates approach 50% for patients with locally advanced breast cancer (LABC) requiring axillary lymph node dissection (ALND) and postmastectomy radiotherapy (PMRT). However, lymphedema rates and patient-reported outcomes (PROs) are largely unknown among patients with LABC following premastectomy radiotherapy (PreM-RT) and axillary surgery. We report PROs and lymphedema outcomes for PreM-RT followed by mastectomy with immediate autologous reconstruction (IAR) and axillary surgery for patients with LABC. **METHODS:** This is a prospective, single-arm feasibility trial. Women age ≥18y with cT3 – T4, N0-N3, M0 with partial or complete response to neoadjuvant chemotherapy (NAC) by RECIST criteria and desiring IAR were enrolled beginning 1/2022. All received NAC and PreM-RT. Primary endpoints reported here are PROs of BREAST-Q and LYMPH-Q surveys at baseline, post-RT, and postoperative intervals. Scores range from 0-100 with higher scores representing greater satisfaction. Secondary endpoints include lymphedema rates, defined as relative volume change (RVC) ≥10% from baseline by perometry. Subclinical lymphedema, subjective symptoms of swelling/heaviness not meeting criteria for lymphedema by perometry or physician-assessment, and associated interventions were also evaluated. **RESULTS:** Among 27 patients (1 Asian [3.8%], 5 Black [19%], 16 White [62%], 6 Hispanic [24%]), the median (IQR) age was 42y (37-57). 48% (13/27) were ER+/HER2-, 30% (8/27) ER-/HER2-, and 52% (14/27) had inflammatory breast cancer. All completed PreM-RT and surgery with IAR. 25/27 (93%) underwent ALND; 2 had a sentinel lymph node biopsy. Median (IQR) follow-up from surgery was 15 months (8-21). All BREAST-Q domains except psychological well-being decreased at 1 month postop and recovered to baseline by 1 year (Figure). 17 patients completed perometry; 1 (6%) developed lymphedema at 6 months postop (RVC 11%) and 1 (6%) developed post-RT lymphedema (RVC 12%) that resolved at postop weeks 4-6. 11/25 (44%) patients reported subclinical lymphedema; all participated in lymphedema therapy and 64% (7/11) wore arm sleeves. LYMPH-Q domains (function, appearance, psychological, information) improved from baseline throughout the entire postop period, while arm symptoms remained stable after surgery compared to baseline. **CONCLUSIONS:** PreM-RT followed by mastectomy with IAR for LABC is associated with high levels of satisfaction with breast and upper extremity symptoms following surgery, and with lymphedema rates far lower than reported after ALND and PMRT (24-49%).

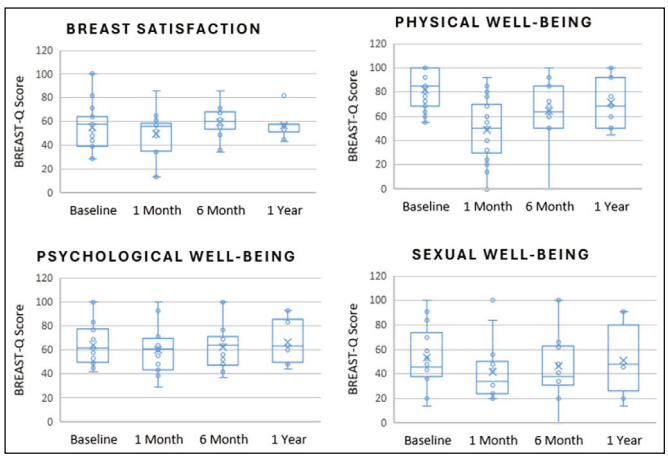

Figure. BREAST-Q Median Scores by Domain

EP292

Survival After Internal Versus External Hemipelvectomy for Pelvic Sarcoma Subtypes

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INTRODUCTION: Pelvic sarcomas are rare and often require complex resection. This study aims to evaluate survival differences between internal (IHP) and external hemipelvectomy (EHP) across pathological subtypes. **METHODS:** Patients diagnosed with pelvic sarcomas undergoing curative intent surgery were identified from the National Cancer Database (2004-2021). Overall survival comparing IHP and EHP was evaluated using Cox proportional hazards regression adjusted for age, tumor size, grade, local extension, surgical margin group, insurance status, facility type, number of positive regional nodes/examined, and receipt of chemotherapy or radiotherapy. **RESULTS:** The cohort included 296 osteosarcoma, 104 chondroblastic osteosarcoma, 1,329 chondrosarcoma NOS, 156 dedifferentiated chondrosarcoma, 824 clear cell chondrosarcoma, 127 Ewing sarcoma, and 49 spindle cell sarcoma cases. Osteosarcoma patients were 48.7% female with a median age of 47 years and follow-up of 29 months; external hemipelvectomy was performed in 52% and showed no adjusted survival difference (HR 1.24, p = 0.24). Chondroblastic osteosarcoma patients were 36.1% female, median age 36.5 years, follow-up of 28.8 months; EHP in 58% showed no adjusted survival difference (HR 1.31, p = 0.47). For chondrosarcoma NOS, 39.1% were female, median age 52 years, follow-up of 62 months; EHP in 36% showed worse adjusted survival (HR 1.31, p = 0.038). Dedifferentiated cases were 41% female, median age 61 years, follow-up of 16 months; EHP in 53% showed worse adjusted survival (HR 1.94, p = 0.0065). Clear cell cases were 36% female, median age 62 years, follow-up of 66 months; EHP in 9% showed a nonsignificant trend toward better survival with IHP (HR 0.49, p = 0.095). Ewing sarcoma patients were 32.1% female, median age 24 years, follow-up of 57 months; EHP in 21% showed no adjusted survival difference (HR 1.59, p = 0.45). Spindle cell sarcoma patients were 48% female, median age 58 years, follow-up of 29 months; EHP in 42% showed no adjusted survival difference (HR 3.31, p = 0.47). **CONCLUSIONS:** Across pelvic sarcomas except for certain subtypes of chondrosarcoma, EHP does not seem to offer survival advantage. IHP with limb salvage offers better functional outcomes and quality of life and should be attempted when possible as our findings suggest that the survival impact of amputation may rather be driven by tumor biology more than the procedure itself.

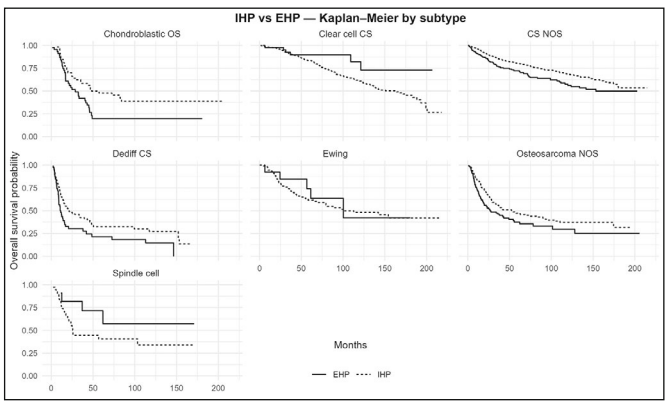

Figure. Kaplan–Meier Curves Comparing Internal and External Hemipelvectomy Survival Across Pelvic Sarcoma Subtypes

EP293

Conditional Survival for Patients who underwent Hepatic Resection for Colorectal Cancer Liver Metastases: Insights from SEER Cohort

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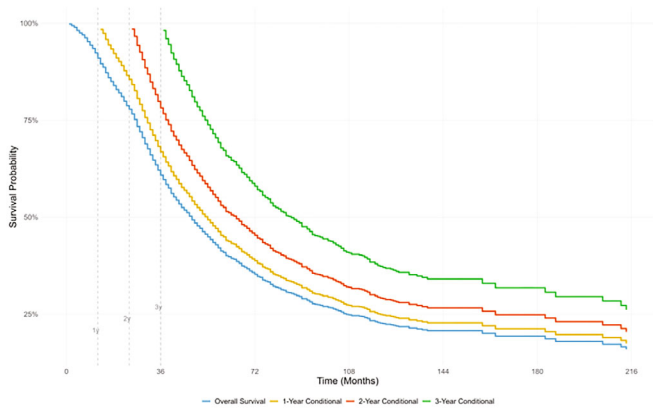
INTRODUCTION: Hepatic resection for colorectal cancer liver metastases (CRLM) offers the only potential for long-term survival in selected patients. However, traditional overall survival (OS) metrics do not reflect the evolving

prognosis. Therefore, this study aimed to evaluate conditional survival (CS), which adjusts for years already survived, and identify prognostic factors influencing survival after hepatic resection for CRLM. **METHODS:** A retrospective cohort analysis of 4,102 patients with CRLM who underwent curative-intent liver resection was conducted. Demographic, clinicopathologic, and treatment variables were collected, including age, sex, tumor grade, T and N stage, perineural invasion, and CEA status. Kaplan-Meier analysis was used to estimate OS, while CS at 1–3 years post-resection was calculated as the probability of surviving an additional 3 years, given survival to each time point. Subgroup analyses stratified CS by clinicopathologic factors, from which nomograms were constructed. External validation of the models was performed using patients from the National Cancer Center Database. **RESULTS:** The median age was 59 years, with 58.1% male and 76.9% White patients. Most tumors were moderately differentiated adenocarcinomas (77.7%) and right-sided (64.5%). Baseline 4 year OS was 49%. However, CS showed improved probabilities with given additional survival: 54% at 1 year, 63% at 2 years, and 81% at 3 years. Age, tumor grade, T stage, N stage, perineural invasion, CEA Status were associated with negative conditional survival differences. For example, patients < 45 years achieved a 3-year CS of 62% after 1 year survival versus 47% in patients ≥65 years, while patients with undifferentiated tumors demonstrated the lowest CS across all grades across all timepoints (37–52%). Nomograms were generated to predict 1-, 2-, and 3-year conditional survival, each incorporating time-specific prognostic factors such as tumor stage, grade, and resection margin. Model performance was favorable (AUCs 0.65–0.70), with consistent calibration and similar metrics on external validation. **CONCLUSIONS:** Conditional survival for patients with CRLM improves substantially with year survived, highlighting a favorable shift prognostic for long-term survivors. High-risk features, including advanced age, poor differentiation, and nodal disease, predict lower CS. These estimates can better inform postoperative counseling and surveillance strategies for patients undergoing liver resection for CRLM.



	If patient has survived (year)					
Total survival time (year)	**0**	**1**	**2**	**3**	**4**	**5**
1	0.91					
2	0.78	0.85				
3	0.61	0.67	0.78			
4	0.49	0.54	0.63	0.81		
5	0.41	0.45	0.53	0.67	0.83	
6	0.35	0.39	0.45	0.58	0.72	0.86

Figure. Conditional Survival Kaplan Meier Plot and Table for patients with distant hepatic metastases from colon cancer who underwent liver resection

EP294

Surgeon-anesthesiologist dyad familiarity improves perioperative efficiency and outcomes in cytoreductive surgery with hyperthermic intraperitoneal chemotherapy

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INTRODUCTION: Surgeon-anesthesiologist dyad familiarity has been associated with improved outcomes in complex gastrointestinal surgery, yet its impact on cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS-HIPEC) remains unexplored. CRS-HIPEC requires exceptional intraoperative coordination for fluid management, temperature control, and hemodynamic optimization. We hypothesized that dyad familiarity would improve perioperative efficiency and short-term clinical outcomes. **METHODS:** A retrospective analysis was conducted of consecutive CRS-HIPEC procedures performed between October 2023 and October 2025 at a tertiary cancer center. All cases were performed by a single surgical oncologist and 18 anesthesiologists. Two anesthesiologists staffed 100% of familiar dyad cases, while 16 others covered non-familiar dyad cases. Outcomes compared between familiar and non-familiar dyads included epidural analgesia utilization, in-room to anesthesia ready time, anaesthesia-ready-to-incision time, PACU discharge time, ICU admission rate, and hospital length of stay (LOS). **RESULTS:** A total of 113 CRS-HIPEC procedures were analysed: 68 % (n=77) with familiar dyads and 32% (n=36) with non-familiar dyads. Epidural utilization was significantly higher in familiar dyad cases (75.3% vs 41.7%, p< 0.01). Familiar dyads achieved in-room to anesthesia ready time < 30 minutes in 78% of cases vs 44% (p< 0.01). Anaesthesia-ready-to-incision time < 20 minutes was achieved in 77% vs 81% of cases (p=0.72). PACU discharge within 60 minutes occurred in 21% vs 11% of cases (p=0.27), and within 120 minutes in 53% vs 47% of cases (p=0.54). ICU admission was rare in both groups (1.3% vs 0%). Hospital length of stay < 5 days occurred in 81% of familiar dyad cases vs 67% of non-familiar dyad cases (p=0.10). **CONCLUSIONS:** Greater familiarity between the surgeon and anesthesiologist was associated with more efficient workflow and improved recovery after CRS-HIPEC. This is the first study examining dyad familiarity in CRS-HIPEC, demonstrating that structured staffing models fostering consistent teams represent a modifiable factor to improve outcomes in complex oncologic surgery.

EP295

A competing risks survival analysis of metastatic low-grade mucinous adenocarcinoma: overall survival is an imprecise endpoint

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INTRODUCTION: Overall survival is a common endpoint for assessing cancer outcomes. However, for cancers with longer survival, competing risks, such as deaths due to other causes, can obscure endpoint measurement. Low-grade appendiceal mucinous adenocarcinoma (LGMA) is a rare disease with predilection for peritoneal metastasis but longer overall survival than other causes of peritoneal metastasis. Therefore, a competing risk analysis of death due to cancer and non-cancer causes was performed. **METHODS:** Using SEER data, 1205 patients from 2006-2022 with metastatic LGMA were identified. Descriptive statistics were assessed. Kaplan-Meier survival estimates and competing risks regression based on Fine and Gray's proportional subhazards model and Cox proportional hazard regression were performed using R. **RESULTS:** Among 1205 patients, the median age was 59 (IQR 49-69). Females comprised 63% of the cohort. Most patients received chemotherapy (52%). There were 354 (29.4%) overall deaths with 264 (21.9%) cancer-specific and 90 (7.5%) non-cancer deaths. Median overall survival was 155 months. By age quartiles (18-49, 50-59, 60-69, and 70+ years), the proportion of non-cancer deaths increased from 11%, 20.7%, 17.1%, to 40.7%, respectively. Overall, age was associated with cancer-specific mortality (p=0.002). By age quartiles, the highest age quartile (70+ years) had a 51% higher cumulative incidence of LGMA death (Subdistribution hazard ratio [SHR]=1.51, 95% CI 1.09-2.09; p=0.013) than the lowest age quartile. Using proportional hazard regression, the hazard ratio (HR) of LGMA death was 76% higher than the lowest age quartile (HR 1.76, 95% CI 1.26-2.44; p=0.001). There were minimal differences in SHR and HR for quartiles aged 50-59 (0.70 and 0.71) and 60-69 (1.22 and 1.23), respectively. Receipt of chemotherapy had a 6% higher cumulative incidence of LGMA death (SHR=1.06, 95% CI 0.83-2.09; p trend=0.7), which was not significant. **CONCLUSIONS:** For metastatic LGMA, increasing age was

associated with a higher cumulative incidence of mortality for LGMA and from non-cancer causes. While there were negligible differences using a competing risk survival model for lower age quartiles, there was a larger difference with the highest age quartile, suggesting that mortality due to non-cancer causes is a competing risk in this cohort. These data have clinical relevance for patient counseling and research significance for future study design as overall survival may be an imprecise endpoint for metastatic LGMA with older populations.

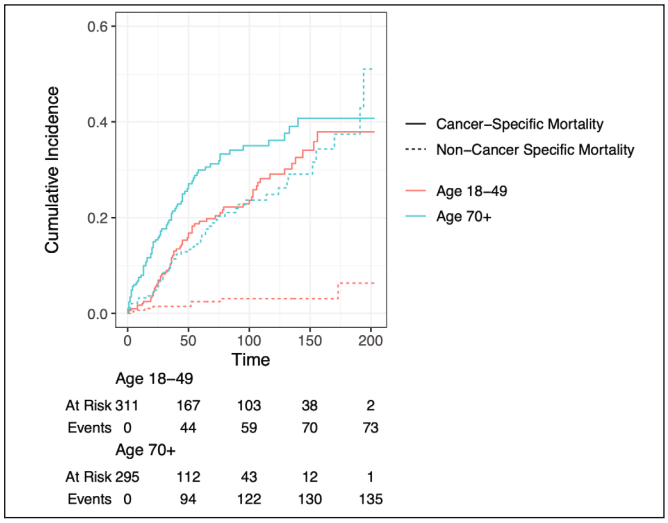

Figure 1: Cumulative Incidence of Cancer Specific and Non-Cancer Specific Mortality by Lowest and Highest Age Quartiles

EP296

Clinical-pathologic discordance in gastric adenocarcinoma: implications for accurate stage and treatment selection

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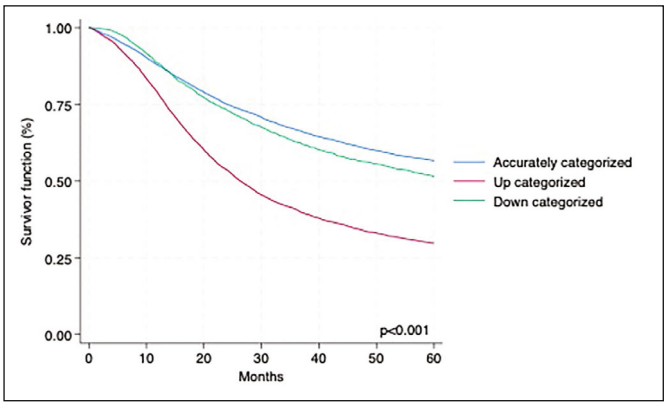
INTRODUCTION: Precise clinical staging is crucial for appropriate treatment planning in the management of gastric cancer, including the decision to administer neoadjuvant systemic therapy. Substantial differences exist between clinical and pathologic staging, resulting in potential misdiagnosis and altered treatment selection . We seek to evaluate this correlation in a contemporary, national dataset. **METHODS:** Retrospective cohort study of patients diagnosed with non-metastatic gastric adenocarcinoma between 2010-2022 with complete staging data included in NCDB. Interrater agreement was analyzed utilizing the unweighted Cohen's kappa coefficient. Adjusted Cox proportional hazards models were used for survival analyses. **RESULTS:** 15249 patients were included; the majority were male, white, with a mean age of 64 years. Initial, preoperative T staging was T1 (24.6%), T2 (20.1%), T3 (46.9%), and T4 (8.4%). Pathologic evaluation resulted in T or N staging in 6329 (41.5%) patients. T categorization was upstaged in 22.1% and downstaged in 19.5% of patients (upstaged from T1, 29.7%; T2, 42.5%; T3, 23.2%). Agreement between pre and postoperative T staging was only moderate (58.4%, kappa 0.41; p< 0.001). Preoperative N categorization was N0 (58.3%), N1 (27.5%), N2 (10.4%), and N3 (3.7%). Pathologic evaluation led to 33.0% upstaging and 14.3% downstaging (Upstaged from N0, 36.6%; N1, 35.2%; N2, 19.1%); resulting in only minimal agreement (52.7%, kappa 0.26; p< 0.001). Clinical T1N0 disease was present in 3405 (22.3%) patients; 34.8% of these had either T or N stage upstaging on final pathology (T upstaged in 27.5%, N in 23.4%). Of these, 38.7% received no systemic therapy, 10% received neoadjuvant, 47.1% adjuvant, and 4% perioperative therapy. T2N0 was diagnosed in 2070 (13.6%) patients; 55.6% of these had either T or N upstaging (T upstaged in 68.3%, N in 40.5%). Upstaging in either T or N categorization was associated with decreased OS (HR 2.1, 95% CI: 1.9 – 2.2; p< 0.001) (Figure 1). **CONCLUSIONS:** Clinical T and N stage often did not correlate with pathologic staging in patients diagnosed with gastric cancer. A significant number of patients with early-stage disease are upstaged on final pathology, precluding them from getting recommended preoperative systemic therapy. Given the lack of concordance in clinical staging, consideration of neoadjuvant chemotherapy for presumed early stage gastric cancers may be beneficial and warrants further study.



EP297

Clinicopathologic and Therapeutic Insights Into Early Recurrence of Widely Invasive Oncocytic Thyroid Carcinoma

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INTRODUCTION: Widely invasive oncocytic carcinoma (WIOC) represents the most aggressive phenotype within the oncocytic neoplasm of the thyroid, as defined by the 2022 WHO and 2025 ATA classifications. Despite standardized diagnostic criteria, the timing, pattern, and management outcomes of recurrence in WIOC remain poorly defined. This study characterizes the clinicopathologic features and treatment strategies associated with the early-recurrence phenotype of WIOC. **METHODS:** A retrospective review was conducted of all oncocytic thyroid neoplasms managed at a tertiary endocrine surgery center between 2012 and 2022. Cases meeting histopathologic criteria for widely invasive oncocytic carcinoma were identified, and those with postoperative recurrence were analyzed to characterize recurrence timing, anatomic distribution, adjuvant radioiodine use, and management strategies. **RESULTS:** A total of 309 oncocytic thyroid neoplasms were identified, comprising 224 oncocytic adenomas, 46 minimally invasive oncocytic carcinomas, and 39 widely invasive oncocytic carcinomas (WIOC). Recurrence was observed exclusively within the WIOC subset, reinforcing its biologically aggressive nature. Among patients with WIOC, five developed disease recurrence (12.8%). The recurrent cohort demonstrated a trend toward older age (64.8 ± 18.0 vs 61.3 ± 16.8 years, p = 0.73) and larger primary tumors (7.5 ± 3.5 vs 5.6 ± 2.2 cm, p = 0.28) compared with nonrecurrent WIOC. All patients with recurrence had undergone total or completion thyroidectomy, with four undergoing concurrent central and/or lateral neck dissection. Adjuvant RAI was administered in 4 of 5 patients (80%), with an average dose of 164.2 ± 33.4 mCi (range 142–214). The mean time to recurrence was 14.4 ± 21.7 months (range 3–53), and four of five (80%) recurred within the first postoperative year. Sites of recurrence included the lateral neck (n=1), central neck (n=2), tracheal/laryngeal invasion (n=1), and lung metastasis (n=1). Following recurrence, surgical re-intervention was performed in three patients. Lenvatinib was initiated in one patient and radiation therapy was delivered in two. No disease-specific mortalities were observed. **CONCLUSIONS:** Recurrence within the oncocytic spectrum occurred exclusively in WIOC and predominantly within the first postoperative year. Early and comprehensive surgery combined with adjuvant RAI and selective reintervention provides durable control, underscoring the need for vigilant early surveillance in this high-risk subset.

EP298

Successes and Challenges in the Establishment of a Familial Genetic Endocrine Tumor Clinic

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INTRODUCTION: Familial endocrine syndromes remain underrecognized despite their implications for patients and their families. We and others have demonstrated existing gaps in early diagnosis, family screening, and psychosocial support. Barriers include underutilization of existing genetic counseling and testing, and educational resources. To address this gap, we established a surgeon-led multidisciplinary clinic dedicated to familial genetic endocrine tumors in a large urban hospital system with an extensive suburban and rural referral network starting in January 2025. We hypothesized we would identify patients with familial endocrine disorders without previous access to overall systemic management. **METHODS:** Patients referred had suspected familial genetic endocrine tumors. Clinical assessment, genetic counseling and testing was performed. Patients were enrolled in the Familial Endocrine Tumor Cohort and Heritability (FETCH) study. FETCH is an IRB-approved longitudinal, prospective cohort study that collects demographic and medical history, biospecimens and metabolomic analyses. We tested family and patient understanding, emotional response, and perceived barriers. Descriptive statistics were used to characterize findings. **RESULTS:** From January to October 2025, 45 patients (30 female, 15 male) were referred. Fourteen (31.1%) had pathogenic or likely pathogenic germline variants, seven (15.6%) had variants of uncertain significance, and 24 (53.3%) tested negative. Mutations included RET, SDHA, SDHB, PTEN, TSC1, PMS2, MSH6, and ATM. Common reasons for referral included suspected familial hyperparathyroidism, pheochromocytoma/paraganglioma, MEN syndrome, PTEN hamartoma spectrum, adrenocortical carcinoma and familial thyroid cancers. Many patients presented with clinically suggestive, but gene test-negative phenotypes, highlighting limitations in current genetic panels. Most patients reported no prior testing or access to testing or counseling. **CONCLUSIONS:** Familial genetic endocrine tumor syndromes are increasingly recognized, but barriers to care remain. The success of this surgeon-led clinic highlights an unmet need for integrated hereditary endocrine tumor care. Next steps include refining patient eligibility, developing protocols to manage patients with gene test-negative yet phenotypically suspicious cases, and using collected biospecimens for gene discovery. We demonstrate how multidisciplinary collaboration can improve the care of patients with rare familial genetic endocrine tumor diseases and open doors for translational research.

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Association of number of positive sentinel lymph nodes to total sentinel lymph nodes in node positive breast cancer patients after neoadjuvant chemotherapy

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INTRODUCTION: Axillary lymph node dissection (ALND) is the standard for patients with residual nodal disease following neoadjuvant chemotherapy (NAC). However, there is increasing interest in creating a risk-based approach and de-escalating ALND to reduce morbidity without compromising oncological outcomes. This study aims to investigate whether the number of positive sentinel lymph nodes (SLN) to total SLN can stratify patients with high likelihood of additional nodal disease on completion ALND (cALND) in patients with pathologically node positive breast cancer after NAC (ypN+). **METHODS:** This retrospective single-institution study analyzed 1,061 patients with invasive breast carcinoma treated with NAC between 2014-2021. 154 patients had ypN+ after NAC. 66 patients had at least one positive SLN and underwent cALND. We fitted a multivariable logistic regression for additional disease with targeted axillary dissection (TAD), largest tumor size, number of positive SLN, and total number of SLN as covariates. From this, we estimated the probability of additional disease at different numbers of positive SLN while holding total SLN constant. **RESULTS:** In our cohort, 51.6% of patients with additional disease on cALND were HR+/HER2–. Clinically node-negative (cN0) status was significantly associated with lower additional disease rates on cALND. Patients with ≥4 positive SLNs had a 100% likelihood of additional disease on cALND, regardless of the total SLN. However, with 1–3 positive SLNs, the likelihood of additional disease decreased as more total SLN were sampled (e.g., from 0.55 with 3 SLN to 0.35 with 9, when 2 were positive). SLN ratio was not predictive, as similar ratios reflected differing risk levels. 2/4 nodes vs. 3/6 nodes corresponded to additional disease probabilities of 0.55 and 0.67, respectively. **CONCLUSIONS:** Although the SLN ratio was not predictive, the number of positive SLN was strongly associated with additional disease on cALND. Clinically, these findings can confirm guidance on patients who should undergo cLAND, when 4 or more SLN are positive. For patients with only 1–3 positive nodes and a higher total node count on SLNB, the lower likelihood of additional disease may target a subgroup to further investigate forgoing cALND. This data provides the framework to create individualized risk estimates and improving shared decision-making of axillary management.

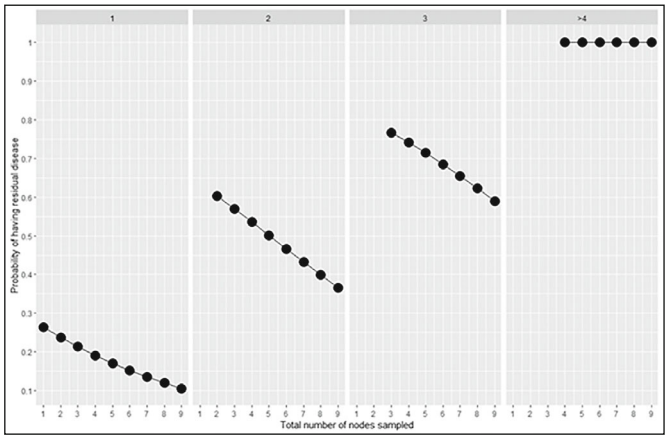

Figure. Positive sentinel lymph nodes and probability of residual disease on completion axillary dissection

EP300

A Comparative Analysis of 90-Day Outcomes in Elderly Patients Undergoing Minimally Invasive versus Open Pancreatectomy for Pancreatic Cancer: A Propensity Score Matching Analysis

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INTRODUCTION: Pancreatic cancer remains a formidable malignancy, with surgical resection offering the only potential for a cure. Traditional open pancreatectomy has been the standard of care, but minimally invasive surgery (MIS) has emerged as a less invasive alternative. While MIS offers potential benefits such as reduced blood loss and shorter hospital stays, its safety and efficacy, particularly in the vulnerable elderly population, require rigorous evaluation. This study leverages a large, real-world dataset to compare the postoperative outcomes of these two surgical approaches in patients aged 70 years and older. The primary objective of this study was to compare 90-day postoperative outcomes between elderly patients undergoing MIS versus open pancreatectomy for pancreatic cancer. **METHODS:** We conducted a retrospective cohort study using the TriNetX Global Collaborative Network, a federated health research network comprising data from 161 healthcare organizations. We identified patients aged 70 years or older with a diagnosis of pancreatic cancer who underwent either MIS or open pancreatectomy. To minimize selection bias, we performed 1:1 propensity score matching based on patient demographics and comorbidities, resulting in two balanced cohorts of 1,500 patients each. The primary outcomes analyzed included 90-day mortality, infection following surgery, thromboembolic events, specific gastrointestinal (GI) complications, and acute kidney injury. **RESULTS:** After propensity score matching, the two cohorts were well-balanced. At 90 days post-surgery, no statistically significant differences were observed between the MIS and open surgery groups across all major outcomes analyzed. The 90-day mortality rate was 4.4% in the MIS group compared to 4.0% in the open group (Risk Ratio [RR] 1.100, 95% CI 0.781-1.549, p=0.585). Rates

of infection following surgery were also similar (12.4% for MIS vs. 13.1% for open; RR 0.949, p=0.584), as were rates of specific GI complications (4.9% for MIS vs. 5.3% for open; RR 0.937, p=0.678). Furthermore, there were no significant differences in the incidence of thromboembolic events (5.9% vs. 6.7%; p=0.408) or acute kidney injury (5.0% vs. 6.3%; p=0.114). **CONCLUSIONS:** In this large, propensity-matched, real-world analysis of elderly patients undergoing surgery for pancreatic cancer, MIS was associated with a comparable 90-day morbidity and mortality profile to open pancreatectomy. These findings suggest that, in appropriately selected elderly patients, MIS is a safe and viable surgical option that does not compromise short-term outcomes.

EP301

Surgical Implications of Tumor Growth Dynamics for Multiple Endocrine Neoplasia 2-related pheochromocytoma using AI-based Automated Pipeline Images

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INTRODUCTION: Little is known pheochromocytoma (PHEO) progression in different Multiple Endocrine Neoplasia type 2 (MEN2) subtypes. We propose an automated artificial intelligence (AI) pipeline to predict tumor burden, and growth dynamics using computer tomography (CT) images in MEN2A and MEN2B for tailored surgical planning. **METHODS:** PHEO lesions from 58 baseline CT scans and 30-second time point follow-up scans post-surgical resection were manually contoured. Scans were split into train, validation, and test sets using a 70:10:20 ratio. Lesion segmentation performance was evaluated using Dice Similarity Coefficient (DSC). Patient-level total tumor volume (TTV) was used to validate diagnostic performance. Tumor volume growth rate (TVGR%), relative total volume difference (RTVD%), total volume growth rate (TVGR), and tumor volume doubling time (TVDT) were compared with AI-generated TTV scans. Radiographic differences were studied with radiomic-based machine learning models, Random Forest (RF), Random Hinge Forest (RHF), and XGBoost. **RESULTS:** Lesion size analysis for true positives (TP) was significantly larger than both false negatives (FN), and false positives (FP) ($p < 0.05$). This corresponds to a sensitivity of 90% and a positive predictive value (PPV) of 55%. FN lesions exhibited the smallest volume distribution, with a median size < 1 mm³, while FP lesions showed greater variability, though their median volume remained lower than TP lesions. The adrenal lesion segmentation model achieved a DSC of 0.62, lesion detection sensitivity of 90%, with 0 median FP per scan (range 0, 2). The mean absolute TTV difference was -22.19 mm³ (-226.94 mm³, 182.55 mm³). RTVD % was not significantly different between MEN2A and MEN2B groups showing a mean±SD values of 329.1±845.1% and 89.46±373.9% respectively. The mean±SD for TVDT was 1.52±36.51 mm³/day between MEN2A and MEN2B groups MEN2B tumors exhibited a broader range, indicating more dynamic changes in tumor size over time. The mean±SD for TVGR was -0.02±2.23% and -0.05±0.31% and was largely comparable between two genotypes. **CONCLUSIONS:** We exhibit the first AI applications in MEN2-related PHEO as a standardized and reproducible model for growth dynamics, segmentation, and radiomics to anticipate growth potential, recurrence, and surgical timing. Despite TVGR and RTVD % showing no difference between MEN2 subtypes, the TVDT for MEN2B PHEO displayd a trend in volume variability. Furthermore, this tool may be used in the surveillance of PHEO and implicated in the screening of adrenal incidentaloma.

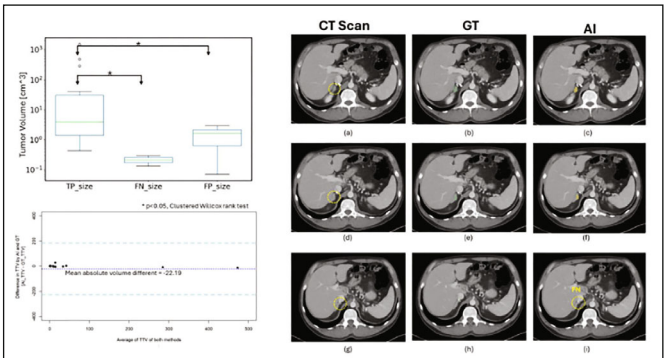

Figure 1. *Top Left,* Test set for TP, FN, and FP lesion tumor volumes [cm³]. Statistically significant differences (* $p<0.05$) are shown with the paired line between lesion types. *Bottom Left*, Bland-Altman plot of the difference for total tumor volume (TTV) [cm³] on scan level of the test set between AI-generated and GT expert annotated lesion masks. *Right:* An example case from one patient. The first column represents the CT images with markup of the tumor area (yellow dotted circle), the Second column represents the expert annotated ground truth

EP302

Sentinel Node Biopsy at Prophylactic Mastectomy: Necessary Precaution or Unnecessary Procedure?

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INTRODUCTION: The role of sentinel lymph node biopsy (SLNB) in prophylactic mastectomy remains controversial. We aimed to evaluate the diagnostic yield of SLNB and the incidence of occult malignancy in prophylactic nipple-sparing mastectomies (NSMs). **METHODS:** We performed an IRB-approved review of a prospectively maintained NSM database at Massachusetts General Hospital (2007–2019). Patients undergoing bilateral prophylactic mastectomy (BPM) or contralateral prophylactic mastectomy (CPM) were included. Clinicopathologic features, BRCA status, MRI findings, and SLNB results were analyzed. **RESULTS:** A total of 1,624 prophylactic NSMs were performed in 1,331 patients (36.1% BPM, 63.9% CPM). SLNB was performed in 53.4% of cases; three patients (0.4%) had positive nodes (two isolated tumor cells in the CPM cohort, one micrometastasis in the BPM cohort), with no macrometastatic disease identified. Occult cancer was found in 91 cases (5.6%), more frequently in CPMs than BPMs (6.9% vs. 3.2%, p=0.002). Most occult cancers were in situ (71.4%), and among invasive cancers, 88.5% were luminal A subtype with a median size of 0.6 cm. Prior ipsilateral radiation and contralateral breast cancer also increased risk. On multivariable analysis, BRCA1/2 positivity was independently associated with decreased risk of occult cancer (OR 0.47, 95% CI 0.23–0.92, p=0.034). Among patients with occult cancer who underwent preoperative MRI, 55.3% had false-negative findings. **CONCLUSIONS:** Occult malignancy was uncommon, and SLNB positivity was exceedingly rare in prophylactic NSMs. Routine SLNB is not justified in this setting and should be reserved for select higher-risk scenarios. Personalized, risk-adapted approaches to axillary management and preoperative imaging are warranted.

Table 5. Predictors of Occult Cancer on Final Pathology: 91 occult cancers in 1624 prophylactic mastectomies

	Univariate Analysis		Multivariate Analysis	
	Odds Ratio	p-value	Odds Ratio	p-value
Post-menopausal	1.353 [0.875–2.073]	0.168		
BMI ≥ 30 kg/m2	0.746 [0.309–1.532]	0.467		
Non-white race (ref: white)	1.745 [0.857–3.240]	0.098		
Hypertension	0.729 [0.320–1.442]	0.404		
Smoker	1.070 [0.639–1.725]	0.789		
Prior ipsilateral cancer	2.119 [0.860–4.492]	0.071		
Prior ipsilateral radiation	**2.334 [1.100–4.486]**	**0.017**	**2.286 [1.070–4.433]**	**0.021**
Contralateral cancer	**2.237 [1.363–3.849]**	**0.002**	1.536 [0.855–2.895]	0.167
BRCA mutation	**0.352 [0.185–0.617]**	**0.001**	**0.468 [0.225–0.919]**	**0.034**
Other mutation	0.607 [0.183–1.489]	0.337		

EP303

Disaggregating Hispanic Subgroups Reveals Distinct Disparities in Colon Cancer Characteristics and Outcomes

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INTRODUCTION: Hispanic individuals represent the largest ethnic minority group in the United States with most cancer research aggregating them into one category, obscuring subgroup-specific differences. Disaggregation may better identify disparities in colon cancer presentation, treatment, and survival. **METHODS:** Using the National Cancer Database (2009–2020), we identified patients with stage I–IV colon cancer excluding any without stage or race information. Multivariable logistic regression assessed odds of advanced-stage disease. Cox regression evaluated three-year overall survival. Covariates included age, comorbidity index, diagnosis year, insurance, and income quartile. **RESULTS:** Among 628,226 patients, 44,288 were Hispanic: Mexican (n=5563), Puerto Rican (n=2097), Cuban (n=1308), Dominican (n=864), and South/Central American (n=2657). Compared with non-Hispanic White (NHW) patients (n=552,139), pooled Hispanics had higher odds of advanced disease (OR 1.08; p< 0.001). By subgroup, odds were elevated for Mexicans (OR 1.12; p< 0.001), South/Central Americans (OR 1.12; p=0.006), Puerto Ricans (OR 1.12; p=0.02), and Cubans (OR 1.15; p=0.018), nonsignificant for Dominicans (OR 1.13; p=0.08). Stage IV was most frequent among Mexicans (27.1%). Despite later stage at diagnosis, Hispanics had better three-year survival than NHWs (HR 0.84; p< 0.001). Survival advantages were strongest for Dominicans (HR 0.57; p< 0.001) and South/Central Americans (HR 0.74; p< 0.001), moderate for Puerto Ricans (HR 0.83; p< 0.001) and Cubans (HR 0.86; p=0.008), and smallest for Mexicans (HR 0.92; p=0.005). Socioeconomic findings: South/Central Americans were found to be more likely in the highest income quartile (43.2%), while Dominicans (27.1%) and Puerto Ricans (24.7%) were concentrated in the lowest. Mexicans and South/Central Americans had the highest uninsured rates (11.7% and 12.4%). Tumor grade distribution showed higher proportions of intermediate/high-grade disease among Dominicans and South/Central Americans. Chemotherapy initiation within 30 days was lowest among Cubans (8.3%) and Puerto Ricans (9.3%) compared to NHWs (11.2%), though Hispanics overall were more likely to eventually receive treatment. **CONCLUSIONS:** Hispanic subgroups were more likely to present with advanced-stage colon cancer but demonstrated superior survival compared to NHWs, with variation across subgroups. These findings underscore the importance of disaggregating Hispanic populations in cancer research and registries to inform targeted screening, prevention, and treatment strategies.

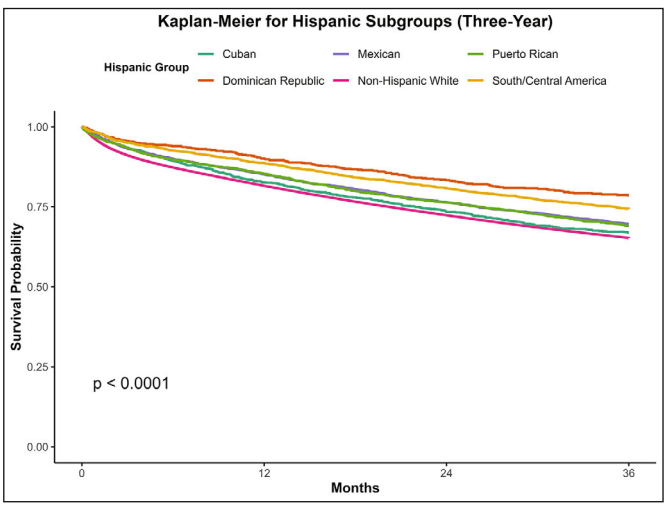

Figure. Kaplan-meier curve depicting three-year survival of each Hispanic subgroup and Non-Hispanic White patients

EP304

Operative vs Non-operative Management of Pneumatosis Intestinalis and Pneumoperitoneum in Patients on Immunotherapies

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INTRODUCTION: Pneumatosis Intestinalis (PI) is the presence of gas in the wall of the small or large intestines. PI has evolved from an urgent surgical finding on X-ray to an often incidental CT finding that only necessitates surgery when supported by concerning clinical signs. PI can progress to pneumoperitoneum, which often necessitates surgery. One recognized cause of PI is the use of oncologic drugs, including targeted therapies. The current study aims to assess outcomes of operative and non-operative management of PI among patients on immunotherapy. **METHODS:** This study included 36 patients, from Moffitt Cancer Center (n=28) and Tampa General Hospital (n=8), on immunotherapies who developed PI or pneumoperitoneum from 2016 to 2025. A retrospective chart review was completed, assessing age, BMI, admission vitals, labs, number of days in the ICU, need for vasopressors, operative management, and mortality. The Kruskal-Wallis Test was used to compare the significance of each prognostic factor. **RESULTS:** Out of 36 patients analyzed, 9 received an operation, 9 required vasopressors, and 6 patients died within 90 days of their admission. Factors that may be associated with a need for an operation included age (p=0.022), maximum temperature (p=0.017), and hospital day of maximum temperature (p=0.042). **CONCLUSIONS:** When evaluating patients on immunotherapy with PI or pneumoperitoneum, the patient's age, maximum temperature, and the hospital day of maximum temperature could influence the decision for operative or non-operative management. Reinforcement of associations could be made with a larger sample size.

EP305

Extracellular vesicles as therapeutic nanoparticles for pancreatic cancer

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INTRODUCTION: Pancreatic cancer (PC) is a leading cause of cancer-related mortality, often presenting as a systemic metastatic disease with poor prognosis and limited therapeutic options. Novel therapies are urgently needed to improve patient survival. Extracellular vesicles (EVs) are spherical nanovesicles that have gained attention as therapeutic agents due to their ability to deliver therapeutic cargos to tumor sites. MiR-141, a known tumor suppressor, is downregulated in PC and plays a key role in epithelial to mesenchymal transition (EMT). This study explores the therapeutic potential of EVs enriched with miR-141 (EV-miR-141) using an innovative 3D spheroid model. **METHODS:** EVs enriched with miR-141 were generated from HEK293 cells stably expressing miR-141 via lentiviral transduction (shMIMIC-miR-141). The effects of EV-miR-141 on PC cell proliferation, migration, and invasion were assessed through in vitro assays. EMT-related gene expression in treated PC cells was analyzed by qRT-PCR. Additionally, 3D spheroids derived from human PC cells were treated with EV-miR-141, and changes in spheroid size and tumor cell viability were monitored over time using live-cell imaging. Finally, a murine xenograft model was used to evaluate the in vivo effects of intratumoral EV-miR-141 injection. **RESULTS:** HEK293 cells stably expressing miR-141 exhibited a 150-fold increase in miR-141 levels, with a corresponding 300-fold enrichment in their EVs. Treatment of human PANC-1 cells with EV-miR-141 significantly reduced cell proliferation, migration, and invasion compared to control EVs. EV-miR-141 also downregulated the expression of EMT-related genes ZEB1, Snail, TWIST, and Vimentin, while upregulating the epithelial marker E-cadherin. In 3D spheroid models, EV-miR-141 treatment markedly reduced spheroid size and growth, and induced tumor cell apoptosis. In vivo, intratumoral injection of EV-miR-141 into PANC-1 xenografts led to decreased tumor growth and reduced proliferation, as confirmed by Ki-67 immunohistochemistry. **CONCLUSIONS:**

These findings demonstrate that EVs enriched with the tumor-suppressor miR-141 effectively inhibit pancreatic cancer (PC) cell growth and EMT, highlighting their potential as a targeted therapeutic approach. Additionally, patient-derived 3D spheroid models offer a promising platform for evaluating treatment efficacy and accelerating the development of novel therapies for pancreatic cancer.

EP306

Incorporation of a global surgical oncology rotation into a CGSO Fellowship Program: Impact and perceptions

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INTRODUCTION: Medical education is adopting an increasingly global perspective, yet international health education opportunities are relatively rare during surgical fellowships. Our study aims to assess the impacts of the international rotation (IR) on Complex General Surgical Oncology (CGSO) graduates. **METHODS:** All Roger Williams Medical Center (RWMC) CGSO Fellowship graduates who participated in IRs between 2006-2022 were surveyed (n=9). IRs included 4-week rotations Kenya, India, Pakistan, Mexico, New Zealand, and France. The survey responses were collected anonymously. The survey focused on short- and long-term impact of IR experience using a 5 point-Likert scale. SPSS software was used for descriptive statistics. **RESULTS:** The response rate to was 88.8% (n=8/9). Most fellows were Caucasian (33.3%) or Asian/pacific islander (33.3%), male (77.7%), with current practices in the community (44.4%) and urban settings (77.7%). All agreed that they were able to get exposure to cases they had not encountered in their fellowship in the United States. All but one fellow indicated gaining a greater appreciation of resource limitations and cost savings that still inform their practice. Majority of fellows (66.6%) felt that they learned something that changed their clinical practice. Most also reported that the IR led to long-term professional relationships, collaborations, and exchange of ideas (66.6%). The main barrier to participation was financial, cited by 55.5% of the fellows with costs ranging from $2,500-$7,000 per month. After completing fellowship, 55.5% of fellows continued global health trips. **CONCLUSIONS:** Offering IR in CGSO Fellowships provides exposure to cases and surgical techniques not seen in the United States, enhances understanding of resource limitations, and fosters the development of an international network of surgeons. Sustainable improvement in the global health landscape may be better achieved by integrating IRs within one international hospital system, and providing financial support from professional societies and fellowship programs.

EP307

Global surgeon attitudes regarding radiotherapy utilization for patients with pancreatic ductal adenocarcinoma

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INTRODUCTION: Neoadjuvant radiotherapy (RT) has the potential to improve margin-negative resection rates and long-term local control among patients with pancreatic ductal adenocarcinoma (PDAC). However, surgeon attitudes regarding the use and utility of RT among patients with PDAC are variable and not well-defined. This study aimed to characterize international practice patterns and surgeon-reported challenges related to RT use in PDAC. **METHODS:** A 39-item electronic survey was distributed between June and August 2025 via the Radiosurgery Society, International Hepato-Pancreato-Biliary Association, and Pancreas Club listservs. Eligible respondents were providers who had treated at least one PDAC patient in the past five years. The survey addressed provider characteristics, RT utilization patterns, and surgeon-specific attitudes regarding RT and its perceived impact on surgical outcomes. **RESULTS:** A total of 142 surgeons across six continents completed the survey (Europe: n = 61, 43%; North America: n = 49, 35%; Asia: n = 19, 13%; South America: n = 6, 4%; Africa: n = 5, 4%; Australia: n = 2, 1%). Compared to European surgeons, North American surgeons were more likely to offer neoadjuvant RT for borderline (54.5% vs. 18.7%) and locally advanced PDAC (45.5% vs. 12.2%) (both $p < 0.001$). Among all respondents, 71% of surgeons (n = 92) believed neoadjuvant RT makes surgical resection more technically challenging. Among 89 free-text responses describing these challenges, 78% (n = 69) cited fibrosis, adhesions, or loss of dissection planes as key contributors. Additionally, 28% (n = 25) noted vascular fragility or increased risk of intraoperative injury, and 24% (n = 21) reported edema or inflammation obscuring surgical anatomy from neoadjuvant RT. A subset of respondents (18%, n = 16) identified delayed surgery (>6–8 weeks post-RT) as a factor worsening fibrosis and increasing surgical complexity after RT. The type of RT was also felt to impact surgical complexity, with 10% (n = 9) citing greater fibrosis with certain techniques (e.g., SBRT vs. MR-guided RT). Nearly one-half of surgeons (n = 58, 44.3%) reported hesitancy to offer a minimally invasive surgical approach after RT. **CONCLUSIONS:** Nearly 3 in 4 surgeons believe that neoadjuvant RT increases operative complexity in PDAC resection, resulting in a wide variation in the surgeon-supported use of RT among patients with PDAC globally. These findings underscore the need for standardized measures of RT-associated operative complexity to allow for objective assessment of RT variables that drive this phenomenon.

EP308

Disparities in access to surgery for colorectal liver metastases in New York City

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INTRODUCTION: Liver resection for colorectal liver metastases (CRLM) is a potentially curative treatment that is underutilized in the United States. Population-level data on disparities in access to liver surgery have been described, but municipality-level data is lacking and required to implement local interventions. **METHODS:** The New York State Cancer Registry (NYSCR) and the New York Statewide Planning and Research Cooperative System (SPARCS) datasets were linked to identify patients with synchronous, liver-only CRLM in New York State (NYS) and New York City (NYC) between 2010 – 2020. Demographic and treatment details were retrospectively reviewed from the linked dataset alongside census tract data, and patients who underwent liver resection were compared to those who did not using Pearson's chi-squared, Welch's t-test, and Firth's penalized logistic regression as appropriate. High-volume liver surgery facilities were defined as having ≥20 liver resections per year. Geo-mapping was performed to determine driving distances between patient home addresses and their treating facility. **RESULTS:** We identified 3,765 patients in NYS, 2,609 of which lived in NYC. The CRLM resection rate in NYS was 24% compared to 20% in NYC. Within NYS, a history of prior colorectal resection (OR 3.09, $p< 0.001$) and White race (OR 1.47, $p=0.001$) were associated with an increased likelihood of undergoing liver resection. Treatment at a low-volume liver surgery facility (OR 0.18, $p< 0.001$), having positive primary lymph nodes (OR 0.39, $p< 0.001$), diagnosis of CRLM in the latter half of the study (OR 0.67, $p< 0.001$), Medicare insurance (OR 0.72, $p=0.008$), and older age (OR 0.97, $p< 0.001$) were associated with a decreased likelihood of undergoing liver resection. Associations were similar in the NYC cohort except for White race no longer being associated with receipt of resection (Table 1). In NYC, farther travel distance to the treating facility (OR 1.03, $p=0.001$) was associated with increased receipt of liver resection. Among those who did not undergo resection in NYC, 18% bypassed a closer high-volume center to be treated at a farther low-volume center. **CONCLUSIONS:** This study identifies municipality-level disparities in the receipt of liver surgery for CRLM, laying the foundation for the implementation of local interventions.

Table. Logistic regression analysis of predictors for receipt of liver resection for CRLM in NYC

Variable		OR (95% CI)	p
Age at Diagnosis		0.98 (0.97,0.99)	**<0.001**
Sex	Female	1.16 (0.93,1.44)	0.191
	Male	REF	-
Race			
	White	1.17 (0.89,1.53)	0.258
	Other	0.95 (0.70,1.29)	0.762
	Black	REF	-
Insurance			
	Medicare	0.62 (0.45,0.86)	**0.004**
	Medicaid	0.87 (0.66,1.16)	0.355
	Dual Eligible	0.75 (0.46,1.19)	0.224
	None	0.82 (0.38,1.67)	0.599
	Commercial	REF	-
Income		1.00 (1.00,1.00)	0.824
Facility Type	Low Volume	0.23 (0.18,0.29)	**<0.001**
	High Volume	REF	-
Diagnosis Period	2015-2019	0.66 (0.53,0.84)	**<0.001**
	2010-2014	REF	-
Elixhauser Comorbidity Index		1.00 (0.96,1.04)	0.896
Positive Primary Lymph Node		0.34 (0.25,0.44)	**<0.001**
History of Colorectal Resection		4.44 (3.07,6.47)	**<0.001**
Area Deprivation Index – National Percentile		1.00 (1.00,1.00)	0.540
Distance to treating facility		1.03 (1.01,1.04)	**0.001**

OR=Odds Ratio; CI=Confidence Interval; REF=Reference group

EP309

The Declining Role of Surgery in the Management of Desmoid Tumors

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INTRODUCTION: Desmoid tumors (DT) are rare, locally aggressive neoplasms traditionally treated with surgery, but primary management has shifted to less invasive approaches, including active surveillance and systemic therapy.This study aims to evaluate the changing role of surgery in DT over time, analyzing both overall and site-specific trends. **METHODS:** Patients with pathologically confirmed DT were identified from a prospectively maintained institutional database. Initial treatment after presentation was evaluated in patients presenting from 1992–1999, 2000–2007, 2008–2015, and 2016–2023. Variations in clinicopathologic characteristics were documented by retrospective chart review and compared using Chi-squared tests. Disease-specific survival (DSS) was estimated from the date of initial treatment at our institution and variable risk assessed by Kaplan Meier and log-rank analyses. **RESULTS:** Among 761 patients, median age and tumor size were 39 yo (range 1-89 yo) and 6.8 cm (range 0.6-36 cm). Overall, most patients were female (66%), with tumors arising mainly in the extremity (31%) or abdominal cavity (26%; vs. 22%, 18%, and 3.5% in the abdominal wall, chest wall or other locations, respectively). Patient and tumor demographics shifted slightly over time. In the latest cohort, patients tended to be older (p=0.033) and more commonly have primary and abdominal wall vs. extremity tumors (p= 0.03, p< 0.001, respectively) than in the earliest cohort (31 vs. 22% of patients older than 50 yo, 87 vs. 77% primary tumors and 26 vs. 47% extremity tumors). Use of surgery as first line therapy declined significantly over time; while 94% of patients treated in the earliest cohorts underwent operative intervention, only 18% of patients in the modern era were resected (p< 0.01). Complete gross resection was achieved in all patients in the latest cohort, compared with 5.0% R2 resections previously (p=0.026). Operative management was supplanted by non-operative interventions including active surveillance, ablative and systemic therapies (Figure). This shift was most significant among patients with extremity DT (98 vs. 9.8% undergoing resection in earliest vs latest periods) with surgery continuing to be used for intra-abdominal DT (32%) in late cohorts. Despite the increasing use of non-operative strategies, DSS rates fell over time (5-year DSS 96, 97, 100, and 100%) in patients undergoing initial evaluation during serial time periods (p=0.031). **CONCLUSIONS:** Surgical management of DT declined significantly over time, with a rise in non-operative strategies. Improved DSS suggests upfront non-operative care does not increase risk.

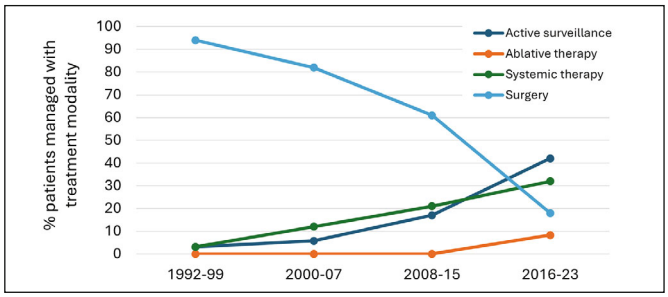

Figure. Shift in Upfront Therapeutic Approach of Desmoid Tumors with Time

EP310

Clinicopathologic predictors of recurrence and post-recurrence survival following curative resection of perihilar cholangiocarcinoma: insights from a 24-year institutional cohort

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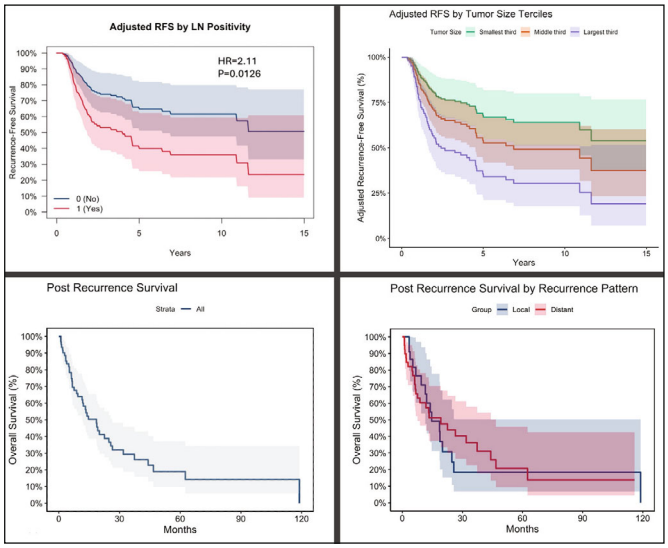
INTRODUCTION: Perihilar cholangiocarcinoma (pCCA) remains one of the most aggressive hepatobiliary malignancies, with high recurrence rates even after curative-intent resection. Contemporary data defining recurrence patterns, clinicopathologic predictors, and post-recurrence outcomes in a homogeneous surgical cohort are limited. **METHODS:** We conducted a 24-year retrospective cohort study of patients undergoing curative-intent liver resection for de novo pCCA. Patients requiring vascular reconstruction, transplantation, or with primary sclerosing cholangitis were excluded. Clinicopathologic features, recurrence patterns, recurrence-free survival (RFS), overall survival (OS), and post-recurrence survival (PRS) were analyzed using Kaplan–Meier and multivariable Cox regression. **RESULTS:** Among 163 patients, the median follow-up was 7 years. The median RFS was 4.7 years (95% CI, 3.6–5.9), with 1-, 3-, and 5-year rates of 78.5%, 68.1%, and 58.9%. The median OS was 5.4 years (95% CI, 3.6–7.2), with 1-, 3-, and 5-year rates of 85.3%, 68.1%, and 58.9%. Recurrence occurred in 66 patients (40.5%) at a median of 1.5 years, most commonly distant (57.6%) versus locoregional (33.3%). On multivariable analysis, lymph node positivity (HR 2.06, 95% CI 1.17–3.61, p=0.012) and increasing tumor size (HR 1.15 per cm, 95% CI 1.02–1.36, p=0.026) independently predicted recurrence, while margin status was not associated. Among patients with recurrence, median PRS was 18.6 months (95% CI, 12.2–24.9). PRS did not differ by recurrence pattern (locoregional vs distant, p=NS) or prior receipt of adjuvant therapy (20.1 vs 13.9 months, p=0.527). Treatment after recurrence was heterogeneous: 41% received systemic chemotherapy, 26% underwent locoregional or surgical interventions, 6% received alternative/investigational therapies, and 23% received best supportive care. **CONCLUSIONS:** In the largest single-institution series of homogeneous pCCA resections without vascular reconstruction, recurrence occurred in over 40% of patients, predominantly at distant sites. Lymph node involvement and tumor size independently predicted recurrence, while resection margin did not. Post-recurrence survival remained poor and was unaffected by recurrence pattern or adjuvant therapy. These findings underscore the urgent need for novel systemic and perioperative strategies to reduce recurrence and improve survival in pCCA.



Adjusted Recurrence-Free and Post-Recurrence Survival Following Curative-Intent Resection for Perihilar Cholangiocarcinoma

EP311

Epithelial-mesenchymal transition is activated in pancreatic ductal adenocarcinoma with perineural invasion

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INTRODUCTION: Perineural invasion (PNI) is associated with aggressive disease behavior and poor clinical outcomes in pancreatic ductal adenocarcinoma (PDAC). Here we investigated the biology of PDAC tumors using a cohort with both PNI status and transcriptome. **METHODS:** A cohort of 177 PDAC patients in The Cancer Genome Atlas (TCGA) was analyzed. Gene set enrichment analysis (GSEA) was conducted using Hallmark gene sets. PNI positivity was obtained from pathology report. **RESULTS:** Utilizing optical character recognition and natural language processing techniques with artificial intelligence on pathology reports obtained by Kefeli et al., we identified 101 patients (79.5%) that had PNI-positive tumors among 127 PDAC patients in TCGA. In this cohort, PNI-positive patients trended to worse overall survival (OS) and disease-free survival (DFS) compared to those without PNI, however did not reach statistical significance. PNI-positive PDAC enriched all proliferation-related gene sets (G2M checkpoints, E2F targets, Mitotic spindle, myc targets v1&2, MTORC1), however, there were no differences in MKi67 or proliferation score. There were no differences in the mutation frequencies of KRAS, TP53, CDKN2A, or SMAD4, nor differences in genomic instability such as aneuploidy, intratumor genomic heterogeneity, fraction altered, homologous recombination deficiency, and the mutation rates between PNI-positive and negative PDAC. PNI-positive PDAC enriched immune response-related gene sets such as TNF-α signaling, interferon-α response, and interferon-γ response, however, there were no differences in lymphocyte infiltration, cytolytic activity, nor in tumor immune microenvironment composition between the two groups. Although angiogenesis gene set was enriched to PNI-positive PDAC, none of the vascular endothelial cells were significantly infiltrated compared to PNI-negative PDAC, and surprisingly, neither were neuron cells. The most pronounced enriched gene set was epithelial–mesenchymal transition (EMT) (NES = 2.11, FDR < 0.001), which was consistent with significant increased expression of EMT related genes (ITGB1, LAMC2, and ITGAV, all p< 0.05), and infiltration of mesenchymal stem cells in PNI-positive PDAC cohort. **CONCLUSIONS:** PNI-positive PDAC is associated with epithelial-mesenchymal transition and its association with cell proliferation, neuron infiltration, angiogenesis or suppression of immune infiltration was weak in TCGA

EP312

National compliance with literature-defined learning curve milestones following the rapid adoption of robotic esophagectomy for patients with esophageal cancer

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INTRODUCTION: More patients needing esophagectomy for esophageal cancer in the United States are undergoing a robotic approach over laparoscopic or open surgery. However, there are no nationally accepted learning curve milestones to guide development of a robotic esophagectomy program. The aim of this study is to determine learning curve milestones for performing robotic esophagectomy from a literature review of reported outcomes and evaluate what proportion of centers in the National Cancer Database (NCDB) meet these milestones. **METHODS:** A systematic review of articles published after 2010 was performed searching PubMed for mentions of "learning curves" or "textbook outcomes" for patients undergoing robotic esophagectomy. Milestones were defined by adding greater weight to outcomes from articles with higher level evidence (e.g. randomized trials, multicenter, large cohorts). Low-, medium-, and high-volume hospitals for performing robotic esophagectomy for patients with primary esophageal cancer between 2010-2022 in the NCDB were defined using cubic spline modeling for the rate of conversion to open. Overall trends for the achievement of milestones over time were studied using general linear regression. **RESULTS:** From 24 articles reviewed, learning curve milestones in the NCDB were ≥15 lymph nodes harvested, rate of conversion to open ≤3.3%, R0 resection ≥93.1%, mean length of stay ≤12.4 days, reoperation ≤15.5%, and 90-day mortality ≤2.6%. Over the study period, the proportion of hospitals meeting these milestones significantly increased for lymph nodes harvested (45.8% to 65.3%, p< 0.001) but decreased for rate of conversion to open (83.3% to 68.8%, p< 0.001), R0 resection (91.7% to 67.0%, p< 0.001), mean length of stay (68.2% to 57.1%, p< 0.001), reoperation (87.5% to 80.6%, p< 0.001), and 90-day mortality (87.5% to 49.7%, p< 0.001, Figure 1A). During the study period, the volume of robotic esophagectomy cases increased most at low-volume centers (< 4 cases/year, 11 to 88 hospitals) compared to medium (4-7 cases/year, 3 to 31 hospitals) and high-volume centers (≥8 cases/year, 1 to 7 hospitals, Figure 1B). **CONCLUSIONS:** As more centers adopt robotic esophagectomy, relatively more low-volume hospitals launched programs and fewer patients met literature-defined postoperative and oncologic milestones. Future work will study strategies for patient selection and program growth to achieve these learning curve milestones when building a robotic esophagectomy program.

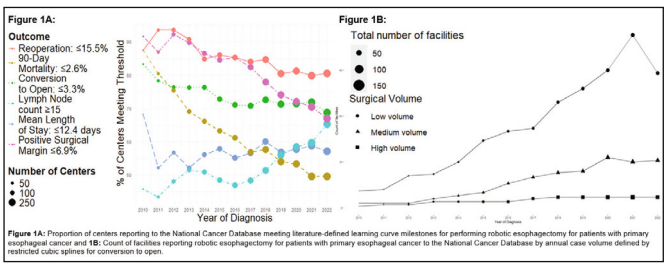

Figure 1A: Proportion of centers reporting to the National Cancer Database meeting literature-defined learning curve milestones for performing robotic esophagectomy for patients with primary esophageal cancer and **1B:** Count of facilities reporting robotic esophagectomy for patients with primary esophageal cancer to the National Cancer Database by annual case volume defined by restricted cubic splines for conversion to open.

EP313

Time-to-Treatment in Patients with Non-Metastatic Triple Negative Breast Cancer: A Canadian Retrospective Cohort Study

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INTRODUCTION: Triple negative breast cancer (TNBC) is an aggressive subtype with historically higher rates of recurrence and poorer survival compared to other subtypes. The purpose of this study was to evaluate whether delays from diagnosis to initial treatment in TNBC impacts overall (OS) and breast cancer specific survival (BCSS) and to identify factors affecting treatment timelines. **METHODS:** This retrospective cohort study identified patients with non-metastatic TNBC who underwent neoadjuvant chemotherapy (NAC) or surgery between 2005 to 2023 at two academic institutions in Montreal, Canada. Time to treatment (TTT) was calculated from the date of pathological diagnosis and categorized as: < 30, 30–60, 60–90 and >90 days. Inferential statistics were used to estimate median TTT differences between treatment sequences. Multivariate logistic regression identified factors associated with BCSS, and the Kaplan–Meier (KM) analysis and log-rank tests were used to evaluate OS and BCSS across TTT categories. **RESULTS:** Of 801 patients, 51.8% (n=415) were treated with NAC and 48.2% (n=386) were treated with surgery first. Median age at diagnosis was 57 years, and the median follow up time was 72 months. Overall, 77.7% (n=622) of patients were treated within 60 days. Patients receiving NAC had a median TTT that was 11 days earlier than those who underwent surgery first. On multivariate analysis, nodal status, tumor size and Eastern Cooperative Oncology Group score were predictors of BCSS, but TTT and treatment sequence were not. The KM analysis showed no significant differences in OS or BCSS across TTT categories (p=0.26 and p=0.43 respectively). Sensitivity and subgroup analyses revealed no threshold effect or association between TTT and outcomes, regardless of stratifying treatment sequence (NAC vs. surgery first) or clinical nodal status. **CONCLUSIONS:** In this study of non-metastatic TNBC patients, our findings suggest that modest delays may not compromise survival outcomes, likely driven by modern systemic therapy strategies. Ongoing efforts should aim to minimize avoidable delays by both patients and providers to support optimal care delivery.

EP314

Trends and Disparities in Lung Cancer Surgery Over Two Decades

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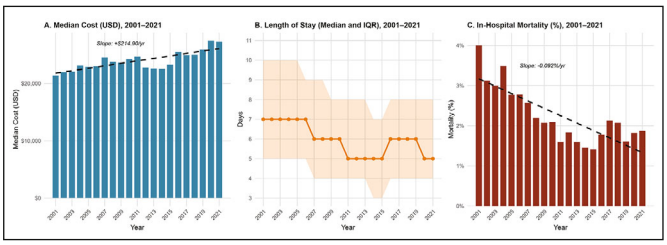
INTRODUCTION: Most patients with nonmetastatic lung cancer will undergo surgical treatment. This study aims to better understand trends and disparities over two decades, in lung cancer patients undergoing surgery, specifically examining how socioeconomic factors influence postoperative outcomes in the context of broader surgical trends. **METHODS:** This retrospective, cross-sectional study, analyzed data from 2001-2021 from the National Inpatient Sample database. Adults 18 years and older with stage 1-3 lung cancer undergoing elective surgery (sublobar resection, lobectomy, or pneumonectomy) with overnight stay were included. Univariable analysis and multivariable logistic regression were performed. Outcomes examined included trends in mortality, length of stay (LOS), cost, and complications, adjusting for age, sex, race/ethnicity, insurance, income, Charlson comorbidity index, surgery type and hospital variables. **RESULTS:** The cohort consisted of 594,065 patients, most Non-Hispanic (NH) White, older than 65, with Medicare insurance, treated at large, urban, private nonprofit, teaching hospitals. Overall, in-hospital mortality declined from 4% to 1.88% (p< 0.001), and hospital costs rose from $21,397 to $27,286 (p< 0.001). Females had lower odds of in-hospital mortality (OR=0.64, CI=0.62–0.67), decreased LOS (RR=0.41, CI=0.34–0.48), less systemic complications (OR=0.85, CI=0.84–0.86) and surgery-specific complications (OR=0.73, CI=0.73–0.74). Compared to NH White patients, NH Black patients had higher odds of in-hospital mortality (OR=1.09, CI=1.01–1.17), increased LOS (RR=1.52, CI=1.07–2.16), and more systemic complications (OR=1.10, CI=1.07–1.13) but fewer surgery-specific complications (OR=0.72, CI=0.7–0.73). Asian American and Pacific Islander (AAPI) patients had lower odds of in-hospital mortality (OR=0.79, CI=0.67–0.93), and surgery-specific complications (OR=0.82, CI=0.79–0.86). Hispanic patients had higher odds of systemic (OR=1.14, CI=1.09–1.18) and lower odds of surgery-specific complications (OR=0.74, CI=0.72–0.77). Compared to those with Medicare, patients with private insurance had decreased in-hospital mortality (OR=0.77, CI=0.73–0.82), decreased LOS (RR=0.45, CI=0.35–0.48), lower odds of systemic (OR=0.88, CI=0.86–0.9) and surgery-specific complications (OR=0.92, CI=0.9–0.93). [All results p< 0.05] **CONCLUSIONS:** Our study demonstrates decreasing mortality rates, rising hospital costs, and persistent disparities in lung cancer surgery over the past two decades, underscoring the need for targeted interventions to address healthcare inequities.



EP315

TikTok university: breast cancer 101

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INTRODUCTION: The incidence of breast cancer has been increasing and outcomes improve significantly when diagnosed at an early stage. Patient education and breast cancer screening are a focus of both physicians and health systems. TikTok is a social media application with over 1.5 billion monthly users that has emerged as a center for medical knowledge sharing where users share information via short informational videos directly to the general public. Little is known about the quality of medical advice provided on this app.The purpose of this study was to evaluate the quality and source of breast cancer information available on TikTok. **METHODS:** Four reviewers conducted a cross sectional content analysis of the search term #breastcancer on TikTok to assess videos available for viewing related to the topic that were narrated in English and had > 500 views. Each video was independently coded for uploader identity, video type, presence of recommendations, and their accuracy according to American Cancer Society guidelines. Descriptive statistics were calculated with Microsoft Excel. **RESULTS:** A total of 100 videos were analyzed, collectively amassing over 137 million views. Half were created by patients. Videos made by healthcare professionals included individuals with advanced degrees such as dentists, ultrasound technologists, naturopaths, PhDs, nutritionists, physician assistants, and medical doctors across multiple specialties. Forty-seven of the 100 videos provided recommendations or educational information, 29 of which were created by self-identified healthcare professionals. Of the 47 videos providing recommendations, 11 were significantly inaccurate, 9 of which were attributed to healthcare professionals.. Videos containing inaccurate information received an average of 1.9 million views, compared with 1.5 million views for videos presenting accurate information. **CONCLUSIONS:** Breast cancer content on TikTok reaches millions of consumers. Patients, loved ones, and health professionals can garner community and financial benefit from popular videos and engagement from their content. The majority of misinformation about breast cancer on TikTok are from creators who present themselves as healthcare workers. Further research is needed to understand the extent of social media driven breast cancer misinformation and how it contributes to patient outcomes. Increased engagement in TikTok by responsible physicians and healthcare organizations may improve public education regarding diagnosis and treatment of breast cancer.

EP316

An Ounce of Prevention: Risk-Reducing Endocrine Therapy

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INTRODUCTION: Endocrine therapy reduces breast cancer incidence among high-risk (HR) women, yet uptake and adherence remain low despite national recommendations.[1,2,3] This study evaluated the uptake rate of risk-reducing endocrine therapy (RRET) and subsequent breast cancer (BCa) development among HR subgroups, including those with family history, genetic mutations (GM), and pathologic high-risk lesions (RL) at a single institution. **METHODS:** This is a retrospective study of women aged ≥35 years identified as HR by validated models (≥20% lifetime risk (LTR)), RLs (atypical ductal/lobular hyperplasia or lobular carcinoma in situ) or pathogenic GM. Exclusions included prior BCa or insufficient data for risk assessment. Demographic and clinical data were analyzed descriptively and comparatively. The primary endpoint was RRET uptake (analyzed with a two-proportion Z-test). Secondary endpoints included BCa incidence (Fisher's Exact Test) and BCa hormone receptor positivity (Exact Binomial test) among women who did versus did not receive RRET, as well as RRET adherence, completion, and time to development of BCa. **RESULTS:** 387 HR women met criteria (mean age 54, range 36-81), with a mean LTR of 30.5%. RLs were identified in 24% and 6% had GMs. RRET was initiated in 14% (n=55) (tamoxifen in 78%, raloxifene in 15%, and aromatase inhibitors in 7%), with 2.1% (n=7) unable to complete treatment due to side effects. Of the 332 women who did not initiate RRET, 70.8% had no documented offer, 23% declined and 6.2% were lost to follow-up. Among 111 women who had a documented offer, 49.6% initiated RRET versus 14.2% overall ($p < 0.0001$) Even under conservative sensitivity assumptions (reclassifying 100 patients of "unknown" cases as counseled non-initiators), initiation among truly counseled remained ≥ 26% ($p \leq 0.03$, 95% CI 20.8-32.1%). At a mean follow-up of 2.2 years after HR designation, 19 women (4.9%) developed BCa, all in the non-RRT group, which corresponds to a number needed to treat of 18 and approaches significance by Fisher's exact (p=0.050 one-tailed; p=0.089 two-tailed). All cancers were ER/PR-positive, significantly exceeding expected baseline rates (p=0.0065; 95% CI 82.4–100%). **CONCLUSIONS:** Only 14% of HR women in our study initiated RRET, with over half lacking documented discussion. Uptake rose significantly among those counseled, demonstrating that provider recommendation is critical. No cancers occurred among RRET users, suggesting meaningful risk reduction despite limited power. These findings signal missed opportunities and underscore the need for standardized counseling pathways and provider engagement to expand RRET usage.

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Discordance between radiologic response and tumor marker dynamics during preoperative chemotherapy for colorectal liver metastases: analysis of nationwide Japanese data

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INTRODUCTION: Preoperative chemotherapy is an established treatment strategy for colorectal liver metastases (CLM). Both radiologic response and tumor marker dynamics (CEA and CA19-9) are known to correlate with long-term outcomes after hepatectomy. However, patients showing discordant trends—radiologic response with marker elevation or vice versa—are not uncommon, and their prognostic implications remain unclear. **METHODS:** Patients who underwent initial hepatectomy for CLM between 2013 and 2015 were retrospectively identified from the nationwide database of the Joint Committee of Liver Metastases Survey from Colorectal Cancer. Cases with extrahepatic metastases or R2 resection were excluded. Changes in tumor markers ≥20% decrease, ≥20% increase, or < 20% were defined as biological response (Bio-R), progression (Bio-PD), or stable disease (Bio-SD), respectively. Based on RECIST and biological response, patients were classified into four groups:

A, RECIST CR/PR/SD + Bio-R/SD;
B, RECIST PD + Bio-PD;
C, RECIST CR/PR/SD + Bio-PD;
D, RECIST PD + Bio-R/SD.

Overall survival (OS) was compared among groups, and prognostic factors were identified using multivariable analysis. **RESULTS:** Among 5,464 registered cases, 333 patients met the inclusion criteria. Based on CEA, the numbers of patients in Groups A, B, C, and D were 273, 16, 39, and 5, respectively; based on CA19-9, the corresponding numbers were 284, 6, 19, and 15. In the CEA-based classification, Group C showed a trend toward poorer overall survival (OS) than Group A (5-year OS: 30.4% vs. 59.7%, p = 0.083). In the CA19-9-based classification, Group C demonstrated significantly worse OS than Group A (5-year OS: 41.0% vs. 60.8%, p = 0.028). Multivariable analysis identified CA19-9 Bio-PD (p = 0.027), lymph node metastasis ($p < 0.001$), and initially unresectable disease (p = 0.038) as independent predictors of poor OS. **CONCLUSIONS:** Approximately 10% of radiologic responders showed discordant tumor marker elevation during chemotherapy. CA19-9 progression was an independent adverse prognostic factor, suggesting that tumor marker dynamics provide complementary biological information to radiologic response in CLM.

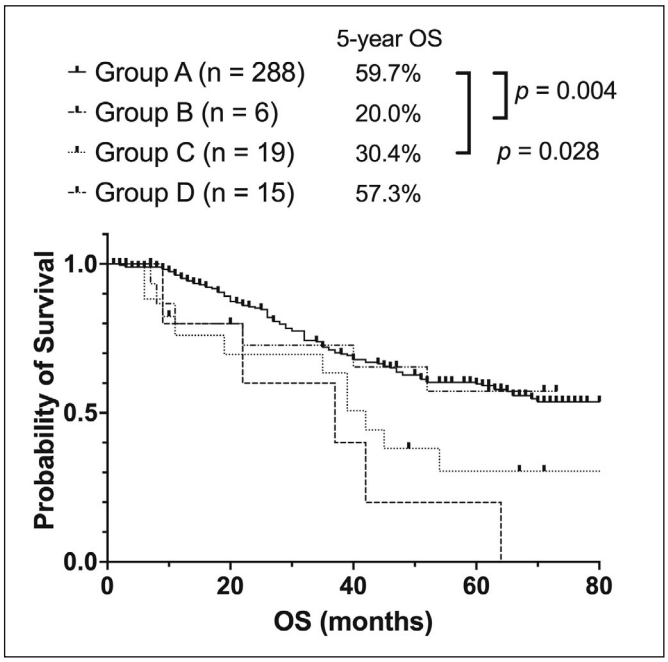

Figure. Overall survival according to the combined RECIST and CA19-9 biological responses

EP318

Pilot study of Stomach CanceR Early detection and prevention with ENdoscopy (Pilot-SCREEN): acceptability and feasibility results

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INTRODUCTION: Gastric cancer (GC) has high mortality rates, particularly among high-risk groups. Early detection and screening can significantly improve outcomes, yet screening guidelines for GC are lacking in the US. We aimed to examine the feasibility and acceptability of opportunistic upper endoscopy (EGD) performed at the time of colonoscopy (EGD-SC). **METHODS:** A clinical trial enrolled 50 individuals aged 45-80 who were not scheduled to undergo EGD, had not undergone EGD in the past 5 years, and were scheduled for colonoscopy at a single academic institution. A survey was conducted prior to EGD to assess participants' health history, beliefs, and knowledge about GC, as well as their motivators and barriers to undergoing an EGD. A post-EGD survey was conducted 1-2 weeks after the procedure to evaluate participants' preferences and satisfaction. Individuals were stratified as high- and low-risk based on their race/ethnicity, immigration status, and family history of

GC. **RESULTS:** Among individuals contacted, 51.6% expressed interest in participating, and 26.6% were enrolled and received EGD at the time of their colonoscopy. Enrolled individuals had median age of 56 (range 45-76), 48% were male, 55.8% had prior colonoscopy, and 68% were high-risk individuals. The median additional time required for EGD was 17 minutes (9-26). None had procedure complications. 93% of patients believed that screening would detect GC earlier, and 90.7% believed it would reduce the likelihood of dying. Less than 10% believed GC screening would be embarrassing (4.7%), painful (9.3%), invasive (9.3%), or take too much time (2.3%). The post-EGD survey found that 100% of individuals thought the combined EGD-SC was satisfactory, 90.% acceptable, 75% comfortable, 97.5% preferred having the EGD done at time of colonoscopy, 80.0 % felt that the addition of EGD would want them to get screening more than colonoscopy alone, and 92.5% said they would recommend the combined EGD at time of colonoscopy to a family member (Table 1). The acceptability of EGD did not differ between high- and low-risk groups except high-risk participants were less likely to report feeling comfortable getting EGD (70.4% vs 84.6%), believe that EGD could positively impact GC outcomes (70.4% vs 100.0%), and feel that it would not interfere with other future priorities (88.9% vs 100.0%) compared to low-risk participants. **CONCLUSIONS:** An opportunistic EGD performed during colonoscopy is a feasible and well-accepted strategy for screening patients for precancerous gastric conditions.

Table 1. Satisfaction, preferences, and acceptability of upper endoscopy (EGD) for gastric cancer screening

Post EGD Survey[a]	All sample N (%)	High-risk N (%)	Low risk N (%)	P-value[b]
Satisfaction of Colonoscopy and Endoscopy Outcomes				
• Very satisfied/satisfied • Neutral • Dissatisfied/very dissatisfied	40 (100.0) 0 (0.0) 0 (0.0)	27 (100) 0 (0.0) 0 (0.0)	13 (100) 0 (0.0) 0 (0.0)	0.0776
Preference for getting both upper endoscopy (EGD)				
• At the same time as the screening colonoscopy • At a separate time from the screening colonoscopy	39 (97.5) 1 (2.5)	27 (100) 0 (0.0)	12 (92.3) 1 (7.7)	0.3250
Inclination to undergo screening with the addition of EGD				
• Much more/somewhat • Not change whether I want to undergo screening • Somewhat less/ much less	32 (80.0) 7 (17.5) 1 (2.5)	24 (88.9) 2 (7.4) 1 (3.7)	8 (61.5) 5 (38.5) 0 (0.0)	0.3327
Recommendation of combined EGD and colonoscopy to family or friends				
• Very likely/Likely • Neutral • Not likely/Very unlikely	37 (92.5) 3 (7.5) 0 (0.0)	25 (92.6) 2 (7.4) 0 (0.0)	12 (92.3) 1 (7.7) 0.0	0.2540
Acceptability of the upper endoscopy (EGD)				
• Feels comfortable getting an EGD (affective attitude)	30 (75.0)	19 (70.4)	11 (84.6)	0.0427
• No effort at all/ little effort is required to participate in the EGD (burden)	38 (95.0)	26 (96.3)	12 (92.3)	0.4477
• EGD has potential to positively impact outcomes related to stomach cancer (perceived effectiveness)	32 (80.0)	19 (70.4)	0 (100.0)	0.0246
• Understands how EGD will help to detect and/or manage stomach cancer (intervention coherence)	35 (87.5)	22 (81.5)	0 (100.0)	0.4016
• Confident about getting an EGD in the future (self-efficacy)	36 (90.0)	23 (85.2)	0 (100.0)	0.6026
• Getting an EGD interferes with other priorities in the future (opportunity cost)	2 (5.0)	2 (7.4)	0 (0.0)	0.0050
• Getting an EGD is acceptable (general acceptability)	36 (90.0)	25 (92.6)	11 (84.6)	0.6453

[a] 40 respondents completed the post-EGD survey
[b] P-values were calculated based on Mann-Whitney U tess to examine the differences in survey responses between high- and low-risk participants

EP319

Clinicopathologic and Therapeutic Features of Early-Onset Gastric Cancer in a Quaternary Center of a Middle-Income Country: A 10-Year Retrospective Study

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INTRODUCTION: Gastric cancer remains a leading cause of cancer-related death in Colombia. Although global incidence has declined, early-onset gastric cancer (EOGC, ≤50 years) is increasing, often showing diffuse histology and poor prognosis. This study aimed to describe the clinicopathologic, therapeutic, and survival features of Colombian patients with EOGC treated at a quaternary reference center between 2015 and 2025. **METHODS:** A retrospective observational study included patients < 50 years with histologically confirmed gastric adenocarcinoma. Demographic, clinical, molecular, and treatment data were extracted from electronic records. Categorical variables were expressed as frequencies and continuous as means or medians. Survival was estimated using Kaplan–Meier. **RESULTS:** A total of 66 patients were included (mean age 39 years, 66.6% female). Abdominal pain and nausea/vomiting were the most frequent symptoms. At diagnosis, 54.5% had locally advanced tumors, 36.3% nodal involvement, and 50% distant metastases, including peritoneal carcinomatosis in 47%. Histologically, 39.3% were signet-ring cell adenocarcinomas and 60.6% poorly differentiated. HER2 positivity, PD-L1 expression, and MSI-High status were observed in 7.6%, 25.8%, and 12.1%, respectively. Surgery was performed in 62.1%, mainly laparoscopic (61%); R0 resection in 42%. FOLFOX and FLOT were the most used regimens. Median overall survival was 24 months; 1-, 3-, and 5-year survival rates were 84%, 67%, and 54% (Image 1). Intestinal-type tumors showed superior 5-year survival (63% vs 42%). **CONCLUSIONS:** EOGC in this cohort predominantly affected women and presented at advanced stages with diffuse, poorly differentiated histology. Despite multimodal therapy, survival remains limited, highlighting the need for early detection, genetic testing, and biomarker-guided therapies.

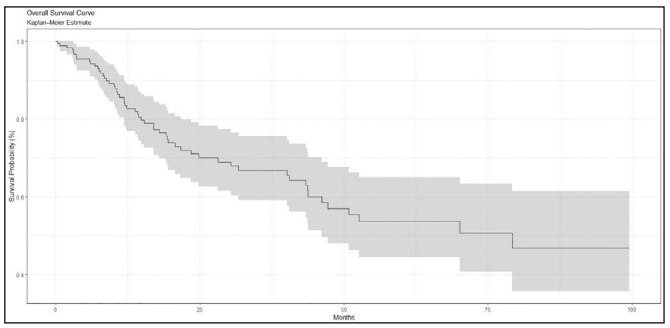

Figure 1. Kaplan–Meier Overall Survival Curve for Early-Onset Gastric Cancer (≤50 years)

EP320

Patterns and Outcomes of Surgical Management for Primary Colorectal Lymphoma: An Analysis of the National Cancer Data Base (NCDB)

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INTRODUCTION: Primary colorectal lymphoma (CRL) is a rare subtype of gastrointestinal lymphoma (GIL), comprising < 1% of colorectal cancers. While chemotherapy is standard, surgery is often performed for urgent presentations or diagnostic uncertainty. Large scale evaluations of this disease are lacking, and we sought to evaluate patterns of surgical care and outcomes of CRL in the US. **METHODS:** Using the NCDB (2004–2021), we identified CRL cases excluding secondary involvement or incomplete data. Multivariable logistic and Cox regression analyses assessed demographic and clinical factors associated with treatment receipt and overall survival (OS), adjusting for demographic and clinical covariates. **RESULTS:** Among 10,595 patients, 5,373 (50.7%) received surgery. Surgical patients were more likely to have early-stage disease (64% vs. 55%; p< 0.001), lower comorbidity (Charlson Deyo < 3: 96.5% vs. 94.7%; p< 0.001), and be treated at non-academic centers (64% vs. 55%; p< 0.001). No differences were observed by age, sex, race, or insurance (p >0.05). Among surgical patients, treatment included surgery alone (47.6%), surgery + chemotherapy (SC; 29.6%), SC + immunotherapy (SCI; 17.2%), and other combinations. Adjusting for age, sex, comorbidity burden, stage, insurance,

facility and race, compared to chemotherapy alone, SC (HR 0.87; 95% CI: 0.78–0.96; p=0.006), SI (HR 0.65; 95% CI: 0.46–0.91; p=0.012), and SCI (HR 0.60; 95% CI: 0.51–0.69; p< 0.001) were associated with improved OS. Stage-stratified analysis showed that for early-stage disease (n=3,718), surgery alone (HR 0.81; p=0.002), SC (HR 0.82; p=0.014), SR (HR 0.57; p=0.031), and SCI (HR 0.58; p< 0.001) improved OS. In late-stage disease (n=1,833), surgery alone was associated with worse OS (HR 1.62; p< 0.001), while SCI was beneficial (HR 0.63; p< 0.001). **CONCLUSIONS:** Although chemotherapy is the standard of care, half of CRL patients undergo surgery. Surgery-inclusive treatments improve OS in early-stage CRL but offer limited benefit or potential harm in late-stage disease. Surgical intervention may be valuable in appropriately selected CRL patients.

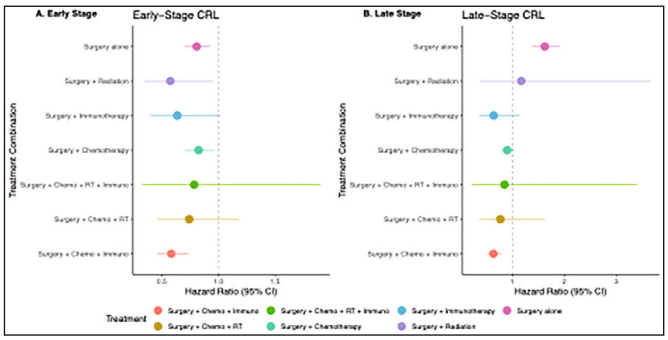

Figure. Adjusted hazard ratios for overall survival associated with surgery-containing treatment combinations versus chemotherapy alone, stratified by disease stage.

EP321

Running out of time: How operative duration influences post-operative outcomes in hepatic resections

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INTRODUCTION: Operative time is an easily measurable but complex surrogate for surgeon proficiency and technical stress in hepatic resections. While prolonged operations are conventionally associated with morbidity, it is unclear whether prolonged operative time is an independent risk factor or a mediator for other clinical characteristics on post-operative complications. **METHODS:** The American College of Surgeons NSQIP database was queried for cases of major hepatic resections (n=5168). Odds ratios for operative time (measured in hours) and clinical variables were assessed with univariable and multivariable logistic regression models. To assess how prolonged operative time acts as a mediator for perioperative risk factors on post-operative outcomes, we carried out a causal based mediation analysis using quasi-Bayesian approximation, followed by nonparametric bootstrap sensitivity analysis for significant findings. Results were reported as the average causal mediation effect (ACME), average direct effect (ADE), total effect, and proportion of total effect mediated by operative time. **RESULTS:** Operative time had significant effects in 20 of 22 outcomes in univariable analysis. In multivariable models, operative time remained independently associated with bleeding requiring transfusion (OR: 1.19 per hour, p = 0.012), invasive procedure post-operatively (OR: 1.27, p = 0.002), and bile leak (OR: 1.22, p = 0.017). 46% of included pathways had significant mediations through operative time. Select preoperative risk factors whose effects were at least partially mediated included age (21 mediations), neoadjuvant chemotherapy (21 mediations). And BMI (20 mediations). The largest mediation effects were in bleeding complications – in cases with roux-en-y biliary reconstruction, 80% of resultant bleeding risk was transmitted through operative time. Further, operative time mediated 54% (16 of 30) of tested pathways for bile leak, 39% for post-operative liver failure, and 52% for post-operative invasive procedures. Operative time significantly mediated 61% of tested pathways with respect to 30-day mortality. **CONCLUSIONS:** In hepatic resections, operative time is both an independent predictor and a crucial mediator of perioperative risk factors on adverse outcomes. By quantifying direct and mediated pathways, our analysis highlights operative time as a key conduit through which comorbidities and technical complexity translate into post-operative complications, underscoring its importance in outcome modeling and surgical quality improvement.

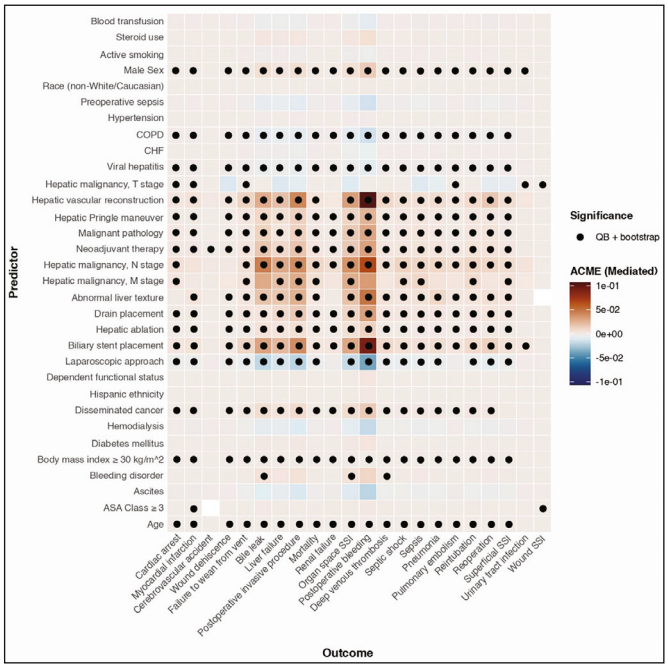

Figure. Average causal mediation effects for operative time in hepatic resections

EP322

Single-cell transcriptomics reveal systemic immunomodulatory effects of imatinib in gastrointestinal stromal tumor

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INTRODUCTION: Gastrointestinal stromal tumor (GIST) is the most common human sarcoma. While tyrosine kinase inhibitors (TKIs) like imatinib improve patient survival, they are rarely curative, and conventional immunotherapy has not proven effective in advanced disease. While imatinib has immunomodulatory effects on the tumor microenvironment that contribute to its efficacy, its systemic impact on circulating immune cells remain unclear. **METHODS:** Peripheral blood mononuclear cells (PBMCs) were obtained from patients with GIST undergoing surgical resection and processed for single-cell RNA-sequencing using the 10X Genomics platform, quantified using CellRanger, and analyzed using Seurat using SCTransform normalization and RPCA integration. Cells were annotated via projection to the Azimuth PBMC reference. Differential pathways were assessed using gene set enrichment analysis using the Kegg and Hallmark pathway databases. **RESULTS:** We profiled 41,123 high-quality cells from 3 untreated and 3 imatinib-treated GIST patients, with an average of 2,792 genes detected per cell and 4.7% mitochondrial read counts. The treated patients were all clinically sensitive to imatinib. Cells projected onto 30 cell types in the PBMC reference. CD4+ T cells and NK cells were the predominant cell type in most samples, with CD14+ monocytes being the most common cell in one sample. There were no differences in coarse cell type abundance between treated and untreated samples. Within the T cell compartment, there was a relative decrease in the fraction of both CD4+ and CD8+ naïve T cells with treatment, with a concomitant increase in the fraction of CD8+ effector memory T cells. There was an increasing trend in regulatory T cells in treated samples. A pathway analysis within the monocyte compartment revealed upregulation of cytokine and T cell receptor signaling pathways along with extracellular

matrix pathways. There was downregulation of TNFα signaling, interferon response pathways, and oxidative phosphorylation in the treated samples. **CONCLUSIONS:** These findings suggest that imatinib exerts a systemic immunomodulatory effect in GIST patients by promoting a T cell memory response and regulating inflammatory pathways in monocytes. These changes could contribute to its therapeutic efficacy, and further investigation could inform immunotherapeutic strategies.

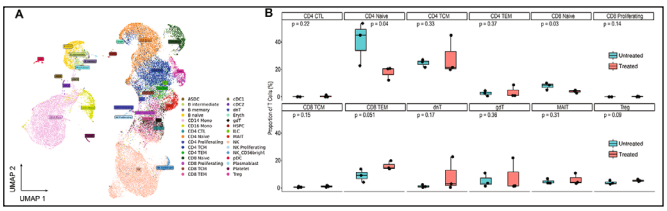

Figure 1. A) UMAP projection of integrated scRNA-seq data colored by cell type. B) Proportion of cell types within the T cell compartment. P-value represents one-tailed Student's t-test.

EP323

Payer Mix Trends at High and Low Volume Hospitals Providing Cancer Care, 2011–2023

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INTRODUCTION: High surgical volume is associated with lower mortality, fewer complications, and fewer readmissions compared to low surgical volume, but access to high-volume hospitals may not be equitable across patient populations. Payer mix captures hospitals' financial orientation and patient composition. Despite the importance of payer mix in shaping access, quality, and financial stability, trends in payer mix among high- and low-volume hospitals providing cancer care remain understudied. **METHODS:** Data were obtained from the National Academy for State Health Policy and the American Hospital Association from 2011 to 2023. Hospitals offering oncology services were included. High-volume hospitals (HVHs) were defined as those in the top quartile of total annual surgical operations, and low-volume hospitals (LVHs) were defined as those below the 75th percentile. For each year, the mean payer mix across public and private payers was reported for HVHs and LVHs. Four linear mixed-effects regression models were estimated to evaluate differences in payer mix by high-volume status. All models included hospital-level random intercepts and year fixed effects. **RESULTS:** The analytic sample included 25,153 hospital-year observations from 2,837 hospitals between 2011 and 2023. In 2011, the mean payer mixes at HVHs and LVHs were 15.0% and 13.9% for Medicaid, 30.0% and 33.8% for Traditional Medicare, 7.6% and 5.7% for Medicare Advantage, and 41.1% and 40.0% for Commercial payers. In 2023, the mean payer mixes for HVHs and LVHs were 16.4% and 17.0% for Medicaid, 21.8% and 24.5% for Traditional Medicare, 21.6% and 18.2% for Medicare Advantage, and 36.6% and 36.5% for Commercial payers (Figure). For the mixed effects models, high-volume was associated with a lower Medicaid payer mix ($\beta = -0.37$; 95% confidence interval (CI): −0.61 to −0.14; p=0.002), a lower Medicare Advantage payer mix ($\beta = -0.22$; 95% CI: −0.41 to −0.03; p=0.02), and a higher Commercial payer mix ($\beta = 1.09$; 95% CI: 0.77 to 1.42; p< 0.001) compared to low-volume. Differences in Traditional Medicare were not significant ($\beta = -0.03$ pp; 95% CI: −0.23 to 0.17; p = 0.77). **CONCLUSIONS:** From 2011 to 2023, HVHs and LVHs saw declines in Traditional Medicare and increases in Medicaid and Medicare Advantage. High-volume status was associated with a lower Medicaid and Medicare Advantage payer mix and a higher Commercial payer mix compared to low-volume status. Continued monitoring of these trends is critical to understand access, reimbursement, and the financial sustainability of cancer care delivery.

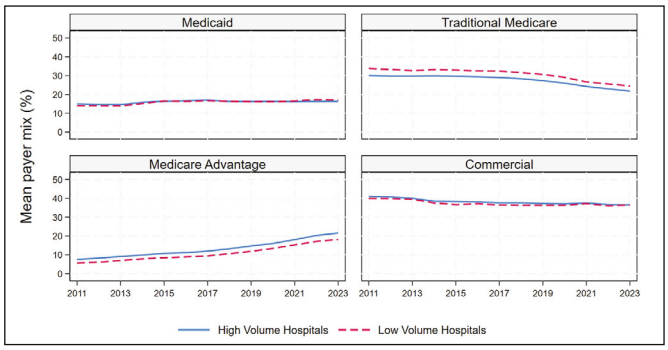

Figure. Payer Mix and Surgical Volume, 2011-2013

EP324

Nephroprotection During Cisplatin-Based HIPEC: A Systematic Review of the Use of Sodium Thiosulfate and Renal Outcomes

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INTRODUCTION: Cytoreductive surgery (CRS) with hyperthermic intraperitoneal chemotherapy (HIPEC) is associated with significant survival benefit for select patients with peritoneal surface malignancies. Cisplatin-based HIPEC is frequently used due to its synergistic cytotoxic effect with hyperthermia, however, nephrotoxicity remains a significant dose-limiting factor. Sodium thiosulfate (ST) has been investigated as an adjunct to mitigate cisplatin-related acute kidney injury (AKI). We aimed to assess the incidence of AKI with cisplatin-HIPEC comparing patients who did and did not receive intravenous (IV) ST. **METHODS:** A systemic review was performed using the PubMed, Embase and Cochrane Library databases. Studies including Cisplatin-based HIPEC following CRS assessing cohorts who did and did not receive IV ST for nephroprotection prior to August 2025 were included. The primary outcome was incidence of AKI using any definition. The systematic review was published in PROSPERO (CRD420251141717). **RESULTS:** A total of 252 records were retrieved, of which six comparative studies met inclusion criteria, comprising a total of 698 patients (ST n=259 vs. no-ST n=439). Cisplatin dosing was 50–100 mg/m² over 60–90 minutes. Four of six studies (≈240/698 patients) focused on ovarian cancer; two enrolled mixed peritoneal malignancies. AKI occurred in 4/259 (1.5%) with ST versus 127/439 (28.9%) without ST. Pooled RR for AKI was 0.11 (95% CI 0.05–0.24), favoring ST, with I^2=0%. Absolute RR was 27.4%, corresponding to an approximate number needed to treat of 3.7 to prevent one AKI event. An additional eight studies in which all patients received ST were included, totaling 288 patients treated for ovarian cancer (3 studies), peritoneal malignancies (2), colorectal (1), gastric (1), and pancreatic cancer (1). Cisplatin doses were 50-350 mg/m2 over 60-90 minutes, including two phase I/II trials. Across studies, 33/288 patients developed AKI, yielding a crude incidence of 11.5%. **CONCLUSIONS:** In cross comparative cohorts of cisplatin-HIPEC, adjunctive sodium thiosulfate is associated with an ~90% relative reduction in AKI and a large absolute benefit. Interpretation should consider variability in AKI definitions and the predominance of nonrandomized designs. Standardized renal endpoints and prospective trials are warranted to confirm efficacy, define optimal dosing/timing, and assess safety and longer-term renal outcomes.

EP325

Health-related Quality of Life Among Cancer Survivors — Comparative Analyses of Veterans and Civilians

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INTRODUCTION: Advances in cancer care have expanded the survivor population in the United States (US), making survivorship a major public

health priority. Since access to high-quality care often depends on insurance coverage, the Veterans Health Administration may provide a more consistent framework of healthcare access compared with civilian systems. However, veterans frequently experience greater comorbidity and psychosocial stress. We sought to compare health-related quality of life (QoL) outcomes between veteran and civilian cancer survivors in the US. **METHODS:** Cancer survivors were identified from the 2017–2022 Behavioral Risk Factor Surveillance System (BRFSS). Outcomes included poor general health, poor physical health (PH; ≥14 poor days/month), poor mental health (MH; ≥14 poor days/month), and activity limitation (≥14 poor days/month). Poisson regression models, adjusted for confounders, estimated incidence rate ratios (IRRs) of poor-health outcomes by veteran status. **RESULTS:** Among 68,816 cancer survivors (veterans: 18.3%, n=12,583; civilians: 81.7%, n=56,233), veterans were older (66.2 ± 11.4 years vs. 61.3 ± 12.8 years), predominantly male (93.5%, n=11,759 vs. 41.3%, n=23,228), and had higher prevalence of diabetes (24.6%, n=3,096 vs. 17.8%, n=10,010), stroke (9.9%, n=1,247 vs. 6.1%, n=3,431), and coronary artery disease (17.4%, n=2,189 vs. 9.1%, n=5,122) (all p< 0.001). On unadjusted analysis, both male veterans (IRR 1.10, 95% CI 1.02–1.19) and female veterans (IRR 1.24, 95% CI 1.02–1.51) reported higher rates of poor PH than civilians. Female veterans also experienced greater rates of poor MH (IRR 1.55, 95% CI 1.22–1.97), whereas no difference in MH (IRR 0.93 95%CI 0.82–1.05) was observed among males (Figure). On multivariable analysis, male veteran status remained associated with activity limitation (IRR 1.04, 95% CI 1.01–1.07), and female veteran status with poor PH (IRR 1.24, 95% CI 1.02–1.52). Across both sexes, coronary artery disease (IRR 1.64, 95%CI 1.53–1.77), diabetes (IRR 1.51, 95%CI 1.40–1.62), stroke (IRR 1.38, 95%CI 1.25–1.53), and minority race/ethnicity (IRR 1.43, 95%CI 1.33–1.54) were adverse independent predictors of poor physical health. **CONCLUSIONS:** Veteran status was associated with a higher incidence of poor QoL outcomes among cancer survivors with health-related domains differing by sex. Elevated comorbidity burdenalong with socioeconomic factors and employment were key determinants of poor QoL, highlighting the need for targeted survivorship interventions addressing chronic disease and social disparities.

Figure. Unadjusted Poisson regression analyses of poor physical and mental health days among veteran and civilian cancer survivors

EP326

Tanzania National Liver Tumor Board: Results of a Readiness and Interest Survey

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INTRODUCTION: Hepatocellular carcinoma is a leading cause of cancer related death in Sub-Saharan Africa (SSA). The care is complex and spans multiple disciplines. Limited access to resources in SSA results in delayed and incomplete care. The use of a national multidisciplinary liver tumor board (MLTB) is thought to expedite referral pathways. The current platform of a hybrid MLTB at Muhimbili National Hospital in Tanzania is poised for country wide dissemination. This study was intended to gauge interest and readiness in a national MLTB in Tanzania to link providers and resources, alleviate inconsistencies, and consolidate liver cancer care across the nation. **METHODS:** 56 delegates representing 21 of the 31 administrative regions in Tanzania, participated in a survey distributed via RedCAP to assess current tumor board utilisation and interest on national MLTB expansion. Delegates represented 38 hospitals across the country (3 national, 19 regional referral, 16 zonal). **RESULTS:** Eight out of the 38 hospitals (21%) have an existing tumor board (TB). The majority meet once per week (88%). Challenges include scheduling conflicts (88%), technical issues (75%), and provider engagement/expertise (50%). Of the 30 hospitals that do not have an existing TB, 13 (43%) attend TBs at other hospitals across Tanzania (11/13, 84%) or internationally (2/13, 15%). Participating hospitals believe the most important benefits of national TBs include improved treatment guideline adherence and recommendations (84%), educational and research opportunities (84%), improved patient care (82%), specialty collaboration (82%), review of pathology and radiology (82%), access to specialty resources (76%), and enhanced coordination of care (79%). All 38 hospitals (100%) expressed interest in a national TB, with 68% reporting they would present 50-100% of their liver cancer patients. 66% see 1-2 liver cancer patients per week, 8% see 3-4 patients per week, 3% see 5 patients per week. Preferred format was hybrid (45%), followed by virtual (32%). Preferred frequency was monthly (53%), followed by weekly (44%). Desired content included case presentations (87%), treatment guidelines (84%), and educational lectures (61%). Barriers preventing national expansion include training on virtual platform (76%), case organization (76%), and data reporting (58%). Technology needs include video conferencing (95%), remote pathology (53%), remote radiology (47%), and secure messaging (34%). **CONCLUSIONS:** There is an interest in national MLTB expansion across Tanzania. However, many barriers need to be addressed as part of a successful implementation.

EP327

Cancer-specific survival after surgery for entero-pancreatic neuroendocrine tumors: a population-based analysis.

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INTRODUCTION: Surgery plays a central role in managing entero-pancreatic neuroendocrine tumors (EP-NETs). Evaluating contemporary long-term outcomes is essential for optimizing treatment decisions and patient counseling. We examined cancer-specific survival (CSS) after surgical resection of EP-NETs. **METHODS:** We conducted a population-based retrospective cohort study of adults with EP-NETs undergoing surgical resection over 2000–2023. Primary outcome was cancer-specific death analyzed with cumulative incidence function (CIF) accounting for competing risk of death from other causes. Fine-Gray models examined factors associated with CSS, with an interaction term between primary site and metastatic status. **RESULTS:** Of 3,536 patients, 2,429 had small bowel NET (SB-NETs, 66.5% metastases) and 1,107 had pancreatic NETs (PanNETs, 37.5% metastases). Median follow-up was 6 years (IQR 3-10). Overall, 642 patients (56.1%) from cancer, predominantly among those with metastases (67.2%). 10-year CIF of cancer-death after surgery was 21.9% (95%CI 20.2-23.6%) for all EP-NETs, 22.7.4% (95%CI 20.6-24.8%) for S-NETs, and 19.9% (95%CI 17.0-22.9%) for PanNETs. This was lower for those without metastases, with 8.4% (95%CI 6.1-11.0%) for SB-NETs and 3.9% (95%CI 2.3-6.3%) for PanNETs. In non-metastatic SB-NETs, non-cancer death surpassed cancer death within 6 months of surgery, while in non-metastatic PanNETs non-cancer deaths surpassed cancer deaths starting 2 years after surgery (Figure). Advancing age and high comorbidity burden were independently associated with increased hazards of cancer-death, while female sex was independently associated with lower hazards of cancer-death. Among those with metastases, PanNETs had higher hazards of cancer-death after surgery than SB-NETs (sub-hazard ratio – sHR 1.89, 95%CI 1.28-2.78), but among those without metastases, they had lower hazards of cancer-death after surgery than SB-NETs (sHR 0.59, 95%CI 0.34-1.01). **CONCLUSIONS:** Given the typically indolent nature of most EP-NETs, CSS offers a more accurate reflection of oncologic outcomes after surgery. There is favourable CSS after surgery for EP-NETs which is modulated

by metastatic status. In non-metastatic EP-NETs, 10-year cancer-death incidence after surgery is low and non-cancer deaths eventually exceed cancer deaths shortly after surgery. Those data can support weighing of therapeutic options and risk communication about surgery.

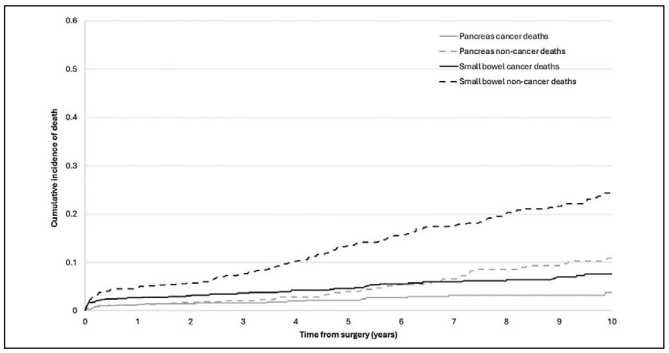

Figure. Cumulative incidence of cancer and non-cancer deaths after surgery for non-metastatic small bowel and pancreas neuroendocrine tumors.

EP328

Comparing team performance in complex surgical oncology: a single-institution cohort study

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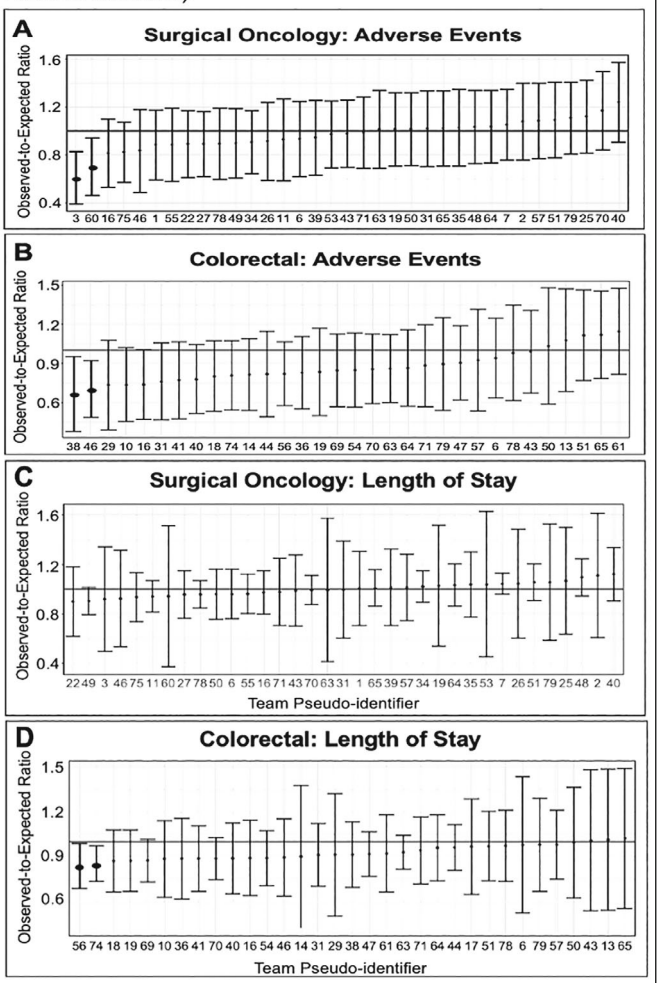
INTRODUCTION: Team dynamics play an important role in patient outcomes. In most academic medical centers, teams are led by residents. Little feedback exists on team performance during surgical training. This study aimed to compare patient outcomes across resident-led teams in complex surgical oncology, and we hypothesized that patient outcomes would vary by team assignment. **METHODS:** This was a retrospective cohort study of general surgery resident care teams who contributed more than 10 surgical oncology operations (colectomy, hepatectomy, pancreatectomy, or proctectomy) to the NSQIP registry at a university-affiliated hospital (2018-2025). The primary exposure was resident team, defined as the combination of residents rotating on colorectal or surgical oncology each month. The primary outcome was a composite metric of any adverse event including mortality, 30-day reoperation, readmission, and post-operative complications. Length of stay (LOS) was also measured. Mixed effects regression models were used to calculate expected rates of outcomes for each patient. Observed-to-expected (O:E) ratios were then calculated for each team with 95% confidence intervals to measure differences in team performance. Teams were considered outliers if their confidence intervals excluded 1. **RESULTS:** A total of 68 surgical oncology and colorectal teams treated 987 patients with 11 attending surgeons. Teams contributed a median of 15 patients [interquartile interval: 13, 27] to the registry. The median patient age treated by each team was 61 [58, 63] and 56% of each teams' patients were female. There were no differences in the median patient age, sex, or number of comorbidities treated by each team. Twenty-seven percent (n=266) of patients experienced at least one adverse event with a median adverse event rate of 25% [18%, 55%] per team. After adjustment for potential confounders, 2 surgical oncology teams (0.61-0.70) and 2 colorectal teams (0.67-0.70) had adverse event O:E ratios < 1 while no teams experienced greater than expected adverse event rates. Two colorectal teams had LOS O:E ratios < 1 (0.84-0.85) while no surgical oncology teams had significantly longer LOS than expected. **CONCLUSIONS:** Some teams perform significantly better than others when controlling for patient disease and attending surgeon. This likely indicates that resident leadership and team dynamics impact patient care. Measuring team performance may be the first step in identifying teams and residents who require feedback and intervention.

Figure. Caterpillar plots depict observed-to-expected ratios of adverse events for surgical oncology (Panel A) and colorectal (Panel B) teams and length of stay (Panel C: surgical oncology, Panel D: colorectal).



Models controlled for operation type, surgical approach, indication for operation, operative urgency, patient American Society of Anesthesiologists class, patient comorbidity score, and presence of disseminated cancer as fixed effects and surgeon identifier as a random effect. Bolded confidence intervals represent outliers in performance. Ratios <1 indicate better performance, while ratios >1 represent worse performance.

EP329

Phase I study of intratumoral influenza vaccination prior to surgery in patients with resectable melanoma

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INTRODUCTION: In murine models, intra-tumoral (IT) seasonal influenza (flu) vaccine administration reduced melanoma growth. This phase I clinical trial evaluated the safety, histologic and immune effects of IT flu vaccine administration in patients with melanoma. **METHODS:** Patients with resectable stage I-III melanoma presenting with ≥1 cm diameter of cutaneous or nodal disease were eligible for this dose-escalation study using a Bayesian optimal interval design. Participants (pts) received a standard intramuscular

dose followed by two IT doses (0.5, 1.0 or 1.5 mL) of the Flucelvax quadrivalent unadjuvanted seasonal flu vaccine 26 &14 days prior to standard surgical resection. H&E stained, formalin-fixed paraffin-embedded tissue was examined in blinded fashion by a dermatopathologist (CGC). Peripheral blood was obtained pre-therapy and just prior to surgery. The primary endpoint was the maximum tolerated IT vaccine dose. Secondary endpoints included changes in tumor dimensions, pathologic analysis of the surgical specimen, systemic cytokine levels by ELISA, and circulating immune cell subsets by spectral flow cytometry. **RESULTS:** 18 pts with stage I (N=7), II (4), or III (7) melanoma were enrolled. The majority of pts were female (11), and the average age was 59 years (range 33-78). No dose-limiting toxicities were observed, and 12 pts received the highest dose level. Pathological analysis revealed 11 pts (61.1%) with brisk lymphocyte infiltration, 4 (22.2%) with evidence of tumor regression, and 3 (16.7%) with < 10% viable tumor. One pt had 100% tumor regression with associated brisk germinal center formation. Comparison of pre- versus post-resection plasma samples showed increased levels of chemokine (C-X-C motif) ligand 10 (CXCL10, p< 0.01), CCL3 (p=0.01) and GM-CSF (p=0.02), and decreased levels of interleukin (IL)-1 beta (p=0.02). In cases with a brisk lymphocyte infiltrate, IL-6 was elevated at time of surgery compared to baseline (p=0.03) while IL-13 was decreased (p=0.03). Immunophenotyping of peripheral blood mononuclear cells showed a vaccine-associated increase in B cells (6.3% to 8.3%) and naive CD8+ T cells (29.9% to 33.9% of CD8+ cells), and a 10.8% decrease in neutrophil-like myeloid-derived suppressor cells (all p< 0.01). **CONCLUSIONS:** IT flu vaccination prior to surgery is well tolerated. Histologic, plasma, and immunophenotyping markers associated with favorable melanoma response to IT flu doses were observed in this single-arm trial. Based on these data, additional evaluation of this treatment in melanoma patients is warranted.

EP330

Risk of late stage breast cancer in Georgia: Does your zip code matter?

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INTRODUCTION: Limited access to screening resources such as mammograms, ultrasounds, and clinical breast exams can delay diagnosis and treatment, increasing mortality risk. In Georgia, 42 out of 159 counties lack MSQA-approved mammography facilities, potentially placing women in these areas at higher risk for late-stage breast cancer diagnosis. The purpose of our study was to evaluate whether living in rural counties in Georgia is associated with a higher percentage of late-stage breast cancer diagnoses. **METHODS:** Data from the National Cancer Institute state cancer profiles and SEER databases were analyzed specifically investigating the percentage of late-stage breast cancer cases at the time of diagnosis for citizens of Georgia Counties from 2017-2021. Counties in Georgia were classified using USDA continuum codes as rural or urban. A two-sample t-test with unequal variances was performed using SPSS to compare the percentage of late-stage breast cancer at the time of diagnosis between these groups. * 24 rural counties and 9 urban counties were excluded from our analysis due to having 3 or few average annual counts of breast cancer. **RESULTS:** The analysis revealed a statistically significant difference (p = 0.002), with rural counties showing a higher proportion of late-stage breast cancer diagnoses compared to urban counties. The percentage of patients diagnosed with last stage breast cancer in rural Georgia counties was 36.43% while Urban counties was 33.45%. With these results, we can conclude that living in a rural Georgia county is associated with a higher risk of presenting with late-stage breast cancer at the time diagnosis. **CONCLUSIONS:** This study highlights a critical disparity in breast cancer outcomes potentially related to geographic access to screening services in Georgia. Women in rural areas face increased risk of late-stage breast cancer diagnosis, underscoring the need for improved screening access and healthcare resources in these regions to promote earlier detection and reduce mortality.

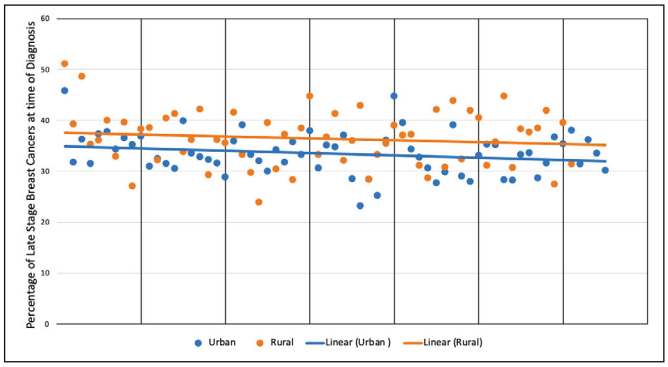

Figure. Percentage of late stage breast cancers' in urban vs rural Georgia counties at the time of diagnosis from 2017-2021

EP331

Life Support in the Intensive Care Unit: Outcomes among patients undergoing Gastrointestinal Cancer Surgery

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INTRODUCTION: Intensive care unit (ICU) admission after a gastrointestinal (GI) cancer surgical preocedure can be costly and consequential, yet real-world data on ICU and life-support intervention (LSI) use are limited. We sought to evaluate national trends, predictors, and outcomes associated with ICU and LSI utilization among GI cancer surgical patients. **METHODS:** Adult patients undergoing a GI cancer surgical procedure were identified in the Epic Cosmos database (2016-2025). ICU admission and LSI utilization, defined as invasive mechanical ventilation and/or vasopressor use, were evaluated over time. Multivariable logistic regression assessed predictors and outcomes, adjusting for sociodemographic and clinical factors. **RESULTS:** Among 376,503 patients, median age was 70 years; 53.8% were male and 79.6% were White. Overall, 21.8% (n=82,076) required ICU admission; 88.6% (n=72,702) of which received LSI, which was more common among males (59.3% vs. 56.9%), patients with comorbidities (53.7% vs. 44.8%), and following emergency procedures (24.7% vs. 17.8%) (all p< 0.001). From 2016 to 2025, ICU admissions declined by 8.4% (95%CI 6.7-10.1; p< 0.001); however, among patients admitted to ICU, LSI use rose by 24.2% (95%CI 22.8-25.6; p< 0.001) (Figure 1). Predictors of LSI included any comorbidity (aOR 1.28, 95%CI 1.22–1.34) and an emergency surgical procedure (aOR 1.74, 95%CI 1.63–1.86). Compared with colorectal surgery, LSI was more likely after esophageal (aOR 2.42, 95%CI 2.16–2.72), gastric (aOR 1.51, 95%CI 1.42–1.62), biliary (aOR 1.62, 95%CI 1.41–1.86) and pancreatic procedures (aOR 1.30, 95%CI 1.21–1.41). LSI recipients had higher odds of prolonged hospitalization (aOR 2.89, 95%CI 2.66-3.14), complications (aOR 1.94, 95%CI 1.85-2.04), and ICU readmission (aOR 2.08, 95%CI 1.91-2.27), reduced odds of discharge home (aOR 0.25, 95%CI 0.23-0.27) and greater 30-day mortality (aOR 2.82, 95%CI 2.50-3.19). Adjusted 30-day mortality among LSI patients rose from 9.1% (95%CI 8.4–10.0) in 2016 to 10.1% (95%CI 9.2–11.2) in 2025 (p< 0.001). Among LSI recipients, key mortality predictors included systolic BP 70–99 mmHg (aOR 7.27, 95%CI 4.61-11.4), SpO_2 < 85% (aOR 3.54, 95%CI 3.32-3.78) and history of emergency surgical procedure (aOR 2.61, 95%CI 2.45-2.77). **CONCLUSIONS:** Between 2016 and 2025, ICU admissions after GI cancer surgery declined, yet LSI utilization increased. LSI was associated with worse short-term outcomes, including prolonged hospitalization, as well as higher morbidity and mortality. These findings underscore the need for proactive perioperative optimization and early identification of high-risk patients, as escalation of care with LSI was associated with adverse outcomes.

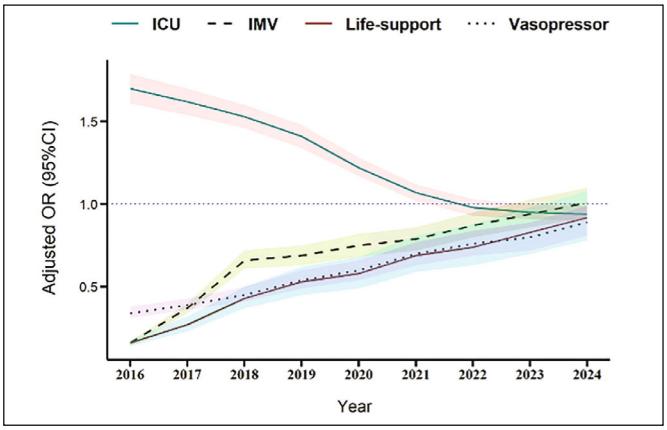

Figure 1. Temporal trends in adjusted odds of ICU admission and life-support interventions among patients undergoing gastrointestinal cancer surgery, 2016–2024, with 2025 as reference (OR = 1.0)

EP332

Artificial Intelligence for Fibroepithelial Lesion Evaluation and Extrication Technology (AI-FLEET) Phase 2: Differentiating Fibroadenomas from Phyllodes Tumors — Comparison with Phase 1

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INTRODUCTION: The Artificial Intelligence for Fibroepithelial Lesion Evaluation and Extrication Technology (AI-FLEET) project was developed to improve the diagnostic accuracy of breast fibroepithelial lesions (BFLs). BFLs are the most common breast tumors in women under 35, ranging from fibroadenomas (FAs) to phyllodes tumors (PTs). In up to 20% of cases, needle biopsy cannot reliably distinguish FAs from PTs, often necessitating surgical excision. Surgery, however, is invasive, costly, and associated with complications, scarring, and psychosocial distress. In Phase I, AI-FLEET classified PTs as benign versus borderline/malignant, achieving high performance. In Phase II, the model was expanded to differentiate FAs from PTs. **METHODS:** We curated a BFL database of patients diagnosed between 2003–2024. Phase I included only PTs, while Phase II added FAs. The model uses a single pre-operative ultrasound (US) image and clinical features (age, BMI, race/ethnicity, menopausal status, echogenicity, and tumor size) to differentiate BFL types. Multiple convolutional and attention-based architectures were evaluated. Performance was assessed using subject-stratified 5-fold cross-validation (80% training, 20% validation) with accuracy, sensitivity, specificity, F1-score, and area under the receiver operating characteristic curve (AUC). **RESULTS:** The Phase I cohort included 81 patients (65 benign, 16 borderline/malignant PTs) with 1,638 US images. In differentiating benign from borderline/malignant PTs, the model using ConvNext as the image encoder achieved an accuracy of 0.91, F1-score 0.67, and AUC 0.94 [0.88–1.00], with a sensitivity 0.71 ± 0.33, specificity 0.95 ± 0.02, PPV 0.87, and NPV 0.81. The Phase II cohort included 689 patients (409 FAs, 280 PTs) with 4,067 US images. In distinguishing FAs from PTs, the model using ConvNeXt as the encoder achieved an accuracy of 0.62, F1-score 0.56, and AUC 0.69 [0.65–0.74], with a sensitivity 0.73 ± 0.06, specificity 0.56 ± 0.07, PPV 0.63, and NPV 0.68. **CONCLUSIONS:** AI-FLEET performed well in differentiating PT subtypes in Phase I but showed reduced performance when expanded to distinguish FAs from PTs in Phase II. These findings highlight the complexity of BFL classification and the need for strategies to address class imbalance. Future iterations will incorporate digitized pathology slides to improve model robustness and support more accurate preoperative differentiation of breast fibroepithelial lesions.

Table 1. Performance comparison between Phase I and Phase II

Phase (Model)	Task	Mean Accuracy	Mean F1-Score	Mean AUC [95% CI]	Sensitivity ± STD	Specificity ± STD	Mean PPV ± STD	Mean NPV ± STD
Phase I ConvNeXt	Benign vs Borderline/ Malignant PT	0.9098	0.6720	0.9427 [0.8842, 1.0000]	0.7135 ± 0.3292	0.9531 ± 0.0236	0.8686 ± 0.1732	0.8120 ± 0.1660
Phase I ResNet18	Benign vs Borderline/ Malignant PT	0.9179	0.7294	0.9349 [0.8775, 0.9923]	0.8287 ± 0.1591	0.9317 ± 0.0242	0.9210 ± 0.0312	0.8610 ± 0.1138
Phase II ConvNeXt	Fibroadenoma vs Phyllodes tumor	0.6209	0.5598	0.6938 [0.6521, 0.7355]	0.7326 ± 0.0569	0.5618 ± 0.0725	0.6276 ± 0.0312	0.6794 ± 0.0402
Phase II ResNet18	Fibroadenoma vs Phyllodes tumor	0.6170	0.5383	0.6732 [0.6049, 0.7414]	0.6735 ± 0.0325	0.5842 ± 0.0730	0.6207 ± 0.0469	0.6400 ± 0.0374

EP333

Evolving stage-specific determinants of long-term survival in surgically treated pancreatic cancer

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INTRODUCTION: Pancreatic cancer remains highly lethal with a small subset of patients surviving beyond 5 years. This study aims to evaluate potential determinants of long-term survival in pancreatic cancer patients. **METHODS:** A retrospective analysis of adults with surgically treated pancreatic cancer in the National Cancer Database (2004–2019) was performed. AJCC sub-stages were collapsed into I–IV. Survival was grouped as 0–2, 2–5, or >5 years from diagnosis to last contact/death. Stage-specific ordinal logistic regression estimated adjusted odds ratios (aORs) for longer survival, controlling for demographic, clinical, and system-level variables. **RESULTS:** Among 63,433 patients, 31.4% had stage I (n = 19,922), 57.6% stage II (n = 36,559), 5.2% stage III (n = 3,298), and 5.8% stage IV (n = 3,654). In stage I, older age, comorbidity, and minority race were associated with lower long-term survival. Negative margins (aOR 2.07, p< 0.001) and absence of lymphovascular invasion (aOR 1.86, p< 0.05) favored longer survival, whereas extended hospital stay predicted worse outcomes. Treatment in Southern or Mountain regions corresponded with shorter survival, while no 30-day readmission after surgery (aOR 1.31, p< 0.05) predicted longer survival. In stage II, Black race (aOR 0.80, p< 0.05) and Medicaid insurance (aOR 0.71, p< 0.05) were associated with lower survival. Negative margins (aOR 2.12, p< 0.001), absence of lymphovascular invasion (aOR 1.65, p< 0.001), and adenocarcinoma histology (aOR 1.62, p< 0.05) predicted longer survival. Treatment at academic centers (aOR 1.27, p< 0.001) and residence in Medicaid-expansion states (aOR 1.23–1.39, p< 0.05) were tied to improved outcomes. In stage III, lower income predicted poorer survival, whereas more nodes harvested (aOR 1.02, p< 0.05) predicted longer survival. Longer hospital stay (aOR 0.95, p< 0.05) was associated with worse outcomes. In stage IV, Black race (aOR 0.33, p< 0.05) corresponded with lower survival, while negative margins (aOR 2.30, p< 0.05) and shorter diagnosis-to-treatment time (aOR 1.01, p< 0.05) predicted improved survival. **CONCLUSIONS:** Across stages, survival reflected a shifting balance between biological and systemic influences. While operative and pathologic factors were most influential in early disease, sociodemographic and access-related factors increasingly shaped outcomes with advancing stage. Aligning care quality with timely, inclusive delivery may help improve outcomes.

EP334

Failure-to-rescue following colectomy for cancer: A nationwide analysis

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INTRODUCTION: Failure-to-rescue (FTR) is a well-established metric in general surgery, but data on FTR in colon cancer surgery is scarce. Given the complexity of these operations, we sought to identify potentially modifiable institutional &system-level factors. **METHODS:** Using the ACS NSQIP Colectomy-Specific Database from 2015 to 2021, all patients undergoing colectomy for colon cancer, based on ICD-9 & ICD-10 diagnosis codes, were identified. FTR was defined as patients who died during admission and experienced at least one serious post-operative complication. Post-operative complications were defined as wound, pulmonary, renal, central nervous system, cardiac, sepsis, bleeding, anastomotic leak, or return to the operating room. Rates of 30-day FTR and complications were calculated. Temporal trends in FTR over the study period were examined. Multivariable logistic models were constructed to identify independent predictors of FTR. **RESULTS:** The overall FTR rate in 22,655 patients with a median age was 63 years (52% female) with a diagnosis of colon cancer was 7.9%, with 1,790 patient deaths following at least one complication within 30 days of surgery. Patients with left-sided tumors accounted for 52% of cases. Over the study period, the FTR rate ranged from 7.4% to 9.2%. Patients in the FTR group more often underwent open surgery (80% vs 43%, p< 0.001), a total colectomy (8.6% vs 4.6%, p< 0.001), and stoma creation (58% vs 27%, p< 0.001). FTR was not associated with surgery in the setting of disseminated disease (6.5% vs 6.6%, p=0.92). Median time to death was 11 days [6-19 days]. The most common complications resulting in FTR were septic shock (38%), unplanned intubation (38%), and bleeding requiring transfusion (34%). For an individual patient, as the number of complications increased, the FTR rate increased incrementally from 3% with one complication to 38% with 5 or more complications. In the FTR group, 71% of patients had >1 complication. Multivariable analyses revealed post-operative septic shock (OR: 6.0, CI 4.8-7.6, p< 0.001), post-operative stroke (OR: 3.8, CI 2.5-5.6, p< 0.001), and ASA of 5 (OR:3.1, CI:1.1- 8.6, p=0.032) to be most independently associated with FTR. **CONCLUSIONS:** FTR after colectomy for colon cancer remains common, with nearly 8% of patients dying following a major postoperative complication. Although rates have not substantially improved over the past decade, our findings highlight septic shock, postoperative stroke, and poor preoperative physiologic status as the strongest independent predictors of mortality following a complication. The incremental rise in FTR with multiple complications underscores the importance of early recognition and coordinated escalation of care.

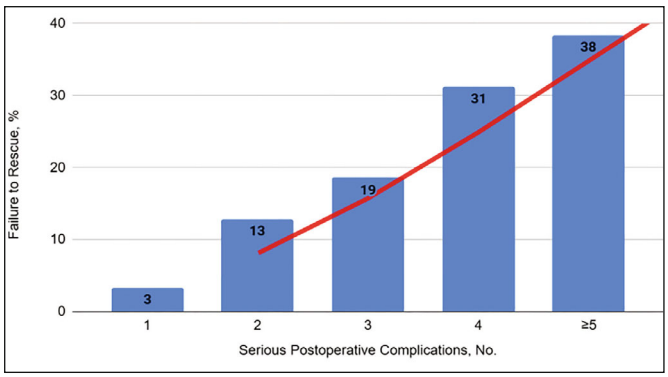

Figure. Influence of the number of complications on failure-to-rescue

EP335

Real-World Experience of Lifestyle and Attitudes Toward Treatment in Newly Diagnosed Cancer Cases in a Safety-Net Hospital: A Prospective Cohort Study

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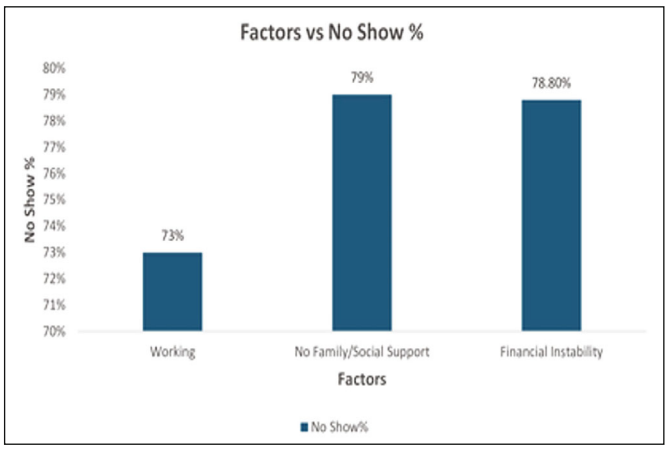
INTRODUCTION: Urban safety-net hospitals serve diverse cancer populations who often face lifestyle, financial, and social barriers to care. Appointment non-adherence to cancer treatment–related visits delays therapy and worsens outcomes. Our aim is to evaluate factors that contribute to cancer related appointments nonadherence. **METHODS:** We conducted a prospective cohort study of 64 adult patients with newly diagnosed cancers from November 2024 to April 2025 at an urban academic safety-net hospital. A 25-question interview performed assessing demographics, lifestyle behaviors, financial stability, family/social support, and cancer treatment related appointment adherence. If the patient missed 1 or more appointments, was counted as "a no show". Descriptive analyses, cross-tabulations, and fisher tests of independence were performed. **RESULTS:** Among 64 patients, the no-show rate was 59.4%. Overall, 26.6% were working, and most patients in this cohort were daily wage earners. In addition, 48.4% reported having a reliable source of income, and 57.8% reported family/social support. We found that these three factors showed correlation with appointment non-adherence, although the associations were not statistically significant, likely due to the smaller sample size. No-shows were more frequent among working patients (73% vs. 67%, p=0.34), those lacking family/social support (79% vs. 65%, p=0.55), and those who were financially unstable (78.8% vs. 70.9%, p=0.36). **CONCLUSIONS:** Among urban safety-net hospital cancer patients, working status, lack of family/social support, financial instability were associated with higher rate of appointment non-adherence. Integrating routine SDOH (Social determetitant of health) screening, social support programs, coordinating multiple outpatient visits on a single day may help to minimize lost wages and improve appointment adherence.



EP336

Comparison of Postoperative Pancreatic Fistula and Fistula Formation After Robot-Assisted and Open Pancreaticoduodenectomy

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INTRODUCTION: Robot-assisted pancreaticoduodenectomy (R-PD) has become an established procedure for periampullary tumors. Postoperative pancreatic fistula (POPF) remains one of the most critical complications after PD, and its incidence and severity may be higher after R-PD because less postoperative adhesion could allow greater movement of pancreatic juice. In this study, we compared the incidence and severity of POPF between R-PD and open PD. **METHODS:** Robot-assisted pancreaticoduodenectomy (R-PD) has become an established procedure for periampullary tumors. Postoperative pancreatic fistula (POPF) remains one of the most critical complications after PD, and its incidence and severity may be higher after R-PD because less postoperative adhesion could allow greater movement of pancreatic juice. In this study, we compared the incidence and severity of POPF between R-PD and open PD. **RESULTS:** A total of 212 patients were included: 34 R-PD and 178 open PD cases. The proportion of patients with a soft pancreas was significantly higher in the R-PD group (94.1% vs. 68.0%, p < 0.001). There were no significant differences in BMI (23.3 vs. 22.0, p = 0.212), main pancreatic duct diameter (3.0 vs. 3.0 mm, p = 0.473), or Updated Alternative Fistula Risk Score (29.5 vs. 26.0, p = 0.097). The conversion rate to open surgery in the R-PD group was 5.6%. Estimated blood loss was significantly lower in the R-PD group (52.5 vs. 250 mL, p < 0.001). The incidence of Clavien–Dindo grade ≥III complications was comparable between the two groups (20.0% vs. 20.8%, p = 0.942). BL occurred in 18 patients (52.9%) after R-PD and in 87 patients (48.9%) after open PD (p = 0.690). The CR-POPF incidence was

comparable between groups (44.1% vs. 40.4%, p = 0.690). Among patients with CR-POPF, 44.4% after R-PD and 39.1% after open PD required only prolonged drainage under conservative management without additional treatment such as antibiotics. The rate of grade C POPF did not differ significantly (5.9% vs. 1.1%, p = 0.261). Radiographically confirmed fistula formation one week after surgery was also comparable between R-PD and open PD (73.3% vs. 69.4%, p = 0.928). **CONCLUSIONS:** The incidence and severity of CR-POPF, as well as the rate of fistula formation, were comparable between R-PD and open PD. These findings suggest that fistula formation dynamics and postoperative clinical outcomes may not differ substantially between the two approaches.

EP337

Relaxin-Expressing Oncolytic Virus Remodels the Tumor Microenvironment and Enhances Therapeutic Efficacy in Pancreatic Ductal Adenocarcinoma

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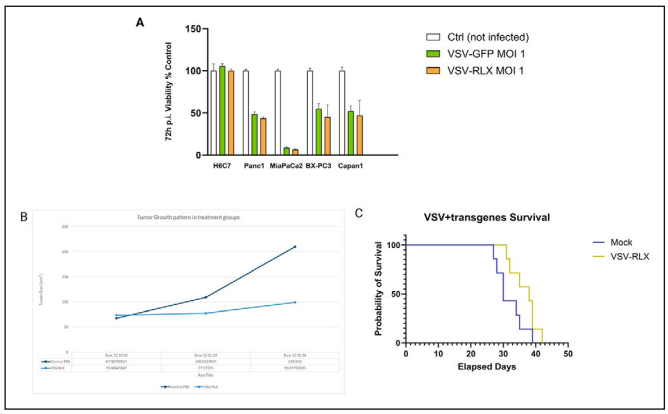
INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is characterized by a dense tumor microenvironment (TME), which plays a central role in therapeutic resistance and significantly limits drug delivery and therapeutic efficacy. While oncolytic viruses (OVs) offer a promising therapeutic avenue, the desmoplastic TME often impedes their effectiveness in PDAC. To address this, a Vesicular Stomatitis Virus (VSV) was engineered to express relaxin, a peptide known for its ability to modulate extracellular matrix components, to remodel the TME and enhance OV therapy in PDAC. **METHODS:** A recombinant VSV expressing human relaxin (VSV-RLX) was created. In vitro, relaxin expression was verified via Western blot, and the cytotoxic effects of VSV-RLX on human PDAC cell lines were assessed using MTS assays. Two sets of in-vivo experiments were conducted. C57BL/6 mice with subcutaneous PDAC xenografts received intratumoral injections of VSV-RLX or saline (control). Tumor growth was carefully monitored. In one experiment, mice were sacrificed 24 hours after the last treatment, and samples were collected for proteomics profiling using mass spectrometry. The other experiment continued as a survival study. **RESULTS:** In-vitro experiments demonstrated that VSV-RLX effectively infected and lysed various PDAC cell lines, with confirmed relaxin expression in infected cells. VSV-RLX did not exert any cytotoxic effects on the normal pancreatic cell line H6C7. It had the greatest impact on the human PDAC cell line MiaPaCa2, which showed the lowest percentage of viable cancer cells after 72 hours of treatment with the OV. In vivo, VSV-RLX significantly slowed tumor growth compared to saline controls ($P < 0.01$). After treatment, the average tumor size in the control group was 210 mm^3, while the tumor size VSV-RLX group was 99.3 mm^3. Proteomic analysis identified a total of 2,667 proteins, among which 11 were significantly down-regulated and 58 were significantly up-regulated in the VSV-RLX–treated group compared to the mock-treated group ($p < 0.05$ and $|FC| \geq 1.5$). Survival data showed a statistically significant improvement in the VSV-RLX group compared to the saline control ($P < 0.049$). **CONCLUSIONS:** These findings collectively demonstrate that engineering VSV to express relaxin successfully remodels the desmoplastic TME of PDAC, leading to enhanced viral spread and superior anti-tumor effects. VSV-RLX thus represents a novel and potent therapeutic strategy for PDAC, warranting further investigation in clinical trials to fully explore its potential. This figure compilation presents key findings investigating the efficacy of a relaxin-expressing oncolytic Vesicular Stomatitis Virus (VSV-RLX) in pancreatic ductal adenocarcinoma (PDAC). Panel A illustrates in vitro results that confirm relaxin expression in cells and showcase VSV-RLX's ability to infect and lyse various PDAC cell lines, while demonstrating its non-cytotoxic effects on normal pancreatic cells (H6C7). Panel B depicts in vivo data showing average tumor sizes following intratumoral injections of VSV-RLX vs. saline into C57BL/6 mice bearing PDAC xenografts, highlighting the significant reduction in tumor volume achieved by VSV-RLX (e.g., 99.3 mm³ vs. 210 mm³ in control). Panel C presents survival data, demonstrating the statistically significant improvement in survival for mice treated with VSV-RLX compared to the saline control, further reinforcing the therapeutic potential of TME-remodeling oncolytic virotherapy in PDAC.



EP338

Mesoappendiceal Invasion in Small Appendiceal Carcinoid Tumors: A Multi-Institutional Analysis of Long-Term Outcomes

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INTRODUCTION: Carcinoid tumors of the appendix are the most common neoplasm arising from the appendix. With an incidence of 2 to 3 million cases per year, often found incidentally post-resection, they can pose a challenge in appropriate management. Mesoappendiceal invasion has been implicated as a risk factor for metastatic spread but investigation into the risk of this tumor characteristic has been mixed. The lack of long-term follow-up data in national databases makes the recurrence risk difficult to determine. We aimed to use a multi-institutional cohort to examine the management of these tumors and their associated risk. **METHODS:** The electronic data warehouses of both a large quaternary care academic medical center and a regional quaternary care pediatric hospital were queried for the ICD-9 and 10 codes for carcinoid tumor of the appendix as a diagnosis from September 2011 to August of 2024 managed with an upfront appendectomy. Patients without pathology reports were excluded. Patients with primary tumors >2 cm were also excluded, as tumor size is an independent risk factor for metastatic spread. This cohort was analyzed for tumor characteristics, type of operative management, reintervention, and recurrence. Chi-squared and Kruskal-Wallace tests were used for univariate analysis. **RESULTS:** Our query resulted in a cohort of 63 patients aged 8-68 (Median: 25.4, SD: 14.4). Median follow up was 3.4 years (SD: 3.6). Mesoappendiceal invasion was present in 21 (33%) cases. Compared to patients without mesoappendiceal invasion, those with invasion were more often female (85.7% vs 54.8%, p=0.015) and more likely to have perineural invasion (52.4% vs 21.4%, p=0.033). Two patients in the cohort had a second operation, one with mesoappendiceal invasion and one without, in both cases a right hemicolectomy was performed. There were no recurrences in the entire cohort. **CONCLUSIONS:** In this unique cohort of both pediatric and adult patients with long-term follow up, mesoappendiceal invasion was associated with female sex and perinural invasion but was not associated with a higher reoperation rate. Most importantly, there were no documented recurrences in long-term follow-up. These findings suggest that for tumors below the widely

accepted size threshold of 2cm, conservative management with appendectomy alone remains appropriate, even in the presence of mesoappendiceal invasion. Mesoappendiceal invasion does not appear to independently drive recurrence in small tumors.

Table 1

	Mesoappendiceal Invasion (n=21)	None (n=42)	Total (n=63)
Age (SD)	26.7 (12.8)	24.8 (15.2)	25.4 (14.4) **p=0.444**
Gender			**p= 0.015**
Male	3 (14.3%)	19 (45.2%)	22 (34.9%)
Female	18 (85.7%)	23 (54.8%)	41 (65.1%)
Race			**p= 0.460**
White	20 (95.2%)	34 (81.0%)	54 (85.7%)
Black	0	1 (2.4%)	1 (1.6%)
Asian/PI	0	2 (4.8%)	2 (3.2%)
Other	1 (4.8%)	5 (11.9%)	6 (9.5%)
Ethnicity			**p= 0.167**
Hispanic	4 (19.1%)	3 (7.3%)	7 (11.3%)
Non-Hispanic	17 (81.0%)	38 (92.7%)	55 (88.7%)
Tumor Size			**p= 0.145**
<1	10 (47.9%)	28 (66.7%)	38 (60.3%)
1-2	11 (52.4%)	14 (33.3%)	25 (39.7%)
Perineural Invasion			**p= 0.033**
Yes	10 (52.4%)	9 (21.4%)	19 (30.2%)
No	11 (47.6%)	33 (78.6%)	44 (69.8%)
Lymphatic involvement			**p= 0.715**
Yes	1 (4.8%)	3 (7.1%)	4 (6.4%)
No	20 (95.2%)	39 (92.9%)	59 (93.7%)
Re-Operation			**p= 0.611**
Yes	1 (4.8%)	1 (2.4%)	2 (3.2%)
No	20 (95.2%)	41 (97.6%)	61 (96.8%)
WHO Grade			**p= 0.471**
1	21 (100%)	40 (97.6%)	61 (98.4%)
2	0	1 (2.4%)	1 (1.6%)
3	0	0	0
Goblet Cell Pathology			
Yes	0	0	0
No	21 (100%)	42 (100%)	63 (100%)
Positive Margin (first operation)			**p= 0.209**
Yes	2 (9.5%)	1 (2.4%)	3 (4.8%)
No	19 (90.5%)	41 (97.6%)	60 (95.2%)
Follow Up Interval, years – mean (SD)	3.30 (2.84)	3.49 (3.95)	3.43 (3.60), **p= 0.838**
Death			**p= 0.476**
Yes	0	1 (2.4%)	
No	21 (100%)	41 (97.6%)	

EP339

Single Institutional Experience on Postoperative Outcomes of Middle Vs. Distal Pancreatectomy

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INTRODUCTION: Middle-segment pancreatectomy (MP) preserves pancreatic parenchyma to maintain endocrine and exocrine function but is technically demanding and may increase perioperative morbidity compared to distal pancreatectomy (DP). This study evaluated long-term institutional outcomes comparing MP and DP. **METHODS:** A retrospective analysis of 1,010 patients undergoing MP(n=87) or DP(n=923) from 2010-2025 was performed. Baseline demographics, perioperative outcomes, and pathological variables were collected. Outcomes included clinically significant postoperative pancreatic fistula (POPF), hospital length of stay (LOS), 30-day readmission and mortality. Long-term functional outcomes included exocrine insufficiency and new-onset diabetes (assessed within 12–24 months per ADA criteria). Multivariable regression adjusted for age, sex, BMI, ASA class, diabetes, tumor histology, and postoperative complications. **RESULTS:** MP cases accounted for 3-9 cases annually. MP patients were more frequently female (60/87 vs.499/923 for DP; p=0.006), and had fewer pancreatic ductal adenocarcinoma (PDAC) histology (7/87 vs.349/923 for DP; p< 0.0001). On univariate analysis, MP was associated with nearly doubled rates of POPF (15/87 vs.90/923 for DP; p=0.039) and longer median hospital LOS (6 vs.5 days; p< 0.0001), while 30-day readmission rates (9/87 vs.106/923 for DP; p=1.00) and 30-day mortality (0/87 vs.5/923 for DP; p=1.00) were similar. On adjusted multivariable analysis, MP independently increased risk of POPF (OR 3.1, 95% CI 1.1–8.7; p=0.031) and prolonged LOS (+29%, 95% CI 1.1–1.6; p=0.006). MP patients had lower rates of exocrine insufficiency (7/87 vs.178/923 for DP; p=0.002) and no differences in rates of new-onset postoperative diabetes (10/87 for MP vs.166/923 for DP; p=0.45). Other complications including transfusion within 72h (2/87 for MP vs.77/923 for DP; p=0.056), urinary tract infection (6/87 for MP vs.26/923 for DP; p=0.088), cardiac arrest (2/87 for MP vs. 3/923 for DP; p=0.060), and C. difficile infection (2/87 for MP vs.3/923 for DP; p=0.060) were similar between the groups. Advanced T-stage tumors (T3-T4) were more frequent in the DP cohort (213/333 vs.6/40 for MP; p=0.05). **CONCLUSIONS:** Compared with DP, MP was associated with higher rates of POPF and prolonged LOS, but lower rates of exocrine insufficiency and no difference in new-onset postoperative diabetes. This suggests that MP remains appropriate for carefully selected patients prioritizing parenchymal preservation, recognizing potential functional gains may come at the cost of increased short-term morbidity.

Table 1. Baseline and perioperative characteristics of patients undergoing distal vs. Middle pancreatectomy

Variable	Distal (N = 923)	Middle (N = 87)	*P*-value
Age (years)	63.8 ± 14.5 (median 67)	61.6 ± 15.8 (median 64.6)	0.23
Female sex	499/923 (54.1%)	60/87 (69%)	0.006
BMI (kg/m²)	27.3 ± 5.6 (median 26.6)	26.6 ± 4.8 (median 25.4)	0.33
Diabetes Mellitus	172/923 (18.6%)	12/87 (13.8%)	0.23
ASA classification			
— Low [I-11]	429/923 (46.5%)	51/87 (58.6%)	0.046
— High [111-IV]	494/923 (53.5%)	36/87 (41.4%)	
Hospital LOS (days)	5 [4–6]	6 [5–7]	<0.0001
Transfusion required (72h)	77/923 (8.3%)	2/87 (2.3%)	0.056
30-day readmission	106/923 (11.5%)	9/87 (10.3%)	1.00
30-day mortality	5/923 (0.5%)	0/87 (0%)	1.00
Sepsis within 48h	34/923 (3.7%)	2/87 (2.3%)	0.76
Septic shock within 48h	6/923 (0.7%)	2/87 (2.3%)	0.14
Postoperative pancreatic fistula (ISGPS Grade B/C)	90/923 (9.8%)	15/87 (17.2%)	0.039
Delayed gastric emptying	53/923 (5.7%)	7/87 (8%)	0.82
Organ/space SSI	79/923 (8.6%)	0/87 (0%)	0.001
Wound disruption	2/923 (0.2%)	1/87 (1.2%)	0.23
Post-op pneumonia	12/923 (1.3%)	2/87 (2.3%)	0.34
Unplanned intubation	9/923 (1.0%)	2/87 (2.3%)	0.24
Pulmonary embolism	16/923 (1.7%)	2/87 (2.3%)	0.66
Ventilator >48 h	7/923 (0.8%)	3/87 (3.4%)	0.046
Stroke/CVA	1/923 (0.1%)	0/87 (0%)	1.00
Cardiac arrest (CPR)	3/923 (0.3%)	2/87 (2.3%)	0.060
Venous thrombosis	15/923 (1.6%)	2/87 (2.3%)	0.65
Urinary tract infection	26/923 (2.8%)	6/87 (6.9%)	0.088
C. difficile colitis	3/923 (0.3%)	2/87 (2.3%)	0.060
T stage (T1–4)	333/923 (36.1%)	40/87 (46%)	0.056
— T1	142	18	
— T2	163	16	
— T3	201	6	
— T4	12	0	
N-positive disease (N1/N2)	187/923 (20.3%)	17/87 (19.5%)	0.88
— N1	162	14	
— N2	25	3	
M1 disease	19/923 (2.1%)	2/87 (2.3%)	0.91
Histology (PDAC)	349/923 (37.8%)	7/87 (8%)	<0.0001
New Onset Diabetes Postop	166/923 (18%)	10/87 (11.5%)	0.45
Exocrine insufficiency	178/923 (19.3%)	7/87 (8%)	0.002

Note: Values are presented as n/N (%) or mean ± SD (median). P-values were calculated using χ^2 or Fisher's exact test for categorical variables and Mann–Whitney U test for continuous variables.

Abbreviations: ASA, American Society of Anesthesiologists; LOS, length of stay; POPF, postoperative pancreatic fistula; SSI, surgical site infection; PDAC, pancreatic ductal adenocarcinoma.

EP340

Survival Outcomes of Young Breast Cancer in Lebanon

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INTRODUCTION: Breast cancer is the most common malignancy in women worldwide. Young breast cancer (YBC), defined as diagnosis age 40, is the leading cancer among females aged 15–39 and is more frequent in developing countries, including Lebanon. Data on YBC in the Middle East are limited. This study compared tumor characteristics, treatments, and outcomes between YBC and older breast cancer (OBC) patients. **METHODS:** A retrospective review was performed on 745 female patients diagnosed with invasive breast cancer between 2010 and 2016. Patients were categorized as younger (< 40 years) or

older (≥40 years) at diagnosis. Univariate and multivariate logistic regression analyses were conducted to assess predictors of mastectomy and chemotherapy use. Overall survival (OS) and disease-free survival (DFS) were compared using log-rank tests. **RESULTS:** YBC comprised 17% of cases. Compared to OBC, YBC had higher rates of multiple masses (38.1% vs. 27.2%; P=0.017), multifocal/multicentric tumors (39.2% vs. 27.3%; P=0.001), calcifications (72.4% vs. 51.9%; P=0.001), grade 3 tumors (52% vs. 34.2%; P< 0.001), HER2-positive status (30.6% vs. 21.6%; P=0.033), and lymphovascular invasion (46.7% vs. 40.1%; P=0.028). YBC more often received chemotherapy (90.2% vs. 75.8%; P=0.003), particularly neoadjuvant (37.4% vs. 24.6%; P=0.028), anthracycline-based regimens (90.2% vs. 75.8%; P=0.003), and trastuzumab (37.3% vs. 24.6%; P=0.029). Recurrence (16.7% vs. 10%; P=0.031) and distant metastasis (14.3% vs. 8.2%; P=0.033) were more frequent in YBC, with poorer DFS (P=0.012). **CONCLUSIONS:** Young patients (< 40 years old) with breast cancer in Lebanon presented with more aggressive tumor features, received more intensive systemic therapy, and had worse DFS than OBC, highlighting the need for targeted management strategies.

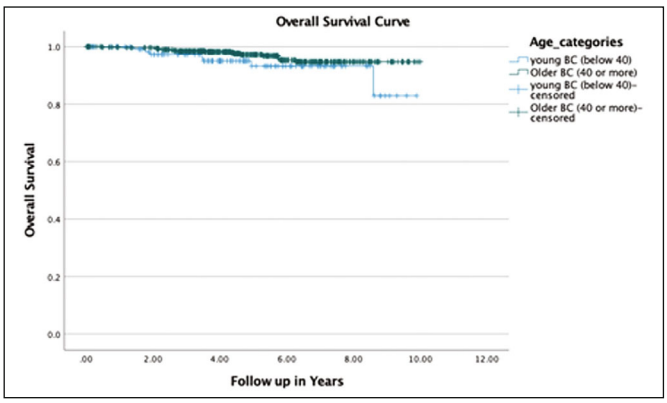

Figure 1: Overall Survival Curve

EP341

Implementing paradigm shifting clinical trials: real-world outcomes of neoadjuvant vs adjuvant ICI in advanced melanoma patients

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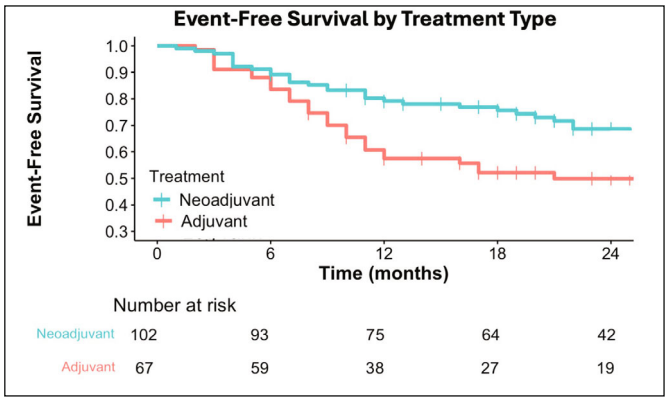
INTRODUCTION: Immune checkpoint inhibitors (ICIs) have revolutionized the management of advanced melanoma. SWOG S1801 demonstrated improved event-free survival (EFS) with neoadjuvant pembrolizumab compared to adjuvant therapy alone in resectable stage III/IV melanoma patients. Similarly, the NADINA trial demonstrated improved EFS using neoadjuvant ipilimumab plus nivolumab compared to adjuvant nivolumab. We conducted a retrospective study to evaluate outcomes associated with neoadjuvant versus adjuvant ICI in real-world patients with stage III/IV melanoma. **METHODS:** We reviewed records from our prospectively-maintained IRB-approved institutional database from January 2020 to December 2024 to identify consented patients with resectable stage III or oligometastatic stage IV melanoma who underwent curative-intent surgery and received ICI either preoperatively (neoadjuvant) or postoperatively (adjuvant). The patients had to have at least 12 months of follow-up or an event. The primary endpoint was event-free survival (EFS), defined as time from diagnosis to recurrence, progression, or death. Secondary endpoints included pathological response (neoadjuvant group) and immune-related adverse events. **RESULTS:** A total of 169 patients met the inclusion criteria: 102 received neoadjuvant ICI and 67 received only adjuvant ICI. The neoadjuvant group had significantly longer event-free survival at 2 years than the adjuvant-only group (p=0.01). In a landmark analysis, EFS at 1 year was 80.2% (95% confidence interval [CI], 72.8 to 88.4) in the neoadjuvant group and 60.6% (95% CI, 49.9 to 73.4) in the adjuvant-only group. The EFS at 2 years was 69.2% (95% CI, 60.0 to 79.7) in the neoadjuvant group and 49.7% (95% CI, 38.6 to 64.0) in the adjuvant only group. The median follow-up was 28.7 months (IQR 18.5-41.3) in the neoadjuvant group while the adjuvant group was 30.1 months (IQR 19.5-41.8). Pathologic complete response (pCR) was observed in 50 (49.0%) patients and partial response was seen in 12 (11.7%) patients of the neoadjuvant cases. The percentage of grade 3 or higher immune-related adverse events was 11.7% in the neoadjuvant group and 19.4% in the adjuvant group (p=0.189). **CONCLUSIONS:** In this single institution analysis, neoadjuvant ICI was associated with improved two-year EFS compared to adjuvant ICI in patients with advanced melanoma, consistent with prospective data from SWOG 1801 and NADINA. This evidence supports quickly integrating neoadjuvant treatment into clinical practice and emphasizes the importance of additional real-world validation.



EP342

Peritoneal tumor board for collaboration of patients as a destination program

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INTRODUCTION: Peritoneal disease presents complex clinical challenges that demand a collaborative approach to treatment. Fragmentation of care across U.S. health systems is common, often resulting in inadequate communication between treating teams. Furthermore, the absence of consistent guidelines contributes to contrasting therapeutic opinions and increased patient distress. Here, we describe the structure and process of an oligometastatic tumor board that introduces key innovations to overcome regulatory barriers and promote collaborative decision-making, thereby streamlining treatment planning. **METHODS:** Our integrated model convenes surgical oncologists, medical oncologists, radiologists, pathologists, and other specialists from across the country for regular (weekly) tumor board discussions. The development of a HIPAA-compliant, electronic medical record–embedded forum, along with a separate authorization process, facilitates participation by physicians not affiliated with Yale. A particularly novel feature is the engagement of nursing and advanced practice providers (APPs), who ensure high-fidelity communication with external treatment teams. Thorough case preparation and periodic scientific presentations further enrich discussions during the Peritoneal Tumor Board (PTB). **RESULTS:** From August 2024 to May 2025, 33 tumor board meetings were held. An average of 4 cases were discussed per meeting, with 6 meetings including lectures from various specialties. In total, 115 case discussions occurred, involving 99 unique patients. Of these, 41 patients (41%) were both in-state and in-network, 12 (12%) were in-state but out-of-network, and 46 (46%) were both out-of-state and out-of-network. Invitations were sent to 56 out-of-network providers, of whom 25 (45%) participated, including 6 who attended multiple sessions. About 1/3 of the time, the discussion led to a change in part of the treatment plan. Yale surgical oncologists, medical oncologists, radiologists, and pathologists consistently attended the meetings. **CONCLUSIONS:** The Peritoneal Tumor Board serves as an effective platform to address the fragmentation of care and to foster national collaboration in

managing complex peritoneal malignancies. The active leadership of nursing and APPs has created a sustainable, high-engagement model that includes both in-network and out-of-network providers. This process offers a replicable framework that can supplement existing tumor board structures at cancer centers and help reduce care fragmentation in complex oncologic programs.

EP343

Trends in secondary angiosarcoma in whole breast versus partial breast radiation in breast cancer patients

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INTRODUCTION: Secondary angiosarcoma is a rare, aggressive malignancy with increasing incidence in recent years. The increase of secondary angiosarcoma may be associated with the rise in breast conserving therapy with radiation in breast cancer patients. The incidence and overall survival in secondary angiosarcoma after patients receive partial versus whole breast therapy is poorly understood. **METHODS:** This study is a National Cancer Database (NCDB) (2004-2023) analysis of 1945967 breast cancer patients (stage I-IV) who received whole versus partial breast radiation. The population was queried for patients who were diagnosed with secondary angiosarcoma (229 patients). The incidence of angiosarcoma in patients who underwent whole breast radiation versus partial breast radiation was analyzed via Chi square test for categorical data. Kaplan-Meier method was used to estimate overall survival. **RESULTS:** 229 of 1946496 (0.0001%) of breast cancer patients who underwent either whole breast radiation (n=207) or partial breast radiation (n=22) had secondary angiosarcoma. Of the 229 patients, those who underwent whole breast radiation had decreased overall survival compared to patients who underwent partial breast radiation (Figure, p< 0.0001). A greater proportion of patients with whole breast radiation presented with poorly differentiated angiosarcoma (22.2% versus 13.6%), however this finding was not statistically significant. Patients with stage T1 breast cancer had an increased risk of angiosarcoma (HR 8.05 95%CI 4.45–14.56, p< 0.001), while those with stage N1 disease had a lower associated risk (HR 1.02 95% CI 0.11–0.66, p=0.003). Additionally, older patients exhibited an increased risk of secondary angiosarcoma after radiation (HR 1.04 95% CI 1.02-1.06 p< 0.00001). **CONCLUSIONS:** Patients with secondary angiosarcoma following whole breast radiation experience worse oncologic outcomes. Secondary angiosarcoma after radiation has been associated with poor prognosis and its association with whole versus partial breast radiation requires further investigation.

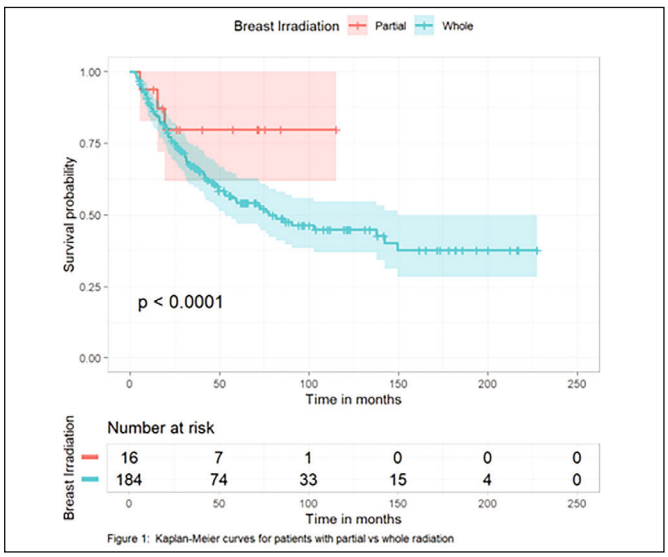

Figure. Kaplan Meier Overall Survival Landmark Analysis for Breast Cancer Patients with Secondary Angiosarcoma

EP344

Frailty screening is associated with decreased loss of independence, length of stay, and readmission

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INTRODUCTION: Frailty reflects decreased physiological reserve and has been associated with morbidity, mortality, prolonged length of stay, loss of independence, failure to rescue, and hospital readmission. Given the importance of frailty, frailty screening was initiated in an academic surgical oncology practice. **METHODS:** Materials and Methods: Patients undergoing complex GI surgery (hepatobiliary and colorectal) from January 2017 to June 2025 were included. Frailty screening with the Risk Analysis Index was initiated in April 2020. Univariate analysis was conducted using the chi-square and Student's T test (JMP). Multivariate analysis was performed with logistic regression. **RESULTS:** A total of 865 patients were included, with a mean age of 63.5 years, and 516 were screened for frailty. The majority had no complications (72%), underwent hepatobiliary surgery (65.1%), had Medicare (50.85%), were male (53.1%), and were white (95.1%). Frailty screening was not associated with risk for postoperative major or minor complications (p=0.58), race (0.196), or age (0.144). However, frailty screening was associated with decreased readmission (11.8 vs. 18.6%, p < 0.006), loss of independence (3.5 vs.11.5%, p < 0.0001), and length of stay above 5 days (35.1 vs. 46%). A multivariate model was created, including age, race, insurance status, and biological sex, to examine the impact of frailty screening on hospital readmission, loss of independence, and length of stay. This model demonstrated the continued influence of frailty screening on loss of independence (OR 4.1, p < 0.001), hospital readmission (OR 1.74, p=0.0046), and length of stay greater than 5 days (1.61, p=0.001) but no association with mortality. **CONCLUSIONS:** The mere act of screening patients for frailty in a high-volume academic surgical oncology practice significantly improved patient outcomes. Screened patients are more than 4 times less likely to be discharged to settings other than home. The odds of readmission and length of stay greater than the median are also significantly reduced. Outcomes could potentially be further improved with prehabilitation and modified postoperative care pathways for frail patients.

EP345

Considerations and Priorities When Deciding Where to Receive Cancer Care in the United States

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INTRODUCTION: Cancer outcomes are better at high-volume or NCI-designated centers, yet many patients seek treatment elsewhere. Although travel burden has been identified as a key determinant in treatment facility selection, the relative influence of this and other factors remains unclear. This study aims to quantify and rank the relative importance of factors influencing a patient's selection of treatment center for cancer care. **METHODS:** A nationally representative quantitative survey of U.S. adults, including those who have had 1) cancer, 2) caregiving experience, or 3) neither, was conducted via the Theorem platform (Dec 2024 - Jan 2025). A structured survey, utilizing themes developed from prior qualitative research, assessed the importance of 22 considerations across 5 domains using a 5-point Likert scale. The survey was psychometrically tested and validated in clinic patients and caregivers before deployment. Incomplete and non-human responses were excluded. **RESULTS:** Of 7,766 surveys initiated, 7,188 (93%) were completed and 6,687 (86%) met inclusion criteria, comprising 822 respondents who have had cancer, 3,093 with caregiving experience, and 2,772 with neither. The cancer subgroup was older, had higher distributions of income, education, and medical literacy, and had a greater proportion of male, white, married, and retired respondents (p < 0.05). No difference in US region or living environment distribution was

noted. The domains with the highest proportion of "very important" ratings were cost of care (64%) and reputation/quality (58%) whereas the convenience/visit experience (43%) and advice (42%) domains had the lowest ($p < 0.001$). When ranking all 22 considerations by frequency of "very important" ratings ($p < 0.001$, Table 1), reputation/quality factors dominated the top five, while convenience/visit experience factors were most common in the bottom five. Patients and caregivers rated nearly all considerations as more important than respondents with neither experience ($p < 0.001$, Table 1). **CONCLUSIONS:** In a nationally representative U.S. cohort, individuals ranked cost and quality higher than convenience and visit experience when considering where to receive cancer care. These findings highlight that although individuals may be willing to travel for high-quality care, targeted support is needed to overcome financial and logistical barriers to such access. Notably, center and surgeon reputation emerged as the top two considerations, while family/friend's opinion ranked lowest, underscoring that individuals prioritize trusted expertise rather than relying on informal advice.

Table 1: Relative Importance of 22 Common Considerations When Choosing Where to Receive Complex Cancer Care

Domain	Consideration	Patient* (N=822)	Caregiver* (N=3,093)	Neither* (N=2,772)	All Respondents (N=6,687)				
		Very Important	Very Important	Very Important	Very Important†	Important	Moderately Important	Slightly Important	Not Important
Reputation & Quality	Center's reputation	70.5%	68.9%	61.7%	66.1%	22.7%	8.1%	1.4%	1.6%
Reputation & Quality	Reputation of your surgeon	71.0%	67.8%	62.5%	66.0%	22.0%	8.2%	2.0%	1.7%
Reputation & Quality	Center's outcomes after your specific operation	69.6%	68.0%	60.6%	65.1%	23.4%	7.7%	2.0%	1.7%
Cost of Care	Out-of-pocket cost of treatment	64.4%	67.0%	62.9%	65.0%	20.7%	9.2%	2.7%	2.5%
Cost of Care	Center's ability to communicate directly with insurers	65.3%	65.1%	59.9%	62.9%	24.8%	8.8%	1.7%	1.7%
Access to Care	Ease of scheduling appointments	65.0%	65.6%	57.6%	62.2%	26.5%	8.4%	1.5%	1.5%
Reputation & Quality	Accredited cancer center status	65.3%	65.0%	57.9%	62.1%	24.6%	9.2%	2.3%	1.8%
Convenience & Visit Experience	Staff courtesy and professionalism	63.6%	62.2%	54.0%	59.0%	27.6%	9.8%	2.0%	1.6%
Access to Care	Center has access to your prior medical records	64.6%	61.1%	54.6%	58.8%	26.2%	10.8%	2.5%	1.8%
Access to Care	Wait time from request to appointment	59.4%	60.4%	54.1%	57.7%	28.5%	10.0%	2.2%	1.5%
Advice	Recommendation of your primary care provider	59.6%	55.1%	48.9%	53.1%	30.4%	11.9%	2.5%	2.1%
Reputation & Quality	Rank relative to competitors	53.6%	52.8%	47.0%	50.5%	31.6%	13.1%	2.6%	2.3%
Convenience & Visit Experience	Ability of family/friends/spouse to take you to/from appointments	51.6%	52.5%	46.7%	50.0%	30.4%	12.9%	3.9%	2.8%
Reputation & Quality	Number of operations your surgeon has performed	54.1%	51.2%	45.4%	49.1%	30.5%	15.1%	3.3%	2.0%
Reputation & Quality	Clinical trials available at the center	42.7%	46.2%	43.6%	44.7%	31.6%	16.4%	4.1%	3.3%
Convenience & Visit Experience	Affordable parking options	44.3%	42.4%	39.2%	41.3%	28.1%	18.4%	6.6%	5.7%
Convenience & Visit Experience	Hospital amenities (e.g., 24/7cafe, waiting areas, healing gardens)	40.3%	44.1%	38.2%	41.2%	31.0%	18.4%	6.2%	3.2%
Convenience & Visit Experience	Favorable prior experience at the center	43.0%	41.5%	37.2%	39.9%	29.7%	18.8%	5.6%	5.7%
Access to Care	Time it takes to get to the center	41.2%	40.5%	38.5%	39.7%	33.6%	19.1%	4.8%	2.8%
Convenience & Visit Experience	Proximity to family and friends	39.0%	36.9%	33.1%	35.6%	28.7%	21.6%	8.3%	5.9%
Convenience & Visit Experience	Nearby amenities (airport, lodging, dining)	36.2%	36.2%	33.4%	35.0%	28.3%	22.1%	8.3%	6.2%
Advice	Family member/friend's opinion	30.0%	31.7%	29.6%	30.6%	28.6%	24.9%	10.1%	5.7%

*Comparisons between subgroups were all statistically significant ($p<0.001$).
†The downward trend in proportion of respondents rating each item as "Very Important" across the 22 domains was statistically significant ($p<0.001$).

EP346

CDK7 inhibition is a novel target in Fibrolamellar carcinoma (FLC)

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INTRODUCTION: Fibrolamellar carcinoma (FLC) is a rare, lethal cancer that disproportionately affects young individuals without known genetic or environmental predisposition. Unfortunately, only 30-45% of patients survive beyond 5 years and the lack of effective systemic therapy options is a major barrier to long-term survival. A unique fusion oncoprotein, DNAJ-PKAc, is expressed in all cases of FLC and causes epigenetic remodeling. Current evidence suggests cyclin dependent kinase 7 (CDK7) is a major mediator of this epigenetic change. CDK7 inhibitors have emerged as drugs of interest for treating advanced solid malignancies and recent work from our group demonstrates their efficacy in causing cancer cell death and suppression of FLC-specific genes in vitro. **METHODS:** Immunodeficient mice (R2G2) were injected in the left flank with FLC PDX cells. These cells were derived from a patient with FLC and harbor the DNAJB1-PRKACA gene fusion. Approximately 70 days following injection grossly palpable tumors were noted for each mouse and baseline measurements were taken. **RESULTS:** Five mice were administered corn oil vehicle control via oral gavage on days 1-14. Five mice were administered the CDK7 inhibitor SY-5609 at a dose of 5 mg/kg in corn oil via oral gavage on days 1-14. Serial tumor measurements every three to four days demonstrated significant growth in tumor size over the course of the study in corn oil treated animals while there was a statistically significant decrease in tumor size in all animals treated with SY-5609, this effect was apparent at both 7 days (*p= 0.008) and 14 days (**p = 0.001). Mice were sacrificed on day 15 after initiation of therapy, tumors removed, final tumor volumes calculated, and tumor preserved for molecular and histologic analysis. The weight of all experimental animals was stable and they exhibited no signs of toxicity or adverse events throughout the study (Figure 1). Grossly the treated tumors appeared diminished in size and histopathology was done to show increased apoptosis and decreased proliferation in treated animals. **CONCLUSIONS:** CDK7 inhibition is a safe and effective therapy for FLC in a pre-clinical mouse model of disease. There were no adverse effects noted with SY-5609 treatment and there was statistically significant reduction in tumor volume at two weeks as compared to control. Further, histopathologic data confirms increased apoptotic activity and decreased proliferation in SY-5609 treated animals. Future studies will look at longer treatment periods with CDK7 inhibitors, tumor biology following removal of therapy and the efficacy of novel combination therapies with CDK7 inhibition as a backbone.

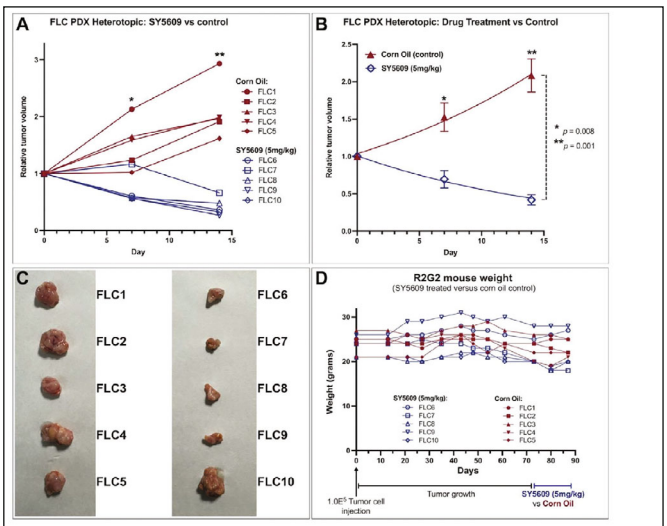

Figure 1. *CDK7 Inhibition is tumoricidal in a heterotopic patient cancer-derived xenograft (PDX) model of Fibrolamellar carcinoma (FLC).* **A.** Tumor volume is shown for each individual animal over the course of the treatment. Relative tumor volume is depicted in the y-axis because each tumor was a different volume at initiation of therapy and tumor trajectory is normalized to this starting value. Animals treated with corn oil are shown in red and animals treated with SY-5609 are shown in blue. *p= 0.008, **p = 0.001 for corn oil versus SY-5609. **B.** Aggregate tumor volume data from the corn oil and SY-5609 treated mice is shown. Overall, there was a significant decrease in tumor volume at days 7 and 14 in animals treated with SY-5609 while animals treated with vehicle control showed increase in tumor volume. *p = 0.008, **p = 0.001 for corn oil versus SY-5609. **C.**Following sacrifice on day 15 tumors were removed and gross images of the tumors are displayed from control and treatment groups. **D.** Mouse weight data is depicted throughout the course of the study. Tumor initiation with $1x10^5$ tumor cells was followed by tumor growth for 73 days at which point mice were treated with SY5609 (blue) or corn oil (red). There were no mouse deaths or significant changes in weight; the mice appeared healthy throughout the course of the study.

Figure. CDK7 Inhibition is tumoricidal in a heterotopic patient cancer-derived xenograft (PDX) model of Fibrolamellar carcinoma (FLC)

EP347

Microenvironmental remodeling in cholangiocarcinoma: MGP up-regulation and VSMC enrichment in involved lymph nodes

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INTRODUCTION: Lymph node involvement is a critical prognostic factor in cholangiocarcinoma. We investigated molecular and cellular differences between involved and uninvolved lymph nodes, focusing on MGP (Matrix Gla Protein) expression and vascular smooth muscle cells (VSMCs). Understanding these differences may reveal microenvironmental changes associated with metastasis. **METHODS:** Spatial transcriptomic sequencing was performed on 14 lymph nodes (LNs) from 6 cholangiocarcinoma patients. Four were classified as involved and 10 as uninvolved. During analysis, differential gene expression between involved and uninvolved LNs was investigated, including quantification of the percentage of MGP-expressing cells and the proportion of vascular smooth muscle cells (VSMCs) per sample. Statistical comparisons between groups were performed using the Mann-Whitney U test. **RESULTS:** The percentage of MGP+ cells was significantly higher in involved LNs compared with uninvolved nodes (mean 39.1% vs. 13.6%, p = 0.006). Similarly, involved lymph nodes exhibited a higher median proportion of vascular smooth muscle cells compared with uninvolved nodes (17.6% vs. 5.0%, p = 0.006). These findings suggest coordinated alteration of stromal cell composition and MGP expression associated with LN involvement. **CONCLUSIONS:** Involved LNs show marked expansion of VSMCs and elevated MGP expression in cholangiocarcinoma patients. These changes may reflect microenvironmental

remodeling that supports tumor dissemination and could serve as potential biomarkers for metastatic involvement.

EP348

Comparative Genomic Analysis Reveals Concordant Mutation Profiles in Metastatic Colon and Rectal Cancers to the Liver Based on Age Group

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INTRODUCTION: The incidence of metastatic colorectal cancer (mCRC) among younger patients has been rising. Approximately 20% of patients achieve long-term cure, primarily those with oligometastatic liver disease; however, 50–75% develop recurrence after curative-intent surgery. Comprehensive genomic profiling enables identification of targetable mutations. This study investigated clinical and genomic differences between younger (< 50 years) and older (>50 years) patients who underwent hepatic resection for metastatic colon and rectal cancers. **METHODS:** Patients undergoing resection of mCRC to the liver (2016–2023) were included. Those with extrahepatic disease at presentation were excluded. Patients who were Microsatellite Instability-High were excluded. Survival analyses were performed using Cox proportional hazards models in R (v4.3.1). Log-rank P-values, hazard ratios, 95% confidence intervals, and Wald test P-values were reported. Foundation medicine was used to profile genomic mutations in tumor specimens from primary and metastatic sites. **RESULTS:** Thirty-seven patients met inclusion criteria. Median age was 41 (range 28–48) in the younger group and 60 (range 51–72) in the older group. Synchronous disease was present in 78% of younger and all older patients. Median Clinical Risk Score was 2 in both groups. All younger patients experienced recurrence, while two older patients remained disease-free. Median time to recurrence was 12 months in younger patients and 13 months in older patients (P=0.43), with no significant survival difference. Among 65 genes tested, none reached clinical significance. TP53 (P=0.15) and PIK3CA (P=.43) mutations trended higher in older patients, while EGFR (P=.15), SMAD4 (P=.15), NSD3 (P=0.4), and PRKN (P=0.4) mutations were seen exclusively in younger patients. **CONCLUSIONS:** Age did not affect recurrence or overall survival in patients undergoing hepatic resection for mCRC. Although no genomic alterations reached clinical significance, younger patients demonstrated unique mutation trends divergent from canonical pathways (APC/P53/NRAS) warranting further studies for prognostic and therapeutic implications.

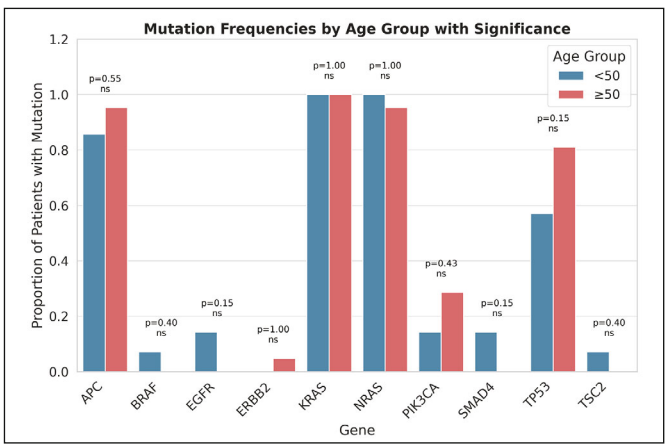

Figure. Mutation Frequencies by Age Group in Metastatic Colon and Rectal Cancer to the Liver

EP349

Surgical Debulking Prior to Peptide Receptor Radionuclide Therapy (PRRT) in Patients with Well Differentiated Gastroenteropancreatic Neuroendocrine Tumors (GEPNETs)

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BACKGROUND: GEPNETs are among the most prevalent NETs in the US, with metastatic involvement in 50-75% of the cases. Liver failure secondary to metastatic disease is the leading cause of death in patients with GEPNETs. Although PRRT with 177Lu-DOTATATE has become a transformative therapy for patients with GEPNETs, the cytoreductive potential of the treatment is modest. The post-hoc analysis from the NETTER-1 study identified a subset of patients with GEPNETs with one or more tumors >3 cm reduced progression-free survival (PFS). Surgical debulking is an established treatment for patients with metastatic GEPNETs with hepatic involvement with some series showing improved survival. However, complete surgical debulking is not always technically feasible. This pilot study aims to assess the feasibility and clinical impact of surgical debulking of tumors >3 cm prior to PRRT with 177Lu-DOTATATE in patients with GEPNETs. Additionally, we will explore mechanistic impact of surgical debulking in changes in somatostatin receptor 2 (SSTR2) expression based on 64Cu-DOTATATE PET/CT. **METHODS:** This is a single institution pilot study to assess the objective response rate of the combination of standard of care treatment in GEPNET by first surgical debulking of tumors > 3cm followed by PRRT with 177Lu-DOTATATE within 90 days of surgery (Figure 1). The study will enroll six patients with metastatic well-differentiated, grade 1-2 GEPNETs with adequate SSTR avidity defined as ≥ liver SSTR uptake confirmed on a 64Cu DOTATATE PET/CT. Only patients with hepatic metastases, and at least one large tumor >3 cm which is accessible for surgical resection, will be enrolled. All patients will be reviewed for study candidacy at a multidisciplinary neuroendocrine tumor board. Following surgery, patients will undergo a 64Cu DOTATATE PET/CT within 12 weeks. All patients will then receive standard treatment with up to 4 cycles of 177Lu-DOTATATE. The primary objective is to measure objective response rate of a combination of surgical debulking followed by PRRT. The secondary objective is to assess the radiomic profile including SSTR standardized uptake values of large (> 3 cm) and non-large (< 3 cm) tumors. **RESULTS**: This study is open and enrolling. **CONCLUSION:** Trial in progress.

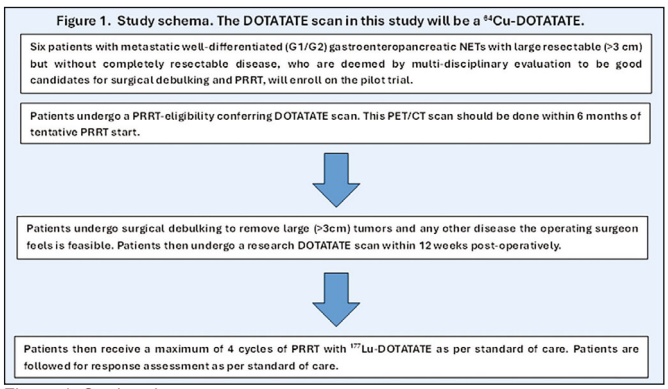

Figure 1. Study schema.

EP350

Use of GLP-1 receptor agonists reduces mortality in obese patients with neuroendocrine tumors: A propensity-score matched study

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INTRODUCTION: Obesity has been increasingly recognized as a risk factor for neuroendocrine tumors (NETs), but its impact on outcomes in this population remains understudied. Glucagon-like peptide-1 receptor agonists (GLP-1RA), commonly used in obesity and diabetes management, may influence cancer outcomes, including incidence and mortality. The objective of this study is to evaluate the association between GLP-1RA use and overall mortality (OM) in obese patients with NET, as well as to assess the incidence of NETs and OS among obese patients with and without GLP-1RA use. **METHODS:** A retrospective cohort analysis was conducted using the TriNetX database to evaluate the outcomes of adult patients with obesity (BMI ≥30 kg/m²) diagnosed with NET who did or did not take GLP-1RAs. Cohorts were propensity score

matched for key comorbidities (BMI >30, Diabetes Mellitus, Coronary Artery Disease, Chronic Kidney Disease, and Congestive Heart Failure). The primary outcome was overall survival. The secondary outcome was incidence of NET in obese patients who did or did not take GLP-1RAs. **RESULTS:** In total, 2511 patients who used GLP-1RA and 27485 patients who did not were identified. After propensity score matching, 2506 patients from each cohort were analyzed. Mortality was significantly lower in patients on GLP-1RA compared to those who were not (9.1% versus 21.2%, OR 0.371, CI 0.313 to 0.439, p< .05). Additionally, overall survival was significantly higher in those taking GLP-1 RA (67.3% vs 42.3%, HR 0.485, p< 0.05). Use of GLP-1RA in patients with obesity did not demonstrate a significant difference in incidence of NETs. **CONCLUSIONS:** GLP-1 agonist therapy in patients with obesity and neuroendocrine tumors is associated with significantly reduced all-cause mortality. In addition, the use of GLP-1RA does not seem to affect the incidence of NET tumors. These findings support a potential protective effect of GLP-1 agonists on survival in patients with obesity and NETs.

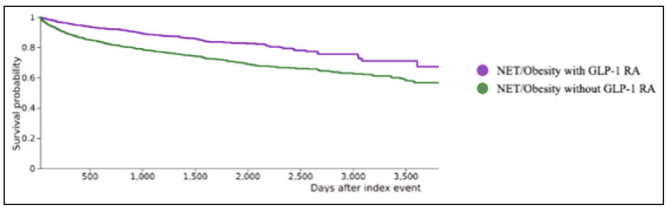

Figure. Kaplan-Meier survival analysis for obese patients with NET tumors on GLP1-RA vs not on GLP1-RA

EP351

Oncologic and surgical outcomes for a novel approach to esophagectomy: a retrospective analysis at a large community health system

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INTRODUCTION: Open esophagectomy in the treatment of esophageal cancer is major surgery with potential for profound complications and difficult post-operative recovery. Transhiatal Endoscopic Esophageal Mobilization (TEEM) is a minimally invasive method of esophagectomy that minimizes morbidity and length of procedure via a dual-team approach from the abdomen and the neck. This study analyses our 10-year experience of TEEM approach for esophagectomy. **METHODS:** A retrospective review of patients who underwent TEEM esophagectomy from January 1 2015-December 31, 2024 was performed. Patients were excluded from analysis if they did not have a diagnosis of esophageal cancer. Demographics, intraoperative data, and post-operative, and pathologic results were collected for descriptive analysis. **RESULTS:** A total of 156 patients received TEEM. Mean patient age was 65 years (range 34-84). Average procedure time was 3 hours and 33 minutes. Tumor locations in the esophagus included lower third (51.9%, n =81), middle third (9.6%, n = 15), esophagogastric junction (34.6%, n = 54), and unspecified (3.8%, n = 6). An average of 15 lymph nodes were collected in each case. 39.7% (n=62) patients had positive nodes.30-day mortality was 1.2% (n=2). **CONCLUSIONS:** TEEM esophagectomy is a feasible approach for surgical resection of esophageal cancers from mid esophagus to EGJ with efficient operative speed, adequate lymphadenectomy, and low mortality. Further study is needed to directly compare the TEEM method against other established forms of esophagectomy to identify if this technique confirms specific benefit in respect of operative time, oncologic outcomes, and survival.

Table 1: Demographics and results of 10-year TEEM Esophagectomy Experience

Demographics	mean +/- St dev or % (n)
Age (years)	64 +/- 9.3
Cancer Location	
Esophageal cancer-lower third (150.5 C15.5)	51.9% (81)
Esophageal cancer middle third (150.4 C15.4)	9.6% (15)
Esophageal cancer esophagogastric junction (cardia) (151.0 C16.0)	34.6% (54)
Malignant neoplasm of the esophagus unspecified (150.9 C15.9)	3.8% (6)
Operative Data	
Mean operative time	3h 33min +/- 1hr9min
Average lymph nodes collected	15 +/- 5.5
30-day mortality	1.2% (2)

EP352

Risk Reveal™ Molecular Assay and NCCN Criteria in Stage I NSCLC: Concordance and Impact on Adjuvant Therapy Recommendations

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INTRODUCTION: Accurate risk stratification after non-small cell lung cancer (NSCLC) resection guides adjuvant therapy. While not routinely recommended for stage IA disease, some patients remain high risk for recurrence. This study evaluated concordance between the risk stratification assay and NCCN high-risk criteria, and their influence on adjuvant treatment decisions. **METHODS:** We retrospectively reviewed patients who underwent resection for pathologic stage I NSCLC between January 2022 and April 2025 and had tumor samples sent for RiskReveal™ analysis. Demographic data, presence of NCCN-defined highrisk features, and adjuvant therapy decisions were collected. A multivariable logistic regression analysis was performed to identify predictors of receiving adjuvant therapy, adjusting for age, smoking history, gender, stage (IA vs IB), surgical approach, NCCN high-risk features, and Risk Reveal™ stratification. **RESULTS:** Of the 177 stage 1 NSCLC tumor samples submitted for RiskReveal™, 79 (44%) were intermediate/high risk (Figure 1). All patients underwent robotic-assisted R0 resection. 73.4% (58/79) were pathologic stage IA and 26.5% (21/79) stage IB. NCCN high-risk features were present in 48 patients (60.7%). Adjuvant therapy was given to 14 of 58 stage IA (24%) and 12 of 21 stage IB (57%). Among 21 RiskReveal™ high-risk patients, 66.7% (14/21) also met NCCN high-risk criteria; 50% (7/14) received adjuvant therapy. Among the seven high-risk patients by RiskReveal™, but not by NCCN, two received adjuvant therapy. Among 58 RiskReveal™ intermediate risk patients, 58.6% (34/58) also met NCCN high-risk criteria; 38.2% (13/34) received adjuvant therapy. Of the 24 intermediate RiskReveal™ patients without NCCN high-risk features, 16.6% (4/24) received adjuvant therapy. Among 98 RiskReveal™ low risk patients, 5% had stage IB disease. Twenty-five patients in the low-risk group were found to have high-risk features according to NCCN criteria – two patients received adjuvant therapy. In multivariable analysis, patients with high/intermediate Risk Reveal™ had significantly greater odds of receiving adjuvant therapy compared with those with low risk (OR 19.8, 95% CI 4.3–90.6; Figure 1b). **CONCLUSIONS:** Concordance between NCCN and RiskReveal™ high-risk was associated with greater adjuvant therapy use. Among patients with high/intermediate risk by RiskReveal™ without NCCN high-risk features, 8% received adjuvant therapy, suggesting RiskReveal™ influenced decisions. Prospective studies should compare RiskReveal™ impact on treatment decisions in stage 1 NSCLC.

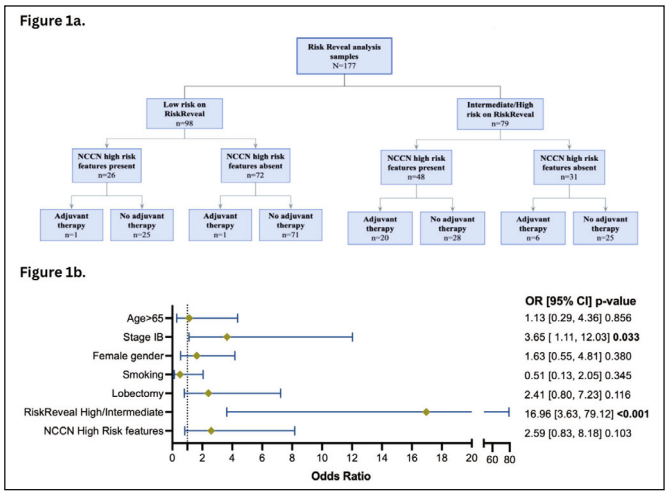

Figure 1. a) Risk stratification of stage I NSCLC patient samples using the RiskReveal™ molecular assay; b) Forest plot of predictors of adjuvant therapy.

EP353

Easing the Burden – Early Evidence from Nigeria's First RCT of Financial Navigation in Cancer Care

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INTRODUCTION: In Nigeria, cancer diagnosis is frequently accompanied by severe psychosocial challenges, including emotional distress and disruption of daily life. Late-stage presentation, limited healthcare system capacity, and high out-of-pocket costs contribute to poor psychosocial outcomes. This study evaluates the effect of a targeted financial navigation (FN) program on financial distress, psychosocial well-being, and quality of life in newly diagnosed breast, colorectal, and prostate cancer patients. **METHODS:** This mixed-methods sub-study was nested within COST-FIN (NCT06630962), the first randomized controlled trial in a low- and middle-income country to evaluate the effectiveness of a novel financial navigation program in reducing financial toxicity and distress among cancer patients. COST-FIN is embedded within the African Research Group for Oncology (ARGO) consortium, a long-standing U.S.–Nigeria cancer research partnership. Conducted at two tertiary hospitals in southern Nigeria, the trial enrolls patients ≥18 years old with newly diagnosed breast, colorectal, or prostate cancer. Participants are randomized 1:1 to receive either routine care (RC) or FN, which includes insurance counseling, linkage to charitable funds, and budgeting support. Outcomes are measured at baseline, 3 months, and 6 months using validated instruments: FACIT-COST for financial distress and SF-12 for physical and mental health. **RESULTS:** To date, 148 patients have been enrolled (FN = 76, RC = 72), with a median age of 52 years and 64% female. Breast cancer was the most common diagnosis (58%), followed by colorectal and prostate cancer. Preliminary findings suggest a trend toward greater improvement in financial distress among FN participants over 6 months (+6.1 points) compared to minimal change in the RC arm (+0.2 points). Physical and mental health scores remained stable in both groups. **CONCLUSIONS:** Early findings suggest a trend toward reduction in financial distress for cancer patients in Nigeria receiving financial navigation, even as overall quality of life remains unchanged. A formal interim analysis will be conducted when 50% of the sample reaches 6-month follow-up to determine effectiveness and guide planned crossover. The trial is ongoing, and final analysis will assess the durability and broader impact of FN at full enrollment.

EP354

Breast cancer risk reduction strategies in BRCA+ patients presenting with ovarian cancer at a large public hospital

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INTRODUCTION: Approximately 15% of women with epithelial ovarian cancer carry a BRCA mutation, yet there are no clear guidelines regarding breast cancer screening or risk-reducing mastectomy in this population. Studies are limited for the diverse and often economically disadvantaged patients diagnosed at public safety-net hospitals. We report our experience with breast cancer risk reduction strategies in this unique cohort. **METHODS:** A retrospective chart review was conducted on patients diagnosed with ovarian cancer between 1/1/04 and 1/1/25 who were then found to harbor a pathogenic mutation in BRCA 1 or BRCA 2 genes. Data included patient demographics, ovarian cancer characteristics and treatment, details of breast cancer imaging surveillance or risk-reducing mastectomy, and clinical follow-up. **RESULTS:** 36 patients were included (median age at diagnosis 57.5 years, range 30–75), of which 9 patients (25%) had a prior diagnosis of breast cancer before developing ovarian cancer. The majority (31, 86.1%) self-identified as a non-white race, and 12 (33.3%) identified as Hispanic. 26 patients (72.2%) harbored mutations in BRCA 1, while 10 patients (27.8%) carried BRCA 2 mutations. 32 patients (88.9%) were diagnosed with advanced-stage (III/IV) ovarian cancer. 24 patients (66.7%) received maintenance treatment with a PARP inhibitor. Among patients with no prior history of breast cancer, 18 patients (66.7%) were referred to a breast surgeon. The majority of these consultations (12, 66.7%) occurred after completion of adjuvant chemotherapy for ovarian cancer. 3 patients (11.1%) received risk-reducing mastectomy, with surgery occurring a median of 43 months following diagnosis (range 21–45 months). 20 patients (74.1%) received imaging surveillance and 4 patients (14.8%) did not undergo either mastectomy or imaging. Of the patients undergoing imaging surveillance, 9 (45%) received imaging less frequently than twice annually. 8 patients (40%) received imaging surveillance with mammogram only, while 12 (60%) received both mammogram and MRI. There were no breast cancer diagnoses following ovarian cancer diagnosis. Median follow-up time was 42.5 months after ovarian cancer diagnosis (range 11–151). **CONCLUSIONS:** Active surveillance may be appropriate, given the low rate of subsequent breast cancer diagnoses. Frequency of imaging surveillance is limited in this often-transient patient population, indicating a need for close clinical follow-up. Further studies are needed to clarify how the evolving landscape of ovarian cancer treatment, with improved survival following the introduction of PARP inhibitors, may influence decisions between imaging surveillance and risk-reducing mastectomy.

Table. Breast cancer risk mitigation strategy of patients without prior history of breast cancer (n = 27)

Received risk-reducing mastectomy	3 (11.1%)
Received imaging surveillance	20 (74.1%)
Neither mastectomy nor imaging	4 (14.8%)
Imaging surveillance modality (n = 20)	
Mammogram only	8 (40%)
Mammogram and MRI	11 (55%)
Mammogram + MRI + US	1 (5%)
Imaging frequency (n = 20)	
Less than annually	4 (20%)
Annually	5 (25%)
Twice annually	11 (55%)

EP355

The Global Landscape of Practice-Changing Breast Cancer De-Escalation Randomized Trials

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INTRODUCTION: Breast cancer (BC) treatment de-escalation reduces patient morbidity without compromising oncological outcomes, yet its global distribution and impact remain undefined. We hypothesized that the US lags other regions in de-escalation efforts and that specific trial characteristics influence clinical adoption. **METHODS:** We systematically reviewed phase III trials (1975–2024). PubMed, Embase, Scopus, and major guidelines were queried. Data included trial features, geography, funding, and impact factor (IF). Practice-changing was defined by guideline adoption or high-impact journal designation. Regression was used to evaluate predictors of practice-changing status. **RESULTS:** We included 127 publications from 78 trials. Of those, 82.7% were multi-center, 53.5% focused on radiation, 23.6% surgery, and 22.0% systemic. Trials spanned 1985–2024, rising in the 2010s (47.2%) and 2020s (36.2%) vs 15.0% in the 2000s and < 1% earlier ($p < 0.001$). US-led output declined as non-US activity rose. Of all publications, 21.3% were US-based, falling from 100% in the 1980s to 14.0% in the 2020s. Among all publications, 58.3% were classified as practice-changing based on adoption in guidelines or clinical uptake. Guideline citation rates were 33.9% for NCCN, 22.8% for St. Gallen, 15.0% for ESMO, 12.6% for ASTRO, and 6.3% for ASCO. Only NCCN demonstrated a significant regional bias favoring U.S. trials ($p = 0.0141$). Geographically, most publications were led by European investigators (66.1%), followed by North America (25.2%) and Asia (8.7%). US-based publications most often focused on surgical de-escalation (44.4%), while non-US trials more frequently addressed radiation

(60.0%). US trial publications were more likely to appear in high-impact journals (mean IF: 54.4 vs. 34.5), which may partially explain their higher but not statistically significant practice-changing rate (74.1% vs. 54.0%, p = 0.0975). Practice-changing trials in high-impact journals (IF ≥10) were more often cited (OR 3.38, 95% CI 1.47–8.04, p=0.005). US origin was not predictive (OR 1.15, p=0.795). Publication year was consistently associated with decreased odds of downstream influence: each year after 2010 was linked to lower odds of practice-changing designation (OR = 0.84, p < 0.001) and guideline citation (OR = 0.86, p < 0.001). **CONCLUSIONS:** Global BC de-escalation research is largely led outside the US. While geography did not predict guideline inclusion, publication in high-impact journals was the key driver of downstream influence. Practice-changing impact has declined for newer trials.

EP356

Post-transparency price convergence in oncology services

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INTRODUCTION: Cancer imposes a significant economic burden on the US healthcare system and its patients. We aimed to measure changes in price difference, variation, and overall level for cancer care following implementation of price transparency regulations. **METHODS:** This was a retrospective longitudinal study of publicly available nationwide hospital price transparency data from December 2021 to June 2024. The dataset was constructed using billing codes across four oncology service categories (inpatient care, chemotherapy administration, radiation, surgery). Initial rate percentiles were grouped based on quartiles into 'Bottom 25%' (0-25th percentile), 'Middle 50%' (25th-75th), and 'Top 25%' (75th-100th) market segments. A linear mixed effects model evaluated the annualized real rate change (ARRC) as a function of CBSA-service (i.e., local market)-specific percentile price rank, service category, payer, market structure, and hospital. One-proportion binomial tests assessed the proportion of converging markets. **RESULTS:** Data were extracted for 89 billing codes from 228 hospitals, yielding 11,290 negotiated rate groups comprised of 349,990 monthly rate observations. Overall, there was aggregate price stability (model intercept -0.001, p= 0.889). There were 355 (86.4%) converging and 56 (13.6%) non-converging markets (p< 0.001). Hospitals in initially low- or high-price deciles demonstrated large inflation-adjusted price increases and decreases, respectively, compared to hospitals in middle deciles, with a -22.9 percentage point ARRC differential between the lowest and highest rates within local markets (p< 0.001; Figure 1). Convergence was associated with service category, payer, and larger hospital size (p< 0.01). The random effects structure revealed substantial heterogeneity across hospitals (conditional R2= 0.580, marginal R2= 0.176), suggesting that transparency data may be affecting convergence through hospital-level rate negotiations. **CONCLUSIONS:** Prices for oncology services demonstrated convergence, both in terms of a reduction in price difference and variation, following federal price transparency regulations without a significant change in overall inflation-adjusted price. While price convergence is an encouraging step towards eliminating waste and promoting affordability, it is only part of a multifaceted strategy to curb cancer-related spending. Future studies should measure changes in outcomes relative to costs, particularly for financially vulnerable patients who may face more limited access to low-cost alternatives.

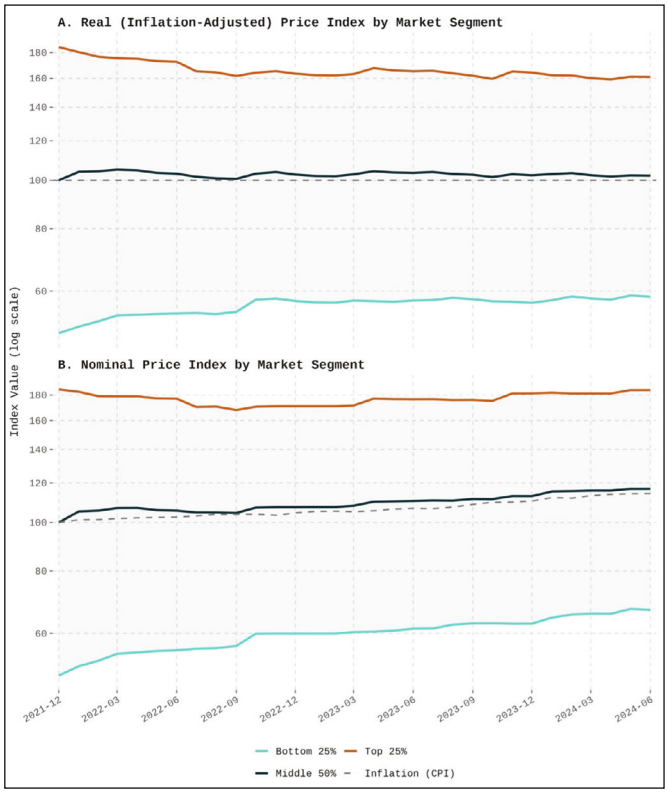

Figure 1. Real and nominal price convergence trends for oncology services.

EP357

Liver Resection versus Trans-arterial Chemoembolization for Huge Hepatocellular carcinoma (>10cm): A nationwide Propensity score adjusted analysis

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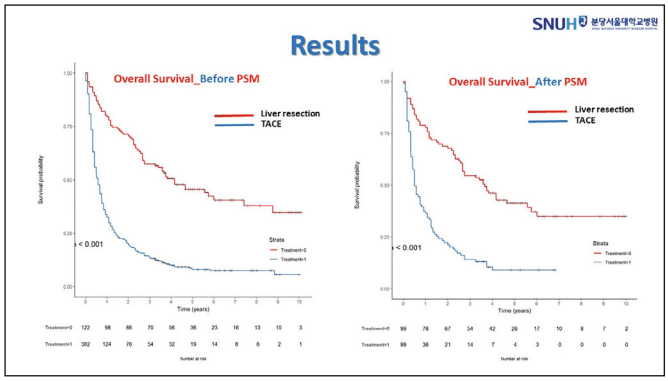
INTRODUCTION: Management of huge hepatocellular carcinoma (HCC) larger than 10 cm remains controversial, with guidelines recommending either liver resection (LR) or locoregional therapies such as transarterial chemoembolization (TACE). However, nationwide comparative evidence is limited. **METHODS:** We conducted a retrospective analysis using data from the Korean Primary Liver Cancer Registry (KPLCR), a nationwide representative cohort from 2008 to 2017. Among 15,307 patients, 504 with solitary HCC ≥10 cm without metastasis were identified. Of these, 122 underwent LR and 382 received TACE. Propensity score matching (PSM) was applied to balance baseline variables, resulting in 99 patients per group. Overall survival (OS) and recurrence-free survival (RFS) were compared using Cox proportional hazards models. **RESULTS:** Before PSM, patients undergoing LR had significantly better baseline liver function compared with those receiving TACE. After PSM, clinical characteristics including Child-Pugh classification and MELD scores were well balanced. LR demonstrated superior OS (hazard ratio [HR] 3.06, 95% CI 2.18–4.29, p< 0.001) and RFS (HR 3.37, 95% CI 2.43–4.68, p< 0.001) compared with TACE. These survival benefits remained consistent in both pre- and post-matching analyses. **CONCLUSIONS:** In this nationwide propensity score–adjusted study, LR was associated with markedly improved long-term outcomes compared with TACE for huge HCC. These findings support surgical resection as the preferred treatment strategy in appropriately selected patients with tumors larger than 10 cm.



EP358

An implementation science approach to improving the uptake of depression treatment in cancer patients: iCan DepCare

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INTRODUCTION: Depression is associated with cancer recurrence, diminished quality of life (QoL), increased healthcare expenditures, chemotherapy nonadherence, and racial and ethnic disparities in cancer outcomes. A systematic review and meta-analysis showed that patients with depression who have received surgery for their cancer diagnosis have poorer survival and worse quality of life by nearly 15% and 15 points on scale, respectively. Few if any strategies have been developed to improve uptake in medical and surgical oncology settings. **METHODS:** We conducted a scoping review of qualitative facilitators and barriers to depression screening and treatment in oncology settings followed by patient and provider interviews and focus group sessions which were thematically analyzed and coded using the Consolidated Framework for Implementation Research. **RESULTS:** Key barriers reviewed by our qualitative analysis included stigma, unclear provider roles as barriers, poor patient–provider relationships, difficulties navigating the healthcare system, and a lack of resources offered by clinics, inconsistent screening, limited outside referrals, absence of systemized CC, time constraints, staffing limitations, and gaps in patient understanding of available resources. Leadership support, electronic health record prompts, peer support, personal relationships with providers, embedded psycho-oncology teams, early conversations about depression in cancer care plans, patient-friendly resources, and personalized interventions emerged as facilitators. We mapped barriers to key behavior change techniques/strategies including education, capacity building, clinical data relay, and patient activation. Leveraging user centered design principles, we developed an EHR integrated psychoeducation-activation prototype that delivers personalized treatment recommendations, resources and stress relief. The final strategy (iCan DepCare) for promoting depression care includes ongoing technical assistance for clinic champions/staff, triage support, education, reminders for oncology teams, and the digital psychoeducation tool for patients. **CONCLUSIONS:** We applied behavioral and implementation methods, combined with contextual data analysis, to develop a multilevel implementation strategy to increase uptake of screening and treatment for depression in medical and surgical oncology settings. This study and its implementation design represent a new approach to depression care in oncology, targeting a condition that profoundly affects cancer and surgical outcomes.

EP359

Predicting future liver remnant after hepatectomy: is 99mTc-SC SPECT a crystal ball?

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INTRODUCTION: Accurate prediction of the future liver remnant (FLR) is critical to avoid post-hepatectomy liver failure (PHLF). The most common approach to estimating FLR is computed tomography (CT) volumetry which does not account for heterogeneity in liver function resulting from cirrhosis, steatosis, or chemotherapy. Single photon emission computed tomography (SPECT/CT) with technetium-99m sulfur colloid (99mTc-SC) can potentially provide valuable functional data to enhance predictions of FLR. We evaluated the correlation of 99mTc-SC SPECT/CT with outcomes in major hepatectomy. **METHODS:** Participants were enrolled in a prospective pilot (NCT02881554) evaluating 99mTc-SC SPECT before and after radiation or surgery for liver cancer. Analyses were performed on the surgical cohort (n=3) that underwent preoperative (3-6 days prior), perioperative (POD 3-4) and postoperative (POD 29-36) 99mTc-SC SPECT/CT (Fig. 1a). FLR was contoured on preoperative cross-sectional images and registered onto SPECT scans. Imaging parameters included anatomic liver volume (ALV), functional liver volume (FLV), liver-to-spleen uptake (L/Smean), and total liver function (TLF). FLV accounts for SC SPECT intensity within the ALV, whereas TLF is derived from the product of FLV and L/Smean. Biochemical data on liver function was obtained. **RESULTS:** Two patients with colorectal metastasis (CRLM) with normal liver function and one patient with hepatocellular carcinoma (HCC) and Child-Pugh A cirrhosis were included. Both patients with CRLM had received neoadjuvant chemotherapy and the patient with HCC had prior Y-90 therapy. Right (n=2) and extended left hepatectomy (n=1) were performed.

Predicted preoperative FLR volume was comparable to perioperative ALV for individual patients (981 vs 964, 1313 vs 1474, and 1024 vs 1162 cc3). Both CRLM patients (1, 2) demonstrated postoperative recovery of TLF to baseline or above, whereas the patient with HCC (3) experienced mildly decreased TLF (Figure 1b). One patient with CRLM (1) had a transient increase in bilirubin consistent with Grade A PHLF. Despite undergoing the greatest volumetric resection (ΔALV = -54%, ΔFLV = -49%), TLF was preserved due to an increase in perioperative L/Smean. **CONCLUSIONS:** This pilot study demonstrates the feasibility of using 99mTc-SC SPECT/CT to evaluate temporal changes in liver function surrounding major hepatectomy, suggesting potential utility of this approach to improve preoperative FLR assessment and prediction of PHLF. Larger studies are warranted to validate these findings and establish functional imaging-based thresholds for surgical planning.

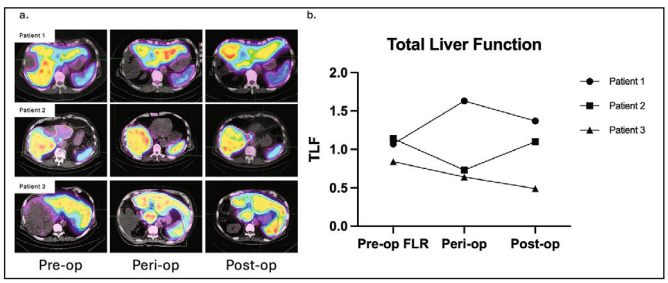

Figure 1. 99mTc-SC SPECT scans (a) and total liver function (b) as a product of functional liver volume and liver/spleen uptake (TLF = FLV * L/Smean) at preoperative, perioperative, and postoperative timepoints

EP360

Impact of Age on Use of Neoadjuvant Chemoimmunotherapy for Patients with Triple-Negative Breast Cancer

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INTRODUCTION: There is limited population-level data regarding the use and outcomes of neoadjuvant chemoimmunotherapy (NACI) for triple-negative breast cancer (TNBC) management across patient ages. We examined trends in the use of NACI and neoadjuvant chemotherapy (NAC) without immunotherapy in TNBC patients stratified by age groups. We also examined associated rates of pathological complete response (pCR) and overall survival (OS). **METHODS:** Adult women with nonmetastatic TNBC who underwent neoadjuvant systemic therapy between 2012 and 2022 were selected from the National Cancer Database. These patients were compared overall and stratified by age group (< 50 years, 50-70 years, and > 70 years old) based on receipt

of NACI or NAC. **RESULTS:** 56,606 patients were included. Rates of NACI significantly increased from 2012 to 2022 with a concomitant decrease in NAC rates ($p < 0.0001$). This trend was similar across age groups, though women > 70 received significantly less NACI than women in the other age groups in 2022 ($p < 0.0001$). Women had greater pCR rates in the breast and axillary lymph nodes with NACI compared to NAC overall (RR 1.405, $p < 0.0001$), with women > 70 years receiving the greatest benefit (RR. 1.56, $p < 0.0001$). All women had greater OS with NACI over NAC (HR 0.704, $p < 0.0001$), especially women 50-70 years. **CONCLUSIONS:** Use of NACI for TNBC patients has increased over the past decade. NACI was associated with greater pCR rates over NAC in all women, especially > 70 years. NACI was also associated with greater OS in all groups, suggesting that older TNBC patients may achieve significant clinical benefit from this regimen.

Table. Risk ratios for overall pathologic complete response in the breast and axillary lymph nodes after NACI versus NAC among TNBC patients.

Overall			
Comparison	**Risk Ratio**	**95% CI**	**p-value**
NACI vs. NAC	1.4054	1.378 - 1.4335	<0.0001
**Adjusted for: age, breast surgery type, axillary surgery type, CCI, TNM clinical stage (early vs. late)*			
Age Groups			
< 50 years			
NACI vs. NAC	1.3835	1.3453 - 1.4229	<0.0001
50-70 years			
NACI vs. NAC	1.4573	1.4139 - 1.502	<0.0001
> 70 years			
NACI vs. NAC	1.562	1.4434 - 1.6904	<0.0001
**Adjusted for: breast surgery type, axillary surgery type, CCI, TNM clinical stage (early vs. late)*			

EP361

Yield of sentinel node biopsy in desmoplastic melanoma: Lessons from 2,000 patients in the National Cancer Database (NCDB)

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INTRODUCTION: Desmoplastic melanoma (DM) is a high-risk lesion that is a rare fibrosing variant of cutaneous melanoma. The role of sentinel lymph node biopsy (SLNB) in desmoplastic melanoma remains controversial, with practice often extrapolated from superficial spreading melanoma (SSM). **METHODS:** The NCDB 2018–2021 was queried for non-metastatic, clinically node-negative patients with DM undergoing primary excision. DM cases (T stage ≥1b) were propensity matched 1:1 with SSM controls. Outcomes included SLNB use, nodal positivity, adjuvant therapies, and overall survival (OS). Predictors of SLNB positivity were evaluated using multivariable logistic regression. **RESULTS:** 2,009 patients with DM were identified and matched with SSM controls. SLNB was performed similarly in DM and SSM patients (71.2% vs 69.0%, respectively; p=0.148). DM patients had significantly lower rates of SLNB positivity (33.3% vs. 46.4%, p< 0.001) and higher rates of positive margins (4.5% vs. 2.4%, p< 0.001) leading to lower rates of adjuvant systemic therapy (10.1% vs. 14.1%, p< 0.001) and subsequent node dissection (0.4% vs. 1.2%, p=0.014), but higher rates of adjuvant primary radiation (15.0% vs. 1.9%, p< 0.001) compared to SSM. The risk of SLNB positivity in DM exceeded 10% only in T4b patients (14.1% vs. SSM 40.0%, p< 0.001, see Table 1). On multivariable analysis, T4b stage was the only independent predictor of SLNB positivity. No significant difference in five-year OS in DM compared to SSM despite differences in local and regional outcomes (72.0% vs. 71.7%, log-rank p=0.120). **CONCLUSIONS:** SLNB yields in DM are low across most T stages, with clinically relevant risk exceeding 10% confined to T4b tumors. Differences in local and regional outcomes did not result in differences in OS compared to SSM.

Table 1. Rates of positive SLNB and margins by T stage in patients with clinically node-negative DM. DM: Desmoplastic Melanoma; SLNB: Sentinel Lymph Node Biopsy. *Statistically significant.

	SLNB positivity		
	DM	**SSM**	**p**
T1b	4/87 (4.6%)	7/89 (7.9%)	0.559
T2a	19/331 (5.7%)	49/360 (13.6%)	**<0.001***
T2b	1/25 (4.0%)	4/20 (20.0%)	**0.010***
T3a	28/339 (8.3%)	116/370 (31.4%)	**<0.001***
T3b	2/44 (4.5%)	9/43 (20.9%)	**0.042***
T4a	43/462 (9.3%)	105/385 (27.3%)	**<0.001***
T4b	20/142 (14.1%)	48/120 (40.0%)	**<0.001***

EP362

Investigation of diabetes and neoadjuvant therapy as possible preoperative risk factors in development of delayed gastric emptying after pancreaticoduodenectomy

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INTRODUCTION: Delayed gastric emptying (DGE) is a common complication after pancreaticoduodenectomy (PD), prolonging hospital stays and decreasing quality of life for patients. Historically it has proven difficult to identify preoperative factors associated with DGE, though some authors have shown association between DGE and diabetes mellitus (DM) and administration of neoadjuvant chemotherapy (NAC). The objective of this study was to investigate DM and NAC as potential predictors of DGE in patients undergoing PD. **METHODS:** A single institution retrospective study was performed on patients who underwent PD between 2018 and 2023. DGE was classified using the ISGPS definition and Grade B and C were deemed to be clinically significant. Preoperative factors were investigated using multivariable logistic regression. **RESULTS:** A total of 327 patients were included with a mean age of 68 ± 11 years. Eighty-nine (27%) patients had DM and NAC was administered in 102 (31%) patients. Clinically significant DGE was observed in 42 (13%) patients. Preoperative factors included age, sex, BMI, NAC, DM, and insulin dependence. On multivariable analysis the only factor that was found to be associated with clinically relevant DGE was the administration of NAC (OR: 2.35, 95%CI:1.16 – 4.75, p=0.018). **CONCLUSIONS:** In the current study, neither diabetes nor insulin dependence were found to be associated with DGE, while NAC was the only factor found to have a significant association. This study redemonstrates our limited ability to predict DGE preoperatively in patients undergoing PD. Future directions include further elucidation of the mechanism driving the association between NAC and DGE as well as validation of the present findings.

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Frailty in non-metastatic pancreatic ductal adenocarcinoma and its association with surgical resection

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INTRODUCTION: Frailty is an aging-related syndrome that closely correlates with overall and cancer-related outcomes, however, its prevalence and association with receipt of curative-intent treatment have not been characterized at the population level in non-metastatic pancreatic ductal adenocarcinoma (PDAC). This study describes the distribution of frailty in patients with

non-metastatic PDAC and evaluates its association with receipt of surgical resection. **METHODS:** We performed a retrospective cohort analysis of SEER-Medicare data, including Medicare fee-for-service beneficiaries diagnosed with non-metastatic PDAC from 2013 through 2019. We defined frailty using the Claims-based Frailty Index (CFI). CFI was then used to categorize patients as non-frail, pre-frail, mildly frail, or moderately-to-severely frail. We evaluated the distribution of frailty across the study population via kernel density estimation. We assessed the association between frailty category and receipt of curative surgery via logistic regression, adjusting for relevant clinical and sociodemographic variables. **RESULTS:** A total of 8,237 patients with non-metastatic pancreatic ductal adenocarcinoma (mean [SD] age of 78 [7.7], 57.6% female, 77.4% White, and 63.3% with pancreatic head tumors) were identified. Across the frailty strata, 2,585 patients were non-frail (31.4%), 4,043 were pre-frail (49.1%), 1,256 were mildly frail (15.2%), and 353 were moderately-to-severely frail (4.3%). Curative-intent surgical resection was performed in 2,486 patients (30.2%). Within each frailty stratum, 39.7% of non-frail patients underwent surgical resection, compared to 30.7% in pre-frail, 15.8% in mildly frail, and 5.7% in moderately-to-severely frail (Figure 1). After adjusting for clinical and sociodemographic characteristics, patients in higher CFI categories were significantly less likely to undergo surgical resection than those in the non-frail category [mildly frail aOR = 0.53, 95% CI = (0.43 – 0.66); moderately-to-severely frail aOR = 0.18, 95% CI = (0.11 – 0.30)]. **CONCLUSIONS:** Frailty is common in the non-metastatic PDAC population with over two-thirds of patients falling into at least a pre-frail category. Frailty is also strongly associated with decreased receipt of surgical resection. However, even when limited to non-frail patients, only 40% of non-metastatic patients with PDAC actually underwent surgical resection, suggesting that adherence to treatment guidelines for optimal outcomes in this otherwise healthy patient population is imperfect at best.

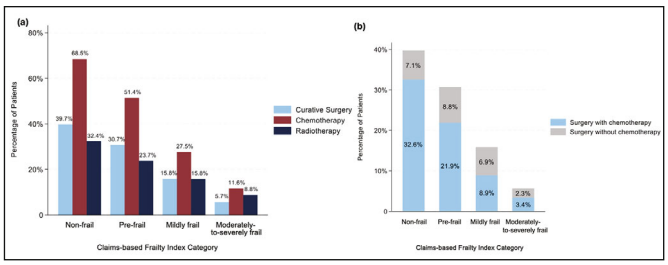

Figure 1: Treatment characteristics of non-metastatic PDAC patients, by CFI category

EP364

Cross-platform validation of an AI model for vascular anatomy and phase recognition in robotic pancreatoduodenectomy on the da Vinci 5

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INTRODUCTION: Artificial intelligence (AI) models have been developed to identify anatomical structures and surgical phases in operations performed on the da Vinci Xi (Xi) platform. However, these models may not apply to newer robotic systems. The da Vinci 5 (dV5) introduces major hardware and visualization upgrades, and it is not known if AI trained on Xi data can be used with this next-generation platform. Our study aimed to validate an AI model for anatomical and phase recognition trained on Xi robotic pancreatoduodenectomy (RPD) cases when applied to the dV5 platform. **METHODS:** We built an AI model for anatomical and phase recognition in RPD using data from the Xi platform and validated it on test data from the DV5 platform. For vascular anatomy recognition, the AI model was trained using 3,541 manually annotated images of the hepatic artery (HA), superior mesenteric artery (SMA), and portal vein/superior mesenteric vein (PV/SMV) from 49 Xi cases. Validation was performed using 120 annotated images from five dV5 cases. Model performance was assessed using intersection over union (IoU), with a value of 1.0 indicating perfect overlap between the AI model and manual annotations. For phase recognition, the AI model was trained using videos from 50 Xi cases annotated at 1-second intervals including six resection phases and three reconstruction phases. Validation was performed using 1-second interval phase annotations from the same five dV5 cases. Model performance was measured using F1 scores, with a score of 1.0 indicating perfect agreement between the AI model and manual annotations. **RESULTS:** For vascular anatomy recognition, the AI model achieved an overall mean IoU of 0.543 (HA 0.478; SMA 0.382; PV/SMV 0.770) on dV5 cases. Previously, on Xi cases, the AI model had a similar mean IoU of 0.573 (HA 0.507, SMA 0.493, PV/SMV 0.721). Notably, recognition of the PV/SMV improved on the dV5 cases (IoU, 0.770 vs. 0.721), but recognition of HA and SMA modestly decreased. For phase recognition, the AI model achieved an F1 score of 0.83 on dV5 cases, compared with 0.88 on Xi cases. Across both platforms, the AI model recognized resection phases better than reconstruction phases, suggesting greater difficulty distinguishing complex reconstructive steps. **CONCLUSIONS:** This study provides the first demonstration that an AI model trained on Xi cases can accurately recognize vascular anatomy and surgical phases in RPDs performed on the dV5, supporting cross-platform clinical translation.

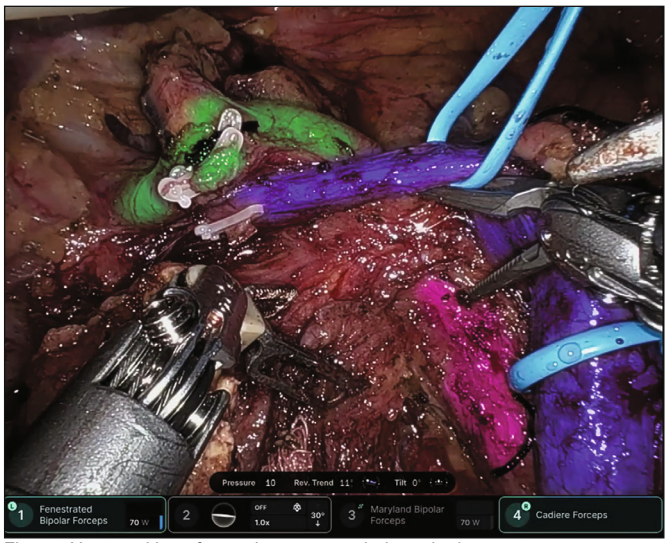

Figure. AI recognition of vascular anatomy during robotic pancreatoduodenectomy on the dV5

EP365

Assessing failure to undergo surgical resection after neoadjuvant therapy for early-stage pancreatic ductal adenocarcinoma

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INTRODUCTION: Neoadjuvant therapy (NAT) has emerged as a preferred method for management of early-stage pancreatic ductal adenocarcinoma (PDAC) because of its ability to downstage tumors and increase the likelihood of patients successfully tolerating systemic chemotherapy before invasive surgery. However, a substantial proportion of patients who receive NAT never proceed to surgery despite being initially considered resectable. This study aimed to identify the determinants of failure to undergo resection after neoadjuvant therapy in patients with non-metastatic PDAC. **METHODS:** We conducted a retrospective cohort study of patients with non-metastatic PDAC who were recommended by a multidisciplinary tumor board for NAT at a high-volume institution between 2022 and 2024. Patients who received at least one cycle of chemotherapy but ultimately did not undergo resection were included. Demographic and clinical data were

collected from the medical record. The primary outcome was the reason for failure to undergo surgery after neoadjuvant chemotherapy. T-tests were performed; a p-value of less than 0.05 was considered statistically significant. **RESULTS:** A total of twenty-five patients were analyzed. The median age was 73 years (IQR 65-75), and 36% were female. Most tumors were located in the pancreatic head (67%). At diagnosis, 61% were stage I, 28% stage II, and 11% stage III. Median baseline tumor size was 33 mm (26-41). 76% of patients received FOLFIRINOX chemotherapy and 24% received gemcitabine/abraxane. The median age was 69 years for FOLFIRINOX patients and 79 years for gemcitabine/abraxane patients ($p < 0.001$). The difference in the Charleson-Comorbidity Index was statistically significant between the two chemotherapy groups ($p = 0.049$). Following NAT, 63% of patients demonstrated growth of the primary tumor. The leading reasons for not proceeding to surgical resection were new metastatic disease (46%), declining performance status or treatment-related complications (21%), chemotherapy toxicity (17%), progressive vascular involvement (13%), and death during therapy (4%). The reasons for not undergoing surgery were not statistically significant between patients who received FOLFIRINOX and those who received gemcitabine/abraxane. **CONCLUSIONS:** Metastatic progression and persistent vascular involvement were the most common determinants of failure to undergo surgery after NAT. Improved patient selection and closer monitoring during therapy may enhance surgical completion rates and outcomes, reducing attrition from potentially curative therapy.

Table of Results

Stratified Results (FOLFIRINOX v/s Gemcitabine/Abraxane)

Characteristic	Overall N = 25	FOLFIRINOXN = 19	Gemcitabine/Abraxane N = 6	p-value
Sex				0.012
Female	9 (36%)	4 (16%)	5 (20%)	
Male	16 (64%)	15 (60%)	1 (4.0%)	
Race				0.4
White	19 (76%)	15 (60%)	4 (16%)	
Asian	4 (16%)	2 (8.0%)	2 (8%)	
Black	2 (8%)	2 (8.0%)	0 (0%)	
Hispanic	3 (12%)	3 (12%)	0 (0%)	0.6
Tumor Location				>0.9
Pancreas Body	8 (33%)	6 (25%)	2 (8.3%)	
Pancreas Head	16 (67%)	12 (50%)	4 (17%)	
Patient Age	73 (65, 75)	69 (62, 73)	79 (76, 83)	<0.001
CCI				0.049
3	1 (4.2%)	1 (4.2%)	0 (0%)	
4	2 (8.3%)	2 (8.3%)	0 (0%)	
5	13 (54%)	12 (50%)	1 (4.2%)	
6	2 (8.3%)	1 (4.2%)	1 (4.2%)	
7	4 (17%)	2 (8.3%)	2 (8.3%)	
8	1 (4.2%)	0 (0%)	1 (4.2%)	
9	1 (4.2%)	0 (0%)	1 (4.2%)	
Past Smoking History	9 (36%)	6 (24%)	3 (12%)	0.6
Past Alcohol Use	2 (8.0%)	2 (8.0%)	0 (0%)	>0.9
History of Pancreatitis	6 (25%)	4 (17%)	2 (8.3%)	0.6
Family History of Cancer	16 (67%)	11 (46%)	5 (21%)	0.6
Diabetes Mellitus (DM)	11 (44%)	8 (32%)	3 (12%)	>0.9
Hypertension (HTN)	15 (60%)	11 (44%)	4 (16%)	>0.9
Chronic Obstructive Pulmonary Disease (COPD)	2 (8.0%)	2 (8.0%)	0 (0%)	>0.9
Liver Disease	5 (20%)	5 (20%)	0 (0%)	0.3
Pre-treatment BMI	26.9 (23.7, 31.6)	27.1 (24.7, 31.6)	24.7 (21.9, 31.6)	0.4
Overall Stage				>0.9
I	11 (61%)	7 (39%)	4 (22%)	
II	5 (28%)	4 (22%)	1 (5.6%)	
III	2 (11%)	2 (11%)	0 (0%)	
Clinical T Stage				>0.9
T1	3 (18%)	2 (12%)	1 (5.9%)	
T2	8 (47%)	5 (29%)	3 (18%)	
T3	4 (24%)	3 (18%)	1 (5.9%)	
T4	2 (12%)	2 (12%)	0 (0%)	
Clinical N Stage				>0.9
N0	16 (94%)	11 (65%)	5 (29%)	
N1	1 (5.9%)	1 (5.9%)	0 (0%)	
Clinical M Stage				
M0	17 (100%)	12 (71%)	5 (29%)	
Pre-treatment Labs				
CA 19-9	88 (11, 883)	83 (11, 291)	774 (23, 1,538)	0.3
CEA	1.70 (1.45, 5.35)	2.20 (1.60, 8.00)	1.50 (1.30, 1.70)	0.4
Albumin	3.70 (3.10, 3.90)	3.80 (3.30, 4.20)	3.35 (3.10, 3.70)	0.2
Creatinine	0.79 (0.70, 0.87)	0.81 (0.70, 0.96)	0.76 (0.67, 0.82)	0.3
Hematocrit	40.0 (35.6, 42.4)	40.7 (36.6, 42.9)	37.4 (34.5, 40.2)	0.4
Bilirubin	1.3 (0.6, 3.4)	1.0 (0.6, 2.4)	2.5 (0.6, 4.4)	0.5
Baseline Tumor Size	33 (26, 41)	33 (26, 38)	34 (29, 41)	0.7
Bile Duct Dilation	10 (43%)	8 (35%)	2 (8.7%)	0.7
Pancreatic Duct Dilation	20 (83%)	16 (67%)	4 (17%)	0.3
Presence of Stent	14 (56%)	10 (40%)	4 (16%)	0.7
Regional Lymphadenopathy	11 (48%)	10 (43%)	1 (4.3%)	0.2
Vascular Involvement	18 (72%)	13 (54%)	5 (21%)	>0.9
SMA	4 (22%)	4 (100%)	0 (0%)	
Celiac Axis	3 (17%)	3 (100%)	0 (0%)	
Splenic Artery	3 (17%)	2 (67%)	1 (33%)	
Hepatic Artery	6 (33%)	6 (100%)	0 (0%)	
GDA	3 (17%)	2 (67%)	1 (33%)	
IMV	1 (5.6%)	0 (0%)	1 (100%)	
Splenic Vein	5 (28%)	3 (60%)	2 (40%)	
Portal Vein (MPV)	5 (28%)	3 (60%)	2 (40%)	
SMV	9 (50%)	6 (67%)	3 (33%)	
Reason for NAT				0.6
Comorbidities / Nutritional Status	18 (72%)	3 (12%)	1 (4.0%)	
Failed surgery	4 (16%)	1 (4.0%)	0 (0%)	
Abutment of nearby organs	1 (4.0%)	0 (0%)	1 (4.0%)	
Vascular involvement	1 (4.0%)	14 (56%)	4 (16%)	
Change in Chemotherapy Regimen				0.4
No	18 (75%)	7 (29%)	1 (4.2%)	
Yes	6 (25%)	8 (33%)	2 (8.3%)	
Yes (after decision for no surgery)		3 (13%)	3 (13%)	
Radiation Therapy	8 (33%)			0.6
No	10 (42%)	8 (32%)	2 (8.0%)	
Yes	6 (25%)	6 (24%)	1 (4.0%)	
Yes (after decision for no surgery)		5 (20%)	3 (12%)	
Post-treatment Tumor Size	10 (40%)	25 (23, 43)	38 (29, 40)	0.9
Change in Tumor Size	7 (28%)	-2 (-5, 2)	0 (0, 1)	0.8
Post-treatment BMI	8 (32%)	24.7 (22.8, 27.7)	21.7 (19.3, 28.3)	0.2
BMI Change	2.5 (0.4, 5.3)	1.8 (0.4, 3.3)	3.0 (2.1, 6.7)	0.4
Vascular Involvement After Therapy	14 (82%)	10 (59%)	4 (24%)	0.5
Local Progression After Chemotherapy	12 (63%)	8 (42%)	4 (21%)	>0.9
Post-treatment Labs				
CA 19-9	78 (10, 2,000)	62 (10, 1,017)	220 (78, 2,398)	0.4
CEA	6.50 (1.10, 7.38)	6.50 (1.10, 7.38)	NA (NA, NA)	
Albumin	3.20 (2.50, 3.70)	3.20 (2.50, 3.80)	2.95 (2.50, 3.60)	0.7
Creatinine	0.74 (0.62, 1.01)	0.82 (0.65, 1.05)	0.67 (0.52, 0.78)	0.4
Hematocrit	32.9 (29.1, 36.1)	34.1 (29.1, 37.1)	32.0 (30.3, 32.7)	0.3
Bilirubin	0.45 (0.40, 0.70)	0.45 (0.35, 0.70)	0.45 (0.40, 0.80)	0.8
Decision for No Surgery				0.5
Medical Oncologist	18 (82%)	13 (59%)	5 (23%)	
Patient & Family	4 (18%)	4 (18%)	0 (0%)	
Reasons for No Surgery				0.2
Metastatic Disease	11 (46%)	7 (29%)	4 (17%)	
Liver metastasis	8/11 (73%)	6 (86%)	2 (50%)	
Peritoneal metastasis	2 (18%)	1 (14%)	1 (25%)	
Bone metastasis	1 (9%)	0 (0%)	1 (25%)	
Declining Performance Status / Complications	5 (21%)	5 (21%)	0 (0%)	
Chemotherapy Toxicity	4 (17%)	3 (13%)	1 (4.2%)	
Local Progression of Tumor	3 (13%)	3 (13%)	0 (0%)	
Death	1 (4.2%)	0 (0%)	1 (4.2%)	

EP366

Endoscopic Resection vs. Surgical Resection for T1/T2 Duodenal Adenocarcinoma: Considerations of Nodal Upstaging

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INTRODUCTION: Endoscopic resection (ER) is increasingly used for the treatment of early-stage duodenal adenocarcinoma (DA). We aimed to identify risk factors that may guide ER selection for clinical T1/T2N0 DA. **METHODS:** A retrospective National Cancer Database analysis (2010-20210) included DA patients with clinical T1/T2N0M0 disease with available pathological staging among those who underwent surgical resection. Outcomes of interest were overall survival and lymph node upstaging (LNU). Survival was evaluated using Cox proportional hazard models, and predictors of LNU were assessed using logistic regression. **RESULTS:** Among 527 patients, 68 underwent ER and 459 underwent a major resection. ER was more commonly performed in patients with comorbid conditions (Charlson Deyo 3: 7.4% vs 3.7%, $p< 0.01$), those with smaller tumors (15.5 mm vs 34.0 mm, $p< 0.01$), and those who lacked lymphovascular invasion (9.4% vs 40.1%, $p< 0.001$). Overall survival did not differ between the two groups (HR: 0.96, 95% CI: 0.65-1.40). Among major resections, nodal upstaging occurred in about 40% of patients and was associated with worse survival (T1 HR: 1.72, 95% CI: 1.18-2.50) & (T2 HR: 2.06, 95% CI: 1.28-3.33). Poor differentiation (OR: 2.83, 95% CI: 1.08-7.45), lymphovascular invasion (OR 7.19, 95% CI: 4.48-11.53), and age (≥80 compared to < 65 - OR: 0.40, 95% CI: 0.20 - 0.82) were significant predictors of LNU. **CONCLUSIONS:** Nearly 40% of patients with clinically node-negative T1/T2 DA who underwent a major resection had LNU, and LNU was associated with worse overall survival. Lymphovascular invasion, poor differentiation, and older age were significant predictors of nodal upstaging.

Table. Multivariable Cox Regression Stratified by T stage of patients undergoing Major Resection

Variable		T1 Hazard Ratio (95% CI)	T2 Hazard Ratio (95% CI)
Sex			
	Females	Ref	Ref
	Males	1.09 (0.74–1.60)	1.76 (1.10–2.82)
Age			
	<65 (%)	Ref	Ref
	65–69 (%)	2.17 (1.20–3.92)	1.62 (0.75–3.47)
	70–74 (%)	1.49 (0.77–2.89)	2.46 (1.18–5.14)
	75–79 (%)	4.46 (2.57–7.73)	1.53 (0.71–3.28)
	80+ (%)	4.05 (2.31–7.11)	3.65 (1.92–6.94)
Race/Ethnicity			
	Non-Hispanic White (%)	Ref	Ref
	Non-Hispanic Black (%)	1.50 (0.92–2.43)	1.53 (0.86–2.73)
	Hispanic (%)	2.04 (0.88–4.72)	0.80 (0.31–2.06)
	Asian/Pacific Islander (%)	0.74 (0.25–2.26)	0.65 (0.08–5.08)
	American Indian / Aleutian / Eskimo (%)	6.13 (0.80–46.81)	3.00 (0.37–24.57)
Charlson Comorbidity Index			
	Charlson-Deyo 0 (%)	Ref	Ref
	Charlson-Deyo 1 (%)	1.77 (1.14–2.76)	1.37 (0.77–2.46)
	Charlson-Deyo 2 (%)	1.99 (0.95–4.19)	0.79 (0.32–1.90)
	Charlson-Deyo 3 (%)	1.01 (0.36–2.88)	0.38 (0.09–1.67)
Facility Type			
	Community	Ref	Ref
	Comprehensive Community	0.56 (0.16–1.91)	1.09 (0.13–8.91)
	Academic	0.40 (0.12–1.34)	0.87 (0.11–7.00)
	Integrated Network	0.32 (0.09–1.17)	1.03 (0.12–8.64)
Lymph Node Upstaging			
	No	Ref	Ref
	Yes	1.72 (1.18–2.50)	2.06 (1.28–3.33)

EP367

Treatment outcome of resection for peritoneal metastases from colorectal cancer and the significance of intraoperative peritoneal lavage cytology

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INTRODUCTION: Resection of peritoneal metastases (PM) from colorectal cancer (CRC) is generally not recommended by NCCN guidelines, but Japanese guidelines strongly recommend simultaneous resection with the primary tumor for synchronous PM, provided it is not overly invasive. Our department has

previously reported that R0 resection combined with perioperative chemotherapy can lead to favorable outcomes, including potential cure. Furthermore, we noted that cases with PM and negative intraoperative peritoneal lavage cytology (IPLC) tended to have a better prognosis than those with positive cytology. This study was conducted to re-evaluate the results with an increased number of cases. **METHODS:** This retrospective study reviewed all CRC-PM patients who underwent R0 resection at our department between April 2001 and December 2023. Treatment outcomes and the prognostic significance of IPLC were investigated. IPLC was collected from the lower abdomen at a single site after laparotomy and minimal adhesiolysis. **RESULTS:** A total of 79 patients underwent R0 resection for PM during the study period, comprising 37 synchronous and 42 metachronous cases, with a total of 100 PM R0 resections. Extraperitoneal metastasis was observed in 24 cases (30.4%). The median overall survival (MST) was 49.2 months, and the 5-year overall survival (OS) rate was 46.3%. Multivariate analysis identified elevated CA19-9, no postoperative adjuvant chemotherapy, and synchronous PM as independent poor prognostic factors for OS. While IPLC positivity was not significant in multivariate analysis, it was significantly associated with poor prognosis in univariate analysis. The median recurrence-free survival (RFS) was 13.2 months, and the 3-year RFS rate was 15.7%. For RFS, multivariate analysis showed that only no postoperative adjuvant chemotherapy was an independent factor. Similar to OS, IPLC positivity was not an independent factor for RFS in multivariate analysis but showed a trend toward shorter RFS in univariate analysis. **CONCLUSIONS:** Patients who did not receive postoperative adjuvant chemotherapy showed a high recurrence rate and poor prognosis. In addition, synchronous PM and elevated CA19-9 were also identified as independent poor prognostic factors. Positive IPLC may be associated with a poor prognosis. IPLC has the potential to be a useful biomarker until liquid biopsy can be easily implemented in clinical practice.

EP368

Elevated Pre-Treatment CA19-9 in Stage 1 Pancreatic Adenocarcinoma is Associated With Significant Risk of Occult Lymph Node Disease

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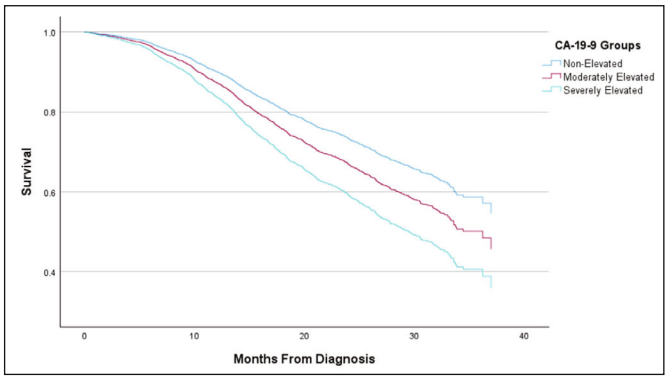
INTRODUCTION: Early-stage pancreatic ductal adenocarcinoma (PDAC) is uncommon, yet accurate clinical staging is critical to guide treatment selection. Serum Cancer Antigen 19-9 (CA 19-9) is routinely used in pre-operative evaluation, as elevated levels often correlate with more advanced disease. The recent inclusion of CA 19-9 values in the National Cancer Database (NCDB) provides an opportunity to evaluate the relationship between elevated CA 19-9 and fidelity of clinical staging and occult nodal disease on a national scale. **METHODS:** The 2022 NCDB PUF was queried for patients with clinical stage 1 (cT1-2N0M0) PDAC diagnosed in 2021-2022 who underwent surgical resection. Pre-treatment (pt) CA 19-9 values were stratified into 3 categories Non-Elevated (NE): 0-37 U/mL, Moderately Elevated (ME): 38-200 U/mL, and Significantly Elevated (SE): >200U/mL. Comparisons between groups were made with $\chi 2$ analysis, odd and hazard ratios with 95% confidence intervals were obtained via multivariable binary logistic and cox regression, respectively. Statistical significance was set at $p< 0.05$. **RESULTS:** A total of 6,212 clinical stage 1 patients who underwent surgical resection were identified. The cohort was 48% male, predominantly white (85%), and mean age was 68 years. Most tumors were located in the pancreas head (68%) and tail (11%). These patients were stratified into their respective ptCA19-9 groups: 1,827 (29%) NE, 2,054 (33%) ME, and 2,331 (38%) SE. Among upfront resection patients (n=2,980), a pathologic stage (pStage) >II was found in 60% of NE, 71% of ME, and 80% of SE patients ($p< 0.001$). Among NAT patients (n=2,883), post-pathologic stage (ypStage) >II was found in 51% of NE, 55% of ME, and 62% of SE patients ($p< 0.001$). On multivariable analysis controlling for age, sex, tumor location, and receipt of NAT and surgery or upfront surgery, elevated ptCA 19-9 was independently associated with nodal positivity, yp/pStage> IIb, and decreased survival. Compared to NE, ME patients had an increased risk of nodal disease (OR 1.33, CI 1.17–1.52), yp/pStage > IIb (OR 1.34, CI 1.17–1.53) and mortality (HR: 1.30, CI: 1.11-1.52). SE patients also had increased risk of nodal disease (OR 1.70, CI 1.50–1.95), yp/pStage > II (OR 1.78, 95% CI 1.56–2.04) and mortality (HR: 1.69, CI: 1.45-1.97) (all $p<0.001$). **CONCLUSIONS:** Elevated ptCA 19-9 in clinical stage 1 patients is strongly associated with occult nodal involvement, yp/pStaging of > IIb, and mortality. These data illustrate on a national scale that elevated CA 19-9 should increase concern for occult nodal disease even in ostensibly Stage 1 patients.



Overall Survival in Clinical Stage 1 Patients

EP369

Road to academic surgical oncology: a bibliometric study of complex general surgical oncology (CGSO) fellowship graduates

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INTRODUCTION: The path to academic surgery is a difficult and arduous one. The objective of the current study is to elucidate factors associated with leading an academic surgical oncology career, particularly those productive with research publications. **METHODS:** Bibliometric and professional profiling of applicants to our CGSO fellowship program from 2017 to 2021 who matched and graduated from an accredited program were performed. Data were obtained from publicly available sources. Impact factors were adjusted for authorship position and type of publication. **RESULTS:** Among 233 surgical oncologists included, 106 (54.5%) were female, 118 (50.6%) currently hold faculty positions at a university-based flagship hospital (UBFH), 123 (52.8%) has at least one publication during independent practice. The median years in independent practice is 3 years (range 1-5 years). In univariate analysis, faculty members at UBFH had higher number of total publications (37.8 vs 19.9, $p< 0.001$), first author publications (14.3 vs 7.2, $p< 0.001$), and adjusted total impact factors (274.4 vs 113.9, $p< 0.001$). Faculty members at UBFH also have higher research productivities before, during, and after fellowship. Female surgical oncologists had lower number of publications (24.6 vs 30.8, $p=0.01$), first author publications (9.0 vs 11.6, $p=0.03$), and adjusted total impact factors (161.2 vs 205.1, $p=0.05$) compared to their male colleagues. Binomial logistic regression found fellowship size to be the only significant factor associated with being a faculty member at UBFH. In ANOVA, the geographic region of the residency, the number of publications before and during fellowship were associated with more publications during independent practice. **CONCLUSIONS:** Academic surgical oncologists are associated with higher research productivities. Larger fellowships are associated with academic surgical oncology careers. This is likely due to their robust research infrastructure to support sustained research effort and effective mentorship. Differences in research productivity may exist between genders. Continued promotion and support of women in academic surgical oncology is needed to achieve gender equity in research productivity.

EP370

Mesothelioma of the Testis: A Case Series of a Very Rare Condition

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INTRODUCTION: Mesothelioma is an uncommonly encountered malignancy arising from mesothelial cells lining serosal surfaces of the pleura, and less

frequently in the peritoneum. However, it rarely occurs at other anatomic sites including the tunica vaginalis testis. **METHODS:** Chart review of 4 additional cases of mesothelioma of the tunica vaginalis testis (MTVT) from a major peritoneal mesothelioma center over the course of 15 years. **RESULTS:** All 4 cases were men with a median age of 64 (range 35 to 87), who initially presented with hydroceles. The diagnosis of mesothelioma was all made after hydrocelectomy. None had a history of industrial asbestos exposure. The subtypes included one epithelioid, two biphasic and one not specified. All patients were treated with radical orchiectomy. Extra-testicular diseases were evaluated by imaging for 3 patients and laparoscopic exploration for one. The 35-year-old case with epithelioid subtype has been followed up with no evidence of disease. Known recurrence was found in one of the biphasic and the unclassified case. The 66-year-old case with biphasic subtype developed multi-organ recurrence was the only one who received adjuvant chemotherapy, immunotherapy and radiation with continued disease progression. The only known mortality was the 87-year-old case with unclassified subtype. The cause of death was not directly related to MTVT. **CONCLUSIONS:** MTVT is an exceptionally rare clinical entity with unclear optimal treatment strategy. The prognosis appears to be somewhat better than pleural and peritoneal mesothelioma, which are the more commonly encountered sites of origin. We recommend radical orchiectomy and laparoscopic evaluation to evaluate for occult peritoneal disease. Referral to experienced academic medical centers and reporting experiences in the literature are recommended.

EP371

The utility of skin punch biopsy in inflammatory breast cancer

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INTRODUCTION: Inflammatory breast cancer (IBC) is clinically diagnosed by skin changes which occur rapidly (< 6 months) and involve at least 1/3 of the breast skin. Dermal lymphatic involvement (cancer cells in the dermal lymphatics) on punch biopsy of the affected skin is a common pathologic characteristic but is not required for diagnosis. When identified in conjunction with the classic clinical presentation, we hypothesize that dermal lymphatic invasion on punch biopsy portends worse oncologic outcomes. **METHODS:** A retrospective chart review of patients diagnosed with IBC from 1998-2025 was completed. Use of punch biopsy, presence or absence of dermal lymphatic invasion, and associations with tumor characteristics, recurrence, and survival outcomes were calculated using univariate, multivariate, and cox proportional analyses. **RESULTS:** 236 patients were identified with IBC, of which 91 (38.6%) had a punch biopsy; 65/91 pts (71.4%) had dermal lymphatic invasion. The overall sensitivity of a punch biopsy was 71%. Punch biopsies were positive in 83% of triple positive cases, 76% of HER2 positive cases, 67% of triple negative cases, and 63% of hormone positive cases. A higher burden of nodal disease (cN2 or cN3) was observed in those with dermal lymphatic invasion than those without (22.1% vs 12.5%). Pts with dermal lymphatic invasion had a higher percentage of de novo metastatic disease (33.8% vs 15.4%). All pts had neoadjuvant systemic treatment (NST). 20 pts (45.5%) had residual dermal lymphatic invasion on final pathology. Dermal lymphatic invasion on initial punch biopsy was associated with lower overall survival (OS, hazard ratio of 2.33, p 0.02) and increased distant recurrence (DR, hazard ratio 3.01, p 0.019), but not locoregional recurrence (LRR, hazard ratio 1.08, p 0.913). There was no significant difference between OS (HR 1.20, p 0.66), LRR (HR 0.67, p 0.64), or DR (HR 1.28, p 0.56) in those with residual dermal involvement versus those without. **CONCLUSIONS:** Punch biopsies are underutilized in the workup of inflammatory breast cancer and should be routinely performed to confirm the diagnosis due to high sensitivity. A positive punch biopsy is strongly associated with worse overall survival and increased distant recurrence. Prognostic association of lymphatic invasion does not persist when stratified by presence or absence on final pathology, suggesting relation to the initial disease, not response to NST.

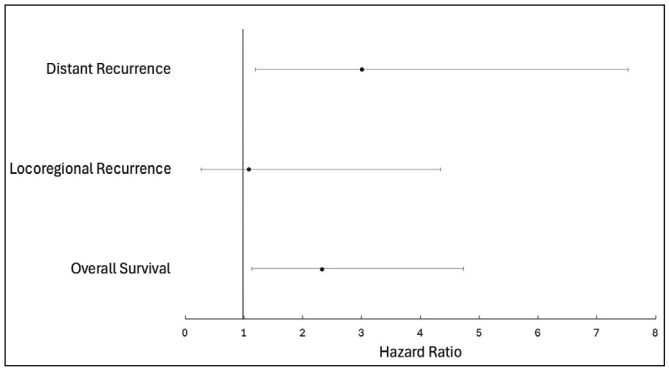

Figure. Presence of Dermal Lymphatic Invasion on Punch Biopsy

EP372

Survival benefit of pulmonary metastasectomy in de novo stage IV breast cancer patients with lung-only metastases: a National Cancer Database study

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INTRODUCTION: The optimal management of stage IV breast cancer with lung-only metastases is still unclear. Treatment options include systemic therapy, pulmonary metastasectomy (PM), and radiation such as stereotactic body radiotherapy (SBRT). While PM may offer a survival advantage in select patients, lung-directed radiation provides local control and comparable outcomes in other patients. We compared overall survival (OS) across these treatments using a national database. **METHODS:** The National Cancer Database (2012-2022) was queried for patients aged ≥18 with stage IV breast cancer and lung-only metastases. Cohorts were defined by treatment: radiation, PM, or systemic therapy alone. Patients undergoing primary breast surgery were excluded. Data on metastatic site count were unavailable due to NCDB limitations. Kaplan–Meier survival analyses and multivariable Cox proportional hazards regression analyzed OS at 1, 3, and 5 years. **RESULTS:** A total of 1481 patients with stage IV breast cancer and lung-only metastases were identified; 980 had complete data and were analyzed. 64 (6.53%) underwent PM, 8 (0.82%) received radiation, and 908 (92.65%) underwent systemic therapy alone. Baseline characteristics including receptor status, tumor grade, patient age, race, and Charlson-Deyo score were similar between groups. Median OS was 88 months for systemic therapy and 9.2 months for the radiation group. PM did not reach median OS as there were >50% alive at last follow-up. 1, 3, and 5-year survival rates for PM were 94%, 80%, and 69%, respectively, and 92%, 75%, and 62% for systemic therapy. OS differed significantly between treatment modalities (p=0.024). Multivariable analysis confirmed survival benefit for PM (HR 0.63, 95% CI 0.41–0.95; p=0.024), this benefit persisted across receptor subtypes. Radiation was associated with higher mortality with all patients dying within 2 years (HR 4.39, 95% CI 1.25–15.4; p=0.021), though sample size was limited. **CONCLUSIONS:** Pulmonary metastasectomy for de novo stage IV breast cancer with lung-only metastases showed a survival advantage over radiation or systemic therapy alone. The NCDB's lack of data on metastatic site count limits confirmation of oligometastatic status. Despite limited radiation data, these findings argue a role for PM in select patients. Prospective studies are needed to refine selection criteria and integrate metastasis-directed therapy into multidisciplinary management.

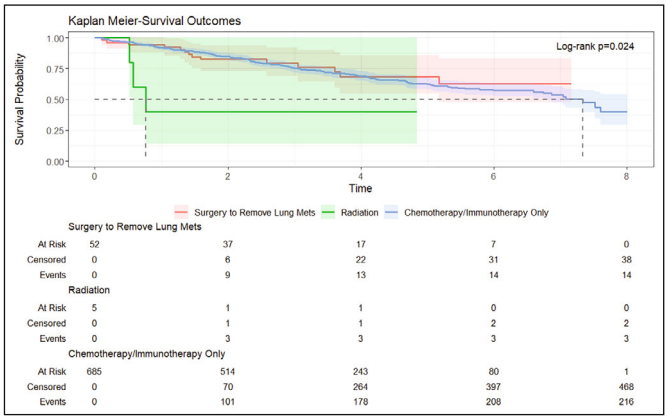

Figure 1

EP373

Institutional outcomes utilizing irreversible electroporation (IRE) for margin accentuation in pancreatic adenocarcinoma: a propensity-matched analysis

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INTRODUCTION: Irreversible electroporation (IRE) is a nonthermal ablative technique used for tumor ablation and margin accentuation. The aim of this study was to evaluate survival outcomes in patients undergoing pancreatectomy with IRE margin accentuation for locally advanced pancreatic adenocarcinoma compared with propensity-matched controls. **METHODS:** A single center, retrospective review was conducted between January 2017 and December 2024 comparing patients undergoing surgical resection with and without IRE ablation for pancreatic adenocarcinoma. Statistical analysis utilizing propensity matched scoring was performed in a 1:1 fashion. **RESULTS:** A total of 46 patients with ECOG scores of 0-2 were analyzed. 23 patients received IRE at the time of pancreatectomy. Most patients (>80%) underwent neoadjuvant chemotherapy, with FOLFIRNOX being the most frequently administered regimen. Most patients underwent a Whipple procedure with approximately half requiring vascular reconstruction in the IRE compared to 28.6% in the controls. Disease free survival was noted to be 20.7 months (95% CI 15.4-26.0) and 23.7 months (95% CI 18.4-29.0) in the IRE group and control group, respectively. Overall survival was noted to be 29.7 months (95% CI 22.7-36.7) and 29.0 months (95% CI 21.5-35.6) in the IRE group and control, respectively. **CONCLUSIONS:** In a single institutional review, there was no statistically significant difference in overall survival and disease-free survival for patients who underwent IRE ablation compared with standard of care.

EP374

Predictors of unplanned readmission after partial colectomy for colon adenocarcinoma in a national cohort

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INTRODUCTION: Unplanned hospital readmission after colon cancer surgery increases morbidity, cost, and resource utilization, yet contemporary predictors of readmission have not been fully investigated. We aimed to identify factors independently associated with 30-day unplanned readmission after partial colectomy using a large national dataset. **METHODS:** We conducted a retrospective cohort study using the National Cancer Database. We included adults with stage I–III colon adenocarcinoma who underwent partial or subtotal colectomy from 2010 to 2019. Multivariable logistic regression estimated adjusted odds ratios (aOR) for unplanned hospital readmission within 30 days of surgery, adjusting for age, sex, comorbidity, stage, race/ethnicity, median income quartile, hospital type, hospital volume, surgical approach, and length of stay (LOS, days from surgery to discharge). **RESULTS:** Among 259,753 patients (median age 69 years; 51% female), the 30-day unplanned readmission rate was 5.1%. Each additional hospital day increased odds of readmission (aOR per day 1.02, 95% CI 1.02–1.02, p< 0.001). Older age (40–50 vs ≥80: aOR 1.16, 95% CI 1.07–1.26, p< 0.001), male sex (aOR 1.05, 95% CI 1.01–1.08, p=0.013), higher comorbidity index (≥2 vs. 0: aOR 1.57, 95% CI 1.50–1.65, p< 0.001), and higher stage (stage III vs stage I: aOR 1.11, 95% CI 1.06–1.16, p< 0.001) were associated with increased odds of readmission. Compared to non-Hispanic White (NHW) patients, non-Hispanic Black (NHB) patients had higher odds (aOR 1.09, 95% CI 1.03–1.15, p=0.002) while Asian American/Pacific Islander (AAPI) patients had lower odds (aOR 0.80, 95% CI 0.71–0.89, p< 0.001). Higher income quartile reduced odds (< $46,277 vs. $57,856–$74,062: aOR 0.92, 95% CI 0.87–0.97, p=0.002). Compared to academic hospitals, community programs had lower odds of readmission (aOR 0.89, 95% CI 0.82–0.96, p=0.002). Compared to open surgery, laparoscopic (aOR 0.87, 95% CI 0.84–0.91, p< 0.001) and robotic (aOR 0.74, 95% CI 0.69–0.79, p< 0.001) approaches had reduced odds of readmission. These results remained significant in sensitivity analyses restricted to patients alive at 30 days and excluding LOS from the model. **CONCLUSIONS:** Although overall readmission rates after partial colectomy for colon cancer were low, postoperative LOS and surgical approach emerged as potentially modifiable risk factors. Higher odds of readmission among older adults, stage III disease, NHB patients, lower income quartiles, and certain hospital types highlight persistent disparities and the need for further investigation in these at-risk populations.

Table. Multivariable Predictors of 30-Day Unplanned Readmission

Comparison	Adjusted Odds Ratios for 30-Day Unplanned Readmission	Estimate (95% CI)	Adjusted p-value
Length of stay, per additional day		1.02 (1.02-1.02)	<0.001
Age: 50–60 vs 40–50		0.97 (0.89-1.06)	0.50
Age: 60–70 vs 40–50		0.97 (0.89-1.05)	0.50
Age: 70–80 vs 40–50		1.08 (0.99-1.17)	0.11
Age: 80+ vs 40–50		1.16 (1.07-1.26)	0.001
Male vs Female		1.05 (1.01-1.08)	0.021
Comorbidity: 1 vs 0		1.20 (1.15-1.26)	<0.001
Comorbidity: 2+ vs 0		1.57 (1.50-1.65)	<0.001
Stage II vs Stage I		1.05 (1.00-1.09)	0.08
Stage III vs Stage I		1.11 (1.06-1.16)	<0.001
Grade: High vs Low/Intermediate		1.08 (1.04-1.14)	0.001
Race/Ethnicity: Non-Hispanic Black vs NHW		1.09 (1.03-1.15)	0.003
Race/Ethnicity: AAPI vs NHW		0.80 (0.71-0.89)	<0.001
Race/Ethnicity: Hispanic vs NHW		0.97 (0.89-1.04)	0.45
Income: $46,277–$57,856 vs <$46,277		0.95 (0.90-1.01)	0.13
Income: $57,856–$74,062 vs <$46,277		0.92 (0.87-0.97)	0.003
Income: $74,062+ vs <$46,277		0.89 (0.85-0.94)	<0.001
Facility: Comprehensive Community vs Academic		0.97 (0.93-1.02)	0.30
Facility: Community vs Academic		0.89 (0.82-0.96)	0.004
Facility: Integrated Network vs Academic		0.99 (0.94-1.05)	0.88
Facility Volume: Medium vs High		0.93 (0.89-0.97)	0.003
Facility Volume: Low vs High		1.00 (0.95-1.05)	0.93
Approach: Laparoscopic vs Open		0.87 (0.84-0.91)	<0.001
Approach: Robotic vs Open		0.74 (0.69-0.79)	<0.001

EP375

Context matters: Overcoming surgical safety concerns of Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy through comparative analysis

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INTRODUCTION: Misperceptions about the surgical safety of cytoreductive surgery concurrent with hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) remain a significant barrier to early patient referral of peritoneal surface metastases in the United States, while internationally this treatment is regarded as standard of care for colorectal, appendix, mesothelioma, and ovarian tumors. NCCN guidelines caution referral due to concerns of high morbidity and mortality, while the guidelines for similar high-risk complex gastrointestinal oncologic (GI) procedures do not temper recommendations

around safety concerns. Consequently, early routine referral rates have remained low, even at high volume centers. This comparative analysis from a high-volume tertiary cancer center hypothesized that the comparative surgical safety of CRS/HIPEC is similar to other complex GI procedures routinely referred for surgical intervention. **METHODS:** NSQIP data for esophagectomy, hepatectomy, and pancreatectomy performed January 2020–July 2024, were compared to an institutional prospectively maintained CRS/HIPEC surgical safety database. 30-day mortality, organ/space infection (OSI), 30-day return to OR (RTOR) superficial/deep surgical site infection and 30-day readmission were compared. Group comparisons used chi-square tests, Bonferroni-adjusted pairwise analyses, and relative risk (RR) estimates with 95% confidence intervals. **RESULTS:** Among 1,197 patients (CRS/HIPEC n=315; esophagectomy n=278; hepatectomy n=229; pancreatectomy n=375), superficial/deep SSI rates were similar as were 30-day readmission rates. CRS/HIPEC had significantly lower organ/space SSI, RTOR, and 30-day mortality (Table 1a). CRS/HIPEC had the lowest 30-day mortality, 0.95% and RR analysis revealed RTOR and OSI events 3-5 times less frequent than for similar risk complex oncologic procedures (Table 1b). **CONCLUSIONS:** This analysis demonstrated that CRS/HIPEC had lower mortality and fewer serious (Grade III-V) postoperative complications than similar risk GI oncologic procedures for which current guidelines routinely endorse referral for surgical evaluation. These results challenge the misperception of surgical toxicity of CRS/HIPEC and support national guidelines should present the surgical safety of CRS/HIPEC with the same descriptions and level of support as similar risk procedures. This change is paramount to expanding and ensuring timely referral of peritoneal metastasis patients.

Table 1. NSQIP Complication Rates and Relative Risk (RR) with Bonferroni-adjusted p-values for pairwise comparison with CRS/HIPEC

Group	OSI		RTOR		30-day Mortality	
	Rate	RR	Rate	RR	Rate	RR
CRS/HIPEC	2.5%	NA	2.5%	NA	0.95%	NA
Esophagectomy	**7.9%***	**3.1 (1.4, 6.9) ***	**14.7%***	**5.8 (2.8, 12.2)***	3.2%	3.4 (0.9, 12.4)
Hepatectomy	**10%***	**4.0 (1.8, 8.7) ***	**8.2%***	**3.3 (1.5, 7.3)***	3.4%	3.7 (1, 13.7)
Pancreatectomies	**12.8%***	**5.0 (2.4, 10.5) ***	**8.5%***	**3.4 (1.6, 7.2)***	1.9%	2 (0.5, 7.5)

P< 0.05

EP376

Cognitive task analysis for enhancing surgical training of axillary lymph node dissection

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INTRODUCTION: De-escalation of axillary surgery has led to decreased exposure to axillary lymphadenectomy for trainees. As surgical training often follows an apprenticeship model, this decline poses challenges for achieving operative autonomy and procedural competency. Cognitive Task Analysis (CTA) is a method for eliciting the cognitive processes, decision-making strategies, and knowledge required to perform complex tasks. When aligned with Entrustable Professional Activities (EPAs), CTA can support structured, feed-forward feedback and promote learner autonomy. We explored the use of CTA to support training in low-frequency procedures such as axillary lymph node dissection. **METHODS:** Breast surgical oncologists at Indiana University completed semi-structured Zoom interviews. Each surgeon described the full procedure and responded to standardized questions designed to elicit decision-making. Topics included: managing a difficult axilla, identifying key anatomic landmarks, variations in anatomy, and error avoidance. Interviews were transcribed and combined into a CTA, then reviewed and refined by a panel of experts. **RESULTS:** The CTA identified 14 key steps, each with 4 to 12 sub-steps and decision points (Figure 1). Critical decisions included incision placement, identification of landmarks, and extent of dissection. The greatest variability was observed with incision placement and procedure initiation. Common cognitive strategies included working from known to unknown structures, reassessing nerve relationships, and using mental models of expected anatomical landmarks to guide dissection. Experts described adjusting their pace and level of caution based on anticipated anatomical complexity, particularly in regions with dense vascular and lymphatic structures. A recurring theme was the use of subtle anatomic cues to achieve procedural mastery. **CONCLUSIONS:** This cognitive task analysis provides a structured framework for teaching axillary lymph node dissection by capturing expert decision-making and cognitive strategies often absent in traditional procedural descriptions. This CTA supports a more consistent and transparent learning experience for trainees, particularly for low-frequency, high-stakes procedures. It also has the potential to enhance feedback, assessment, and learner autonomy within surgical education. Next steps include utilizing this CTA during our resident skills lab and incorporating into electronic feedback systems.

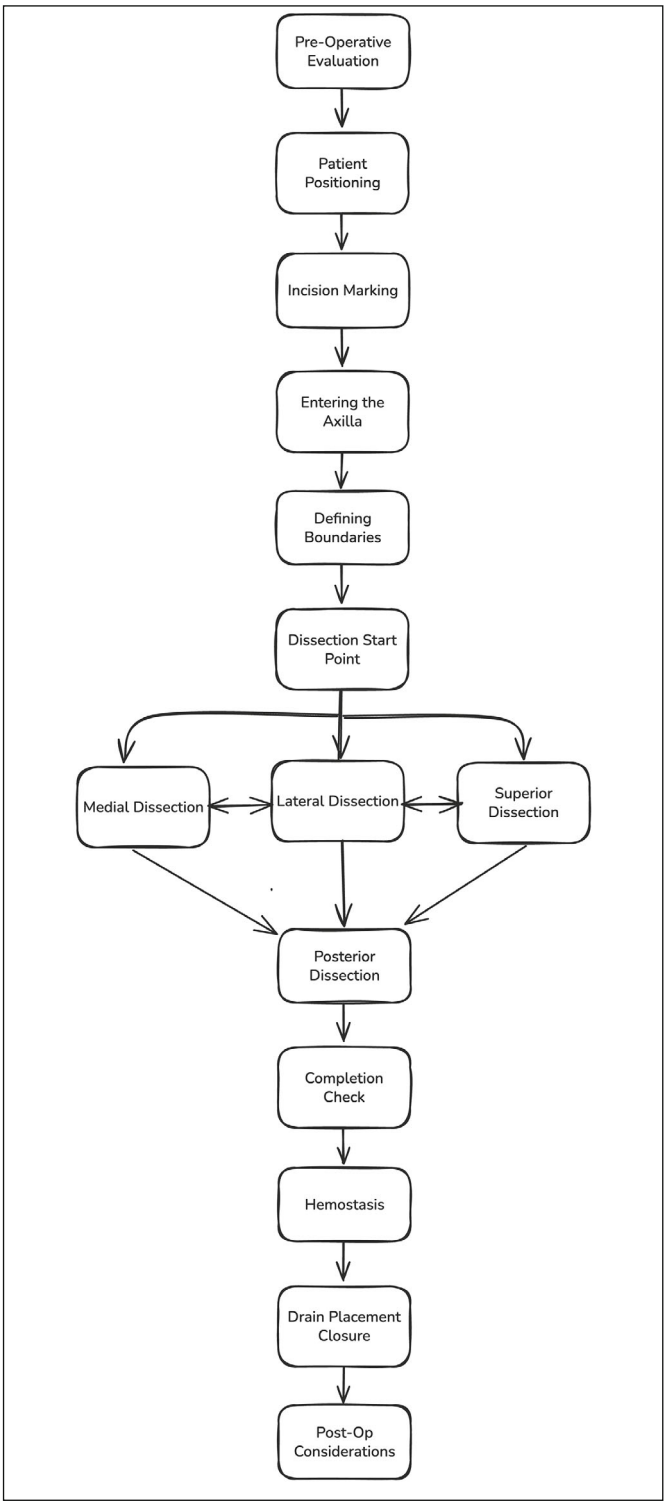

Figure. Overview of key steps for axillary lymph node dissections.

EP377

Balancing Oncologic and Reconstructive Priorities: Early Outcomes of Immediate Versus Staged Sarcoma Reconstruction

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INTRODUCTION: Sarcomas are soft-tissue tumors of mesenchymal origin that require wide resection and complex reconstruction. Reconstructive timing, whether immediate or staged, balances oncologic safety with wound healing and reconstructive success. However, data comparing early postoperative outcomes between these approaches remain limited. This study aimed to compare short-term outcomes following immediate versus staged reconstruction after sarcoma resection. **METHODS:** A retrospective review was performed of patients who underwent sarcoma reconstruction at a single tertiary center between April 2021 and August 2025. Early postoperative outcomes, including takeback to the operating room (OR), infection, hematoma, and seroma, within one month of reconstruction, were compared between immediate and staged cohorts. Fisher's exact test was used to analyze categorical variables, with statistical significance set at $p \leq 0.05$. **RESULTS:** Forty-two patients met inclusion criteria. Of these, 23 (54.8%) underwent immediate reconstruction and 19 (45.2%) underwent staged reconstruction. Mean age was similar between groups (immediate: 59.6 ± 17.7 years; staged: 63.6 ± 16.8 years). In the staged group, the average interval between resection and reconstruction was 10.5 ± 8.3 days. Early takeback to the operating room (OR), defined as within 48 hours, occurred more frequently after staged reconstruction (18.8% versus 0%, $p = 0.084$), primarily for hematoma ($n = 2$) or flap congestion ($n = 1$). No significant differences were observed in rates of infection ($p = 0.137$), hematoma ($p = 0.196$), or seroma ($p = 0.590$) within one month. **CONCLUSIONS:** Staged sarcoma reconstruction was associated with a higher rate of early return to the OR, suggesting increased early postoperative susceptibility in delayed reconstructions, potentially related to inflammatory changes occurring within a few days following resection. These findings may inform preoperative counseling and guide postoperative surveillance strategies in patients undergoing staged reconstruction after sarcoma resection.

EP378

Age and guideline-adherent surveillance colonoscopy following colorectal cancer resection: A geographically diverse cohort study

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INTRODUCTION: Young patients with colorectal cancer (CRC) represent a growing population with distinct patterns of healthcare utilization and oncologic characteristics including more advanced disease at diagnosis and higher rates of synchronous and metachronous lesions. One-year surveillance colonoscopy after CRC resection is particularly important in this cohort, yet few studies have examined adherence. We aimed to investigate the relationship between patient age and postoperative surveillance colonoscopy guideline adherence and hypothesized that younger age would be positively associated with postoperative colonoscopy guideline adherence. **METHODS:** We conducted a retrospective cohort study using the Healthcare Cost and Utilization Project (HCUP) State Inpatient and State Ambulatory Surgery Databases (2016-2020) from FL, IA, MD, NY, UT, VT, and WI. We included patients >18 years who underwent CRC resection and classified them into young (18-49 years), middle (50-64 years) and older (>65 years) age categories. Primary outcome was receipt of guideline-adherent one-year postoperative surveillance colonoscopy. Mixed effects logistic regression was used to evaluate the association between patient age and surveillance colonoscopy guideline adherence with adjustment for potential confounders and clustering at the hospital level. **RESULTS:** We identified 81,634 patients who underwent CRC resection (83.8% colon, 16.2% rectal) of which 8,428 (10.3%) were aged 18-49 years, 24,688 (30.2%) aged 50-64 years, and 48,518 (59.4%) aged >65 years. We observed clinically and statistically significant differences in cancer site, admission type, receipt of ostomy, and receipt of adjuvant chemotherapy across age groups (Table 1). Overall rates of guideline-adherent surveillance colonoscopy were low at 33.7% ($n = 27,481$) and demonstrated a negative dose-response relationship with increasing age (Table 1). After adjustment, the odds of receiving guideline-adherent surveillance colonoscopy were 16% lower for middle-aged (OR 0.84, 95% CI [0.79, 0.88]; $p < 0.001$) and 28% lower for older-aged (OR 0.72, 95% CI [0.67, 0.77]); $p < 0.001$) CRC patients when compared with younger-aged CRC patients. **CONCLUSIONS:** Younger age is associated with higher rates of guideline-adherent surveillance colonoscopy, though overall adherence is low. Elucidating age-specific barriers to postoperative CRC surveillance may inform targeted interventions to improve long-term oncologic outcomes, particularly in the expanding population of young CRC survivors.

Table 1. Unadjusted Guideline-Adherent Surveillance Colonoscopy Rates and Colorectal Cancer Clinical Characteristics by Age

	Age 18-49 (n = 8,428)	Age 50-64 (n = 24,688)	Age ≥ 65 (n = 48,518)	p-value
Guideline-adherent surveillance colonoscopy, yes	3592 (42.6)	9240 (37.4)	14649 (30.2)	< 0.001
Clinical Characteristics				
Cancer Site				< 0.001
Colon	6339 (75.2)	19305 (78.2)	42757 (88.13)	
Rectal	2089 (24.8)	5383 (21.8)	5761 (11.87)	
Admission Type				< 0.001
Urgent/Emergent	2427 (28.8)	6470 (26.2)	16087 (33.2)	
Elective	5988 (71.1)	18162 (73.5)	32335 (66.6)	
Other/Missing	13 (0.15)	56 (0.23)	96 (0.2)	
Ostomy, yes	2657 (31.5)	6511 (26.37)	8706 (17.9)	< 0.001
Adjuvant chemotherapy, yes	1094 (13.0)	2101 (8.5)	2034 (4.2)	< 0.001

Note: Cell contents reflect number of patients (column %); p-values reflect differences across age groups using Chi-Square testing

EP379

Dual Inhibition of AKT and KRAS Enhances Anti-Tumor Efficacy in Preclinical Models of CCA and PDAC

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INTRODUCTION: Therapeutic resistance is a major barrier in cholangiocarcinoma (CCA) and pancreatic ductal adenocarcinoma (PDAC), where activation of PI3K/AKT signaling frequently co-exists with oncogenic KRAS. We investigated whether co-targeting AKT and KRAS could improve therapeutic efficacy in preclinical models of CCA and PDAC. **METHODS:** Human CCA and PDAC cell lines were treated with the pan-AKT inhibitor capivasertib and the pan-RAS inhibitor RMC-6236, alone or in combination. Cell viability was quantified using CellTiter-Glo to determine IC_{50} values, and cell death was assessed with propidium iodide and Hoechst 33342 staining. For in vivo validation, PDX models of CCA and PDAC were established in NOD/SCID mice, and syngeneic intrahepatic CCA models were generated in C57BL/6 mice. Immunophenotyping of treated tumors by flow cytometry characterized therapy-induced changes in the tumor immune microenvironment (TIME). **RESULTS:** Capivasertib and RMC-6236 each induced dose-dependent cytotoxicity in CCA and PDAC lines. The combination treatment produced a two- to three- fold increase in cell death relative to monotherapy. In KRAS inhibitor-resistant CCA cells, sensitivity to capivasertib increased two-fold, associated with increased AKT (Thr308) phosphorylation on immunoblot. In PDX models, monotherapies modestly slowed tumor growth, whereas the combination significantly suppressed tumor progression. In syngeneic iCCA models, dual AKT and KRAS inhibition significantly prolonged overall survival compared with either monotherapy ($p < 0.0001$). Immunophenotyping revealed distinct immune remodeling, with AKT inhibition increasing intratumoral $CD8^+$ T-cell infiltration and KRAS inhibition reducing regulatory T cells (Tregs) and monocytic myeloid-derived suppressor cells (M-MDSCs). Together, these effects indicate that dual inhibition disrupts tumor-intrinsic survival pathways while enhancing anti-tumor immunity. **CONCLUSIONS:** Dual inhibition of

AKT and KRAS produces superior anti-tumor efficacy in preclinical models of CCA and PDAC. AKT inhibition enhances response to KRAS blockade, translating to reduced tumor growth rates in vivo. In CCA, dual inhibition improved overall survival and produced immunologic remodeling of the tumor microenvironment, including increased $CD8^+$ T-cell infiltration and reduced immunosuppressive cell populations. Collectively, these findings establish a strong preclinical rationale for clinical evaluation of capivasertib plus RMC-6236 combination therapy in RAS-driven hepatopancreatobiliary malignancies.

EP380

Head and Neck Cutaneous Melanoma: Survival Determinants in Early Age-Onset Patients

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INTRODUCTION: Head and neck melanomas (HNM) account for ~25% of all melanomas. Determinants of survival, particularly among early age-onset HNM (EOHNM), remain underexplored. This study compared clinical features, treatment patterns, and survival outcomes between EOHNM and late-onset HNM (LOHNM). **METHODS:** We performed a retrospective analysis of HNM cases in the National Cancer Database (2004–2021). Patients were categorized as EOHNM (< 50 years) or LOHNM (>50 years). Overall survival (OS) was assessed by Kaplan–Meier and log-rank tests. Prognostic factors were identified with multivariable Cox regression. **RESULTS:** We analyzed 237,678 patients with HNM, including 26,613 (12.0%) EOHNM and 195,557 (88.0%) LOHNM. Male-to-female ratio was higher in LOHNM (2.8:1 vs. 1.4:1). Most were White (99.2% vs. 98.4%), followed by Black (0.4% vs. 0.7%) and other races (0.4% vs. 0.9%) (p< 0.001). Stage distribution varied significantly by age: among LOHNM, stage 0–IV occurred in 43.9%, 34.5%, 14.5%, 5.4%, and 1.6% vs. 27.6%, 49.0%, 11.2%, 10.3%, and 1.8% in EOHNM (p< 0.001). LOHNM had a significantly higher comorbidity burden (CDCC ≥ 1: 17.1% vs. 5.5%, p< 0.001). Systemic therapies were infrequently used but were more common in EOHNM: radiation (5.0% vs. 4.3%), chemotherapy (2.0% vs. 0.8%), and immunotherapy (7.2% vs. 4.2%) (all p< 0.001). Surgery was the primary treatment, with margin positivity more frequent in LOHNM (R1 micro: 3.1% vs. 1.5%). Kaplan–Meier analysis demonstrated significantly reduced OS in LOHNM compared with EOHNM (log-rank p< 0.001). In multivariable Cox regression, Within EOHNM, worse OS was independently associated with Male (HR 1.25, 95% CI 1.002–1.552), Black race (HR 2.64, 95% CI 1.05–6.60), higher comorbidity (CDCC 2: HR 2.25, 1.23–4.13; CDCC 3: HR 5.49, 2.38–12.64), advanced stage (Stage III: HR 13.76, 1.37–137.83; Stage IV: HR 41.47, 4.07–422.18), lympho-vascular invasion (HR 1.76, 1.30–2.37), and positive surgical margins (R NOS; HR 2.22, p=0.001) were independently associated with survival. Private insurance (HR 0.46, 0.31–0.68 vs uninsured), higher income (highest vs lowest quartile HR 0.61, 0.44–0.85), and more recent year of diagnosis (HR per year 0.92, 0.88–0.95) were protective.
CONCLUSIONS: LOHNM carries worse OS than EOHNM, but they also show distinct adverse prognostic factors. Socioeconomic disparities significantly affect outcomes, highlighting the need for early detection, equitable care, and tailored management across age groups.

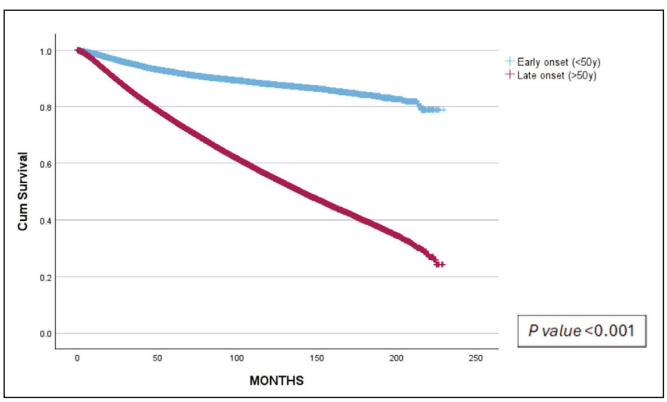

Figure 1. Head and Neck Melanoma Survival

EP381

Local Control and Toxicity Outcomes of Image Guided Liver SBRT in Patients with Prior Hepatic Resection for Primary and Metastatic Liver Malignancies

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INTRODUCTION: Patients with prior hepatic resection for primary or metastatic liver malignancies represent a challenging treatment cohort due to altered anatomy, limited hepatic reserve, and postoperative fibrosis. Improved visualization and dose conformity, enabled by advanced image guidance and adaptive planning, can enhance tumor control while minimizing toxicity. Our objective was to assess local control, toxicity, and dosimetric parameters of image-guided, adaptive SBRT for liver lesions in patients with prior hepatic resection. **METHODS:** This single-institution review (2023-2025) evaluated patients treated with SBRT who had undergone prior partial hepatectomy. Treatments were delivered using either a MR-Linac or a conventional linear accelerator. Collected data included demographics, tumor/dosimetric details, adaptive plan utilization, and follow-up imaging/toxicity. Local control was measured by RECIST v1.1 and toxicity by CTCAE v5.0. Kaplan-Meier estimates were used to assess local control and overall survival. **RESULTS:** A total of 25 patients with single or multiple hepatic lesions were identified. Median follow-up was 15 months (range: 2-48 months). The median age of the cohort was 66 (range: 44–82 years). Seven patients had primary HCC; 18 had metastatic disease, predominantly colorectal cancer (12 patients; 66.7%). Other metastatic primaries included GIST (2; 11.1%), gynecologic malignancies (2; 11.1%), appendix (1; 5.6%), and liposarcoma (1; 5.6%). Prior major hepatectomy (anatomic or non-anatomic resection of >2 segments) was performed in 11 (44%) cases, and minor hepatectomy (anatomic sectionectomy or non-anatomic wedge resections) in 14 (56%). Further surgical resection was not pursued, primarily due to concerns for adequate functional liver remnants given previous major resection or cirrhosis (68%), medical comorbidities (20%) or extrahepatic metastasis (12%). Median SBRT dose was 48 Gy range: 60 - 25.5 Gy) and median fractions were 5 (range: 3-8). Following SBRT, the local control rate was 100%. Grade ≥2 hepatic or GI toxicity occurred in 1 patient. Daily image guidance and adaptive workflows, when applicable, improved target coverage without increasing toxicity. The median overall survival after SBRT was 15 months (range: 2–48 months). **CONCLUSIONS:** For patients with disease recurrence following hepatectomy, SBRT is a safe and effective salvage strategy associated with an extended survival of 15 additional months beyond what was achieved with hepatectomy alone.

EP382

Enhancing Patient-Centered Decision-Making in Cancer Treatment: Evaluating the Effectiveness of a Multi-Dimensional Visual Decision-Making Tool

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INTRODUCTION: We assessed the utility of a novel, multi-dimensional, value-based decision-making tool (DMT) in improving cancer patients' comprehension of treatment options compared to traditional methods. **METHODS:** We conducted a mixedmethods survey based study to evaluate oncology provider perspectives on a novel DMT. The DMT employs a radar chart to visually depict multiple treatment options across key decision domains, each axis represents a quantitative outcome (e.g., survival, quality of life, cost), with values plotted further from the center indicating higher scores. Providers at a tertiary cancer center were recruited in person to participate in structured interviews and complete a survey evaluating the DMT's clarity, its ability to augment verbal/written communication, and its effectiveness compared to existing tools (National Comprehensive Cancer Network [NCCN] Evidence Blocks). Inter-provider agreement was measured using Kendall's coefficient of concordance (W). **RESULTS:** Ten oncology providers were enrolled, with a mean age of 44.0 ± 10.5 years; 40% were female (n=4), and 60% (n=6)

identified as White. The cohort included physicians (50%, n=5), advanced practice providers (30%, n=3), and oncology fellows (20%, n=2). Overall, 90% (n=9) reported that the DMT made it easier to visualize treatment outcomes, and 80% (n=8) agreed it facilitated an effective comparison of the advantages and disadvantages of treatment options. Similarly, 80% (n=8) felt the DMT aided treatment selection. Half of the respondents (n=5) believed the tool covered all necessary information for informed decision-making, while 20% (n=2) were neutral and 30% (n=3) disagreed. Compared with conventional communication strategies, 80% (n=8) preferred integrating the DMT with verbal/written information and 60% percent (n=6) strongly agreed the DMT would benefit future cancer patients. When compared with the NCCN Evidence Blocks, 70% (n=7) preferred the DMT for supporting treatment decision-making. Agreement across responses showed moderate consensus (Kendall's W=0.496, p< 0.001). **CONCLUSIONS:** This pilot study demonstrates the potential of the novel DMT to enhance communication and shared decision-making in oncology. Further research is being conducted to validate these preliminary findings across patient and caregiver cohorts.

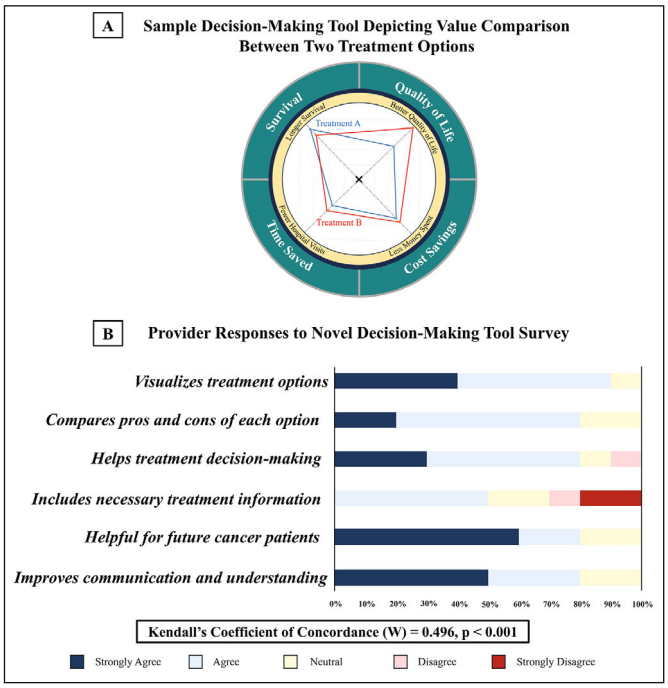

Figure. A. Sample Decision-Making Tool Depicting Value Comparison Between Two Treatment Options B. Provider Responses to Novel Decision-Making Tool Survey

EP383

Impact of clinical and pathological factors on development of regional metastasis in patients with cutaneous squamous cell carcinoma

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INTRODUCTION: Cutaneous squamous cell carcinoma (cSCC) is the second most common skin cancer worldwide, with an increasing global incidence. While patients with localized low-risk cSCC have good outcomes up to 13% of patients develop advanced or metastatic disease, which drastically increases the risk of morbidity and mortality. This study aims to characterize clinical and histological factors predictive of nodal metastasis. **METHODS:** A retrospective case-control study was conducted of adult patients referred to a tertiary care center for cSCC between 2010 and 2022. Node-positive patients were compared with a matched cohort of node-negative patients by age, sex, Charlson Comorbidity Index (CCI), and tumor location. Demographic, clinical, and oncologic datapoints were collected, including history of smoking and immunosuppression. Differences between groups were assessed using the $\chi 2$ test for categorical variables and Welch's two sample t-test for continuous variables. Univariable and multivariable regression was used to analyze the association of variables with the development of regional metastasis. **RESULTS:** Ninety-eight patients met inclusion criteria. There were no significant differences in BMI, tobacco exposure, CCI or immunosuppression between cohorts. Patients who developed nodal metastasis had larger tumors (median 2.3cm (IQR 1.9) v. 0.8cm (0.55), p< 0.001), greater depth of invasion (5mm (5.3) v. 2mm (2), p< 0.001), and more poorly differentiated tumors (19% v. 7.5%, p< 0.001). On univariate regression greater size (OR 24.5, 95%CI 7.77, 115), depth (OR 1.33, 95%CI 1.13, 1.66), perineural invasion (OR 3.62, 95%CI 1.14, 13.9), and poor differentiation (OR 6.79, 95%CI 2.21, 28.4) were all significant risk factors for development of nodal metastases. However, on multivariable regression, only tumor size remained a significant risk factor (OR 34.2, 95%CI 5.79, 486). **CONCLUSIONS:** These data suggest that tumor size is the largest risk factor for nodal metastasis. While other previously highlighted histological factors such as depth, poor differentiation, and perineural involvement were risk factors on univariable analysis, these factors were not significant on multivariable analysis. Further investigation should be done on additional histological factors and to elucidate any correlations between tumor size and other factors.

EP384

Metastatic trends in appendiceal cancer subtypes and survival: an NCDB analysis

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INTRODUCTION: Appendiceal adenocarcinoma represents 0.5-1% of all gastrointestinal tumors and is often discovered incidentally. While peritoneal spread is relatively common among appendiceal cancer, extraperitoneal metastases are not well defined. In addition, prognosis based on site of metastasis for appendiceal adenocarcinoma, especially based on histological subtypes, remains unclear. Our research study aims to examine the comprehensive sites of metastasis of appendiceal adenocarcinoma while concurrently defining overall survival for these subtypes. **METHODS:** We conducted a retrospective review utilizing the National Cancer Database (NCDB) to provide a comprehensive nationwide analysis of metastatic trends in survival in appendiceal adenocarcinoma from 2016-2022. Our primary end points were site of metastasis and overall survival. **RESULTS:** A total of 11,791 patients with appendiceal adenocarcinoma was identified from 2016-2022. Stratification based on histology identified 5,138 (43.6%) as non-mucinous adenocarcinoma and 6,653 (56.4%) as mucinous adenocarcinoma. Of patients in our cohort, 4,700 (39.9%) were metastatic at diagnosis. Of metastatic patients, 1,529 were identified as non-mucinous subtype (29.8% of total appendiceal adenocarcinoma) and 3,171 were mucinous subtype (47.7% of total mucinous). The most common sites of metastasis in appendiceal non-mucinous adenocarcinoma and mucinous adenocarcinoma were peritoneal (68.1% vs 82.1%) and liver (16.9% vs 12.0%), respectively. Interestingly, mucinous adenocarcinoma was associated with improved overall survival (median overall survival (OS) NR) compared to non-mucinous adenocarcinoma (median OS 60 months, p < 0.001). Moreover, patients with mucinous adenocarcinoma experienced improved overall survival, regardless of sites of metastasis (HR 1.06, 95% CI 1.04-1.09; p < 0.001). **CONCLUSIONS:** Appendiceal adenocarcinoma, regardless of histologic subtypes, demonstrates propensity for peritoneal metastasis. Appendiceal non-mucinous adenocarcinoma has a significantly worst prognosis when compared to mucinous adenocarcinoma. Surprisingly, patients who have peritoneal metastasis tend to have a better rate of survival than other metastatic sites.

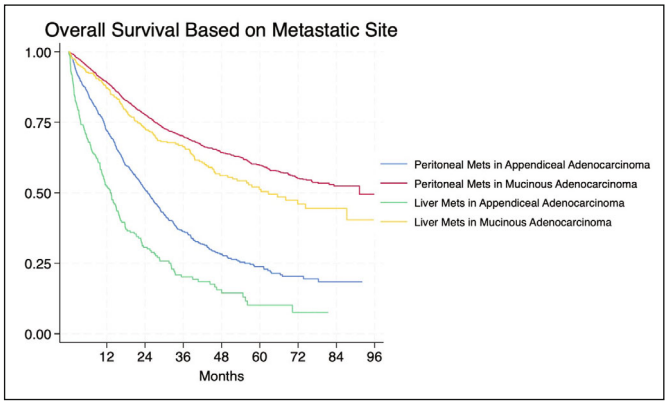

Figure 1: Overall survival of patients with metastatic disease of the peritoneum and liver based on appendiceal cancer subtype.

EP385

Emerging Role of Surgery in Pancreatic Neuroendocrine Carcinoma: A Conditional Survival Perspective

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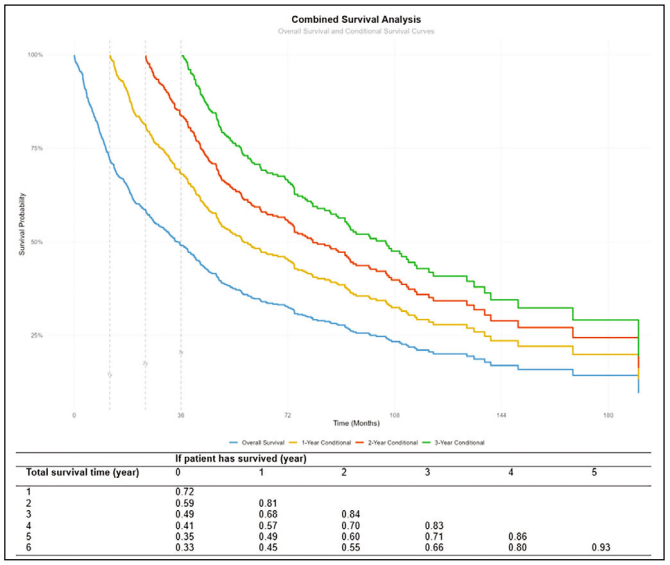
INTRODUCTION: Pancreatic neuroendocrine carcinomas (PanNECs) are rare, aggressive malignancies with historically poor prognoses. Surgical resection in this population is rarely studied, although emerging evidence suggests that selected patients may benefit. To better characterize outcomes in this setting, we evaluated postoperative survival using conditional survival (CS) to provide a more accurate and time-dependent assessment of prognosis. **METHODS:** We identified patients with histologically confirmed PanNEC who underwent curative-intent surgical resection and had documented dates of surgery and follow-up. Collected variables included age, sex, tumor size, lymph node status, metastatic status, resection margin status amongst others. Overall survival (OS) and conditional survival was estimated using Kaplan–Meier methods and Bayes Theorem. Additional 3-year conditional survival (CS) was calculated as the probability of surviving an additional three years, conditional on surviving 1–3 years after surgery. Stratified analyses examined CS across key pathologic and treatment characteristics, and multivariable models were then used to generate prognostic nomograms. **RESULTS:** Overall survival probability at 4 years is 41%, but for those who have already survived for 1, 2, 3 years, the conditional 4-year survival probability rises to 57%, 70% and 83% respectively. Key prognostic factors were found to be tumor stage, tumor size, metastasis, and resection margin. For example, patients with earlier tumor stages (Stage 1) have a 3-year survival probability ranging from 78-80%, significantly higher than those with Stage 4 (range: 40%-60%) at any time point. Separate nomogram models were developed for 1-, 2-, and 3-year conditional survival, each incorporating the most informative prognostic variables identified through feature selection. They demonstrated good accuracy and calibration, with areas under the curve (AUCs) ranging from 0.67 to 0.75 and calibration slopes ranging from 1.2-1.9, which did not significantly change upon k-fold internal validation. **CONCLUSIONS:** Conditional Survival offers a more clinically meaningful, time-dependent estimate of prognosis for PanNEC patients after surgery, highlighting improved survival for those who survive the early postoperative period. These findings underscore the utility of CS in counseling and risk stratification for this high-risk population.



	If patient has survived (year)					
Total survival time (year)	0	1	2	3	4	5
1	0.72					
2	0.59	0.81				
3	0.49	0.68	0.84			
4	0.41	0.57	0.70	0.83		
5	0.35	0.49	0.60	0.71	0.86	
6	0.33	0.45	0.55	0.66	0.80	0.93

Figure. Combined Conditional Survival Kaplan Meier Plot and Table for Pancreatic Neuroendocrine Carcinoma Patients

EP386

Forgoing Axillary Lymph Node Dissection: Survival Trends in Low-Risk Hormone Receptor-Positive Breast Cancer Patients with Positive Sentinel Lymph Nodes

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INTRODUCTION: Axillary lymph node dissection (ALND) carries significant morbidity, and recent advancements in clinical practice have reduced its role in breast cancer staging. While omission of ALND is supported in certain patient populations, it remains common practice for breast cancer patients with multiple positive sentinel lymph nodes, palpable lymphadenopathy, or do not meet certain clinical criteria. This study aims to evaluate overall survival (OS) for low-risk hormone receptor-positive (HR+) breast cancer patients with multiple positive sentinel lymph nodes, in order to identify potential populations who might benefit from the omission of ALND. **METHODS:** A retrospective analysis of the National Cancer Database (NCDB, 2018-2020) was done for women with invasive HR+ breast cancer, low-risk disease, and at least one positive regional lymph node. Low-risk status was defined as OncotypeDx recurrence score (RS) ≤25. Patients were stratified by sentinel lymph node biopsy (SLNB) only or completion ALND. Demographic, pathologic, clinical, and treatment data were collected. Categorical variables were compared using the $\chi 2$ and Wilcoxon rank-sum tests. Survival analyses were done using Kaplan-Meier and log rank tests. Multivariate analysis was conducted using Cox proportional hazards regression. **RESULTS:** After exclusion, 50,590 females with invasive breast cancer were identified as low risk. Seventy-two percent (n=36,456) underwent SLNB only, while 27.8% underwent ALND. Median age was 61.0 [52-69] years old and median follow-up time was 37.5 [24-53] months. Those who underwent ALND had a higher proportion of multiple positive nodes compared to SLNB only (56% vs. 21%, $p< 0.0001$) with no statistically significant difference in age (61 [52-69] vs. 60 [52-68], $p=0.5$). When looking at OS, the SLNB only group had a higher 5-year OS compared to ALND (93.8% vs. 92.2%, log rank $p< 0.0001$). After multivariate Cox regression, ALND had a statistically significant higher risk compared to SLNB only (HR 1.33, 95% CI 1.19-1.48, $p< 0.0001$). As age increased, survival decreased (HR 1.06 per 1 year age increase, $p< 0.0001$). Nodal positivity was not significant ($p=0.14$). **CONCLUSIONS:** In women who had low-risk, HR+ breast cancer and positive sentinel lymph nodes who underwent SLNB only, OS was shown to be improved compared to those who had a higher burden of nodal positivity and underwent ALND. These findings may suggest selective omission of ALND is possible in patients with lower risk, highlighting the advancements in management practices.

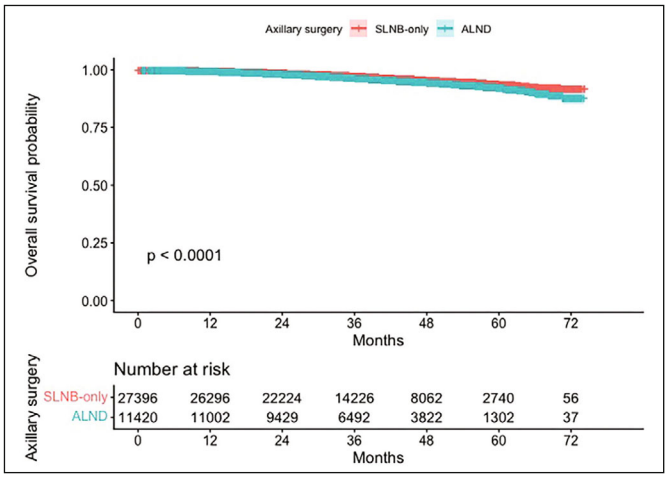

Figure 1. Kaplan–Meier Overall Survival Curves for Low-Risk, HR+ Breast Cancer Patients

EP387

Notably increased risk of postoperative venous thromboembolism associated with neoadjuvant immunotherapy for patients with advanced melanoma

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INTRODUCTION: Immunotherapy with immune checkpoint inhibitors (ICI) has revolutionized the management of cutaneous melanoma with clinical trials demonstrating improved event free survival with neoadjuvant ICI. Recent data suggests that ICI may increase the risk of VTE. While clinical trial results are compelling, the risk profile of neoadjuvant immunotherapy among melanoma patients remains poorly understood in real world populations. **METHODS:** We performed a retrospective database study using TriNetx, a multinational deidentified dataset, for patients cutaneous melanoma from 2010-2025. This platform captures data from over 250 million international patients from over 200 electronic data sources. Patients were stratified based on whether they received neoadjuvant immunotherapy. Primary outcome was postoperative VTE within 90 days of surgery. Propensity score matching was performed for demographics, BMI, hypercoagulable state, preoperative anticoagulation, disease stage, and comorbidities. Adjusted odds ratios (aOR) were determined via multivariable logistic regression. **RESULTS:** We identified a total of 113,085 patients who were propensity matched with 2,520 receiving neoadjuvant ICI and 2,520 who received surgery without neoadjuvant ICI. In the pre-propensity matched cohort, patients in ICI group were significantly more likely to be male, 65% ($p = < 0.0001$), younger, mean age 61.9 vs 63.3 ($p = < 0.0001$), with higher BMI, 29.4 vs 28.7 ($p = < 0.0001$) as compared to the non-ICI cohort. The incidences of postoperative VTE within 90 days were 2.82% and 1.94% in the ICI and non-ICI cohorts respectively (aOR = 1.46,95% CI 1.012-2.113, p = 0.042). Subgroup analysis of singlet vs doublet ICI therapy demonstrated VTE incidence of 3.76% and 2.02% in the singlet and doublet therapy groups respectively (aOR = 1.90, 95% CI 0.946-3.819, p = 0.067). No significant difference in VTE rate was identified in patients who underwent regional lymphadenectomy as compared to those who did not (aOR 1.26, 95% CI 0.693-2.296, p = 0.45). **CONCLUSIONS:** In real world data, patients who received neoadjuvant immunotherapy had a statistically significant higher rate of postoperative VTE. The risk identified warrants further investigation and suggests that this population may stand to benefit from chemical VTE prophylaxis.

EP388

Perceptions of palliative care in GI cancer: a survey of surgical patients

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INTRODUCTION: Early palliative care (EPC) improves symptom management, quality of life, and survival but is underutilized and often viewed as an end-of-life care. Limited research has examined perceptions among patients with gastrointestinal (GI) cancers, particularly those with early-stage disease. This study evaluated knowledge, attitudes, and perceived barriers to EPC to inform timely, patient-centered integration. **METHODS:** Adults (≥18 years) with GI malignancies of any stage completed a 15-minute anonymous cross-sectional survey including Likert-scale, true/false/unsure, and open-ended items assessing awareness, understanding, and attitudes toward PC. Quantitative data were summarized with descriptive statistics; qualitative responses were reviewed for key themes. **RESULTS:** Among 14 participants (n=14), experience and familiarity with palliative care (PC) were limited: 64% had never heard of PC and 57% were unsure of the distinction between PC and hospice. Knowledge gaps and misconceptions were common: 93% believed or were unsure that PC is exclusively for patients in the last six months of life, and 86% were unsure whether PC is designed for older adults and if PC discourages curative treatment. Attitudes toward EPC were generally favorable: 86% agreed a referral would provide support, 93% agreed it indicates doctors care, and 71% would think more positively about the future and try EPC. Most recognized that PC could improve quality of life (71%) and should be introduced early (71%). Cultural and personal considerations were noted, with 34% expressing concerns about accepting PC if they felt like it was burdening their family or cultural/religious influences. Open-ended responses identified five main themes: (1) physical functioning and pain management (~50%), (2) emotional well-being and hopefulness (~43%), and (3) maintaining normal daily activities (~36%). Regarding support needs, participants emphasized: (4) clear communication and explanation from healthcare providers (~57%) and (5) continuity with familiar doctors and nurses (~29%). Percentages reflect frequency of mention, and participants often mentioned multiple themes. **CONCLUSIONS:** GI cancer surgical patients have limited knowledge of PC but perceive its early integration and discussion as supportive rather than threatening. Most felt early conversations would enhance their care without signaling abandonment. These findings support proactive communication and early referrals, encouraging broader integration of palliative care in surgical oncology.

EP389

Age Related Decline of Breast Reconstruction Following Mastectomy for Stage IV Breast Cancer: A National Cohort Analysis

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INTRODUCTION: Approximately 6% of patients with breast cancer present with de novo stage IV disease. Historically, management has centered on systemic therapy, with surgery reserved for palliation of symptoms. However, emerging evidence suggests that primary site local therapy (surgical resection + radiotherapy) may confer a survival advantage in select patients, particularly those with favorable tumor biology. Despite this, factors influencing both oncologic and reconstructive surgical decision-making in this population remains poorly understood. We hypothesize that patients under age 45 are most likely to undergo total mastectomy with breast reconstruction with surgical rates decreasing with advancing age. **METHODS:** The National Cancer Database was queried for female patients diagnosed with de novo stage IV breast cancer (n = 126,278) between years 2012 and 2023. Patients were stratified into 6 age groups: < 45, 45-49, 50-54, 55–59, 60-64, and > 65 years. Rates of total mastectomy and breast reconstruction (tissue-based, implant-based, and combined) were analyzed. Descriptive statistics and Chi-square test were used for group comparisons, with $p < 0.05$ being statistically significant. **RESULTS:** Among patients with Stage IV breast cancer, 19.9% of those < 45years, 16.3% of those aged 45-49 years, 14.1% of those 50-54 years, 12% of those 55-59 years, 10.7% of those 60-64 years, and 8.6% of those > 65 years old underwent total mastectomy ($p < 0.0001$). Reconstruction was performed in less than 6.5% of patients undergoing total mastectomy across all age groups, with rates highest among those < 45 years, and lowest among those > 65 years. Rate of breast reconstruction was 6.5%, 4.5%, 3.1%, 2.1%, 1.4%, and 0.7% for age groups < 45, 45-49, 50-54, 55-59, 60-64, and > 65 years, respectively ($p < 0.0001$). The ratio of breast reconstruction to total mastectomy were 0.30, 0.25, 0.20,

0.19, 0.13, and 0.07 for age groups < 45, 45-49, 50-54, 55-59, 60-64, and > 65 years, respectively (Figure 1). **CONCLUSIONS:** With stage IV breast cancer, patients younger than 45 years are significantly more likely to undergo total mastectomy with breast reconstruction compared to older patients. While rates of reconstructive surgery remain low across all age groups, it is notable that the ratio of breast reconstruction to total mastectomy decreases with advancing age. These findings highlight age as an important determinant of surgical decision-making and may reflect differing treatment intent, patient preferences, and provider recommendations. Further investigation is warranted to understand the underlying factors.

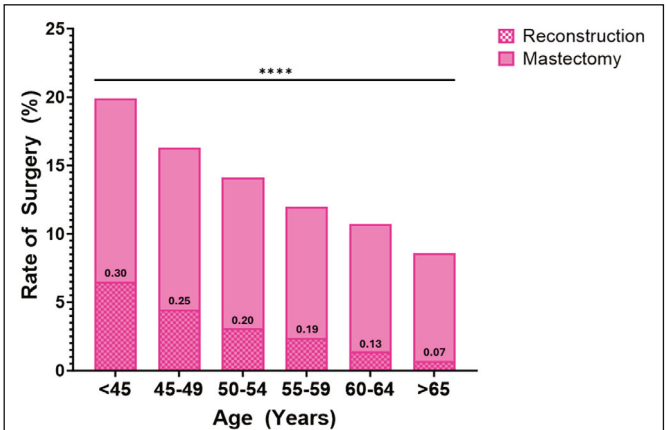

Figure 1. Decline in rates of mastectomy and breast reconstruction with increase in age. Checkered pattern denotes the percent of patients who underwent breast reconstruction within the mastectomy cohort. Numeric value within each bar indicates ratio of breast reconstruction to total mastectomy for each age group. ****: p ≤ 0.0001.

Figure1. Decline in rates of mastectomy and breast reconstruction with increase in age.

EP390

Relative dose delivery of perioperative chemotherapy with gastrectomy for cancer: a rationale for more neoadjuvant dose

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INTRODUCTION: Combination chemotherapy and surgical resection are essential to curative intent treatment for gastric adenocarcinoma (GC). Randomized trials have illustrated challenges in delivering chemotherapy alongside gastrectomy, however detailed analyses are lacking. The study aimed to comprehensively define chemotherapy dose reductions in curative intent gastrectomy. **METHODS:** A single institution, retrospective analysis was conducted (2008-2025) of adult patients who underwent curative gastrectomy for GC (inclusive of Siewert III) and chemotherapy. Two cohorts were categorized by completion of all intended chemotherapy cycles (full dose, FD, n=37) or dose reduction/missed cycles (partial dose, PD, n=35). The timing and frequency of dose reductions and missed cycles was quantified. Relative cycle intensity (RCI) was calculated as the proportion of delivered cycles (full or reduced) divided by the total number intended. **RESULTS:** After exclusions for missing data, 72 total patients were analyzed. Amongst these, 37 (51.4%) received FD whereas 35 (48.6%) received PD. Patients receiving PD were more likely to be older (mean age 67 vs. 57.5, p< 0.01) and have worse ECOG performance status (37% ECOG 0 vs. 78.3%, p< 0.01) whereas individual comorbidities were similar between the groups (all p >0.05). There were no significant differences in the tumor location, AJCC clinical stage, type of chemotherapy agent used (FLOT, ECF/EOF, FOLFOX), or the type of gastrectomy (antrectomy, subtotal, total) performed (all p >0.05). Amongst the 35 dose reductions, 22 (62.9%) occurred postoperatively. Further, surgical complications were only present in the PD group (n=7, 22.6%); there were no complications in the FD cohort. Granular assessment of RCI revealed that 88% of patients could receive all intended cycles prior to gastrectomy (Figure, panel A). However, in the postoperative setting (Figure, panel B) 13% never initiated treatment and 20% achieved less than 70% of the intended number of cycles. Receipt of FD chemotherapy was associated with numerically higher 5-year overall survival (80.1% vs. 65.4%) and distant metastasis free survival (79.1% vs. 58.3%), however the study was underpowered to detect a statistical difference. **CONCLUSIONS:** Dose reductions or cessation of chemotherapy following gastrectomy is common and multifactorial. A higher dose-density is tolerated prior to resection, signaling a rationale for multicenter reassessment of chemotherapy delivery and total neoadjuvant approaches for GC.

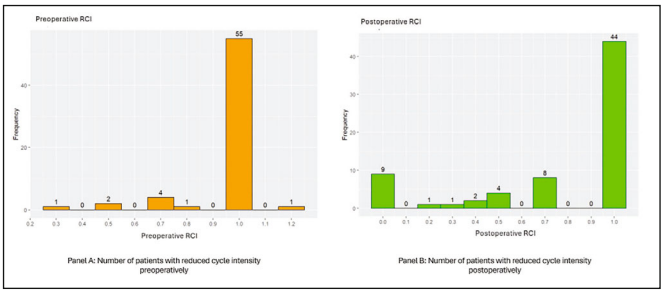

Figure. Preoperative and Postoperative Relative Cycle Intensity (RCI)

EP391

Predictors of oncologic futility after surgery for pancreatic ductal adenocarcinoma

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is the third leading cause of cancer-related death in the United States. About half of patients present with advanced disease not amenable to curative intent. After resection, survival benefit is limited, and postoperative morbidity may preclude adjuvant therapy. This study aimed to identify factors predicting oncologic futility after PDAC surgery. **METHODS:** Patients undergoing curative-intent resection for PDAC (2007–2024) at a tertiary oncology center were retrospectively analyzed. Demographic, clinical, and oncologic variables were collected; 90-day mortalities were excluded (n=25/479, 5%). Futility was defined as death or recurrence within 6 (F6) or 12 (F12) months post-surgery. Univariable and multivariable analyses identified predictors of F6/F12. Subgroup analyses were performed by procedure and neoadjuvant therapy. **RESULTS:** Among 454 patients, F6 and F12 occurred in 111 (24.4%) and 221 (48.7%). F6 was mainly driven by recurrence than death (61 vs 39%). This levelled off at F12 (48 vs 52%). F6 patients were more often male (59% vs 49%, p=0.089), non-white (22% vs 10%, p=0.004), and ECOG≥2 (20% vs 12%, p=0.031). They had higher CA19.9≥500 U/mL (28% vs 13%, p=0.001), stage III–IV (13% vs 6%, p=0.015), poor tumor grade differentiation (29% vs 19%, p=0.004), lymphovascular invasion (47% vs 28%, p< 0.001), and nodal positivity (80% vs 56%, p< 0.001). Surgical factors included vascular resection (24% vs 17%, p=0.08), blood loss 425 vs 400 mL (p=0.04), and readmission (24% vs 7%, p< 0.001). Adjuvant chemotherapy was less frequent (48% vs 73%, p< 0.001). Independent predictors of F6 were CA19.9≥500 U/mL (aOR 2.46, p=0.008), poor differentiation (aOR 3.09, p=0.010), lymphovascular invasion (aOR 1.96, p=0.029), and readmission (aOR 3.36, p=0.001); adjuvant chemotherapy (aOR 0.42, p=0.004) and radiation (aOR 0.21, p=0.003) were protective. For F12, vascular resection (aOR 3.20, p=0.003) and male sex (aOR 0.51, p=0.010) remained significant; adjuvant chemotherapy remained protective (aOR 0.38, p=0.001). F12 rates were 50% after pancreatoduodenectomy, 41% after distal pancreatectomy, and 86% after total pancreatectomy (p=0.032). Neoadjuvant therapy did not alter futility. **CONCLUSIONS:** Nearly half of PDAC resections were oncologically futile within one year. Futility correlated with aggressive tumor biology and complex perioperative courses, while adjuvant therapy markedly improved outcomes. These findings, although covering a large time span and advances in treatment, remark the importance of multimodal therapy and biologically driven selection.

Table: Patient and disease factors associated with a futile resection

Variable	F6	F12	p-value
Incidence of futility	24.4%	48.7%	-
Male sex	59% vs 49%	58% vs 46%	0.089 / 0.008
Non-white race	22% vs 10%	-	0.004
ECOG ≥2	20% vs 12%	-	0.031
CA 19.9 ≥500 U/mL	28% vs 13%	23% vs 11%	0.001 / 0.002
Grade 3 differentiation	29% vs 19%	26% vs 17%	0.004 / 0.007
Lymphovascular invasion	47% vs 28%	44% vs 21%	<0.001
Vascular resection	24% vs 17%	26% vs 12%	0.08 / 0.0002
Readmission ≤90 days	24% vs 7%	18% vs 5%	<0.001
Adjuvant chemotherapy	48% vs 73%	58% vs 74%	<0.001

EP392

Inverse association between neighborhood disadvantage and pancreatic cancer incidence hotspots

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INTRODUCTION: Pancreatic ductal adenocarcinoma (PDAC) is the third leading cause of cancer death in the US with a rising incidence. Previous studies have shown disparities in treatment outcomes and survival driven by social determinants of health as measured by area deprivation index (ADI). PDAC hotspots have been identified in South Florida, and we hypothesize that PDAC hotspots will be associated with higher ADI/neighborhood disadvantage. **METHODS:** A retrospective review was performed of patients with PDAC treated between 2000-2020 in South Florida using the Florida Cancer Data System (FCDS). Neighborhood disadvantage was defined based on ADI. Places with excess PDAC incidence were defined as areas with Incidence Rate Ratio (IRR) greater than or equal to 1.5 (50% higher) compared to statewide. Age-adjusted incidence rates were calculated at the census-designated-place (CDP) level and compared to the statewide average in Florida to identify hotspots based on this specific threshold. Multivariable regression models, controlling for place-level sex, race, and ethnicity proportions, were then fit to assess the association between ADI tertile and odds of being a PDAC hotspot. **RESULTS:** A total of 4,387 cases and 92 places were included in the analysis of which 35% were low ADI (least disadvantaged), 26% medium ADI, and 39% high ADI (most disadvantaged). An average of 38% of the population within these places were over the age of 65, 35% were non-Hispanic white, 42% were Hispanic, and 20% were Black. Communities with medium and high ADI had significantly lower odds of being a pancreatic cancer hotspot compared to low ADI communities (medium ADI: OR = 0.22, p = 0.043; high ADI: OR = 0.19, p = 0.041). Additionally, upon further sensitivity analyses, there was no significant association between being a PDAC hotspot and household income or education level, suggesting that other components of the ADI (i.e. housing, access to care, etc.) may be responsible for the association. **CONCLUSIONS:** Given the established literature on ADI and healthcare outcomes, these findings were unexpected and contrary to our hypothesis. However, they may suggest a detection bias where communities with better access to care have a higher reported incidence even if their underlying risk is not higher. Further work is necessary to fully characterize PDAC hotspots and explore novel strategies for risk stratification, with the aim of optimizing early detection initiatives including culturally sensitive and targeted community outreach programs that will increase patient access to care and improve outcomes in this lethal disease.

Table 1. Demographic composition and association between ADI and PDAC hotspots

ADI Category	
Low ADI	35%
Medium ADI	26%
High ADI	39%
Population Characteristics	
Age > 65 years	38%
Non-Hispanic White	35%
Hispanic	42%
Black	20%
Association with PDAC Hotspot†	
Medium ADI vs Low ADI	OR* = 0.22 (p = 0.043)
High ADI vs Low ADI	OR* = 0.19 (p = 0.041)

† PDAC hotspot are areas with Incidence Rate Ratio (IRR) greater than or equal to 1.5 (50% higher) compared to statewide.
** Based on age-adjusted incidence rates, controlling for sex, race, and ethnicity percentages at the place-level; reference = Low ADI.*

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A Watch-and-Wait Approach After Locoregional Complete Clinical Response in Rectal Cancer: A Systematic Review

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INTRODUCTION: Radical surgery for rectal cancer is associated with significant morbidity and a 2% mortality rate. Following neoadjuvant therapy, up to 26% of patients have been found to have a complete pathological response to treatment. Therefore, the necessity of radical surgery in patients with a complete clinical response following initial therapy has been rightfully questioned. This study evaluates the current literature detailing the expected outcomes of patients with rectal cancer who have a loco-regional complete clinical response to neoadjuvant therapy and are managed with a watch-and-wait approach. **METHODS:** A literature search was conducted to identify papers reporting rectal cancers treated with neoadjuvant chemotherapy and/or radiation therapy wherein patients were managed with a watch-and-wait approach. 3185 studies were identified. The final list of full-text review papers included 52 studies, and only prospective studies were included. Data extraction was completed by four independent reviewers using standardized forms. Quantitative data were then analyzed descriptively and thematically. **RESULTS:** Following full-text review, 37 papers were included in the final analysis. Neoadjuvant therapy regimens varied between centers, specifically in the combination and sequencing of chemotherapy and radiotherapy. However, the majority of patients received concurrent chemoradiotherapy in addition to induction chemotherapy and/or consolidation chemotherapy. For patients with a complete clinical response on a watch-and-wait protocol, the one-year local recurrence rate was 13.0% (7-19%, 95% CI). The two-year local recurrence rate was 18% (12.1-23.9%, 95% CI). The two-year overall survival rate was 98.4% (96.9-99.9%, 95% CI). The five-year overall survival rate was 92.7% (88.7-96.6%, 95% CI). For patients identified as having a local recurrence, 78.4% (71.6-85.2%, 95% CI) of patients underwent salvage surgery. Lastly, 7.1% (5.3-8.9%, 95% CI) of patients developed metastatic disease during follow-up. **CONCLUSIONS:** A watch-and-wait approach for rectal cancer patients following a complete clinical response demonstrates favorable long-term outcomes. Up to 18% of patients managed with watch-and-wait develop a local recurrence within 2 years. Of these, 78% can be successfully treated with a salvage procedure. Additionally, the five-year overall survival rate remains very high at 92.7%. These findings support the implementation of organ preservation management strategies for carefully selected rectal cancer patients who remain under close clinical surveillance.

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Predictors of Perioperative Immunotherapy Use in HCC: A NCDB Analysis

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INTRODUCTION: HCC is the most common primary liver tumor and remains a significant source of morbidity and mortality as the third leading cause of cancer related death worldwide. While surgical resection is a key component of management, recurrence remains high, with rates of 50-60% in certain populations. Immunotherapy has become an important component in advanced stage HCC, with approval in the unresectable or metastatic setting. Given it's success in this setting there is significant interest in it's use in the perioperative setting. We investigated real world use and implementation of immunotherapy for HCC in the perioperative setting. **METHODS:** Patients diagnosed with HCC from 2004-2023 were identified in National Cancer Database (NCDB), and we included those patients who had undergone surgical resection alone, surgical resection after neoadjuvant immunotherapy, and surgical resection with adjuvant immunotherapy. We excluded patients with metastatic disease or those that did not undergo surgical resection. Univariate and multivariate regression analysis and Cox proportional hazard ratios were used to identify trends in immunotherapy usage and identify predictors of immunotherapy. **RESULTS:** We identified 281,339 patients in the NCDB with non-metastatic HCC, 76,563 of whom were included in final analysis (75,804 surgical resection alone, 250 neoadjuvant immunotherapy, and 509 adjuvant immunotherapy). The use of immunotherapy increased dramatically in 2017, with greater increases in adjuvant (from 1.6% in 2016 to 21.4% in 2023) than neoadjuvant therapy. On multivariate analysis, patients were more likely to receive immunotherapy, either in the neoadjuvant or adjuvant setting, than surgery alone if diagnosed in 2017-2023 (OR 6.85, 95% CI 3.79-12.57) or with T3-T4 tumors (OR 3.52, 95% CI 1.91-6.26). Of those who received immunotherapy, patients who received care at an academic facility were more likely to receive neoadjuvant therapy (over adjuvant therapy) (OR 2.54, 95%CI 1.84-3.53). We performed propensity score matching comparing patients diagnosed only after 2017 to compare outcomes of patients who received neoadjuvant immunotherapy vs. surgery alone in a 4:1 manner. Patients treated with neoadjuvant immunotherapy had improved OS vs. surgery alone (Adjusted HR 0.568 (0.426-0.759)). **CONCLUSIONS:** Immunotherapy in the neoadjuvant and adjuvant setting for HCC is rising, and patients who receive care at academic facilities are more to receive immunotherapy in either a neoadjuvant or adjuvant capacity. In select patients, it appears that neoadjuvant therapy is associated with improved OS versus surgery alone.

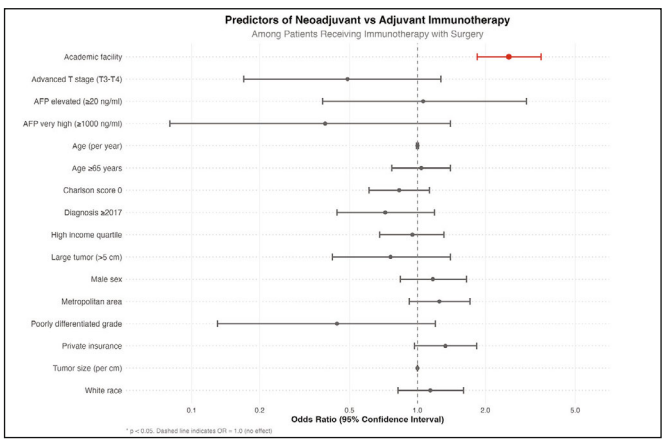

Figure. Predictors of Neoadjuvant Immunotherapy vs. Surgery Alone

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The Landscape of Quality of Life, Exercise and Nutrition Research in Surgical Oncology Clinical Trials: A Topic Modelling Approach

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INTRODUCTION: Recent research has demonstrated survival benefit from structured exercise interventions in colorectal cancer. The degree to which non-pharmaceutical and non-surgical interventions are investigated in the surgical oncology literature is poorly characterized. To explore the evolving research priorities within surgical oncology, we applied topic modeling to clinical trial data to identify and characterize thematic trends, with a focus on quality of life, exercise, and nutrition. **METHODS:** Using a previously validated natural language processing model, we identified 24,345 surgical oncology trials from the National Clinical Trials database. Latent Dirichlet Allocation (LDA) topic modeling was performed, with the optimal number of 26 topics determined using the ldatuning package. Topics were manually reviewed and coded into thematic categories. Trends and study characteristics were compared for the topic "Quality of Life, Exercise, and Nutrition" relative to all other topics. **RESULTS:** A total of 1,094 studies (4.6%) were assigned to the "Quality of Life, Exercise, and Nutrition" topic (Topic QoLEN). The absolute number of registered studies investigating Topic QoLEN has increased from 2 in 2001 to 115 in 2023. The proportion of Topic QoLEN within surgical oncology trials relative to all other topics has steadily increased from 1.3% in 2002 to 5.9% in 2023. Compared with other topics, these studies were significantly more likely to be interventional, prospective, randomized, and single center ($p < 0.05$). A network analysis identified close relationship of Topic QoLEN to Topic Surgical Techniques and Topic Peri-operative Care. **CONCLUSIONS:** Topic modeling reveals that research on QoLEN is an established domain within surgical oncology. QoLEN appears well integrated into surgery-based trials but is lacking in other topic domains such as Systemic Therapy and Radiation Therapy. Given recent evidence of benefit, integration of structured exercise and quality of life measures across surgical oncology trials should be prioritized.

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Location Specific Cumulative Incidence of Recurrence Across Esophageal and GEJ Adenocarcinoma

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INTRODUCTION: Esophageal and gastroesophageal junction (E/GEJ) adenocarcinoma is associated with poor survival and high recurrence rates after curative intent resection. We performed an analysis of E and GEJ (Type I and II) recurrences after esophagectomy at a single institution. **METHODS:** A prospectively maintained database of patients with E/GEJ adenocarcinoma undergoing esophagectomy at our institution by two high-volume surgical oncologists was reviewed. Tumor location was defined by Siewert classification. Overall survival (OS) was analyzed using the Kaplan–Meier (KM) method, and time to recurrence using cumulative incidence functions (CIF) with Gray's test. Multivariable analysis used a Fine–Gray model, treating death as a competing risk. **RESULTS:** From January 2012 - June 2024, 377 patients were identified. Median follow-up was 70 months. Among 377 patients, there were 173 Type I, 163 Type II, and 41 distal esophageal (DE) tumors. Two-hundred seventy-five (73%) received chemoradiation, 32 (8%) chemotherapy only, 22 (6%) received sequential chemotherapy and chemoradiation, and 48 (13%) received no neoadjuvant therapy. There were 161 (43%) recurrences and 49 (13%) deaths. Five-year OS was 57% for Type II, 43% for Type 1, and 39% for DE tumors. Median time-to-recurrence (CIF) was 2141 days, not reached, and 1043 days for Siewert type I, II and DE respectively. The 1-, 3-, and 5-year cumulative incidence of recurrence (CIR) was 26%, 44% and 50% for Type I; 20%, 34%, and 39% for Type II; and 39%, 52%, and 52% for DE (p=0.035). In multivariable regression analysis, compared to Type I, Type II had a lower risk of recurrence (HR = 0.66; 95% CI 0.45-0.95), while DE was similar (HR =0.97; 95% CI 0.50-1.87). CIR was similar when stratified by site (locoregional, distant, or both; p=0.59). Of the 339 patients with available pathologic complete response (pCR) data, 72 (21%) had a pCR. The 5-year OS was 55% for pCR compared to 41% for non-pCR patients (p=0.013). CIR at 5-years was 38% for patients with pCR compared to 52% for non-pCR patients (p=0.017) (Figure 1). **CONCLUSIONS:** In this single institutional retrospective analysis, the risk of recurrence for patients with E/GEJ adenocarcinoma was lowest in those with Type II tumors and with pCR after neoadjuvant chemoradiation.

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Breast Cancer Diagnosis, Management, and Outcomes in a Tertiary-Care Center in Lebanon

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INTRODUCTION: Breast cancer is the most prevalent malignancy among women worldwide, with a notable burden in the WHO Eastern Mediterranean Region (EMRO). In 2022, the median age at diagnosis for female breast cancer in the USA was 62 years, while the median age in Arab nations was significantly lower at 45.4 years. This study aims to analyze the demographics, diagnostic modalities, and management of breast cancer in Lebanon, where the age-standardized incidence is the highest in the EMRO region. **METHODS:** A retrospective chart review was conducted, including patients diagnosed with biopsy-proven non-metastatic breast cancer between January 2010 and December 2016. Eligible participants were females aged over 18 years with confirmed non-metastatic disease who received comprehensive treatment at the study institution. Data were collected on clinicopathological characteristics, diagnostic imaging modalities, types of surgery, and oncologic outcomes. Statistical analysis was performed using SPSS version 23, with a significance level set at $P < 0.05$. **RESULTS:** A total of 750 women were included. The median age at diagnosis was 50 years (range: 26-88), with a median BMI of 26.71 kg/m². Most patients presented with early-stage breast cancer (Stage I: 34.6%, Stage II: 48.1%, Stage III: 17.3%). Invasive ductal carcinoma was the most prevalent histological type (88.3%). Diagnostic imaging was primarily via ultrasound (91.6%) and mammography (94.6%), with core needle biopsy being utilized in 93.4% of cases. Treatment included neoadjuvant chemotherapy (26.6%) and adjuvant chemotherapy (60.2%), with 76.9% receiving radiotherapy. The five-year overall survival (OS) rate was 97.3%, and disease-free survival (DFS) was 92.9%. Notably, stage III disease was significantly associated with lower OS rates (92.6%) compared to earlier stages (Stage I: 98.8%, Stage II: 98%) (P=0.002). Neoadjuvant chemotherapy was linked to improved survival outcomes (OR = 0.034, p = 0.005), while axillary involvement and tumor grade were significant predictors of OS and DFS. **CONCLUSIONS:** NCT is an effective approach for managing invasive breast cancer, offering a viable strategy for reducing residual disease prior to surgery. The study emphasizes the importance of patient characteristics, such as age and nodal involvement, in predicting treatment response. These insights contribute to optimizing treatment plans and improving patient outcomes in breast cancer care.

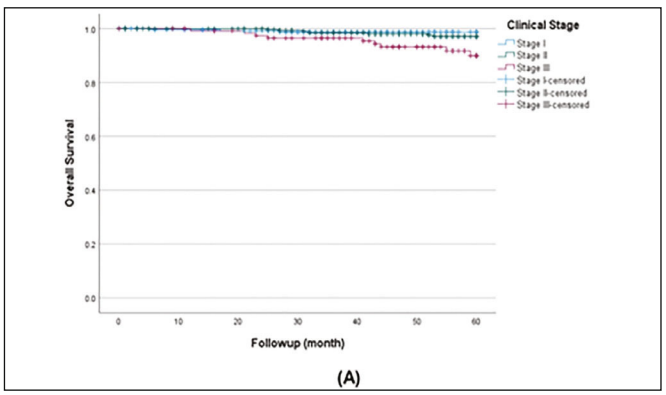

Figure 2: Comparison of Overall Survival according to different classifications (A) Comparison of overall survival of patients classified according to clinical staging. Survival was significantly worse in patient presenting with stage 3(7.43%) (P=0.02) (B) Comparison of overall survival of patients classified according to Molecular subtypes. There was no significant difference in survival rates among patients with various molecular subtypes.

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Cytoreductive Surgery with Hyperthermic Intraperitoneal Chemotherapy is a Cost-effective Treatment for Colorectal Cancer with Peritoneal Metastases

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INTRODUCTION: Cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS-HIPEC) is often performed for colorectal cancer with peritoneal metastases (CRC-PM), either before or after systemic therapy. We investigated the cost-effectiveness of CRS-HIPEC for treating CRC-PM by comparing total hospital charges to the estimated median survival for various treatment modalities. **METHODS:** Using the 2022 National Cancer Database, we identified cases of CRC-PM from 2017-2022. Cases with bone, brain, liver, or lung metastases were excluded. We then created a survival model for the following cohorts to estimate median survival (MS): CRS-HIPEC, systemic therapy only (SO), and no treatment (NT). The model was adjusted for age, sex, race, type of health insurance, and Charlson Deyo score. CRS-HIPEC and systemic therapy were treated as time-varying covariates, with patients simulated to initiate their respective treatments at the same starting time. The effects of CRS-HIPEC and systemic therapy are time-variable, allowing these effects to change at 1 year after treatment. Financial data from a single quaternary medical center were used to estimate the charges for CRS-HIPEC and SO. The cost of survival for each modality was calculated by dividing total charge for that treatment by median survival in months. Charges for systemic therapy were estimated based upon a standard of 12 cycles of 5-fluorouracil, folinic acid, oxaliplatin, irinotecan, and bevacizumab. **RESULTS:** A total of 8754 cases of CRC-PM were identified and included in the analysis. The cohort was predominantly female (n=4747, 54%) and Caucasian (n=7023, 80%). 625 patients underwent CRS-HIPEC (7%), of which 618 (99%) also received systemic therapy; 5443 received SO (62%); 2068 received NT (30%). When compared to NT (MS 15.6 months), the hazard ratios at 1-year post-diagnosis for HIPEC were 0.27 (95% CI 0.18-0.38; MS 54.3 months) and 0.66 for SO (95% CI 0.60-0.72, MS 19.1 months). The median charge of hospital admission for CRS-HIPEC was $187,766. The mean charge for one cycle of systemic therapy was $15,600. The expected total charges for treatment with CRS-HIPEC and systemic therapy was $374,966 and for SO was $187,200. Charges for treatment per month of survival was estimated to be $6,905/ for CRS-HIPEC and $9,801 for SO. **CONCLUSIONS:** These results highlight the role of HIPEC for CRC-PM from a cost-effectiveness perspective. Our data suggest HIPEC is more cost-effective per month of survival than SO and provides favorable value-based outcomes.

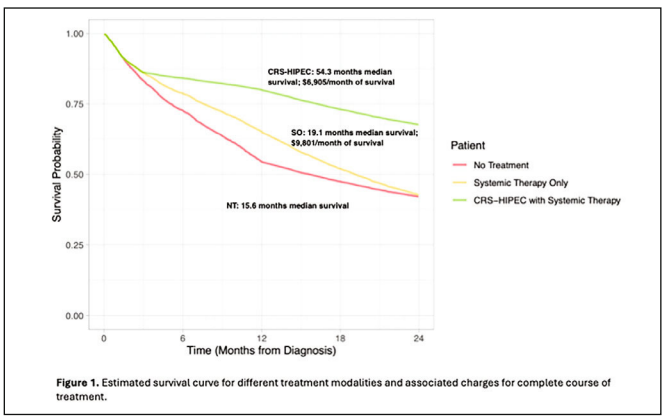

Figure. Survival Model: Two-Year Survival Curve for Representative Average Patients

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Spatial Transcriptomic Profiling of Solid Pseudopapillary Neoplasms of the Pancreas Identifies Distinct Cellular Programs

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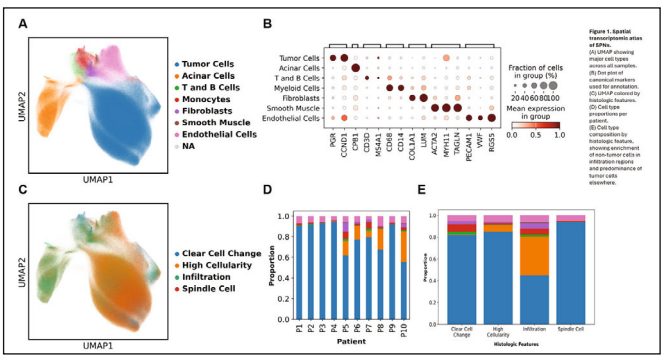
University; Michael Longaker, MD, Department of Surgery, Stanford University; Daniel Delitto, MD, PhD, Department of Surgery, Stanford University

INTRODUCTION: Solid pseudopapillary neoplasms (SPNs) of the pancreas are rare, low-grade tumors that typically affect young women and occasionally recur or metastasize. While the histological features and mutational profile of SPNs are well documented, the spatial organization of SPNs remains incompletely understood. The purpose of this study was to delineate the spatial transcriptomic landscape of SPNs. **METHODS:** Regions of interest (ROIs) from 10 surgically resected SPN specimens collected between 2020 and 2025 were profiled using the G4X Singular Spatial Transcriptomic Platform. Gene expression data were integrated and analyzed to generate spatial embeddings, followed by unsupervised clustering. Cell types were annotated using canonical immunohistochemical and transcriptional markers. **RESULTS:** Spatial transcriptomic profiling was performed on 30 sections of SPNs from 10 patients, yielding 3.6 million high quality cells. The cohort consisted entirely of females with a median age 31.5 years. Integrated analyses revealed heterogenous tumor microenvironment across all samples, comprised of various types of cells including acinar cells, T cells, myeloid cells, fibroblasts, smooth muscle cells, endothelial cells and tumor cells. Across all patients, tumor cells were the most predominant cell type, with several subtypes with distinct biological programs that correlated with unique and heterogenous spatial organization patterns. The spatial morphologies included areas with canonical spindle cell morphology, areas comprised of high cellularity, along with more atypical areas with clear cell change and infiltrative morphologies, reflective of the heterogenous biology and pathophysiology driving SPNs. **CONCLUSIONS:** We present the first spatial transcriptomic analysis of SPNs of the pancreas, establishing a high-resolution atlas of their cellular and spatial architecture. These data provide a foundation for identifying tumor-specific markers and offer new insights into SPN tumor biology.



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Validation of Memorial Sloan Kettering nomogram in a modern cohort of patients with synovial sarcoma

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INTRODUCTION: While surgical resection is the mainstay of treatment in patients with synovial sarcoma, perioperative chemotherapy is considered in high-risk cases. Nomograms, such as the MSK synovial sarcoma nomogram developed in 2006, may guide treatment decisions by predicting patient survival. We sought to validate the MSK synovial sarcoma nomogram and characterize the effect of systemic treatment on risk-prediction and survival. **METHODS:** We analyzed data from a single-institution prospectively maintained sarcoma database for patients with synovial sarcoma who underwent curative intent surgery between 2006-2025. Patients were split into two groups, those untreated with perioperative chemotherapy and those treated with perioperative chemotherapy. Kaplan-Meier analysis was used to characterize disease specific survival (DSS), and C-index by Uno and calibration plots were used to evaluate nomogram performance. **RESULTS:** A total of 143 patients met inclusion criteria; 75 were untreated with perioperative chemotherapy, and 68 were treated. In those untreated with perioperative chemotherapy, the median tumor size was 4cm, with 60% in the lower extremity, 92% deep, and 32% biphasic. In those treated with perioperative chemotherapy, the median tumor size was 8cm, with 79% in the lower extremity, 99% deep, and 44% biphasic. The most common chemotherapy regimen used was AIM in 96% of patients. Median follow-up in both groups was 6.2 years. DSS was 93% (95% CI 86%-100%) in the untreated group and 78% (95% CI 67%-90%) in the treated group. C-index was 80% at 5-years for the untreated group and 67% at 5-years for the treated group. Calibration plots demonstrated that the actual DSS at 5-years was higher than predicted by the nomogram for both groups (Figure 1). **CONCLUSIONS:** The MSK nomogram was designed for use in untreated patients and continues to have excellent C-index in this context. Assessment of calibration reveals that survival in both the untreated and treated groups is better than predicted, potentially due to improvements in care in the intervening 20 years since the nomogram was developed. The overestimation of risk is most notable in those receiving perioperative chemotherapy, perhaps due to the effects of perioperative treatment itself.

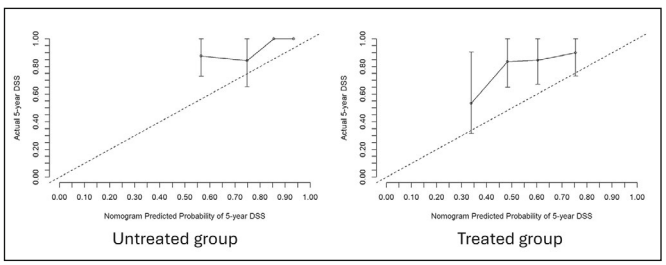

Figure 1. Calibration plots of the MSK nomogram for synovial sarcoma patients untreated with perioperative chemotherapy (left) and treated with perioperative chemotherapy (right).

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Characterization of axillary lymph node associated vessels and presence of metastases in breast cancer

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INTRODUCTION: We have previously shown that aberrancies in human tumor-associated vessels significantly correlated with worse outcomes, including response to neoadjuvant chemotherapy (NCT) and disease-specific survival. In this study, our goal was to characterize the vessels of axillary lymph nodes (LN) among patients with breast cancer undergoing nodal surgery. We hypothesized that aberrancies among LN vessels would be associated with LN positivity and response to NCT. **METHODS:** Subjects were enrolled in our ongoing human intravital microscopy (HIVM) trial for solid tumors (NCT03823144). We used an ultra-high definition confocal laser endomicroscopy device (Cellvizio System, Mauna Kea Technologies) to obtain the HIVM observations during axillary surgery (SNB or ALND). LN vessel characteristics were measured and analyzed with respect to nodal positivity and response to NCT. Vessels within the axillary fat at least 5 cm away from a LN were used as controls. **RESULTS:** At the time of abstract submission, a total of 16 subjects with breast cancer have been included. Cohort characteristics are shown in Table 1. Statistically significant differences in LN vessel characteristics were demonstrated between positive and negative LN with regards to increased tumor vessel non-functionality (directly observed by the absence of blood flow, 85.6% vs 52.7%) and tumor vessel density (identified by previously accepted structural aberrancies, 0.54 vs 0.31) [p< 0.01]. Qualitatively, clinically positive nodes that were treated with NCT did show a normalization of LN vessel characteristics, but these changes were not statistically significant. For SNB LN vessel characteristics in clinically node negative patients that were pathologically found to be negative or positive, no significant differences were found either. **CONCLUSIONS:** For the first time, we have demonstrated a significant association between LN vessel heterogeneity and nodal positivity, suggesting that similar to primary tumor sites, metastases may also impact the LN-associated vessels. This may have important implications on systemic drug delivery to nodal metastases, which is the

subject of preclinical animal experiments also being performed by our group. Our trial continues to enroll, and we anticipate achieving statistical significance with a higher enrollment of subjects with clinically positive nodes and those receiving NCT.

Table 1

Clinical characteristics	Number (%)
Age (years, mean, std)	60.6 (13.4)
Primary tumor size (cm, mean, std)	2.48 (1.65)
Histology	
Ductal	13 (81)
Lobular	3 (19)
Biomarker subtype	
HR+ HER2-	10 (62)
HR+/- HER2+	4 (25)
Triple negative	2 (13)
Clinically node status	
Positive and surgery first (no NCT, received ALND)	2 (13)
Positive and NCT first	3 (19)
Negative and NCT first (based on primary)	2 (13)
Sentinel node biopsy among surgery first subjects (n=9)	
Negative	7 (78)
Positive	2 (22)

EP402

Postoperative Ileus after Cytoreductive Surgery and HIPEC: Risk Factors and Mitigation Strategies

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INTRODUCTION: Ileus is common after cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS-HIPEC). However, precise risk factors associated with postoperative ileus in this population are unknown and the use of gastrostomy tube (GT) for gastric decompression in the setting of ileus has not been extensively described. This study was done to determine risk factors for ileus after CRS-HIPEC and the potential benefit and safety of GT placement for gastric decompression. **METHODS:** A retrospective study of CRS-HIPEC procedures at UCSD from 2007-2021 was conducted. Student's t-test, chi-squared test, and multivariate logistic regression were performed to determine risk factors associated with postoperative ileus (defined as no flatus or bowel movement by postoperative day seven) and correlate intraoperative GT placement with operative outcomes and other risk factors. Patients with total gastrectomy and/or ostomy creation were excluded. **RESULTS:** Ileus occurred after 81/689 (11.8%) CRS-HIPEC procedures. No modifiable patient risk factors associated with ileus were identified. Patients with primary colorectal cancer, more extensive operations (higher peritoneal cancer index/PCI, OR time, and visceral resections or anastomoses), inpatient complications, and greater postoperative opioid use were more likely to develop ileus (Table). GTs were placed in 461 (66.9%) of CRS-HIPEC cases. Patients with an ileus who had an intraoperatively placed GT had lower rates of postoperative NGT placement (4.5% versus 46.7%, p< 0.001) and a lower rate of emesis (38.3% versus 85.7%, p=0.005). Thirty (6.5%) patients with a GT had a related complication, including six (1.3%) with a serious complication (Clavien-Dindo grade ≥ III). **CONCLUSIONS:** Ileus is common after CRS-HIPEC, and risk factors are largely non-modifiable. Intraoperative GT placement reduced the rate of postoperative NGT placement and emesis in those with ileus, and had a low complication rate. Thus, GTs may be a useful strategy for gastric decompression in patients at risk for developing postoperative ileus after CRS-HIPEC.

Table 1. Patient and Operative Characteristics

Patient variables	All CRS-HIPEC Procedures (n = 689) n (%) or median (range)	No ileus (n = 608)	Ileus (n = 81)	p-value
Age	55.1 (20.1-86.1)	54.9 (20.1-86.1)	56.2 (20.8-81.1)	0.652[1]
Gender				0.403[2]
Male	292 (42.4)	254 (41.8)	38 (46.9)	
Female	397 (57.6)	354 (58.2)	43 (53.1)	
Race				0.849[2]
Caucasian	304 (67.6)	273 (67.4)	31 (68.9)	
Hispanic	76 (19.2)	67 (16.5)	9 (20)	
African American	12 (2.7)	11 (2.7)	1 (2.2)	
Asian	39 (8.7)	37 (9.1)	2 (4.4)	
Other	19 (4.2)	17 (4.2)	2 (4.4)	
BMI (kg/m^2)	26.1 (15.6-55.6)	26.3 (15.6-55.6)	25.3 (16.4-42.5)	0.208[1]
Prior CRS-HIPEC	40 (5.9)	33 (5.5)	7 (8.6)	0.309[2]
Primary site				
Appendix	439 (63.6)	392 (64.5)	47 (58)	0.270[2]
Colon/rectum	130 (18.9)	105 (17.3)	25 (30.9)	**0.006**[2]
Ovary	33 (4.8)	29 (4.8)	4 (4.9)	1.000$_2$
Peritoneum (mesothelioma)	60 (8.7)	57 (9.4)	3 (3.7)	0.096[2]
Small bowel	9 (1.3)	9 (1.5)	0	0.609[2]
Gastric*	3 (0.04)	3 (0.5)	0	1.000[2]
Other	13 (1.9)	11 (1.8)	2 (2.5)	0.658[2]
Unknown	2 (0.3)	2 (0.3)	0	1.000[2]
PCI	13 (0-36)	13 (0-36)	15 (3-35)	**< 0.001**[1]
EBL (cc)	160 (0-3000)	150 (0-2400)	250 (50-3000)	**0.096**[1]
Operative time (min)	423 (194-951)	409.5 (194-951)	481 (236-935)	**< 0.001**[1]
Nu. Viscera resected	2 (0-10)	2 (0-10)	2 (0-5)	**< 0.001**[1]
Nu. Anastomoses	1 (0-6)	0 (0-6)	1 (0-3)	**< 0.001**[1]
Inpatient serious complication**	62 (9)	46 (7.6)	16 (19.8)	**0.001**[2]
60-day readmission	95 (14.5)	82 (14.1)	13 (17.8)	0.38[2]
Epidural placed***	415 (90)	363 (90.1)	52 (89.7)	0.819[2]
Opioids (mg MEQ/day)	21.0 (1.5-284.5)	20.8 (1.5-284.5)	29.2 (4.3-98.5)	**0.017**[1]

[1]Student's t-test
[2]Chi-square test
*excluding patients with total gastrectomy
**Clavien-Dindo grade ≥ III
***data available for 463 patients
BMI body mass index, *PCI* peritoneal carcinomatosis index, *EBL* estimated blood loss, *MEQ* morphine equivalent

EP403

Comparison of survival and recurrence outcomes among breast cancer patients: breast-conserving surgery versus medically necessary mastectomy and patient preference mastectomy

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INTRODUCTION: Global mastectomy rates for breast cancer have risen over the past decade for unclear reasons. Patients may perceive mastectomy to improve survival and reduce recurrence risk, despite trials showing breast conserving surgery (BCS) with radiation offers equivalent or superior survival for early breast cancer. Although international guidelines support both BCS with radiation and mastectomy, emerging evidence favoring BCS challenges the routine practice of offering both equally. Currently, there is no comparative data assessing survival and recurrence outcomes across BCS, medically necessary mastectomy (Mast-MN), and patient preference mastectomy (Mast-PP). This study compared breast cancer-specific survival (BCSS), overall survival (OS), local recurrence (LR), and regional recurrence (RR) between these surgical approaches. **METHODS:** Patients who underwent surgery for stage pT1-3pN0-3 breast cancer at our provincial referral center from 2012–2018 were identified from a prospectively maintained database. Exclusions were for stage 4 disease, synchronous breast cancers, neoadjuvant therapy, or BCS without adjuvant radiation. Mastectomy indication was coded preoperatively by the consulting surgeon: Mast-MN for contraindications to BCS, and Mast-PP for patient preference when BCS was feasible. To account for our provincial cancer centre's post-mastectomy radiation guidelines, analyses were stratified by nodal status. BCSS was assessed using a cause-specific hazard model, OS with a Cox proportional hazards model, and LR/RR using a Fine-

Gray competing risk model, controlling for age, T stage, receptor status, grade, lymphovascular invasion, adjuvant hormone and chemotherapy, and axillary dissection. **RESULTS:** Among 1468 node negative patients, 986 underwent BCS, 275 Mast-MN, and 207 Mast-PP. There was no significant difference in BCSS or LR between Mast-PP and BCS, however Mast-PP was associated with significantly worse OS (HR = 2.03, 95% CI: 1.29 –3.20, p=0.02) and greater risk of regional recurrence (HR = 39.7, 95% CI: 4.95–318, p = 0.001) compared to BCS. Among 628 node positive patients, 354 underwent BCS, 207 Mast-MN, and 67 Mast-PP. There was no significant difference in BCSS, OS, LR, or RR between Mast-PP and BCS in these patients. **CONCLUSIONS:** Mast-PP does not appear to confer a survival or recurrence advantage compared to BCS with radiation. In fact, for node negative patients, Mast-PP may have higher risk of regional recurrence compared to BCS, likely due to omission of adjuvant radiation.

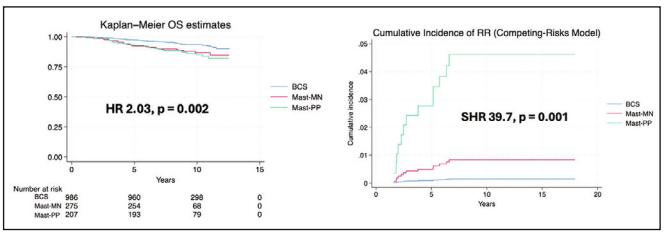

Figure 1: Kaplan-Meier curve for overall survival and cumulative incidence curve for regional recurrence in node negative patients comparing breast-conserving surgery and patient preference mastectomy

EP404

Augmented Reality–Based 3D Modeling for Sentinel Lymph Node Localization in Cutaneous Melanoma: A Pilot Study

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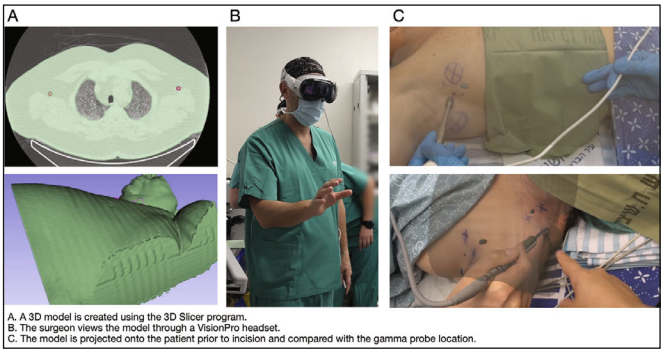
INTRODUCTION: Sentinel lymph node biopsy (SLNB) is the standard for staging high-risk cutaneous melanoma, guided by lymphoscintigraphy and intraoperative gamma probe. These methods provide limited spatial orientation. Augmented reality using patient-specific 3D models (AR3D) from preoperative imaging have the potential to enhance localization, yet its use in SLNB had been scarcely studied. This pilot study aimed to evaluate the feasibility and accuracy of AR-projected 3D models compared with gamma probe detection. **METHODS:** In this prospective study, 10 melanoma patients undergoing SLNB at Sheba Medical Center had preoperative SPECT/CT imaging segmented in 3D Slicer to generate patient-specific 3D models. Models were projected onto the patient via Apple Vision Pro before incision. Localization accuracy was measured as the deviation (mm) between AR3D-identified and gamma probe–identified sentinel lymph node positions. **RESULTS:** Ten patients were enrolled in this pilot study. The median age was 71 years (range 30–77). Primary tumor sites included upper limb (n=5), trunk (n=3), and Lower Limb (n=2). The median Breslow thickness was 1.1 mm (range 0.8–24 mm), with ulceration in 2 cases. Model generation was successful in all patients, with each model projected onto the patient using the AR headset and evaluated by the surgeon prior to incision. The median deviation between AR3D model and the gamma probe localization was 12 mm (range 0–40 mm), with 43% of cases ≤10 mm. No AR-related complications occurred. **CONCLUSIONS:** AR-based 3D modelling was feasible and safe for SLNB localization in melanoma. Although accuracy varied, in nearly half of the cases, AR3D model was within 10 mm of the gamma probe detection. These preliminary results supported further refinement of the technique and evaluation in larger, multicenter trials.



A. A 3D model is created using the 3D Slicer program.
B. The surgeon views the model through a VisionPro headset.
C. The model is projected onto the patient prior to incision and compared with the gamma probe location.

EP405

Patterns in tumor tissue procurement selection for tumor infiltrating lymphocyte cell therapy in the United States

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INTRODUCTION: Patients with metastatic melanoma who have progressed despite systemic therapy are eligible for autologous tumor infiltrating lymphocyte (TIL) cell therapy. This treatment requires surgical tumor tissue procurement (TTP) of at least 1.5cm2 of viable tissue followed by TIL product preparation and subsequent infusion. The factors surgeons use to select TTP has not been systematically evaluated. The aim of the TIL TTP Working Group, a multi-institutional collaborative, is to optimize TIL TTP success. This study reports patterns in TTP selection. **METHODS:** All patients who underwent TTP at a TIL TTP Working Group center were included after local IRB approval. Clinical, oncologic, peri-operative, and outcome variables were collected. Outcomes were TTP site, approach, and rationale for site selection. Descriptive statistics were used to summarize results. **RESULTS:** In total, 102 patients from six institutions underwent TTP following a median of three lines of prior systemic therapy. Eleven patients (10.8%) had prior local therapy to the donor site (radiation: 7/102, 6.9%; T-VEC: 3/102, 2.9%, ablation: 1/102, 1%). At the time of TTP, most patients had both nodal disease (77/102, 77%; neck: 22/102, 21.6%; axilla: 26/102, 25.5%; inguinal: 25/102, 24.5%) and solid organ metastasis (75/102, 73.5%; lung: 51/102, 50%, liver: 33/102, 32.4%). Many patients had a history of bone (31/102, 30.7%) or brain (21/102, 20.8%) metastasis. Patients most commonly underwent TTP from a single tissue type (95/102, 93.1%), most often from lymph nodes (42/102, 41.2%) followed by

skin/subcutaneous/soft tissue (37/102, 36.3%). When performing TTP from lymph nodes, surgeons procured from various nodal basins (inguinal: 14/42, 33.3%, neck: 10/42, 23.8%, axilla: 10/42, 23.8%), and most commonly selected a single node from one basin (29/42, 69.0%). TTP from visceral organs alone was less common (16/102, 15.7%; lung: 6/16, 37.5%, liver: 3/16, 18.8%). More than half of the patients who underwent intraabdominal TTP had a minimally invasive approach (14/27, 51.9%). When choosing a TTP donor site, surgeons aimed to minimize surgical morbidity and maximize tumor accessibility. Recent growth and lack of prior local therapy to the donor site also influenced site selection. **CONCLUSIONS:** In this real-world experience from the TIL TTP Working Group, surgeons prioritized low surgical morbidity, donor site growth, and lack of prior local therapy when identifying a TTP donor site, often selecting soft tissue metastasis or lymph nodes from a single basin.

Patterns in TTP selection for TIL therapy	
Characteristic	**N = 102**
Number of lines of prior systemic therapy (Median, IQR)	3.00 (2.00, 4.00)
Local therapy to the donor site	11 (10.8%)
Radiation	7 (6.9)
T-VEC	3 (2.9%)
Ablation	1 (1.0%)
Metastasis present at TTP	
Nodal metastasis	77 (77.0%)
Neck	22 (21.6%)
Axilla	26 (25.2%)
Inguinal	25 (24.5%)
Solid organ metastasis	75 (73.5%)
Liver	33 (32.4%)
Lung	51 (50.0%)
Brain metastasis	21 (20.8%)
Bone metastasis	31 (30.7%)
Surgical Approach	
Superficial incision	65 (63.7%)
Minimally Invasive abdominal	14 (13.7%)
Open abdominal	13 (12.7%)
Video assisted thorascopic surgery	12 (11.8%)
Donor tissue type	
Skin, subcutaneous, soft tissue (SST)	37 (36.3%)
Visceral organ	16 (15.7%)
Lung	6 (37.5%)
Liver	3 (18.8%)
Lymph node	42 (41.2%)
Inguinal	14 (33.3%)
Neck	10 (23.8%)
Axilla	10 (23.8%)
Lymph Node Characteristics	
Single node from one basin	29 (69.0%)
Multiple nodes from one basin	15 (35.7%)
Multiple nodes from multiple basins	4 (9.5%)
Multiple Tissue Types	7 (6.8%)
SST & Lymph node	3 (2.9%)
Lymph node & Solid organ	2 (2%)
SST & Solid organ	1 (1%)
SST, Lymph node, Solid organ	1 (1%)

EP406

Prognostic Impact of Tumor Size in Stage II–III Diffuse-Type Gastric Cancer: Distinct Significance Compared with Intestinal-Type

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INTRODUCTION: Tumor size has been reported as an independent prognostic factor in gastric cancer (GC), but its impact in diffuse-type gastric cancer (DTGC) remains unclear. This study evaluated the prognostic value of tumor size in surgically treated stage II–III GC, with comparison to intestinal-type GC (ITGC). **METHODS:** We retrospectively analyzed 259 patients with stage II–III GC who underwent curative surgery, including 101 with DTGC. Disease-specific survival (DSS) was compared between DTGC and ITGC. Prognostic significance of clinicopathologic factors—sex, age, operative time, blood loss, tumor size, T stage, and lymph node status—was assessed using Kaplan–Meier and Cox regression analyses. **RESULTS:** Kaplan–Meier analysis showed no difference in DSS between DTGC and ITGC (P = 0.9). In univariate Cox regression, T stage was associated with DSS only in ITGC (P = 0.001), while lymph node status was significant in both subtypes (ITGC: P = 0.008; DTGC: P = 0.005). Notably, tumor size was significantly associated with DSS only in DTGC (P = 0.001). In multivariate analysis, tumor size and lymph node status were independent prognostic factors in DTGC (P = 0.008, P = 0.01, respectively), whereas T stage and lymph node status were independent prognostic factors in ITGC (P = 0.001, P = 0.003, respectively). **CONCLUSIONS:** In stage II–III DTGC, tumor size is a more relevant prognostic factor than T stage. These findings suggest that tumor size should be considered in postoperative risk stratification, and that patients with large DTGC tumors warrant particularly careful surveillance.

Table. Univariate and multivariate Cox regression analyses for disease-specific survival in intestinal-type and diffuse-type gastric cancers

Intestinal-type gastric cancer		Univariate			Multivariate		
Variables	Categories	HR	95%CI	P	HR	95%CI	P
Sex	Male vs. Female	0.87	0.432 – 1.776	0.7			
Age	Continuous variable	1.008	0.982 – 1.041	0.4			
Tumor size	Continuous variable (cm)	1.04	0.948 – 1.143	0.3	1.008	0.905 – 1.110	0.8
T stage	T1-3 vs. T4	2.67	1.475 – 4.842	0.001*	2.90	1.579 – 5.347	0.001*
LN metastasis	Negative vs. Positive	3.22	1.155 – 9.022	0.008*	3.65	1.301 – 10.25	0.003*
Operative time	Continuous variable (min)	1.0009	0.997 – 1.003	0.5			
Blood loss	Continuous variable (mL)	1.0004	0.999 – 1.0009	0.1			
Diffuse-type gastric cancer		Univariate			Multivariate		
Sex	Male vs. Female	0.88	0.446 – 1.772	0.7			
Age	Continuous variable	1.01	0.982 – 1.044	0.5			
Tumor size	Continuous variable (cm)	1.15	1.058 – 1.240	0.001*	1.12	1.030 – 1.210	0.008*
T stage	T1-3 vs. T4	1.91	0.963 – 3.810	0.06	1.48	0.737 – 2.979	0.2
LN metastasis	Negative vs. Positive	3.61	1.268 – 10.29	0.005*	3.04	1.056 – 8.750	0.01*
Operative time	Continuous variable (min)	1.001	0.997 – 1.005	0.3			
Blood loss	Continuous variable (mL)	1.0005	0.999 – 1.001	0.08			

LN, Lymph node; *Significant difference at P < 0.05

EP407

Factors associated with delays in breast cancer surgery among patients from neighboring Hawaiian islands treated on Oahu

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INTRODUCTION: Patients with breast cancer from neighboring Hawaiian islands face unique healthcare challenges, including limited access to specialists and geographic isolation. Delays of more than 8 weeks from diagnosis to surgery can negatively impact survival. For patients from neighboring Hawaiian islands who undergo breast cancer surgery on Oahu, time from diagnosis to surgery and

predictors of delay are unknown. **METHODS:** A single-institution retrospective chart review was conducted of breast cancer patients from neighboring Hawaiian islands who underwent upfront surgery on Oahu. Patients were categorized by time from biopsy to surgery (TTS) within or greater than 8 weeks. Demographic and clinical characteristics were evaluated. Chi-squared and Fisher's exact tests were used for categorical analyses. Binary logistic regression was used to adjust for confounding variables. **RESULTS:** A total of 221 breast cancer patients (99.1% female; mean age 62) from neighboring Hawaiian islands treated from 2014–2024 were identified. Most were from the Big Island (n = 121, 54.8%) and 91.9% (n = 203) had early-stage breast cancer (cTis-2/N0). Almost half underwent surgery >8 weeks from time of biopsy (n = 98, 44.3%). The mean TTS was 9.4 weeks (TTS ≤8: 5.4 weeks; TTS >8: 14.4 weeks). Among those with TTS >8 weeks, the mean time from biopsy to consultation was 4.9 weeks. On univariate analysis, TTS >8 weeks was associated with diagnosis in the post-pandemic period compared to during or before the pandemic (41.8% vs. 16.3% vs. 41.8%, p = 0.003), preoperative diagnostic testing (breast MRI or genetic counseling) compared to no testing (79.6% vs. 20.4%, p < 0.001), consultation with plastic surgery compared to no consultation (51.0% vs. 49.0%, p < 0.001), and mastectomy compared to breast-conserving surgery (61.2% vs. 37.8%, p < 0.001). On multivariate analysis, post-pandemic diagnosis (OR: 2.84, 95% CI: 1.15-7.00, p = 0.023), time from biopsy to consultation (OR: 1.32, 95% CI: 1.13-1.56, p < 0.001), and preoperative diagnostic testing (OR: 3.22, 95% CI: 1.27-8.16, p = 0.014) remained as significant predictors of TTS >8 weeks. **CONCLUSIONS:** Nearly half of breast cancer patients from neighboring Hawaiian islands experienced delay in surgery. Streamlining preoperative management could meaningfully shorten the time from biopsy to surgery, improve access to care, and perhaps improve outcomes for this geographically isolated population.

Table 1: Predictors for time to surgery > 8 weeks

	Beta[1]	OR[2]	95% CI[3]	p-value
Predictors of time to surgery > 8 weeks				
Age ≥ 70	-0.11	0.90	0.37, 2.18	.811
Year				**.029***
Pre-pandemic	-	-	-	-
Pandemic	0.01	1.01	0.35, 2.91	.991
Post-pandemic	1.04	2.84	1.15, 7.00	**.023***
Preoperative diagnostics (Breast MRI or genetic counseling)	1.17	3.22	1.27, 8.16	**.014***
Plastic surgery consultation	0.68	1.97	0.76, 5.12	.166
Time to consult	0.28	1.32	1.13, 1.56	**< .001*****
Index Breast Surgery				
Breast conserving surgery	-	-	-	-
Mastectomy	.68	1.98	0.89, 4.43	.096
Constant	-2.62	0.07		**< .001*****

[1]Beta = Coefficient value

[2]OR = Odds Ratio

[3]CI = Confidence interval

Dashes indicate reference levels

EP408

Association of Operative Volume with Oncologic Outcomes after Simultaneous Colorectal Liver Metastasectomy: A Propensity-Score Matched Analysis from the National Cancer Database

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INTRODUCTION: One in three patients diagnosed with colorectal cancer present with synchronous liver metastases. Although simultaneous resection of the primary tumor and colorectal liver metastases (CRLM) can offer a potential cure, it carries substantial postoperative risk, including 90-day mortality up to 13%. This study aims to investigate the variation in outcomes after simultaneous liver metastasectomy by hospital volume. **METHODS:** This is a retrospective cohort study of patients from the National Cancer Database that underwent simultaneous CRLM resection with their primary colorectal cancer from 2016 to 2022. Hospitals reporting cases for ≥2 years were categorized into high- (HVC, ≥4 cases/year), medium- (MVC, 2-3 cases/year) and low-volume (LVC, < 2 cases/year) centers using inflection points derived from cubic spline modeling of 90-day mortality rates. Propensity score matching and multivariable regression analysis were used to evaluate the association between annual simultaneous CRLM resection volume with postoperative and oncologic outcomes. **RESULTS:** Of 7,837 patients, 29.4%, 38.2%, and 32.4% underwent surgery at HVC, MVC, and LVC, respectively. At HVC (compared to MVC and LVC), patients were younger (median years [IQR]: 57 [48-67]; 61 [51-70]; 63 [53-72], p< 0.001) and had fewer comorbidities (Charlson-Deyo Score 2+: 7.0%, 8.5%, 10.5%, p< 0.001). Patients at HVC had fewer poorly differentiated primary tumors (13.6%, 16.2%, 20.9%, p< 0.001) with more clinical stage T3-T4 (87.4%, 85.0%, 82.4%, p=0.016). More patients at HVC received neoadjuvant chemotherapy (33.3%, 19.7%, 10.8%, p< 0.001) and were less likely to have minimally invasive surgery (35.2%, 49.1%, 47.7%, p< 0.001). Although the median length of stay was similarly 6 days across all groups, patients treated at HVC had lower rates of 30-day readmission (5.8%, 6.9%, 7.5%, p=0.013). Patients treated at HVC had fewer positive margins (9.4%, 13.2%, 16.0%, p< 0.001) and less 90-day mortality from surgery (3.6%, 7.6%, 12.6%, p< 0.001). After a median follow up of 27.9 months, patients at HVC had longer median overall survival after controlling for covariates (p< 0.005, Figure). **CONCLUSIONS:** Patients undergoing simultaneous CRLM resection at HVC had better postoperative and oncologic outcomes possibly related to selecting younger patients for surgery after neoadjuvant chemotherapy. Future work will evaluate differences in patient selection strategies and surgical approaches between high and low-volume centers.

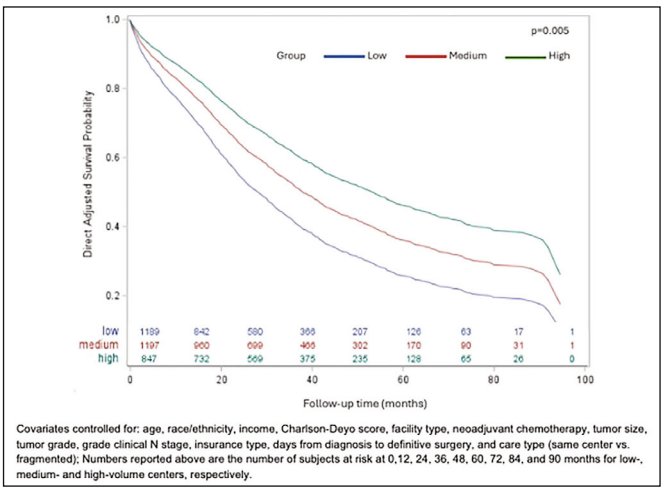

Figure. Overall Survival after Simultaneous Colorectal Liver Metastasectomy by Annual Institutional Volume

EP409

Defining postpartum breast cancer based on 21 gene recurrence score

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INTRODUCTION: Postpartum breast cancer (PPBC), arising during breast involution following childbirth and lactation, is associated with worse outcomes in young women with breast cancer (YWBC). Definitions of PPBC vary, ranging breast cancer (BC) diagnosed from 0-5 years postpartum (pp) to up to 10 years pp. Recent studies show PPBC has distinct transcriptomic profiles and elevated 21-gene recurrence score (RS) compared to nulliparous BC. We aimed to refine the temporal definition of PPBC by assessing whether RS elevation is concentrated within specific time intervals of pp BC diagnosis. **METHODS:** We identified patients (pts) aged ≤45 years with hormone receptor (HR)-positive, HER2-negative BC who underwent RS testing at a single academic cancer center between 2011 and 2024. Pts were classified as nulliparous, ≤10 years pp—further stratified by year since childbirth, or >10 years pp at BC diagnosis. Pts diagnosed during pregnancy or with incomplete reproductive data were excluded. Descriptive statistics characterized cohort distributions. Linear regression compared mean RS, and ordinal logistic regression evaluated odds of higher RS categories (0-15, 16-25, >25), adjusting for age and nodal stage. Invasive disease-free survival (IDFS) was evaluated using Kaplan-Meier analysis. **RESULTS:** We identified 385 pts with HR+/HER2- BC: nulliparous (n=153), ≤10 years pp (n=170), and >10 years pp (n=62). RS was significantly higher by 13.1 points in the ≤1 year pp group (p< 0.001) compared to nulliparous pts, with a trend toward a 4.5 point increase up to 3 years pp (p=0.10). BC diagnosed within 3 years pp showed a mean RS increase of 6.44 (p< 0.001) and 2.83-fold higher odds of being in a higher RS category (p=0.001) compared to nulliparous pts. Extending the window of PPBC diagnosis up to 5 years pp attenuated the effect (mean RS +4.38, p< 0.001; OR=2.23, p=0.002). After a median follow-up of 49 months, there was a trend towards lower probability of IDFS in the 0-3 year pp cohort compared with nulliparous pts (HR=1.95, p=0.23). **CONCLUSIONS:** While PPBC is often defined as 0-5 or up to 10 years pp, our year-by-year analysis shows RS is highest in the first-year pp, with clinically meaningful increases up to 3 years. The period of greatest recurrence risk appears concentrated within 0-3 years pp, supporting a narrower definition of PPBC. This refinement may improve understanding of PPBC in YWBC and guide treatment escalation and risk stratification.

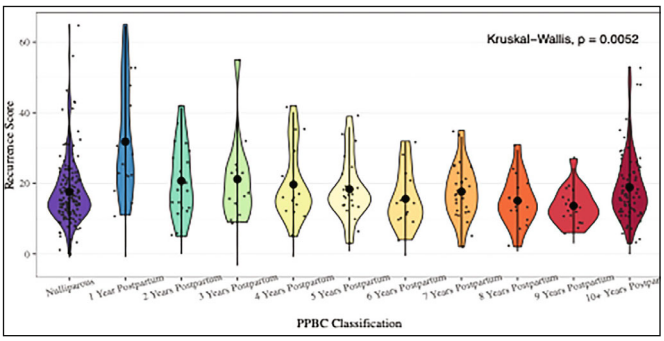

Figure. Recurrence score by year postpartum

EP410

Stage-specific factors may inform strategies for improving cervical cancer survival

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INTRODUCTION: Improving cervical cancer survival requires understanding how prognostic factors shift across disease stages. We aimed to evaluate stage-specific determinants of survival among surgically treated patients. **METHODS:** We conducted a retrospective cohort study of women with surgically treated cervical cancer using the National Cancer Database (2004–2020). Clinical and pathologic stage variables were harmonized to FIGO 2018 definitions, and sub-stages were collapsed into FIGO I–IV groups. Survival was categorized as 0–2, 2–5, or >5 years based on months to last contact or death, without censoring. Ordinal logistic regression modeled the odds of belonging to a higher survival category, reporting adjusted odds ratios (aORs) after adjusting for demographic, socioeconomic, tumor, and treatment factors. **RESULTS:** Of 75,905 patients, 38% had stage I (n = 28,837), 4% stage II (n = 3,034), 54% stage III (n = 40,957), and 4% stage IV (n = 3,077) disease. In early disease (stage I), lower survival was associated with Asian/Pacific Islander race (aOR 0.29, p< 0.05), Medicare insurance (aOR 0.52, p< 0.05), and longer diagnosis-to-surgery intervals (aOR 0.98, p< 0.05), whereas treatment at academic centers improved survival (aOR 1.92, p< 0.05). By stage II, biologic factors such as absence of lymphovascular invasion improved survival (aOR 1.98, p< 0.05). In stage III, poorer survival was linked to older age (aOR 0.98, p< 0.001), Black race (aOR 0.65, p< 0.05), Mexican ethnicity (aOR 0.53, p< 0.05) and sarcoma or squamous histologies (aOR 0.66, p< 0.05; aOR 0.75, p< 0.05), while negative margins (aOR 1.28, p< 0.05), absence of lymphovascular invasion (aOR 1.40, p< 0.001), and treatment at comprehensive community (aOR 1.33, p< 0.05) or academic programs (aOR 1.75, p< 0.001) improved outcomes. In stage IV, higher comorbidity burden (aOR 0.51, p< 0.05) and treatment outside the Pacific region were associated with lower survival, whereas greater number of lymph nodes harvested (aOR 1.02, p< 0.05) remained associated with better survival. **CONCLUSIONS:** Determinants of cervical cancer survival evolve with disease progression: sociodemographic and access factors drive early outcomes, while tumor biology and treatment quality dominate advanced stages. Addressing treatment logistics, ensuring access to specialized care, and improving surgical and pathologic evaluation may reduce disparities and identify patterns that can guide equitable, outcome-driven care.

EP411

Impact of the COVID-19 pandemic on existing racial disparities in rectal cancer: a difference-in-differences analysis

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INTRODUCTION: Cancer care was disrupted by the COVID-19 pandemic, particularly for socioeconomically vulnerable populations. This study aimed to establish whether the pandemic exacerbated existing racial disparities for rectal cancer patients. **METHODS:** This is a retrospective cohort study including Non-Hispanic White (NHW), Non-Hispanic Black (NHB) and Hispanic adult patients from the National Cancer Database diagnosed with rectal adenocarcinoma pre-COVID (2017-2019) or post-COVID (2020-2022). Outcomes of interest were metastatic disease at presentation, time to initial treatment, receipt of surgery among non-metastatic cases, receipt of neoadjuvant chemoradiation among locally advanced cases and overall survival. Difference-in-differences regression models were used to evaluate the association between the pandemic and racial disparities for these outcomes. Parallel trends assumptions were verified by visual inspection of trendlines. **RESULTS:** 91,492 patients were included. Median age was 62 (IQR: 53 – 71) and 38.0% were female (n = 34,788). The majority were NHW (81.3%, n = 74,410), while the rest were NHB (9.7%, n = 8,852) or Hispanic (9.0%, n = 8,230). NHB patients presented more often with metastatic disease, had longer time to treatment initiation, received surgery less often when diagnosed with nonmetastatic disease, underwent neoadjuvant chemoradiation less often when diagnosed with locally advanced disease and experienced worse survival when compared with NHW patients, both pre-COVID and post-COVID (Table). Hispanic patients similarly had longer times to treatment initiation, were less likely to undergo surgery for nonmetastatic disease and less likely to receive neoadjuvant chemoradiation for locally advanced disease when compared with NHW patients, both pre-COVID and post-COVID. However, there was no difference in rates of metastatic disease at presentation between Hispanic and NHW patients pre-COVID, and Hispanic patients had slightly better survival than NHW patients before the pandemic (Table). Difference-in-differences analysis found a small but disproportionate increase in metastatic disease at presentation for Hispanic patients after the pandemic when compared with NHW patients (OR 1.03, 95%CI 1.01 – 1.05). **CONCLUSIONS:** Racial disparities across the spectrum of rectal cancer care were found both before and after the pandemic, which was associated with a disproportionate increase in the number of Hispanic patients presenting with metastatic disease. Longer follow-up may be needed to appreciate the impact of this phenomenon on survival.

	Adjusted probability/mean of outcome** (and associated 95%CI)						Impact of the pandemic on disparity†† (and associated 95%CI)	
	Pre-COVID			Post-COVID				
Outcome	Non-Hispanic White	Non-Hispanic Black	Hispanic	Non-Hispanic White	Non-Hispanic Black	Hispanic	Non-Hispanic Black	Hispanic
Metastatic disease at presentation (%)	24.0% (23.2%, 24.7%)	28.7% (27.3%, 30.2%)*	23.4% (21.9%, 24.9%)	23.1% (22.3%, 23.7%)	29.6% (28.1%, 31.0%)*	25.8% (24.3%, 27.2%)*	1.02 (1.00, 1.04)	**1.03 (1.01, 1.05)***
Time to initial treatment (days)	39.5 (38.8, 40.2)	46.7 (45.3, 48.0)*	48.4 (46.9, 49.8)*	42.3 (41.7, 42.9)	48.4 (47.2, 49.7)*	50.1 (48.8, 51.4)*	-1.22 (-3.0, +0.53)	-1.4 (-3.2, +0.43)
Receipt of surgery‡ (%)							1.00 (0.98, 1.02)	0.99 (0.97, 1.01)
Stage 1	87.0% (85.5%, 88.5%)	79.0% (76.0%, 82.0%)*	81.5% (78.3%, 88.5%)*	84.7% (83.2%, 86.2%)	82.4% (79.4%, 85.4%)	82.0% (78.7%, 85.3%)		
Stage 2	71.0% (69.5%, 72.6%)	65.0% (61.7%, 68.2%)*	69.9% (66.5%, 73.2%)	59.9% (58.0%, 61.7%)	55.8% (52.0%, 59.5%)	56.4% (52.6%, 60.2%)		
Stage 3	74.8% (73.6%, 76.0%)	67.8% (65.6%, 70.0%)*	70.7% (68.4%, 73.0%)*	62.3% (61.0%, 63.6%)	52.5% (50.1%, 55.0%)*	58.0% (55.6%, 60.4%)*		
Receipt of neoadjuvant chemoradiation† (%)	61.8% (60.2%, 62.4%)	54.8% (52.7%, 56.9%)*	58.0% (55.8%, 60.2%)*	50.7% (49.6%, 51.8%)	43.0% (40.9%, 45.2%)*	48.0% (45.8%, 50.1%)*	0.99 (0.96, 1.01)	1.00 (0.97, 1.03)
Overall survival (HR)	-	1.41 (1.34, 1.48)*	0.92 (0.86, 0.98)*	-	1.42 (1.32, 1.52)*	0.94 (0.86, 1.03)	1.00 (0.92, 1.09)	1.01 (0.90, 1.12)

*Significant at p < 0.05 when compared with Non-Hispanic White.

**Adjusted for age, sex, facility type and Charlson-Deyo comorbidity score.

‡Only non-metastatic cases are included in the analysis.

†Only T3+ and/or N1+ cases are included in the analysis.

††For the racial group of interest, when compared with Non-Hispanic White. Presented as odds ratio, mean difference or hazard ratio, as appropriate based on the outcome of interest

HR = Hazard Ratio. 95%CI = 95% Confidence Interval.

Table. Adjusted probabilities/means of outcome and difference-in-difference analysis results for each outcome of interest.

EP412

Socioeconomic and demographic variation in referral limit access to transplantation for patients with cirrhosis and hepatocellular carcinoma in the United States: A national EHR study

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INTRODUCTION: Within SEER, 43% of patients with hepatocellular carcinoma (HCC) are diagnosed within Milan Criteria. Indications for liver transplantation (LT) are expanding with successful downstaging therapy. With a 6-month waiting period prior to transplantation (for meaningful priority on the waitlist), early referral is critical to optimize patient outcomes. We present the first national study of barriers to referral among patients with HCC. **METHODS:** Using Epic Cosmos EHR data, we selected patients with cirrhosis and de novo HCC diagnosis 1/2018 – 9/2024. We estimated the cumulative incidence of referral to a participating Cosmos transplant center, with competing risk of mortality. To understand access to LT referral, we used multilevel modified Poisson regression with state-level intercept, adjusting for age, sex, race, ethnicity, insurance, marital status, rural/urban ZIP code, and social vulnerability index (SVI). **RESULTS:** In 69,738 patients with cirrhosis and newly diagnosed HCC, median age was 65 [IQR: 59, 69]; 73% of patients were white, 75% were male, and 89% were English-speaking. 81% of patients lived in metropolitan areas. Of these, 14.4% were referred for evaluation at any point and 4% were eventually transplanted. When accounting for the competing risk of mortality, the cumulative incidence of referral was 13% at 1-year and 17.5% at 3-years following diagnosis. Patients who were older (age 61-70: 0.81 0.86 0.91, p< 0.001; age 70+: 0.43 0.47 0.51, p< 0.001), Black (0.58 0.63 0.68, p< 0.001), on Medicaid (0.72 0.78 0.85, p< 0.001), never married (0.60 0.64 0.68, p< 0.001), previously married (0.73 0.77 0.82, p< 0.001), widowed/other marital status (0.45 0.54 0.65, p< 0.001), from areas with higher socioeconomic disadvantage (SVI Q2: 0.87 0.93 0.99, p=0.03; Q3: 0.77 0.83 0.89, p< 0.001; Q4: 0.76 0.82 0.87, p< 0.001), or from a small town/rural area (0.83 0.91 1.00, p=0.06) were less likely to be referred. Conversely, patients who were female (1.05 1.11 1.16, p< 0.001), American Indian/Alaska Native (1.14 1.32 1.52, p< 0.001), or Hispanic/Latino (1.05 1.14 1.23, p=0.002) were more likely to be referred. **CONCLUSIONS:** Our study suggests only a small fraction of patients with cirrhosis and HCC are referred for LT. High variation in access to referral based on non-clinical factors suggests barriers to referral that need to be addressed to build an equitable system for LT. Health systems should focus on access to referral to increase LT for HCC.

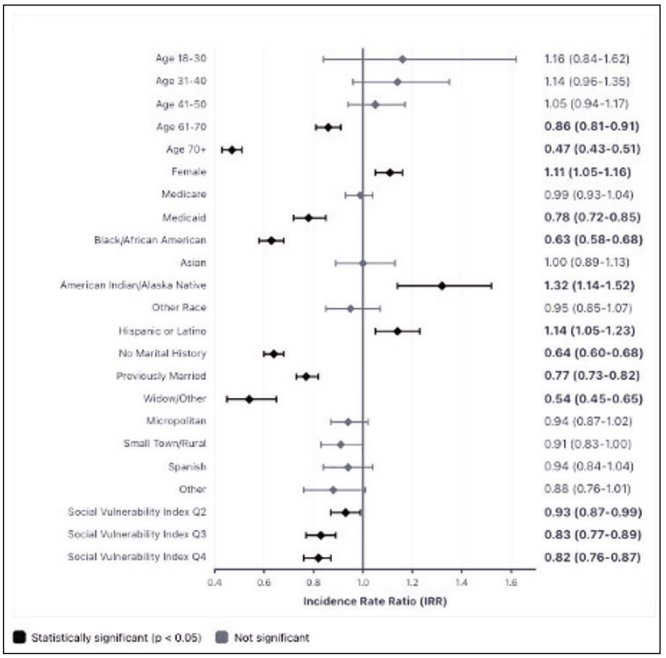

Figure. Analysis of factors associated with risk of referral after diagnosis of HCC in patients with cirrhosis.

EP413

Long-Term Quality of Life and Esophageal Function Outcomes After Esophagectomy

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INTRODUCTION: Esophagectomy is a cornerstone of treatment for esophageal cancer, but existing literature provides limited data on long-term quality of life (QOL). Our objective is to assess long-term QOL and esophageal function following esophagectomy. **METHODS:** Patients were identified via an online support group. Participants were asked to complete the Short Form-36 (SF-36) to measure QOL and the European Organization for Research and Treatment of Cancer Oesophageal Cancer Module (EORTC QLQ-OES18) to measure esophageal function. Data analysis was conducted with SPSS version 31. One sample T-test with normative data was used to compare QOL to the general population. Post-operative QOL and esophageal function overtime were analyzed with multivariate linear regression. **RESULTS:** Of 95 responses that were collected, 69 responses met inclusion criteria. M/F ratio was 58.0% (n = 40)/42.0% (n = 29). The majority of respondents (76.8%, n = 53) were older than 55. Esophagectomies were performed from 2001-2024 with a median time since surgery of 36 months. Of the patients that reported type of esophagectomy, 23.4% (n = 15) underwent a minimally invasive procedure while 76.6% (n = 49) underwent an open procedure. For SF-36 questions, data demonstrated better-than-average scores in physical functioning (PF) (65.63±3.18, p< .001), social functioning (SF) (61.05±3.43, p< .001), limitations due to emotional health (RE) (66.31±2.27, p< .001) and pain scores (63.15±3.43, p< .001). Patients reported worse-than-average scores in energy (38.28±2.70, p< .001) and limitations due to physical health (RLP) (35.87±5.12, p< .004). General health (GH) (46.94±2.62, p=.12) demonstrated no variation from the mean for the general population. Analysis of QOL and esophageal function scores over time demonstrated improvements in RLP (.059, p< .05) and eating (-.159, p< .001) and worsening in dysphagia (.078, p=.05), PF (-.105, p< .01), and GH (-.118, p< .05). **CONCLUSIONS:** General health for patients following an esophagectomy is comparable to that of the healthy population. Over time, patients can expect RLP and eating to improve, but they should be aware that dysphagia, PF, and GH may worsen. Clinicians can use this data to further

inform patients about the risks and benefits of esophagectomy and possibly intervene to minimize long-term functional effects after esophagectomy.

Table 1. Univariate and Multivariate Analysis of SF-36 and EORTC QLQ-OES18

				Multivariate Linear Regression		T-test; test value = 50			
							Significance		Mean
	N	Mean	Std. Deviation	B Coefficient	Significance	t	One-Sided p	Two-Sided p	Difference
SF36_PF	69	65.63	26.39	-.105	.006	4.919	<.001	<.001	15.63
SF36_RLP	69	35.87	42.55	.059	.017	-2.759	.004	.007	-14.13
SF36_Energy	67	38.28	22.08	-.086	.114	-4.343	<.001	<.001	-11.72
SF36_Emotional	67	66.31	18.61	.003	.942	7.174	<.001	<.001	16.31
SF36_SF	69	61.05	26.30	.040	.385	3.490	<.001	<.001	11.05
SF36_Pain	69	63.15	28.48	.047	.234	3.836	<.001	<.001	13.15
SF36_GH	69	46.94	21.75	-.118	.021	-1.170	.12	.25	-3.06
OES18_DYS	66	17.85	20.15	.078	.050				
OES18_SV	66	13.13	22.55	.034	.402				
OES18_CH	66	22.22	28.24	.038	.225				
OES18_EAT	65	46.28	27.64	-.159	<.001				
OES18_DM	66	27.27	27.99	.033	.183				
OES18_TA	66	25.76	34.49	-.034	.141				
OES18_CO	66	36.36	29.66	.044	.077				
OES18_SP	66	19.19	30.42	.006	.818				
OES18_RFX	66	48.48	35.17	.002	.927				
OES18_PA	66	31.31	26.93	-.013	.727				

EP414

Improved locoregional recurrence rates for inflammatory breast cancer

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INTRODUCTION: Inflammatory breast cancer (IBC) accounts for 2.5% of all breast cancers annually. Despite treatments spanning a multimodal approach of neoadjuvant systemic therapy (NST), surgery, and locoregional radiation, overall survival remains poor. We hypothesize that ER/PR and HER2 status, positive surgical margins, and lymphovascular invasion (LVI) are associated with poor prognosis, and overall survival (OS) has improved over time with the introduction of newer NST agents. **METHODS:** IRB approved, single-institution retrospective review of 236 patients (pts) with a clinical diagnosis of IBC treated between 1998 and 2025 was conducted. Differences in clinical and demographic variables were examined. Univariate and multivariate analyses, as well as Cox proportional analyses, were performed. **RESULTS:** Mean age at diagnosis was 53 years (22-92). Median survival was 50.4 months, with a mean follow-up of 45.6 months (17.9-76.4). 27.5% had distant metastases at presentation and 55.1% died of disease during follow-up. 85.6% presented with invasive ductal carcinoma. Only 39.4% had skin punch biopsy. 50.4% were ER/PR-negative. HER2+ disease was found in 37.3% of cases. Dermal lymphatic invasion and LVI in the mastectomy specimen per observed in 36.9% and 53.6% of cases, respectively. On axillary dissection, the mean number of positive lymph nodes excised was 5.83, with a mean of 14.84 nodes excised. 94.9% of pts received chemotherapy, and 69.5% received radiation. Ductal histology, ER/PR+, and HER2+ were associated with OS >3 years. Dermal lymphatic invasion or LVI on mastectomy was associated with elevated risk of locoregional recurrence (LRR) (HR 4.74; HR 2.62) and worse OS (HR 1.82; HR 1.64). HER2- pts were more likely to have dermal lymphatic invasion on mastectomy (50.0% vs 29.5%). HER2+ pts were most likely to achieve pCR (29%), while ER/PR+HER2- were the least likely (2%) ($p < 0.001$). Negative surgical margins did not confer significant survival benefit. Pts diagnosed after 2015 demonstrated lower LRR rate vs diagnosis before 2015 (HR 0.47), but OS remained similar between groups. **CONCLUSIONS:** IBC remains a clinically aggressive disease with limited improvement in long-term outcomes. Worse outcome is associated with ER/PR-, HER2- status, and the presence of LVI or dermal lymphatic invasion; positive surgical margins were not associated with a survival difference. OS was unchanged despite improvement in LRR rate, indicating a need for clinical trials focused on IBC.

Figure 1. Locoregional recurrence and overall survival over time. (A) Patients diagnosed after 2015 (blue) demonstrated improved locoregional recurrence rates compared to patients diagnosed prior to 2015 (red). (B) Patients diagnosed after 2015 (blue) demonstrated similar overall survival compared to patients diagnosed prior to 2015 (red).

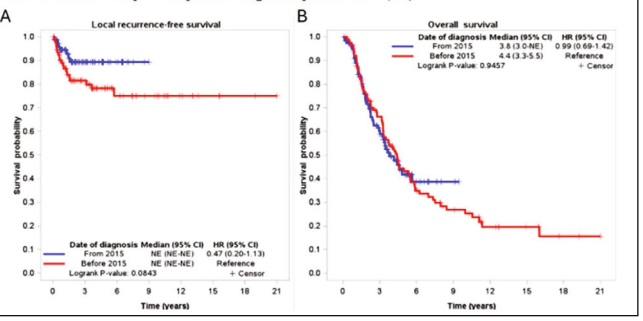

Figure 1. Locoregional recurrence and overall survival over time

EP415

Immediate Breast Reconstruction in Male Mastectomy Patients: National Trends and Policy Impact

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INTRODUCTION: Immediate breast reconstruction (IBR) is a key component of oncologic survivorship, restoring body image and psychosocial well-being after mastectomy. Prior national studies in men were limited to trends through 2014 and did not assess the impact of major health policy reforms. This study analyzed national data from 2005–2022 to evaluate male IBR utilization and the influence of the Affordable Care Act (ACA) on access and equity compared with female cohorts. **METHODS:** A retrospective cohort study was conducted using the National Cancer Database (2005–2022). Male mastectomy patients, regardless of cancer subtype, were stratified by IBR status. Demographic, socioeconomic, and clinical variables were compared using Wilcoxon rank-sum and chi-square tests. Temporal trends were analyzed with piecewise logistic regression (ACA breakpoint: 2013). Multivariable models identified independent predictors of IBR, and interaction terms tested for race- or sex-based effects. Significance was set at $p < 0.05$. **RESULTS:** Among 21,027 male mastectomy patients, 777 (3.7%) underwent IBR. Utilization remained low, peaking near 2013 before declining in recent years. Reconstructed men were younger (median 55 vs. 67 years), predominantly White (85%), privately insured (73% vs. 38%), and more often treated at academic centers ($p < 0.001$). Contralateral prophylactic mastectomy (CPM) was the strongest clinical predictor (46% vs. 7.5%, OR 6.4, 95% CI 5.7–7.3). Socioeconomic factors, including insurance and income, independently predicted reconstruction. Logistic regression showed no significant change in male IBR after the ACA (OR 0.97, $p = 0.7$). In women, IBR was higher overall post-ACA (OR 1.31, $p < 0.001$) but declined thereafter. Racial distribution among men remained consistent, with most reconstructions performed in White patients and minimal minority change. **CONCLUSIONS:** IBR remains uncommon among men and did not show the policy-related increases observed in women. Both sexes demonstrated declining reconstruction rates in recent years, reflecting ongoing variability in access across demographic and socioeconomic groups. Continued attention to equitable counseling and coverage in oncologic care is essential to ensure reconstructive options for all patients.

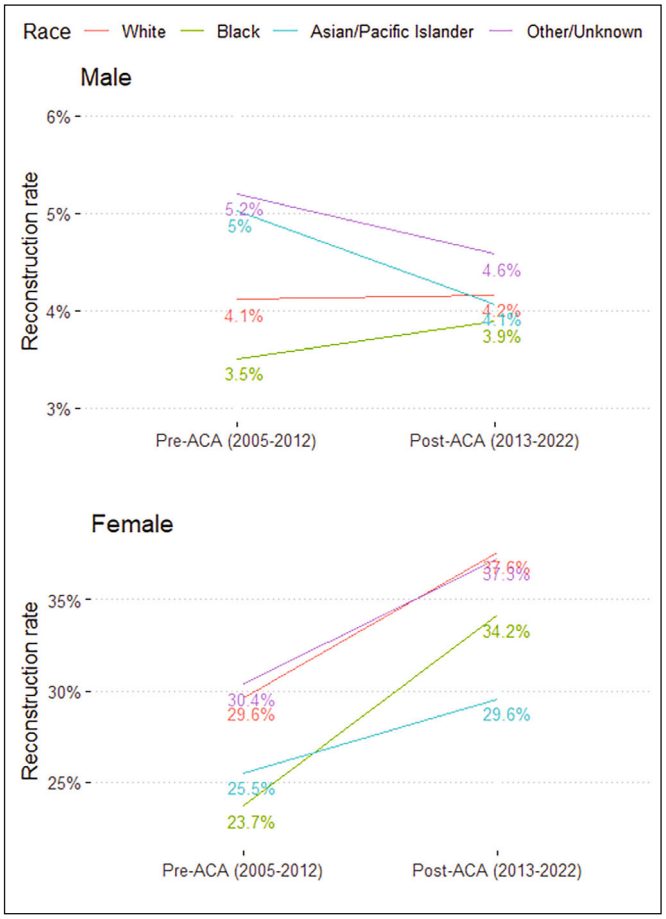

Figure. Reconstruction rate from pre- to post-ACA by race in the male and female mastectomy cohort

EP416

Disaggregation of Asian American patients with colon cancer reveals sociodemographic and outcomes disparities

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INTRODUCTION: Although the prevalence of colon cancer (CC) is rising among Asian Americans (AA), studying AA as a group can mask wide-ranging cultures and backgrounds. Therefore, we sought to characterize sociodemographic differences among disaggregated AA subgroups with CC to gain a better understanding of barriers to care and potentially identify disparities in outcomes. **METHODS:** Adult patients >18 years old with CC were selected using the National Cancer Database (2012-2022). Descriptive analysis of socioeconomic and clinicopathologic variables was performed among the following AA subgroups: Chinese, Japanese, Filipino, Native Hawaiian, Korean, Vietnamese, Laotian, Hmong, Kampuchean, Thai, Asian Indian/Pakastani, and Pacific Islander (PI). Overall survival (OS) was determined by Kaplan-Meier methodology. **RESULTS:** Among 26,751 AA with CC, Chinese (17.8%), Asian Indian/Pakastani (12.1%), and Filipino (10.8%) patients accounted for the highest number of patients. Hmong (23.7%), PI (20.9%), and Asian Indian/Pakastani (19.3%) patients were more commonly diagnosed before 50 years old compared to Korean (8.6%), Japanese (6.8%) and other AA subgroups (p< 0.0001). Additionally, Hmong and Kampuchean patients were more likely to live in the lowest two median household income quartiles (Hmong 66.4%, Kampuchean 45.9%) and highest non-high school educated quartile (Hmong 69.0%, Kampuchean 55.4%) zip codes than patients from other AA subgroups (p< 0.001). With regards to stage, Hmong (59.3%), Thai (56.5%), and Kampuchean (55.5%) patients presented at stage III/IV more often than their AA counterparts (p< 0.0001). Delays in treatment and specifically surgery (stage I-III patients only) >60 days from diagnosis were experienced most by Hmong (14.4%, 16.5%), PI (11.6%, 12.9%), and Kampuchean patients (8.9%, 13.3%) and experienced least by Asian Indian/Pakastani patients (5.3%, 7.8%) compared to other AA subgroups (p< 0.001). 5-year OS among AA subgroups was the lowest for Hmong (51.8%) and Kampuchean (53.1%) patients and the highest for Asian Indian/Pakastani patients (71.8%, p< 0.0001) (Figure). **CONCLUSIONS:** Disaggregation of AA patients with CC revealed socioeconomic and clinicopathologic factors disproportionately affects certain subgroups. Hmong and Kampuchean patients, specifically, had the lowest 5-year OS rates compared to other AA patients. Our findings suggest key differences exist among AA subgroups with CC that can contribute to barriers to care and outcomes, highlighting the importance of disaggregated data.

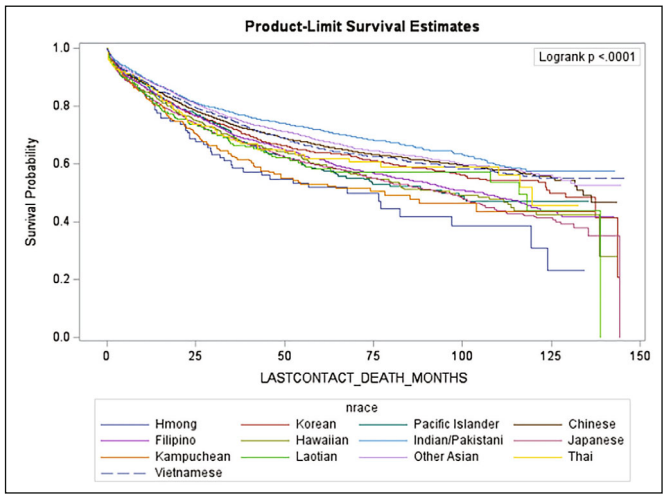

Figure: Overall survival estimates among Asian American subgroups with colon cancer

EP417

Disparities in Receipt of Metastasectomy and Survival Among Patients With Stage IV Cutaneous Melanoma: A National Cancer Database Analysis

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INTRODUCTION: Retrospective studies suggest that metastasectomy may prolong survival in selected patients with stage IV melanoma, yet equitable access to surgery in the modern immunotherapy era remains poorly defined. This study aimed to identify predictors of metastasectomy and factors associated with overall survival (OS) among patients with Stage IV melanoma using a contemporary national cohort. **METHODS:** Adults (≥18 years) with stage IV cutaneous melanoma (2016–2021) were identified from the National Cancer Database. Primary outcome was receipt of metastasectomy; secondary outcome was OS. Multivariable logistic regression estimated adjusted odds ratios (aOR) for metastasectomy, while Kaplan-Meier and Cox regression analyzed OS. **RESULTS:** Among 4,794 patients, 1,778 (37.1%) underwent metastasectomy. Compared to patients who did not receive surgery, those undergoing metastasectomy were more often privately insured and treated at academic centers. On multivariable analysis, socioeconomic factors (race, income, education, geographic area) were not independently associated with metastasectomy (all p >0.05). Lower odds of surgery were observed at community hospitals (aOR 0.42, 95% CI 0.29–0.60), with older age (aOR 0.98 per 1 year increase, p< 0.001), visceral metastasis (aOR 0.60, 95% CI 0.46–0.78), and later year of diagnosis in the study period (aOR 0.93 per 1

additional year, p< 0.001). Brain metastasis increased odds of surgery (aOR 2.17, 95% CI 1.55–3.03). Metastasectomy was associated with improved OS (HR 0.77, 95% CI 0.71–0.84), as were systemic therapy (HR 0.54, 95% CI 0.49–0.59) and treatment at high-volume centers (HR 0.89, 95% CI 0.79–0.99). Worse OS was seen among Black patients (HR 1.45, 95% CI 1.11–1.89), those not privately insured (uninsured: HR 1.29 95% CI 1.07-1.55; Medicaid: HR 1.33 95% CI 1.18-1.50; Medicare: HR 1.15 95% CI 1.04-1.28), and patients undergoing metastasectomy at community hospitals (HR 1.22, 95% CI 1.02–1.47). Brain metastasis conferred the poorest survival (HR 2.25, 95% CI 1.82–2.77). **CONCLUSIONS:** Institutional disparities persist in access to and outcomes after metastasectomy for stage IV melanoma, favoring patients treated at high-volume academic centers and those privately insured. Metastasectomy and systemic therapy were independently associated with improved survival. These findings highlight the need for equitable access to specialized surgical care in the modern immunotherapy era.

EP418

Outcomes of international patients undergoing pancreatic tumor surgery at a destination medical center

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INTRODUCTION: Medical tourism for cancer surgery is on the rise. International patients often face unique challenges, including travel and visa restrictions, communication barriers, limited insurance coverage, and fragmented care. Evaluating outcomes for this group of patients is necessary to optimize the quality of care. **METHODS:** We conducted a retrospective chart review of adult patients (>18 years) with an international address who underwent pancreatic tumor resections at our institution between 2000 and 2025. Patients with non-neoplastic indications were excluded. Sociodemographic, clinical, perioperative, and operative data were analyzed. **RESULTS:** Over the review period, we identified 70 international patients who underwent pancreatic tumor resections. Of note, this is an underestimate, as many international patients indicate temporary local addresses. The mean age was 59.5 years, and 54% were males. Over half (38, 54%) of these international patients were uninsured or self-paying, 44 (63%) did not speak English as their primary language, and 23 (33%) required interpreter services. Regarding treatment sequencing, 22 patients (31%) received neoadjuvant therapy, and only 12 (17%) received adjuvant therapy. Most patients (34, 49%) underwent a Whipple procedure, 39% (27) had distal pancreatectomy, and the remainder underwent total pancreatectomy (8,11%) or other procedures. The commonest pathologic indications were pancreatic ductal adenocarcinoma (PDAC) in 27 (39%), neuroendocrine tumors (NET) in 11 (16%), and intraductal papillary mucinous neoplasm (IPMN) in 7 (10%) patients. Porto-mesenteric vascular resection was required in 14 (20%) patients, and R0 resection was achieved in 89% (62) of the patients. The total 90-day morbidity rate was 64.2%, with severe complications (Clavien–Dindo ≥IIIa) occurring in 17 patients (24.3%). The median hospital stay was 8 days (range 3-118, IQR 6-17), 23% were readmitted within 90 days, and 2 patients experienced 90-day mortality. Many patients were lost to follow-up. With a median follow-up of 12 months, at least 16 (23%) of the patients experienced a known disease recurrence, with the majority of these being in PDAC. **CONCLUSIONS:** International patients receiving complex surgical oncologic care face unique challenges that may impact perioperative outcomes and continuity of care. Prospective studies are needed to understand whether treatment courses for this patient population are optimally guideline-concordant.

EP419

Early-stage invasive lobular carcinoma is associated with low local failures rates regardless of breast surgery or 21-gene recurrence score

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INTRODUCTION: Invasive lobular carcinoma (ILC) is the second most common histologic subtype of breast cancer and exhibits distinct biologic and clinical behavior when compared to invasive ductal carcinoma (IDC). The impact of breast surgery type and 21-gene Recurrence Score (RS) on locoregional recurrence (ILC) in invasive lobular carcinoma has limited characterization in the literature. This study examines the relationship between breast surgery and recurrence score as it relates to risk of locoregional failure among patients with ILC vs IDC. **METHODS:** This is a retrospective cohort review of a prospectively maintained institutional database of patients with stage I-III breast cancer who underwent either breast-conserving surgery (BCS) or mastectomy between 2000-2020 and had available RS data. RS was categorized as low (< 18), intermediate (18-30), or high (>30). Clinical, pathological, and treatment characteristics were obtained. Rates of locoregional and distant recurrence were compared across RS categories and surgery type using descriptive statistics and logistic regression analyses. **RESULTS:** Of the 651 patients included, 440 patients had IDC, 130 ILC, and 78 mixed ductal with lobular features. The average patient age was 57 years old, 64 patients had >1 positive lymph node on SLNB. 90 patients received chemotherapy, 479 patients received endocrine therapy, and 317 patients received radiation therapy. There was no significant difference in RS distribution (p=0.75), mean tumor size (p=0.7), or breast surgery (p=0.65) between lobular and ductal cohorts, with 67%-69% of patients in each cohort undergoing BCS, respectively. With an average of 8.5 years follow-up, LRR occurred in 7 (1.6%) patients with IDC, 2 (2.6%) with mixed ductal and lobular features, and 1 (0.8%). **CONCLUSIONS:** In a modern cohort of early-stage breast cancer patients, rates of LRR were exceedingly low regardless of ductal vs lobular histology or breast surgery performed. Very few patients with ILC had high RS values, limiting the ability to evaluate the association of RS and local outcomes by tumor histology.

EP420

Routine staging laparoscopy prior to neoadjuvant therapy for pancreatic cancer yields significant rate of occult metastatic disease

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INTRODUCTION: Staging laparoscopy (SL) is used to detect metastatic peritoneal disease not seen on cross-sectional studies. While SL for pancreatic adenocarcinoma (PDAC) has previously been controversial, it is now included in the NCCN guidelines when administering neoadjuvant therapy (NAT) with surgical intent. Our institution adopted a strategy of routinely performing SL prior to NAT. Here, we detail the yield of this practice change and prognostic implications. **METHODS:** All patients who underwent SL prior to NAT for PDAC were identified (8/2023-2/2025). All had high-resolution cross-sectional CT with no evidence of metastases. Peritoneal cytologic (PC) washings were routinely performed and considered positive if adenocarcinoma cells were identified. Outcomes of interest included overall yield of SL, overall survival (OS), and local versus distant progression free survival (PFS). **RESULTS:** Seventy-three patients with PDAC underwent SL. The median age was 70 and 51% were male. The overall rate of identifying metastatic disease was 16% (n=12/73). Most cases were identified with PC (n=10/12) and 2 with biopsy. Notably, 7 patients with positive PC had a negative biopsy or no identifiable pathology for biopsy (7/12, 58%). There was an increase in SL positivity with worsening resectablity status: 5% in resectable disease (n=1/20), 22% in borderline (n=7/31), and 18% locally advanced (n=4/22; p=0.29). Cases with radiographic peripancreatic lymphadenopathy had a higher rate of metastases on SL (n=4/12, 33% vs n=11/61, 18% p=0.25). Ca19-9 was not associated with positive SL (p=0.51). Patients with positive SL were treated with definitive chemotherapy. Among patients with negative SL and adequate follow up (n=61), 18 underwent resection. With median follow up time 12.7 months, positive SL was not detectably associated with worse OS (HR 2.02, p=0.21). Local PFS was similar between positive and negative SL (p=0.94). There was a non-significant trend towards worse distant PFS with positive SL (HR, 2.4 p=0.12). Multivariable analysis has not yet been performed due to event number. **CONCLUSIONS:** Routine SL for PDAC with high-resolution CT and in accordance with NCCN guidelines has a yield higher than 16% and is an important initial staging strategy. In particular, PC washings identify a significant portion of these patients and should be considered routine. Positive SL appears to correlate with worse distant PFS in this cohort consistent with prior studies.

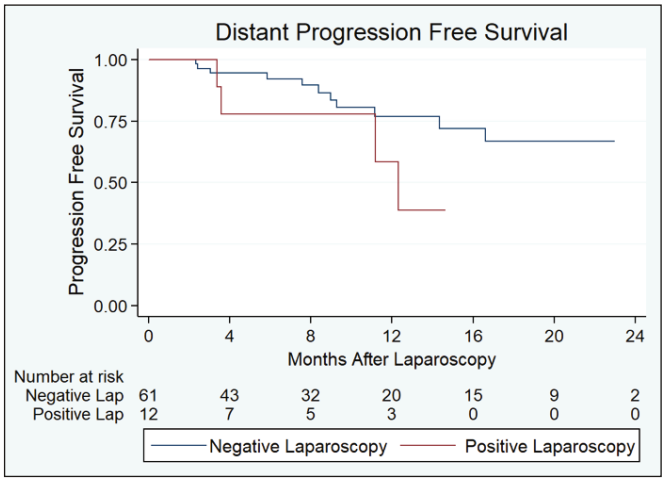

Figure. There was a non-significant trend towards worse distant PFS with positive SL

EP421

Robotic Mastectomy After Neoadjuvant Chemotherapy Is Safe and Feasible: A Single-Institution Experience

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INTRODUCTION: Whether neoadjuvant chemotherapy (NAC) increases surgical difficulty or postoperative risk in robotic nipple-sparing mastectomy (R-NSM) remains unclear. This study aimed to evaluate the impact of NAC on operative time and postoperative complications in patients undergoing robotic mastectomy with immediate reconstruction. **METHODS:** From April 2020 to January 2025, a total of 206 robotic mastectomy and reconstruction procedures were performed in 184 patients, including 22 bilateral cases, at a single institution. All operations were conducted by three breast surgeons, and reconstructions were performed by three plastic surgeons. Reconstruction methods included implant-based reconstruction (98.5%), latissimus dorsi (LD) flap (0.5%), and no reconstruction (4.4%). Patients were classified into NAC (n = 59) and non-NAC (n = 133) groups. Operative time and postoperative complications were compared using independent t-tests and chi-square tests. **RESULTS:** The mean total operative time did not differ significantly between groups (81.0 ± 32.1 min vs 76.5 ± 28.3 min, p = 0.37). Overall complications were slightly more frequent after NAC (20.3% vs 9.8%, p = 0.004), but major complications (necrosis or revision) occurred at similar rates (5.1% vs 5.3%, p > 0.05). No difference was observed in operative efficiency or severe postoperative outcomes despite potential tissue changes after chemotherapy. **CONCLUSIONS:** Robotic mastectomy with immediate reconstruction can be safely and efficiently performed following neoadjuvant chemotherapy. These findings demonstrate that robotic surgery remains a safe and feasible option for patients treated with NAC, maintaining comparable operative time and major complication rates to those without prior chemotherapy.

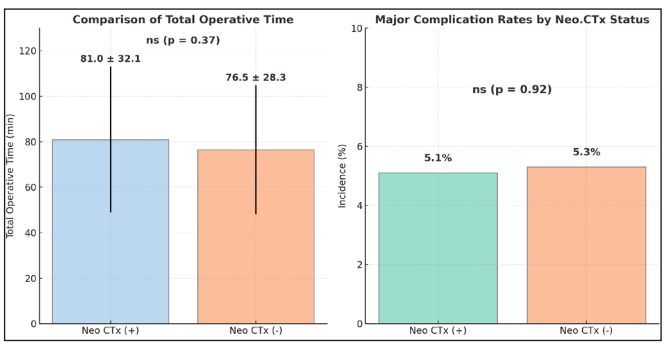

Figure. Operative Time and Major Complication Rates by Neoadjuvant Chemotherapy Status

EP422

Have Surgeons Been Omitting Sentinel Node Biopsy for Breast Cancer Patients Qualifying for the SOUND/INSEMA Trials? A Decade of Experience Leading up to Publication of the Trials

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INTRODUCTION: The SOUND and INSEMA trials showed that omission of sentinel node biopsy (SNB) for early-stage hormone receptor positive (HR+) breast cancer in postmenopausal women was not associated with worse cancer outcomes. The objective of this study was to examine trends in omission of SNB in the decade leading up to publication of the SOUND/INSEMA trials and how omission of SNB impacted adjuvant therapy decisions. **METHODS:** This was a retrospective study of the National Cancer Data Base of patients >=50 years old with AJCC cT1N0, HR+, HER2neu negative breast cancers who underwent breast conserving surgery (BCS). Trends in SNB utilization were stratified by patient age. Factors associated with a tumor positive sentinel node were analyzed adjusting for tumor size, grade, tumor markers, age, and histology. Adjuvant radiation and use of OncotypeDx were compared between those who underwent SNB vs no SNB. **RESULTS:** Of 502,303 patients that fulfilled SOUND/INSEMA criteria (excluding grade III tumors), 53,741 (10.7%) did not undergo a SNB. Omission of SNB rates in 2012 were 14.6% compared to 21.6% in 2023. Amongst patients 50-69 years old, omission rates were 10.3% and 4.8% and in patients >=70 years old, rates were 22.4% and 45.9% respectively. 43,009 patients (8.6%) had a tumor positive sentinel node. On multivariate analysis of tumor factors and patient age, tumor size was the strongest pathologic factor associated with a tumor positive node (1.6-2.0cm vs 0-0.9cm, OR 4.69, 95%CI: 4.56-4.83). Patients with a tumor size of 1.6-2.0cm had a tumor node positive rate of 15.9% versus 3.7% for a tumor size of 0-0.9cm (Table 1). Utilization of SNB was associated with higher rates of radiation therapy and use of Oncotype testing. Of those patients 50-69 years old, 90.2% of patients underwent radiation therapy who underwent a SNB versus 80.9% of patients who did not undergo SNB (p< 0.001). Of patients >=70 years old, 64.5% of patients underwent radiation who underwent SNB versus 39.9% of patients who did not undergo SNB (p< 0.001). Of 50-69 year old patients, 61.0% underwent Oncotype testing who underwent SNB versus 33.4% who did not undergo SNB (p< 0.001). Of patients >=70 years old, 43.0% underwent Oncotype testing who underwent SNB versus 21.8% of patients not undergoing SNB (p< 0.001). However, only 6.4% and 3.5% of patients who did and did not undergo SNB received adjuvant chemotherapy. **CONCLUSIONS:** Omission of SNB for patients with early-stage HR+ invasive breast cancer occurs predominantly in patients >=70years old. Omission of SNB is associated with higher radiation rates and use of Oncotype. Future studies will determine if the SOUND/INSEMA trials will impact these trends.

Table 1. Proportion of Patients that are Tumor Node Positive Stratified by Patient Age and Tumor Factors

	Node Positive
Total Patients	49371 (8.9)
Age, years [N (%)]	
50-59	16074 (11.9)
60-69	19484 (9.2)
70-79	11249 (7.0)
≥ 80	2564 (5.4)
Histology	
Ductal	41350 (8.8)
Lobular	8021 (9.8)
Grade	
I	14733 (6.5)
II	28276 (10.2)
III	6362 (12.4)
PR Status	
ER+PR-	4283 (7.8)
ER+ PR+	45058 (9.0)
Unknown PR	30 (6.3)
Tumor Size	
0-0.9 cm	8411 (3.8)
1.0-1.5 cm	23368 (10.6)
1.6-2.0 cm	17592 (16.2)

EP423

Implementation of a novel decision aid for early-stage breast cancer patients: a randomized prospective trial

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INTRODUCTION: Shared decision making is an increasingly important consideration, especially in early-stage breast cancer (BC) where surgical options have equivalent long term survival. Decisions Aids (DAs) facilitate patient-centered exploration of treatment options and elicitation of preferences. Our group developed a novel DA that incorporates longitudinal quality of life projections for breast conserving therapy (BCT) and mastectomy. **METHODS:** Adult women with a first-time diagnosis of invasive BC deemed candidates for BCT were recruited to this prospective multi-site study. Participants were stratified by surgeon and randomized 2:1 to receive the DA (intervention) versus an established DA from the Ottawa registry (control). Outcome measures were collected following initial surgical consultation. Implementation feedback was also collected from surgeons. Descriptive statistics were reported, and Student's two-tailed t tests and chi-square tests or Fisher's exact tests were used for continuous and categorical variables, respectively. **RESULTS:** To date, of the 35 eligible patients, 30 enrolled (recruitment rate 85.7%). 22 participants were randomized to intervention and 8 to control. Most participants (72.2%, n=13) reported using the DA prior to clinic. Among intervention participants completing the Ottawa DA acceptability survey (n=17), most found the length (82.4%) found the length and amount of information (75%) in the DA was "just right." 82.4% found the information about BCT versus mastectomy was "balanced.". 70.6% of participants found the DA useful when making their surgical decision, and the same proportion reported that the DA included "enough information to help a woman decide on surgery for BC." There were no significant differences in decision quality knowledge or process scores between groups. Surgeons reported that nearly all (91.7%) of clinic visits for intervention participants were "about the same" in length compared to non-study initial visits. **CONCLUSIONS:** Preliminary results suggest this novel DA is feasible to implement and does not increase clinic visit duration. Most patients find the amount and content of information acceptable, and patient-reported decision conflict, self-efficacy, and quality are comparable to the current standard listed in the Ottawa inventory. Recruitment is ongoing, with assessment of decisional regret planned at 3- and 6-months post-surgery.

Table 1: Demographics and study outcomes

	All	Control %(N) n=8	Intervention %(N) n=22	p-value
Current age (years)	60.4 (13.3)	57.5 (13.7)	61.2 (13.6)	0.64
Clinical Stage				
IA	66.7% (20)	37.5 % (3)	77.3% (17)	0.17
IB	23.3% (7)	37.5% (3)	18.2% (4)	
IIA	6.7% (2)	25.0% (2)	0% (0)	
IIB	3.3% (1)	0	4.5% (1)	
Race				
Caucasian	93.1% (27)	88.9% (8)	95.0% (19)	0.53
Native American	11.1% (1)	11.1% (1)	5.0% (1)	
Ethnicity				
Hispanic	6.7% (2)	0	9.5% (2)	>0.99
Not Hispanic	93.3% (28)	100.0% (9)	90.5% (19)	
Health Literacy				
Inadequate	3.3% (1)	0	4.8% (1)	0.77
Partially adequate	26.7% (8)	33.3% (3)	23.8% (5)	
Adequate	70.0% (21)	66.7% (6)	71.4% (15)	
Surgical Decision				
Lumpectomy	85.7% (24)	100% (8)	80% (16)	0.29
Mastectomy	14.3% (4)	0 % (0)	20% (4)	
Decisional conflict total score	3.1 (1.6-21.9)	17.2 (1.6-31.3)	3.1 (0.0-15.6)	0.14
Decision quality knowledge score	80.0 (60.0-100.0)	80.0 (60.0-80.0)	80.0 (60.0-100.0)	0.42
Decision quality process score	0.71 (0.57-0.86)	0.79 (0.43-0.86)	0.71 (0.57-1.00)	0.34

EP424

Effects of robotic gastrectomy in locally advanced gastric adenocarcinoma: an NCDB propensity-matched analysis

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INTRODUCTION: Robotic gastrectomy (RG) is an increasingly utilized approach for gastric adenocarcinoma in the U.S., despite limited evidence supporting its meaningful benefit over laparoscopic (LG) and open gastrectomy (OG). With high-level evidence supporting perioperative chemotherapy, use of adjuvant therapy is a key recovery metric after gastrectomy. We evaluated the impact of RG on adjuvant therapy utilization and perioperative outcomes using a propensity-matched National Cancer Database (NCDB) analysis. **METHODS:** Adults with non-metastatic gastric adenocarcinoma (>pT2N0 or received neoadjuvant chemotherapy (NACT)) who underwent gastrectomy (2016 – 2021) were included. Patients receiving multi-organ resection, neoadjuvant immunotherapy or radiation were excluded. Propensity score matching (PSM) was performed across demographic, staging, and treatment variables to compare RG vs OG and RG vs LG. The primary outcome was use of adjuvant systemic therapy (ASTx), based on a treatment sequence code [RX_SUMM_SYSTEMIC_SUR_SEQ]. Secondary outcomes include the proportion of patients who started systemic therapy ≤ 8 weeks after surgery (ASTx < 8w) among those who received ASTx, length of stay (LOS), 30-day readmission, R0 resection, regional lymph nodes examined (RLNE), and 3-year overall survival (OS). **RESULTS:** Of 6,110 patients, 1,078 (17.6%) underwent RG, 1,783 (29.2%) LG, and 3,249 (53.2%) OG. After PSM, 1,047 RG-OG and 1,014 RG-LG patient pairs were analyzed. ~70% received NACT, the most common pT was ~39% pT3, and pN ~36% pN0. In RG vs OG, RG showed shorter LOS (8.3 vs 9.2, p = 0.01), higher R0 resection (93.1% vs 88.2%, p < 0.001) and more

RLNE (24.6 vs 22.6, p < 0.001). However, there were no differences between groups in ASTx (44.9% vs. 46.2%, p=0.59) or ASTx < 8w (61.3% vs 55.1%, p = 0.35), 30-day readmission (6.9% vs 5.8%, p = 0.31), or 3-year OS (57.9% vs 61.4%; p = 0.50 log-rank). In RG vs LG, RG showed higher R0 resection (93.2% vs 89.3%, p = 0.002), with no difference in ASTx (44.5% vs 44.3%, p=0.99), ASTx < 8w (60.9% vs 65.7%, p = 0.48), RLNE (24.6 vs 24.8, p = 0.69), LOS (8.4 vs 8.3, p = 0.79), 30-day readmission (6.9% vs 5.8%, p = 0.36), or 3-year OS (57.3% vs. 60.8%, p = 0.38 log-rank). **CONCLUSIONS:** Despite improved oncologic metrics in surgery - greater RLNE compared to OG and higher R0 resection rates compared to LG and OG - RG did not improve the use of ASTx or 3-year OS. This study using national data suggests that RG's benefits in the general population remain uncertain, while assuring safety of RG. Further studies to define the value of RG over conventional approaches are warranted, to justify the cost.

Table 1. Outcomes By Propensity Score-Matched Cohorts

	RG vs. OG Cohort			RG vs. LG Cohort		
Variables	**RG (N = 1047)**	**OG (N = 1047)**	**p**	**RG (N = 1014)**	**LG (N = 1014)**	**p**
Adjuvant systemic therapy use – no. (%)	469 (44.9)	480 (46.2)	0.59	450 (44.5)	447 (44.3)	0.99
Days from surgery to adjuvant therapy – mean (SD)	56.4 (23.6)	58.3 (25.7)	0.5	56.7 (23.7)	56.0 (25.3)	0.81
ASTx < 8w – no. (%)	87 (61.3)	81 (55.1)	0.35	84 (60.9)	92 (65.7)	0.48
LOS – mean (SD)	8.3 (8.6)	9.2 (8.0)	**0.01**	8.4 (8.8)	8.3 (7.3)	0.79
30-day hospital readmission – no. (%)	70 (6.7)	58 (5.6)	0.31	68 (6.8)	58 (5.8)	0.36
R0 resection – no. (%)	964 (93.1)	915 (88.2)	**<0.001**	935 (93.2)	900 (89.3)	**0.002**
Regional lymph nodes examined – mean (SD)	24.6 (13.5)	22.6 (12.5)	**<0.001**	24.6 (13.7)	24.8 (14.2)	0.69
30-day mortality – no. (%)	12 (1.5)	16 (2.1)	0.56	12 (1.6)	14 (1.8)	0.83
90-day mortality – no. (%)	24 (3.1)	34 (4.4)	0.24	24 (3.1)	32 (4.2)	0.32
3-year OS – % (CI)	57.9 (54.1-61.9)	61.4% (57.6-65.5)	0.5*	57.3 (53.5-61.5)	60.8 (57.0-64.9)	0.38*

RG – robotic gastrectomy, OG – open gastrectomy, LG – laparoscopic gastrectomy, ASTx – adjuvant systemic therapy use, ASTx < 8w – proportion of patients with ASTx within 8 week, among those who had ASTx, LOS – length of hospital stay in days, defined from day of surgery, OS – overall survival

* p-values for survival derived from log-rank test of Kaplan–Meier curves

EP425

Determinants of survival in young colorectal cancer patients

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INTRODUCTION: Incidence of early-age-onset colorectal cancer (EOCRC) is increasing, and few studies assess survival factors. We evaluate factors affecting survival in stages I–IV EOCRC and late-age-onset gastric cancer (LOCRC). **METHODS:** The NCDB (2010–2020) was queried for patients with stage I–IV colorectal cancer. Patients were categorized into EOCRC (< 50) or LOCRC (≥50). Logistic regression was used to assess multivariate correlation of age with demographic, tumor, and treatment variables. Propensity score matching (PSM) was used to produce comparable groups. Kaplan-Meier curves and log-rank tests were used for survival analysis. Cox regression was used to determine factors predictive of survival. **RESULTS:** 97,211 EOCRC and 735,784 LOCRC patients were included. EOCRC were more likely to be female (OR 1.07), Non-Hispanic black (OR 1.40), Hispanic white (OR 1.69), live 50-200 (OR 1.10) or ≥200 (1.07) miles from their treatment facility, visit an academic center (OR 1.20), present with transverse (OR 1.19), left (OR 1.69), rectosigmoid or rectal (OR 1.65) tumors, Mucinous (OR 1.13) or Signet ring (OR 1.31) histology, stage 2 (OR 1.04), 3 (OR 1.03), and 4 (OR 1.31) disease, and more likely to undergo surgery (OR 1.26), immunotherapy (OR 1.18), and chemotherapy (OR 2.05) when compared to the LORCRC. The EOCRC demonstrated longer survival when compared to the LOCRC group before (HR 0.68, P < 0.01) and after (HR 0.85, P < 0.01) PSM (Fig 1). 10-year survival in the EOCRC and LOCRC groups was 57.3% vs 38.0% (P < 0.05), respectively, before PSM, and 57.3% vs 51.3% (P < 0.05), respectively, after PSM. In the EOCRC cohort, decreased mortality was seen in those with female sex (HR 0.86), Hispanic White race (HR 0.87), Private insurance (HR 0.71), left (HR 0.89), rectosigmoid or rectal (0.86) disease, and undergoing surgery (HR 0.40), Immunotherapy (0.96), and chemotherapy (0.70). Increased mortality was seen in those with Non-Hispanic Black race (HR 1.20), CDCI of 1 (HR 1.15) and ≥2 (HR 1.48), living in southern (HR 1.15), midwestern (HR 1.18), and western (HR 1.13) states, residing in urban (HR 1.17) and rural (HR 1.14) areas, signet ring histology (HR 1.72), moderately (HR 1.27), poorly (HR 2.07), and undifferentiated (HR 2.14) grade, stage 2 (HR 1.38), 3 (HR 1.89) and 4 (HR 14.97) disease. **CONCLUSIONS:** Prolonged survival in the EOCRC group suggests that, despite presenting with more advanced and aggressive disease, they fare better than their older counterparts, likely due to better health and tolerability to therapies. However, the persistence of this difference after PSM indicates other unaccounted-for factors (i.e., genetic or biological).

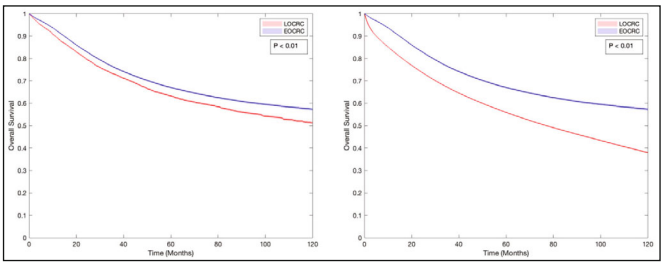

Figure 1. Kaplan Meir survival curve for early (blue) and late (red) age onset colorectal cancer before (left) and after (right) propensity score matching.

EP426

Predictors of long-term survival across stages of surgically treated endometrial cancer

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INTRODUCTION: Endometrial cancer is the most common gynecologic malignancy in the United States and it is often diagnosed at an early stage. Persistent sociodemographic, and regional differences point to variation in survival outcomes across populations. This study evaluated associations between clinical, demographic, and treatment factors and long-term survival across stages of surgically treated endometrial cancer. **METHODS:** We conducted a retrospective analysis of adults with surgically treated endometrial cancer identified from the National Cancer Database (2004-2020). Pathologic stage was defined using AJCC criteria and grouped to correspond with 2009 FIGO I-IV categories. Survival was grouped as 0-2, 2-5, or >5 years. Ordinal logistic regression assessed associations between patient, tumor, and treatment factors and the odds of belonging to a higher survival category, reported as adjusted odds ratios (aORs). **RESULTS:** Of 113,197 patients, 77.4% had stage I, 4.6% II, 13.1% III, and 4.9% IV disease. In stage I, older age (aOR 0.99, p< 0.001), higher comorbidity (aOR 0.92, p< 0.001), Black race (aOR 0.74, p< 0.001), Hispanics (aOR 0.71, p< 0.001), treatment at South Atlantic/Mountain regions (aOR 0.74-0.78, p< 0.05) and community programs (aOR 0.59, p< 0.001) had lower survival odds. Each additional lymph node harvested was associated with higher survival (aOR 1.02 per node, p< 0.001). In stage II, non-adenocarcinoma was associated with lower survival (aOR 0.46, p< 0.001), and patients in Medicaid expansion states had higher survival odds (aOR 1.30–1.45, p< 0.05). In stage III, older age (aOR 0.98, p< 0.001), Black race (aOR 0.75, p< 0.05) and Hispanic ethnicity (aOR 0.73, p< 0.05) were associated with lower survival. Greater lymph-node evaluation (aOR 1.01 per node, p< 0.05) and lack of high school degree (aOR 1.22-1.42, p< 0.05) were associated with higher survival, while longer diagnosis-to-surgery intervals were associated with lower odds (aOR 0.99, p< 0.05). In stage IV, Medicaid insurance was associated with lower survival (aOR 0.44, p< 0.05). Non-adenocarcinoma (aOR 0.44, p< 0.001) and longer radiation intervals (aOR 0.99, p< 0.05) remained strong adverse factors. **CONCLUSIONS:** Despite high overall treatment success, survival outcomes differ by race, region, and socioeconomic status. Early-stage outcomes were associated with surgical and regional factors, whereas late-stage outcomes were associated with treatment-related variables. These findings underscore the need for continued evaluation of modifiable factors contributing to variation in survival.

EP427

A Contemporary Report on Tumor Regression Grade Distribution and Heterogeneity in Surgical Specimens of Patients with Colorectal Liver Metastasis Receiving Chemotherapy prior to Curative-intent Liver Resection

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INTRODUCTION: Tumor Regression Grade (TRG), as a measure of response to chemotherapy, is a prognostic factor in patients with colorectal liver metastasis (CRLM) who undergo surgery following chemotherapy. While CRLM exhibit heterogeneous features, it is unclear how this relates to TRG responses, and to what extent the assessment method influences these results. Our goal was to comprehensively review the pathologic assessment of TRG in CRLM resected specimens, and examine the distribution and heterogeneity observed in this population. **METHODS:** A retrospective study was performed in patients with CRLM having neoadjuvant therapy followed by curative-intent hepatectomy at a comprehensive cancer center (2015-2021). Tumor count, per patient and per tumor TRG score distribution, as well as differences in TRG observed within, and between tumors, were examined and analyzed through specimen review and summarized via descriptive statistics. **RESULTS:** A total of 180 patients with a total of 449 CRLM lesions were identified. Among 449 tumors evaluated, complete response was seen in 43 (TRG 1=9%) and no response in 80 tumors (TRG 5= 18%). In total, 83 (46%) patients had a single lesion, 31 (17%), 22 (12%), 17 (10%), 12 (7%), and 15 (8%) had two, three, four, five, and >5 lesions, respectively. TRG score ranged from 1-5 in patients with up to seven lesions. Those with more lesions had more consistently high TRG scores (poor response - Figure 1). A total of 97 patients had two or more lesions; when examining TRG across lesions, 43 (44%) had the same (concordant) TRG score, 28 (29%) had discordant TRG score within 1 grade difference, and 26 (27%) had discordant scores ≥ 2 TRG grade difference. Discordant TRG was more commonly seen in patients with < 5 tumors, while patients with ≥8 tumors had concordant TRG across all tumors. Upon macro/microscopic select tumor examination, intratumoral variability was identified when using a comprehensive sampling assessment methodology. **CONCLUSIONS:** This study demonstrates that heterogeneity in TRG is present across patients, within patients, and within single tumors, reflecting a broad range of response to systemic therapy. This also underscores the biologic complexity of metastatic disease. The predictive and prognostic implications of these findings require ongoing research efforts. Accordingly, a standardized and reproducible method for histologic evaluation is needed to accurately capture the heterogeneity observed at the tumor, patient, and interpatient level.

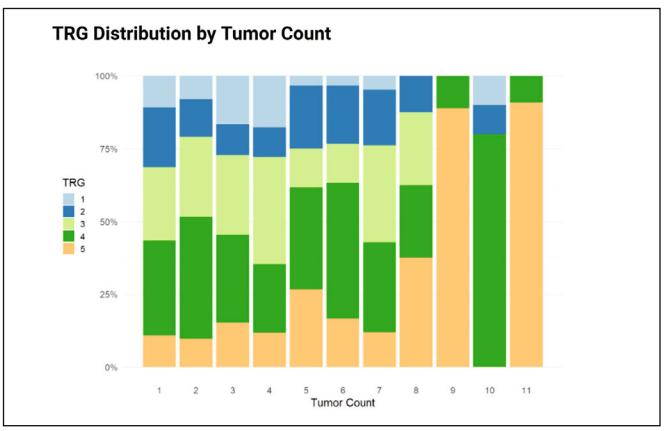

Figure 1. TRG Distribution and Heterogeneity

TRG Distribution of Individual Tumors by Variability Cohort

	TRG					
	1	2	3	4	5	Total
TRG variability						
One lesion	9 (21%)	17 (25%)	21 (19%)	27 (18%)	9 (11%)	83 (18%)
No	10 (23%)	28 (41%)	41 (38%)	39 (26%)	15 (19%)	133 (30%)
Yes	24 (56%)	23 (34%)	47 (43%)	83 (56%)	56 (70%)	233 (52%)
Total	43 (100%)	68 (100%)	109 (100%)	149 (100%)	80 (100%)	449 (100%)

Figure 1. TRG Distribution and Heterogeneity

EP428

Neoadjuvant therapy shows limited survival advantage and increased morbidity in contained perforated colon cancer

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INTRODUCTION: Perforated colon cancer (PCC) carries high morbidity and poor prognosis. A subset of patients present with contained perforation, which can often be stabilized with antibiotics, drainage, or diversion before definitive treatment. In this setting, neoadjuvant therapy (NT) may treat occult local or systemic disease, improve margin-negative resection and technical feasibility, and avoid emergency oncologic resection. Other patients proceed directly to upfront oncologic resection on their index presentation (OR). While NT is increasingly used in high-risk colon cancer, its role in PCC remains uncertain. **METHODS:** A retrospective chart review was conducted of patients with stage I–III colon cancer and contained PCC referred between 2008–2018. Patients underwent either NT or upfront OR. Primary outcome was overall survival (OS); secondary outcomes included recurrence-free survival (RFS), local and distant recurrence-free survival (LRFS, DRFS), and perioperative morbidity. Survival analyses used Kaplan–Meier, Cox proportional hazards, and restricted mean survival time (RMST). **RESULTS:** Ninety-eight patients met inclusion criteria: 76 underwent OR and 22 received NT. Five-year OS was 67% after OR and 61.8% after NT. RFS was similar between groups at 3 years (83.4% vs 87.8%) and 5 years (72.8% vs 65.0%), with no significant differences by log-rank, unadjusted, or adjusted Cox regression (all $p > 0.5$). For LRFS, hazard ratios were 1.10 (unadjusted; p=0.85) and 1.48 (adjusted; $p = 0.47$), while for DRFS, HRs were 0.66 for both unadjusted and adjusted models ($p > 0.4$). RMST analysis showed minimal differences between groups: OS –0.5 mo at 3 y and –1.3 mo at 5 y; RFS +1.0 mo at 3 y and +1.9 mo at 5 y. For LRFS, NT had slightly shorter RMST (1 mo). Differences for OS, RFS, and LRFS were not significant via bootstrapping. However, DRFS favored NT over OR (+4.1 mo at 3 y, $p = 0.056$; +6.0 mo at 5 y, $p = 0.17$). NT was associated with higher stoma creation ($p < 0.0001$) and increased Grade I–IIIa Clavien-Dindo postoperative complications ($p < 0.05$). **CONCLUSIONS:** In contained PCC, NT did not improve OS, RFS, or LRFS but showed a modest 3-year and a trend toward 5-year improvement in DRFS by RMST analysis. NT was associated with higher rates of stoma formation and postoperative morbidity. These findings should be interpreted with caution given the retrospective, single-region design, small NT cohort, and potential selection bias favoring NT in more advanced cases. Multicenter studies are warranted to clarify the role of NT in this high-risk population.

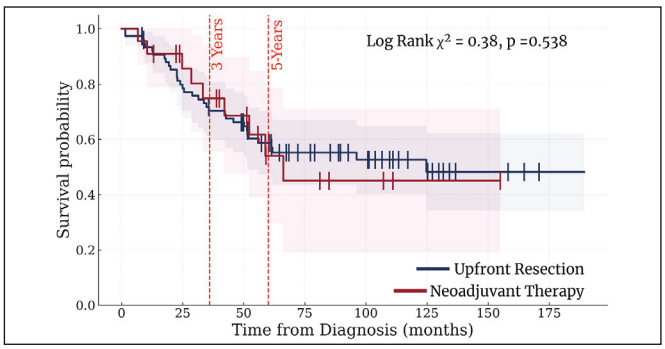

Figure. Overall Survival Comparing Neoadjuvant Therapy versus Upfront Oncologic Resection

EP429

Assessing appendiceal cancer burden and outcomes by socioeconomic status: an incidence-based retrospective cohort study

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INTRODUCTION: Appendiceal cancer is a rare disease with limited data regarding risk factors and outcomes. Although socioeconomic status (SES) is associated with treatment and survival of other gastrointestinal cancers, little is known about the impact of SES on appendiceal cancer. The goal of this study was to assess the burden of appendiceal cancer and survival by socioeconomic status. **METHODS:** Using the incidence-based Surveillance, Epidemiology and End Results (SEER) program, 14,099 appendiceal cancer patients diagnosed from 2006-2022 were identified. Descriptive statistics and survival analysis with Kaplan-Meier survival curves, Cox proportional hazard regression, and Fine-Gray competing risks regression were performed. **RESULTS:** The median age was 59 years (IQR 45-68). The cohort was 7,812 (55.4%) females. Mucinous and non-mucinous adenocarcinoma comprised 4,284 (30.4%) and 3,077 (21.8%) of patients. NET and neuroendocrine carcinoma accounted for 3,575 (25.4%) and 616 (4.4%), respectively. Goblet cell cancer and signet ring cancer accounted for 1,839 (13%), and 708 (5%), respectively. Metastasis was present in 4,120 (29.2%). The highest proportion of patients 4,317 (30.6%) were in the highest SES quintile; 3,274 (23.2%) had high SES, 2,502 (17.8%) had moderate SES, 2,162 (15.3%), and 1,844 (13.1%) in the lowest SES quintile. SES was associated with age, race and ethnicity, histology, and stage at diagnosis (p< 0.05). For the cohort, the median overall (OS) and cancer-specific survival (CSS) were 135 months and not reached, respectively. By SES, there were no differences in CSS (p=0.47) in unadjusted analysis. However, in adjusted competing risks regression, the lowest SES quintile had a 14% increased subdistribution hazard of death (SHR 1.14, 95% CI 1.01-1.29; p=0.031). **CONCLUSIONS:** In an incidence-based dataset, appendiceal cancer cases were nearly three times more common in the highest SES quintile than the lowest. While CSS was not significantly different in unadjusted analysis, after adjustment for potential confounders, the lowest SES quintile had a higher hazard of death than the highest quintile. These data demonstrate contrasting disparities in incidence and survival for appendiceal cancer by SES, which should guide future epidemiologic and clinical research.

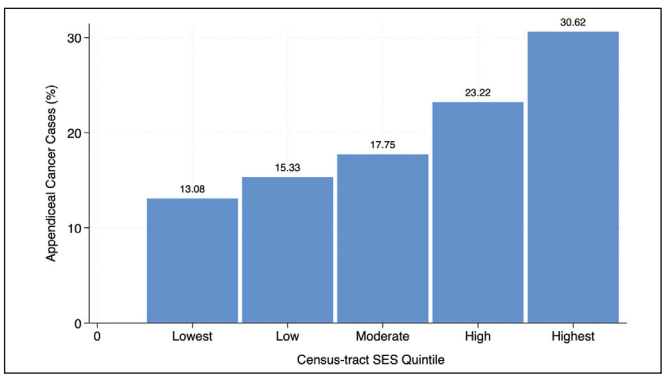

Figure 1: Proportion of Appendiceal Cancer Cases by Socioeconomic Status, 2006-2022

EP430

Contemporary Trends in Minimally Invasive Extrahepatic Cholangiocarcinoma Resections: A National Cancer Database Study

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INTRODUCTION: The use of minimally invasive surgical (MIS) approaches for resection of gastrointestinal malignancies has increased over time. While some studies have reported institutional outcomes of robotic and laparoscopic for extrahepatic cholangiocarcinoma (eCCA), their national adoption and outcomes are not well understood. **METHODS:** Patients who underwent surgical resection for Stage I-III eCCA were identified in the National Cancer Database (2010-2022), excluding liver transplantations and open conversions. Surgical approach trends were assessed using logistic regression. Multivariable logistic regression assessed patient factors associated with each surgical approach, and the association between surgical approach and lymph node (LN) yield, R0 resection, length of stay, 30-day readmission, and 30- and 90-day mortality. Kaplan-Meier and Cox proportional hazards analyses assessed 2-year overall survival (OS) for open vs. MIS (robotic + laparoscopic) resections. **RESULTS:** Among 5,465 resections for eCCA, 318 (6%) were robotic, 936 (21%) were laparoscopic, and 4,211 (77%) were open. Robotic resections increased from 0% in 2010 to 10% in 2022 (OR 1.22), while laparoscopic resections increased from 10% to 19% (OR 1.06; p for all < 0.001). Robotic and laparoscopic resections were negatively associated with Stage 3 disease (OR 0.67, p=0.033; OR 0.77, p=0.025, respectively) and neoadjuvant systemic therapy (OR 0.82, p=0.340; OR 0.77, p=0.033). Compared to open, robotic and laparoscopic resections had shorter lengths of stay (OR 0.60, p=0.121; OR 0.44, p< 0.001), lower readmissions (OR 0.58, p=0.042; OR 0.51, p< 0.001) and lower 90-day mortality (OR 0.44, p=0.013; OR 0.63, p=0.007) with similar LN yields among pN1 patients (OR 0.19, p=0.171; OR 0.26, p=0.217), similar to improved R0 resections (OR 1.22, p=0.216; OR 1.242, p=0.001), and similar use of adjuvant systemic therapy (OR 1.26, p=0.063; OR 1.13, p=0.106). There was no difference in 2-year OS among patients who underwent open compared to MIS resections from 2018-2022 on Kaplan-Meier (78% vs 75%, respectively; Log-rank p=0.1202) or multivariable Cox analysis (aHR 1.23, p=0.108). **CONCLUSIONS:** MIS approaches for eCCA are increasing, but still represent a minority of cases. Compared to open resections, MIS resections are associated with shorter hospital stays and lower short-term mortality, with comparable oncologic outcomes and equivalent overall survival since 2018. These findings highlight opportunities for further adoption of MIS approaches in select patients as MIS learning curves continue to improve.

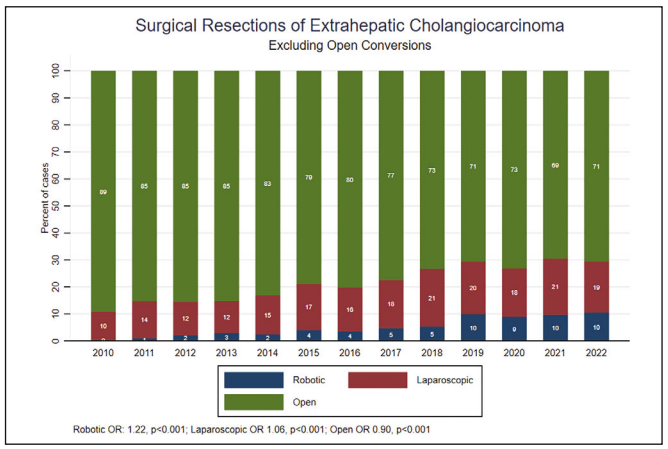

Figure. Trends in surgical approach for resection of extrahepatic cholangiocarcinoma over time

EP431

Impact of food deserts residence on outcomes of pancreatic cancer surgery: A SEER-USDA linked database analysis

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INTRODUCTION: Food deserts are associated with higher rates of chronic disease among residents and disparities in treatment outcomes. This study aimed to evaluate the association between food desert residence and survival after partial or total pancreatectomy for pancreatic cancer. **METHODS:** Adult patients diagnosed with pancreatic cancer who underwent pancreatectomy from 2015-2022, were identified from the SEER RP database. County-level food desert status was determined from the USDA Food Access Research Atlas, defined as areas with low median income relative to the state and limited access to fresh food within one mile (urban) or ten miles (rural). County scores were divided into quartiles. Kaplan–Meier survival analysis, Kruskal–Wallis tests, and linear regression were used to evaluate survival differences by food desert status. **RESULTS:** A total of 11,539 patients from 313 counties were included, 2,909 live in counties with a high percentage of food desert census tracts. There were 49.5% females, 64.9% were non-Hispanic White, 9.8% were non-Hispanic Black, and 15.1% Hispanic; 42.6% were between the ages of 40-64 and 45.3% between 65-80. When evaluating county score quartiles, over 50% of the patients lived in counties with food desert proportions in the 2nd quartile (N = 6,056), the 1st quartile had the lowest, and the 4th quartile had the highest. The 6-year mean survival probability was 0.41 in the 1st quartile and 0.34 in the 4th quartile counties. Survival progressively declined across quartiles ($p < 0.02$). In linear regression analysis, the percentage of food desert tracts per county was inversely associated with 5-year survival probability ($\beta = –0.00126$, SE = 0.00040, $p = 0.0019$), indicating a 0.13% decrease in survival probability for each 1% increase in county food desert proportion ($R^2 = 0.045$, $p < 0.01$). In multivariable linear regression controlling for disease stage, county level food desert proportion was not independently associated with 5-year survival probability ($\beta = 0.0006$, $p = 0.20$). While the overall model was significant ($F(5,231) = 9.62$, $p < 0.001$), only advanced stage showed a trend toward reduced survival (Stage IV vs Stage I, $\beta = –0.087$, $p = 0.09$). Controls for sex and race and ethnicity were not significant. **CONCLUSIONS:** Residence in a food desert is independently associated with significantly decreased 5-yr survival rates after surgical resection for pancreatic cancer. Geographic food access represents a modifiable social determinant of surgical oncology outcomes and may guide targeted community and policy interventions.

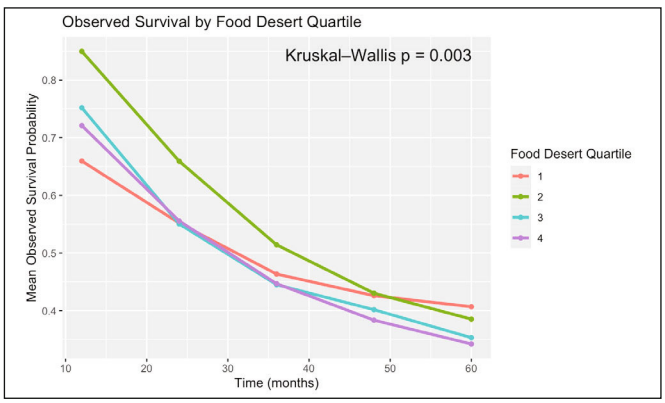

Figure. Mean survival probability of patients after pancreatic cancer resection grouped based on food desert residence.

EP432

Black Box, White Coat: Analyzing Artificial Intelligence's Ability to Synthesize Pancreatic Cancer Guidelines

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INTRODUCTION: Developing clinical guidelines is a time and labor-intensive process requiring diverse expertise and thorough literature appraisal. The potential of Artificial Intelligence (AI) in this process is not yet known. This study evaluated the ability of common AI models to synthesize pancreatic adenocarcinoma (PAC) management recommendations based on primary literature. **METHODS:** 16 questions regarding PAC "Disease Workup," "Management by Staging," "Palliative Care," and "Longitudinal follow-up," were generated based on ASO and NCCN guidelines. Each question was asked to ChatGPT 4o, Perplexity, Copilot, Gemini, and OpenEvidence, with instruction to synthesize recommendations based solely on primary literature sources. AI responses were recorded verbatim, and their concordance to accepted management recommendations and guidelines was rated on a 6-point scale by two blinded surgical oncologists with a clinical practice focused on pancreatic disease (0=incorrect, 1=insufficient/missing essential elements, 2=insufficient, missing minor elements, 3=concordant, 4=overly inclusive, added unnecessary elements, 5=over-conclusive with hallucinations). Concordance was determined via calculating the percentage of "concordant" ratings out of the total number of responses. Results were summarized and analyzed using Cohen Kappa, with inter-rater agreement defined as scores within 1 point, and one-way ANOVA. **RESULTS:** Analysis of responses identified an inter-rater Cohen kappa at 0.73, indicating good inter-user agreement. The mean answer rating overall was 3.2, with individual model means as follows: ChatGPT 3.6, Perplexity 3.1, Gemini 3.2, Copilot 2.9, and OpenEvidence 3.1. OpenEvidence displayed the highest response concordance rate of 87.5% (p=0.001), while ChatGPT 4o had the lowest concordance rate at 18.8%. Perplexity showed a 71.9% concordance rate, Copilot exhibited a 65.6% concordance rate, and Gemini demonstrated a 56.3% concordance rate. No models produced an "incorrect" answer. ChatGPT and Copilot produced hallucinations at 15.6% and 3.2% of responses, respectively. **CONCLUSIONS:** The optimal management of pancreatic cancer remains controversial and current guidelines aid practitioners in providing care. Although certain models provide reliable information, AI can provide non-concordant recommendations when attempting to synthesize PAC management strategies based on their algorithms. Further investigation into these observations is needed to safely integrate AI models into the development of clinical practice guidelines.

EP433

Ultra-high Dose Rate Radiotherapy as a Potential Advancement in the Treatment of Breast Cancer and Other Solid Tumors

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INTRODUCTION: Surgical oncologists are well aware that radiotherapy (RT) is a valuable adjunct in the management of solid tumors for local and regional disease control, recurrence prevention, and treatment of metastatic disease. However, few consider the dose-rate at which RT is delivered. Preclinical studies altering the conventional dose of RT (CONV, <0.1 Gy/s) to an ultra-high dose rate (>40 Gy/s, FLASH) have demonstrated remarkable promise due to the unexpected phenomenon of equivalent tumor control while sparing normal tissues. **METHODS:** Our group compared FLASH and CONV in preclinical breast cancer models to evaluate tumor control and normal tissue responses. Tumor control was assessed in both syngeneic and xenograft orthotopic models using immunocompetent C57BL/6 and immunodeficient NRG mice, respectively. Normal tissue toxicity (NTT) was also evaluated during breast RT in C57BL/6 mice and following repeated irradiation to simulate treatment of local recurrence in NRG mice. Diminished activation of the cGAS-STING pathway has been implicated as a potential mechanism for the FLASH effect, so NTT and tumor control were examined in C57BL/6 cGAS -/- mice. **RESULTS:** FLASH consistently achieved equivalent tumor control to CONV across all models while markedly reducing NTT, especially in the skin during the early post-RT phase (Fig. 1). Removal of cGAS activation partially mimicked the normal tissue protection conferred by FLASH suggesting a signaling pathway that mediates RT toxicity. Moreover, the translatability of FLASH is starting to be shown in early human feasibility studies in cutaneous T-cell lymphoma, melanoma, basal cell carcinoma, squamous cell carcinoma, and bone metastases from solid tumors. **CONCLUSIONS:** FLASH represents a potentially powerful approach in controlling tumor growth while minimizing NTT in breast and other solid tumors. Although the precise mechanism underlying the FLASH effect requires further investigation, the data suggest that attenuated activation of the STING pathway may contribute to its protective effects. Translation of FLASH from the lab to the clinic may represent a way to ameliorate morbidity from traditional RT used to treat breast cancer and other solid tumors.

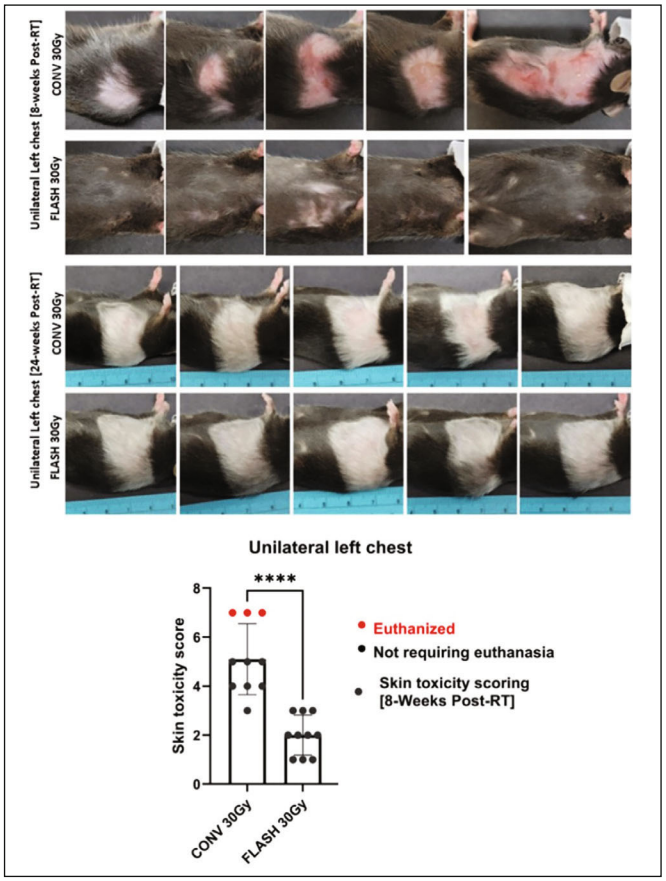

Figure 1

EP434

National Impact of the COVID-19 Pandemic on Late-Stage Presentation of Screen-Detectable Cancers

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INTRODUCTION: The COVID-19 pandemic disrupted routine screening and diagnostic services, raising concerns regarding delayed cancer detection and disease progression. This aim of this study was to evaluate national trends in stage at presentation for major screen-detectable malignancies before and during the COVID-19 era. **METHODS:** A retrospective analysis of the National Cancer Database (NCDB, 2010-2022) was done for patients with breast, colorectal, rectal, cervical, or melanoma. Diagnosis year was categorized as either pre-COVID (≤2019) or COVID-era (2020–2022). Demographic, clinical, and pathologic data were collected. Multivariable logistic regression assessed the independent association between diagnosis period and advanced stage, adjusting for age, sex, comorbidity, and cancer site. **RESULTS:** After exclusion, 1,618,768 patients were found to have breast, colorectal, rectal, cervical, or melanoma. Of those, 59.7% were diagnosed during the COVID era. Overall, 16.6% presented with advanced disease, with a slight increase during the COVID era compared to pre-COVID years (17% vs 16%, p< 0.001). After multivariate regression, COVID-era diagnosis demonstrated higher odds of advanced presentation (adjusted OR 1.06, 95% CI 1.05–1.07, p< 0.001). Increasing Charlson–Deyo comorbidity score correlated with progressively higher odds of advanced stage (OR 1.06–1.22, p< 0.001). Compared to breast cancer, colorectal, rectal, and cervical cancers had significantly greater odds of late-stage presentation, while melanoma was less likely to present advanced (all p< 0.001). **CONCLUSIONS:** The COVID-19 pandemic demonstrated a significant but modest increase in advanced-stage presentation across major screening-related cancers. These findings underscore the long-term oncologic effects of disrupted screening and the need for resilient preventive infrastructure during future public health crises.

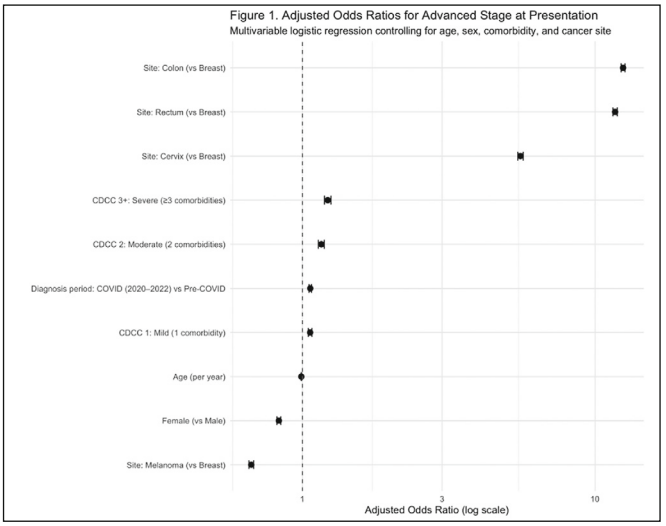

Figure 1: Multivariate logistic regression for advanced stage at presentation

EP435

Maintaining Quality Cancer Care: Temporal Trends in Commission on Cancer Hospital Accreditation Status

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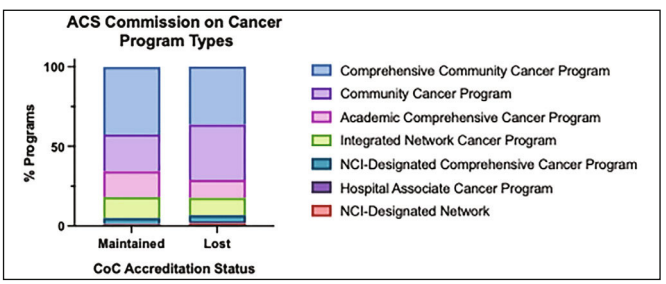
INTRODUCTION: The American College of Surgeons (ACS) Commission on Cancer (CoC) maintains rigorous standards for hospitals to ensure high quality cancer care delivery. Previous studies have shown that CoC accreditation status is associated with increased receipt of guideline concordant cancer care. Hospitals must undergo triennial review to maintain their accreditation status. It is unknown how frequently CoC hospital accreditation status changes over time. **METHODS:** Using the Agency for Healthcare Research and Quality (AHRQ) Compendium of U.S. Health Systems, we compared accreditation status for US hospitals between 2021 and 2025, a period spanning at least one accreditation cycle per hospital. Descriptive statistics were used to compare CoC program types and hospital characteristics among hospitals that maintained, gained, or lost accreditation. **RESULTS:** There were 6742 US hospitals in 2021, of which 17.3% (n=1164) had CoC accreditation. Of these hospitals, 82.3% (n=951) maintained CoC accreditation status, while 17.7% (n=204) lost CoC accreditation status by 2025. An additional 295 gained accreditation status during the study period. Hospitals that lost CoC accreditation were more likely to be community cancer programs (34.8% vs. 23.1%, p< 0.001) and for-profit/investor-owned hospitals (26.0% vs. 9.8%, p< 0.001). In contrast, hospital centers who kept CoC accreditation were more likely to be not-for-profit (60.0% vs. 45.3%, p< 0.001), larger (bed count 341 ± 275 vs. 236 ± 197, p< 0.001), and have higher net patient revenue ($681,444,003 ± $738,115,607 vs. $398,735,365 ±$450,669,743, p< 0.001). Neither hospital payer mix, defined based on the hospital's overall caseload of low-income insured patients, nor major teaching hospital status, defined as resident-to-hospital bed ratio ≥ 0.25, were associated with CoC accreditation status (p=0.29 and p=0.14, respectively). **CONCLUSIONS:** Over 80% of accredited centers maintained their status over an accreditation cycle. Community programs and for profit hospitals were more likely to lose accreditation.



ABSTRACTS

Participating in the

GLOBAL PARTNER POSTERS PROGRAM

SSO 2026 ANNUAL MEETING

Society of Surgical Oncology

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Oral Podium Presentations

GP1

Digital biopsy of high-grade colorectal cancer with Radiomics using preoperative PET

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INTRODUCTION: In recent years, personalized medicine has been attempted in cancer treatment, using various biomarkers to predict treatment efficacy and prognosis. Recently, research on diagnosis and prognosis prediction using Radiomics, which analyzes image features extracted from medical images, has been attracting attention. In the area of colorectal cancer (CRC), studies using CT examinations have reported its usefulness. PET scans provide images of cellular and tissue functions and provide information that more closely reflects cancer activity. In this study, we aimed to evaluate whether radiomics features derived from PET images can enable digital biopsy for the identification of high-grade CRC. **METHODS:** his retrospective study included patients with CRC who underwent surgical resection between 2015 and 2019 and received preoperative PET imaging. Poorly differentiated adenocarcinoma, signet-ring cell carcinoma, and mucinous carcinoma were defined as high-grade CRC. Preoperative PET images were analyzed using 3D Slicer (version 4.11), and tumor volumes were automatically segmented in three dimensions. A total of 113 radiomics features were extracted. Feature normalization and selection were performed using R software (version 4.2.3), and least absolute shrinkage and selection operator (LASSO) regression was applied to identify radiomics features associated with high-grade CRC. Multivariable logistic regression analysis incorporating clinical variables and selected radiomics features was conducted. Receiver operating characteristic (ROC) curve analysis was used to determine optimal cutoff values and evaluate diagnostic performance. **RESULTS:** A total of 454 patients were included (mean age, 68.3 ± 12.6 years; 57.3% male). High-grade CRC was identified in 35 patients. Among the radiomics features, the maximal correlation coefficient (MCC) was selected by LASSO regression model. Logistic regression analysis demonstrated that higher MCC values were associated with a lower risk of high-grade CRC (hazard ratio = 0.532; 95% confidence interval [CI], 0.403–0.702; $p < 0.001$). ROC analysis identified MCC < −0.760 as the optimal cutoff value for predicting high-grade CRC (area under the curve = 0.6715; 95% CI, 0.558–0.785). The incidence of high-grade CRC was 4.1% (15/366) in the MCC-high group and 22.7% (20/88) in the MCC-low group ($p < 0.001$) (sensitivity 57.1%, specificity 83.8%). **CONCLUSIONS:** Among radiomics features extracted from PET images, a single feature was shown to enable digital biopsy for high-grade CRC, suggesting the potential clinical utility of PET-based radiomics in noninvasive tumor characterization.

GP2

Adjuvant endocrine therapy patterns and survival outcomes among premenopausal women with HR+/HER2- early breast cancer undergone multigene assay.

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INTRODUCTION: HR+/HER2- breast cancer (BC) is associated with persistent late recurrence risk. While multigene assays (MGAs) are established for guiding chemotherapy, their utility in guiding extended endocrine therapy (ET) and ovarian function suppression (OFS) remains under investigation. **METHODS:** This multicenter, retrospective study included 4,208 premenopausal women with HR+/HER2- BC who underwent surgery followed by MGA between 2011 and 2023. We evaluated the benefit of extended ET and OFS stratified by MGA risk and clinical risk. Landmark analysis at 5 years was performed to mitigate immortal time bias. **RESULTS:** Of the 4,152 patients included who received ET, median age was 44.4, 27.1% had node positive disease, and 19.7% were MGA high-risk. MGA high-risk patients were significantly more likely to receive chemotherapy (87.1% vs 9.6%, $p<0.01$) but less likely to receive extended ET (OR 0.71, $p=0.017$). In the 5-year landmark analysis, extended ET demonstrated a DFS benefit in all subgroups, and the benefit was much greater in the genomic high-risk group. Extended ET provided a substantial survival benefit in the MGA high-risk group (10-year DFS: 94.9% vs 69.2%, absolute difference 25.7%, $p=0.086$), compared to the low-risk group (97.2% vs 94.0%, $p<0.05$). While adding ovarian suppression did not result in survival benefit among the 4,208 premenopausal EBC patients. survival benefit was observed in a small subgroup of patients with concordant high genomic and high clinical risk group who did not receive chemotherapy (n=25). In this specific group, the addition of OFS yielded significantly better survival compared to tamoxifen alone (5yr DFS 73.8% vs 96.7%, $p=0.003$). **CONCLUSIONS:** Our real-world data suggest that 10yr ET improves long term outcome for premenopausal women with EBC, especially for MGA high-risk with substantial late recurrence risk. Furthermore, for patients with both high genomic and clinical risk, OFS provides a significant survival benefit compared to Tamoxifen or AI alone, when optimal chemotherapy cannot be given.

GP3

From Scalpel to Slide: The Enigma of Tumor Margin Shrinkage in Oral Cancer Resection

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INTRODUCTION: In oral squamous cell carcinoma (OSCC), histologically "close" margins can mislead, driven not by inadequate surgery but by invisible tissue shrinkage post-resection. This prospective study quantifies how much, when, and where margins shrink and identifies tumor and anatomical predictors—laying the groundwork for precision-guided surgery and margin-informed adjuvant decisions. This study was designed with two primary goals:

1. To quantify the magnitude and timing of surgical margin shrinkage across four critical phases of specimen handling; and
2. To identify anatomical and pathological predictors (e.g., subsite, T-stage, PNI, LVI) that influence shrinkage behavior—thereby informing subsite-adapted surgical planning.

METHODS: This prospective observational study included 45 patients with biopsy-proven OSCC undergoing primary curative surgery. Margins were measured at four distinct stages:

- S1: In vivo to immediate post-resection
- S2: Post-resection to 24h our fixation
- S3: 24hour to 48hour fixation
- S4: At Final histopathological reporting

Mean Shrinkage (S″) was calculated phase-wise and subsite-wise. Statistical tests included paired t-tests, ANOVA, Spearman correlation, and multivariate linear regression to identify independent predictors. A sensitivity analysis excluded under-represented subsites.

RESULTS:

- Mean total shrinkage: 25.7%, with the largest drop immediately post-resection (S1: 15.5%)
- Highest shrinkage observed in: upper alveolus (31.2%), lower alveolus (27.6%), buccal mucosa (26.1%)
- Multivariate predictors of greater shrinkage ($p < 0.05$):
- Advanced T-stage
- Poor histological grade
- Presence of PNI and LVI
- DOI >10 mm
- Tongue tumors demonstrated significantly less shrinkage ($\beta = -0.28$, $p = 0.026$).

CONCLUSION: Margin shrinkage is not a minor artifact—it's a clinical reality. Over one-fourth of surgical margins vanish before reaching the microscope, often converting a "clear" cut into a "close" margin on paper. These findings demand a shift from static to dynamic margin planning, integrating tumor biology and subsite behavior into surgical execution. This study advocates for margin correction protocols and multidisciplinary awareness—to protect patients from overtreatment, and surgeons from misjudgment.

STRENGTH OF THE STUDY: This is among the first prospective studies to reframe surgical margin shrinkage in OSCC not as a fixed measurement—but as a dynamic, biologically driven, subsite-specific process unfolding across four real-time phases. By capturing shrinkage as it truly occurs—layer by layer, phase by phase—this work offers a paradigm shift for every surgical oncologist planning margins, every radiation oncologist debating a 'close call', every pathologist interpreting inked edges, and every medical oncologist deciding systemic therapy based on histologic margins. What you see under the microscope may no longer reflect what was actually resected. This study compels the head and neck cancer community to pause, recalibrate, and realign margin-based decisions across disciplines—from scalpel to slide to tumor board.

GP4

Characterizing Colorectal Liver Metastases In Nigeria: A Prospective Multicenter Database Review

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INTRODUCTION: Colorectal cancer (CRC) incidence is rising in sub-Saharan Africa, with over 30% of Nigerian patients presenting with metastatic disease. Data on the patterns, diagnosis, and outcomes of colorectal liver metastases (CRLM) in Nigeria are scarce. Such data can inform treatment planning and elucidate regional differences in CRC biology. This study described the clinicopathologic features, treatment, and survival outcomes of CRLM in a large cohort from Nigeria. **METHODS**: We retrospectively reviewed a prospectively maintained CRC registry spanning seven Nigerian hospitals from November 2013 to March 2025. Adults (≥18 years) with histologically confirmed CRC and documented liver metastases were included. Extracted data included demographics, primary tumor location, timing of metastases, diagnostic modality, and survival outcomes. **RESULTS**: Of 1,315 CRC patients, 464 (35.3%) had metastatic disease, and of this, 272 (58.6%) had liver-only metastases. The vast majority of CRLM were synchronous (97.1%; n=264). Diagnosis of CRLM was made with abdominal ultrasound in 30.4%, abdominal CT in 56.0%, and incidental laparotomy findings in 13.5%. The mean age at CRLM diagnosis was 56.5 ± 15.3 years; 59.4% were male. The distribution of primary tumor locations was as follows: rectum (48.2%), sigmoid colon (18.0%), left colon (8.5%), transverse colon (3.7%), right colon (18.0%), and cecum (3.7%). The median survival time of the patients with CRLM is 8 months. **CONCLUSION**: In this multicenter Nigerian cohort, over half of patients with metastatic CRC present with CRLM, predominantly synchronous. Survival remains poor, highlighting an urgent need for earlier detection, wider access to advanced imaging, and strengthened multidisciplinary care to improve outcomes in Nigeria.

GP5

Cervical Cancer Self-Sampling Screening in Chenalhó, Chiapas.

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INTRODUCTION: Cervical cancer (CC) ranks fourth in incidence among cancers in women and is the fourth leading cause of death from gynecological cancers worldwide. In Mexico, CC is a public health issue. In 2021, CC was the third leading cause of death among women aged 15 to 29, and the second leading cause in the 30 to 59 age group. The primary or necessary risk factor is persistent infection with one of the 14 carcinogenic or high-risk HPV genotypes: 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, and 68. But infection alone does not always cause cancer. Progression to cancer depends on interaction with other risk factors that facilitate viral persistence and cellular damage. In rural and Indigenous communities such as Chenalhó, Chiapas, women have not had access to early detection programs due to inequalities in infrastructure, language barriers, and socioeconomic and cultural conditions. Therefore, the objective of this study is to conduct cervical cancer screening using HPV DNA and mRNA assays, as well as to evaluate the acceptance of self-sampling in Chenalhó, Chiapas. **METHODS:** A prospective, cross-sectional study was conducted in 125 women aged 25 years and older, who were recruited with the assistance of an interpreter (Tzotzil speakers) and provided written informed consent. Self-sampling was performed using the XytoTest device (Mel-Mont Medical). Vaginal and cervical cells were processed for the detection of HPV DNA (Abbott) and mRNA of the E6 and E7 oncoproteins from seven high-risk HPV types (PreTect HPV-Proofer). Histopathological examination, biopsy, and cervical conization were performed in women with abnormal findings. Descriptive statistics were applied. **RESULTS:** HPV DNA positivity was 16%, whereas E6/E7 mRNA positivity was 3.2% (Table 1). Histopathological examination of biopsy and cervical conization specimens confirmed the lesions. HPV DNA tests detect both transient and persistent infections, whereas HPV mRNA tests identify persistent infections by detecting the expression of the viral oncoproteins E6 and E7, which initiate the carcinogenic cascade. More than 94% of participants reported no discomfort or difficulty with the self-sampling procedure. **CONCLUSIONS:** The screening approach based on HPV testing and the acceptability of self-sampling proved to be an effective alternative for the detection of precancerous lesions and the prevention of CC through timely treatment among low-income women from Chenalhó with limited access to health services.

Table 1. Molecular and Histopathological findings in 125 women from Chenalhó, Chiapas

	DNA	mRNA	Histopathological study Biopsy | Cervical conization		Age of lesion-positive cases
Total	21 (16%)	4 (3.2%)	4(3.2%)	3	
HPV-16	3 (2.4%)	0			
HPV-18	0	0			
Pool HPV (12 high-risk HPV) (A case of HPV-16 coinfection)	19 (15.2%)	4 (HPV-31) 2 (HPV-58 coinfectión)	2 (CIN 1) 1 normal	1 (CIN1) 2 (CIN 2)	41 29, 31
HPV, Human papillomavirus; CIN, Cervical intraepithelial neoplasia					

GP6

Evaluating the Safety of Sentinel Node Biopsy Omission in Early-Stage Invasive Lobular Carcinoma

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INTRODUCTION: Recent trials suggest omission of sentinel lymph node biopsy (SLNB) in selected early-stage breast cancer patients. However, invasive lobular carcinoma (ILC) is underrepresented and retrospective data indicate higher rates of nodal metastases raising concern for axillary understaging. This study aims to evaluate the prevalence and predictors of nodal metastases in early-stage, clinically node-negative ILC and assess the oncologic safety

of SLNB omission. **METHODS:** We retrospectively analyzed 625 patients with ER-positive/HER2-negative, T1–T2, clinically node-negative ILC who underwent breast-conserving surgery at our institution between 2004–2024. Exclusion criteria included neoadjuvant therapy, tumor >5 cm, metastatic disease at diagnosis or prior breast cancer. **RESULTS:** Among 625 patients, 471 (75.4%) were pN0 and 154 (24.6%) had nodal metastases (pN1mi–pN3). Histologic subtype significantly correlated with nodal involvement ($p = 0.0035$): classic ILC predominated in pN0 cases (66.1%), while pleomorphic and mixed variants were more common in node-positive patients. Tumor size was strongly associated with nodal burden ($p < 0.0001$). Menopausal status was not predictive ($p = 0.572$). **CONCLUSIONS:** Nearly 25% of early-stage, clinically node-negative ILC harbor occult nodal metastases. Classic ILC and smaller tumors correlate with negative nodal status whereas pleomorphic/mixed histology and larger tumors predict advanced nodal involvement. These findings indicate that omission of SLNB in ILC may carry a risk of axillary understaging and consequent therapeutic implications. Pending evidence from prospective studies specifically designed for lobular histology, SLNB should continue to be considered an essential component of axillary evaluation in this subgroup.

Table. Clinicopathologic Features by Pathologic Nodal Status in 625 Patients

	Total (n=625)	pN0 (n=471)	pN1mi (n=30)	pN1 (n=101)	pN2 (n=13)	pN3 (n=10)	p-value
Menopausal status							
Premenopausal	165 (26.4%)	118 (71.5%)	8 (4.8%)	32 (19.5%)	3 (1.8%)	4 (2.4%)	0.572
Postmenopausal	460 (73.6%)	353 (76.7%)	22 (4.8%)	69 (15%)	10 (2.2%)	6 (1.3%)	
Ki67							
<20	397 (63.5%)	293 (73.8%)	17 (4.3%)	70 (17.7%)	10 (2.5%)	7 (1.7%)	0.461
≥20	228 (36.5%)	178 (78.0%)	13 (5.7%)	31 (13.6%)	3 (1.3%)	3 (1.3%)	
Grading							
G1	16 (2.4%)	13 (81.3%)	1 (6.2%)	2 (12.5%)	0	0	**0.023**
G2	520 (83.3%)	400 (76.9%)	18 (3.5%)	85 (16.4%)	9 (1.8%)	8 (1.4%)	
G3	89 (14.3%)	58 (65.1%)	11 (12.3%)	14 (15.7%)	4 (4.6%)	2 (2.3%)	
Subtype							
Classical	413 (66.1%)	324 (78.5%)	15 (3.5%)	65 (15.8%)	7 (1.7%)	2 (0.5%)	**0.0035**
Solid	19 (3.1%)	13 (68.4%)	3 (15.8%)	3 (15.8%)	0	0	
Pleomorphic	86 (13.7%)	58 (67.5%)	5 (5.8%)	15 (17.5%)	3 (3.5%)	5 (5.9%)	
Alveolar	25 (4.0%)	21 (84%)	0	3 (12%)	0	1 (4%)	
Mixed	52 (8.3%)	34 (65.4%)	6 (11.5%)	9 (17.3%)	3 (5.7%)	0	
Others	30 (4.8%)	21 (70%)	1 (3.3%)	6 (20%)	0	2 (6.7%)	
Pathological tumor size							
pT1mic/pT1a	20 (3.2%)	18 (90%)	1 (5%)	1 (15%)	0	0	**< 0.0001**
pT1b	137 (21.9%)	126 (91.9%)	2 (1.5%)	6 (4.4%)	2 (1.5%)	1 (0.7%)	
pT1c	288 (46.1%)	221 (76.7%)	11 (3.9%)	46 (15.8%)	5 (1.8%)	5 (1.8%)	
pT2	180 (28.8%)	106 (58.9%)	16 (8.9%)	48 (26.7%)	6 (3.4%)	4 (2.3%)	
ALND							
No	524 (83.8%)	454 (86.6%)	25 (4.8%)	44 (8.4%)	1 (0.2%)	0	**< 0.0001**
Yes	101 (16.2%)	17 (16.9%)	5 (4.9%)	57 (56.4%)	12 (11.9%)	10 (9.9%)	

ALND: Axillary Lymph Node Dissection

GP7

Preliminary Spatial Transcriptomic Analysis for Invasive Lobular Carcinoma

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INTRODUCTION: Invasive lobular carcinoma (ILC) is a distinct and clinically challenging subtype of breast cancer characterized by diffuse growth patterns and frequent lymph node metastasis. While ILC exhibits unique biological features compared with other breast cancer subtypes, its tumor microenvironment and spatial heterogeneity remain insufficiently understood using conventional transcriptomic approaches. This study aimed to perform a preliminary spatial transcriptomic analysis of ILC to investigate tumor heterogeneity, microenvironmental interactions, and molecular features associated with lymphatic dissemination. **METHODS:** Primary tumor tissues from ILC patients and matched lymph node metastases were analyzed using the 10x Genomics Visium Spatial Gene Expression platform. Spatial transcriptomic data were integrated and analyzed to reduce batch effects and enable clustering, dimensionality reduction, and cell type annotation. Differential gene expression and functional enrichment analyses were conducted to identify biologically relevant pathways and molecular signatures. **RESULTS:** Nineteen distinct clusters were identified, demonstrating marked spatial and transcriptional heterogeneity across primary and metastatic tissues. EpCAM expression was weak or absent in lobular carcinoma regions and was mainly detected at the tumor periphery and in limited metastatic areas. Enrichment analysis revealed activation of endoplasmic reticulum stress, unfolded protein response, and nucleosome assembly pathways. Genes including JCHAIN, IGKC, and TDO2 were upregulated in primary tumor regions. Tumor cell populations expressed KRT8/18, ESR1, and GATA3. Comparative analysis identified upregulation of HEPACAM2 and downregulation of the tumor suppressor TUSC3, suggesting enhanced migratory and invasive potential. **CONCLUSIONS:** Spatial transcriptomics is a feasible and informative approach for characterizing the complex architecture of ILC. Distinct molecular and spatial features between primary and metastatic sites highlight tumor heterogeneity and microenvironmental interactions. The limited role of EpCAM in ILC and the identification of HEPACAM2- and TUSC3-associated pathways provide potential insights for improved biomarker development and personalized therapeutic strategies.

GP8

The Nodal Nexus: Unraveling the Lymph Node Dynamics and Outcomes in Node-Positive Carcinoma Penis

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INTRODUCTION: While early-stage, organ-confined disease has favorable outcomes, lymph node metastasis remains the most important prognostic determinant. Approximately one-third of patients present with nodal involvement, and 20–25% of clinically node-negative cases harbor occult metastases. Accurate risk stratification in node-positive disease is essential for guiding therapeutic decisions and improving survival. **METHODS:** This retrospective study analyzed medical records of 1200 patients treated for carcinoma of the penis at the Cancer Institute (WIA) between 1990 and 2022. Of these, 354 patients were pathologically node-positive and included in the final analysis. Demographics, tumor characteristics, nodal status, treatment modalities, and outcomes were recorded. Descriptive statistics summarized baseline data. Kaplan-Meier methods were used for survival analysis. Cox regression was employed to identify factors associated with overall survival (OS) and disease-free survival (DFS). **RESULTS:** The study cohort of 354 node positive patient's had a mean age of 52.7 years, with 24.3% being smokers and 28.2% presenting with comorbidities, primarily diabetes (10.5%) and hypertension (5.1%). Grade 2 tumors were the most common (54.5%), while lymphovascular invasion and perineural invasion were observed in 7.6% and 3.2% of cases, respectively. Pathologically, nearly half of the patients were staged as pN3 (48.6%), and extranodal extension (ENE) was identified in 35.9%. Penile-preserving surgery was performed in 77.4% of patients, with Ilio-inguinal lymph node dissection (IIBD), pelvic lymph node dissection (PLND), and superficial inguinal block dissection (SIBD) carried out in 79.9%, 87.6%, and 88.4% of cases, respectively. Adjuvant chemotherapy was administered to 20.1% of patients, while postoperative radiotherapy (PORT) was given to 5.4%. Recurrence occurred in 30.5% of patients, most commonly in nodal regions (12.7%). The five-year overall survival (OS) rate was approximately 60%, with a median OS of 100.3 months. Median disease-free survival (DFS) was not reached, though 25% of patients experienced recurrence within 13.8 months. Significant predictors of poor OS included recurrence (HR 3.79, $p<0.001$), pN3 stage (HR 1.89, $p=0.037$), and pN2 stage (HR 1.75, $p=0.050$), whereas adjuvant chemotherapy had a protective effect (HR 0.50, $p=0.008$). Additionally, high lymph node ratio (LNR), ENE, bilateral nodal involvement, and pelvic metastases were correlated with poorer prognosis. **CONCLUSIONS:** Groin dissection is a key intervention in managing node-positive penile cancer. Nodal stage and recurrence are the strongest predictors of survival. Multimodality approaches, including early lymphadenectomy and adjuvant therapy, improve outcomes in high-risk patients. Despite available prognostic markers, most data remain retrospective and institution-specific. There is a need for multicenter prospective trials and individualized, multidisciplinary care strategies for this challenging subgroup.

GP9

Immigrant Women's Breast Cancer Treatment Experience in a Canadian Healthcare System: A Qualitative Study

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INTRODUCTION: Marked disparities in care exist between immigrant and non-immigrant women with breast cancer in Canada. Immigrants present with more advanced disease and are less likely to be diagnosed by screening, receive radiation after breast conserving surgery, and have reconstruction after mastectomy. Understanding of individual, provider, and systemic factors that may be contributing to these differences is indicated to improve the care of this marginalized population. **METHODS:** A qualitative study design using semi-structured interviews and thematic analysis was conducted with focus on barriers to healthcare and strategies for improving care pathways. Interviews were audio-recorded, transcribed verbatim, and inductively coded by two independent investigators, until data saturation was determined to be reached. Emerging themes were validated with the larger research team. **RESULTS:** Interviews with 17 immigrant women with breast cancer were conducted, with demographics summarized in Table 1. Three main themes emerged: 1. perception of breast cancer as a unifying experience, 2. exacerbation of stressors due to the lack of social safety network, and 3. self-advocacy balanced against gratitude for treatment. Most participants denied experiencing discrimination during treatment, despite having experienced discrimination in non-clinical settings. Participants understood this to be because breast cancer is an equalizing and unifying experience that transcends race, ethnicity, and cultural background. They also described challenges such as financial strain and availability of childcare to be exacerbated by their lack of social safety network in Canada. Finally, they reinforced the need for strong self-advocacy throughout their treatment journey. This feeling was balanced against gratitude to receive treatment without out-of-pocket costs within a high-resource healthcare system. **CONCLUSION:** Immigrant women with breast cancer perceived the diagnosis of breast cancer to be unifying and equalizing. Despite this, they experienced unique challenges which point to the need for enhanced supports to meet practical needs and for treatment navigation.

Table 1: Participant demographics

Demographic Variable	n(%)
Age	
<50	3 (17.6)
50-65	9 (52.9)
>65	3 (17.6)
Race	
Asian or pacific islander	11 (64.7)
Black	4 (23.5)
White	1 (5.9)
Middle Eastern	1 (5.9)
Years in Canada	
<20 years	5 (29.4)
20-40 years	9 (52.9)
>40 years	3 (17.6)
Refugee Status	
No	16 (94.1)
Yes	1 (5.9)
Country of Origin	
EastAsia and Pacific	5 (29.4)
Europe and CentralAsia	3 (17.6)
SouthAsia	3 (17.6)
MiddleEas and NorthAfrica	3 (17.6)
Latin America and the Caribbean	2 (11.8)
Sub-Saharan Africa	1 (5.9)
Language at Home	
English	5 (29.4)
Mix of English and non-English	5 (29.4)
Non-English	7 (41.2)
Highest Level of Education	
Less than high school	1 (5.9)
High school/GED	1 (5.9)
College/University	12 (70.6)
Masters/Doctorate	3 (17.6)
Employment Status	
Employed	14 (82.4)
Unemployed	3 (17.6)

(Table continued)

GP10

Evaluation On The Safety Of Sentinel Lymph Node Detection By Surgeons In Training In Gynecological Cancers

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[1]Sao Vicente Hospital, Gynecological Oncology Department, Curitiba, Brazil; [2]Erasto Gaertner Hospital, Gynecological Oncology Department, Curitiba, Brazil; [3]PUC University, Curitiba, Brazil

INTRODUCTION: In gynecological tumors, the main form of dissemination occurs through the lymphatic chains.[1] The role of lymphadenectomy in endometrial and cervical cancer has been questioned, especially in early stages and considering the morbidity related to the procedure. Few studies have demonstrated the learning curve required to perform sentinel lymph node in gynecological neoplasms and less studies the learning curve with surgeons in training. **METHODS:** Prospective study carried out between 2016 and 2023 at the Erasto Gaertner Hospital in Curitiba PR Brazil, with patients with an initial diagnosis of cervical and endometrial cancer undergoing sentinel lymph node assessment performed by resident or fellow surgeons under the direct supervision of a qualified preceptor. A comparison was also made of four isolated and/or combined methodologies for identifying the sentinel lymph node (SLN) and the patients were allocated into four groups: patent blue alone; Indocyanine Green alone; patent blue associated with lymphoscintigraphy; indocyanine green associated with lymphoscintigraphy. **RESULTS:** A total of 334 patients underwent sentinel lymph node examination, 144 (43.1%) for cervical cancer and 190 (56.8%) for endometrial. The surgical route was 223 (66.8%) laparoscopic, 100 (29.9%) open and 11 (3.3%) robotic assisted. The method used to detect the sentinel lymph node was patent blue only in 157 (47%) patients, indocyanine green only in 15 (4.3%), patent blue associated with lymphoscintigraphy in 101 (29.3%) and indocyanine green with lymphoscintigraphy in 61 (17.7%). Detection rates using patent blue alone were 23.6% on one side only and 58% bilaterally, better rates were observed using indocyanine green with a detection rate of only 6.6% unilaterally and 86.7% bilaterally and reaching 91.5% when associated with the use of lymphoscintigraphy, rates similar to the literature.[8;11] In the analysis of the subgroups, we identified 66,8% laparoscopic and with a surgical time and time to detection (25 min) similar to literature. **CONCLUSIONS:** We demonstrated that residents and fellows under the supervision of an experienced surgeon have a sentinel lymph node detection rate similar to the literature. In this way, we hope to contribute to improving the training of future surgeons, leading to an improvement in the quality of the technique and better treatment for patients.

Detection rate by groups

Side	Detection (%)			
	G1. Patent blue	G2. IC Green	G3. Blue + ly	G4. Green + ly
Non	18.5	6.6	0.0	0.0
Unilateral	23.6	6.6	30.0	8.4
Bilateral	58.0	86.7	70.0	91.5

IC: indocyanine; ly: lymphoscintigraphy
P-value from chi-square: <0,001

GP11

Thyro-GenAI: A Chatbot Using Retrieval-Augmented Generative Models for Personalized Thyroid Disease Management

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[1]Department of Surgery, Seoul National University College of Medicine, Seoul Metropolitan Government Seoul National University Boramae Medical Center,

Seoul, Korea; [2]Graduate School of Convergence Science and Technology, Seoul National University, Suwon, Korea; [3]ZeroOne AI Inc, Toronto, Ontario, Canada; [4]Department of Biomedical Informatics, Graduate School of Medicine, CHA university, Seongnam-si, Gyeonggi-do, Korea; [5]Department of Surgery, Seoul National University Bundang Hospital, Seongnam-si, Gyeonggi-do, Korea; [6]Transdisciplinary Department of Medicine and Advanced Technology, Seoul National University Hospital, Seoul, Korea; [7]Department of Surgery, Seoul National University Hospital Healthcare System Gangnam Center, Seoul, Korea.

INTRODUCTION: Large language models (LLMs) have the potential to enhance information processing and clinical reasoning in the healthcare industry but are hindered by inaccuracies and hallucinations. The retrieval-augmented generation (RAG) technique may address these problems by integrating external knowledge sources. **METHODS:** We developed a RAG-based chatbot called Thyro-GenAI by integrating a database of textbooks and guidelines with LLM. Thyro-GenAI and three service LLMs: OpenAI's ChatGPT-4o, Perplexity AI's ChatGPT-4o, and Anthropic's Claude 3.5 Sonnet, were asked personalized clinical questions about thyroid disease. Three thyroid specialists assessed the quality of the generated responses and references without being blinded, which allowed them to interact with different chatbot interfaces. **RESULTS:** Thyro-GenAI achieved the highest inverse-weighted mean rank for overall response quality. The overall inverse-weighted mean rankings for Thyro-GenAI, ChatGPT, Perplexity, and Claude were 3.0, 2.3, 2.8, and 1.9, respectively. Thyro-GenAI also achieved the second highest inverse-weighted mean rank for overall reference quality. The overall inverse-weighted mean rankings for Thyro-GenAI, ChatGPT, Perplexity, and Claude were 3.1, 2.3, 3.2, and 1.8, respectively. **CONCLUSIONS:** Thyro-GenAI produced patient-specific clinical reasoning output based on a vector database, with fewer hallucinations and more reliability, compared to service LLMs. This emphasis on evidence-based responses ensures its safety and validity, addressing a critical limitation of existing LLMs. By integrating RAG with LLMs, it has the potential to support frontline clinical decision-making, especially helping first-line physicians by offering reliable decision-support while managing thyroid disease patients.

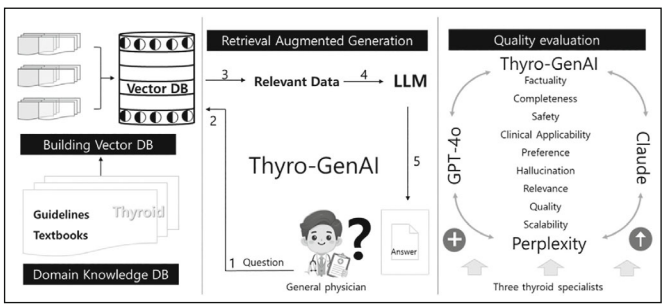

Figure. (1) A general physicians generate thyroid-related questions. (2) The questions are put into the chatbot. (3) The chatbot searches for relevant data using a vector database. (4) Relevant data are retrieved from the database. (5) An answer is generated using the LLM. After generating four chatbots, three thyroid specialists evaluate the quality of the responses and references through evaluation criteria. (DB; database, LLM; Large language model).

Poster Park Presentations

GPA1

Clinicopathological Features Associated With Failure of Stomach Preservation Following Laparoscopic Sentinel Node Navigation Surgery in Early Gastric Cancer Patients: A Secondary Analysis of the Multicenter Randomized Phase III SENORITA Trial

Jae-Seok Min[1,2], Sang-Ho Jeong[3], Young-Woo Kim[4], Hong Man Yoon[4], Ji Yeong An[5,6], Bang Wool Eom[4], Hoon Hur[7]; Young Joon Lee[8], Gyu Seok Cho[9], Young-Kyu Park[10], Mi Ran Jung[10], Ji-Ho Park[8], Woo Jin Hyung[5], Myeong-Cherl Kook[4], Mira Han[11,12], Byung-Ho Nam[13,14] and Keun Won Ryu[4]; for the Sentinel Node Oriented Tailored Approach (SENORITA) Study Group

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INTRODUCTION: The SENORITA phase III trial demonstrated the effectiveness of laparoscopic sentinel node navigation surgery (LSNNS) in preserving stomach function for patients with early gastric cancer (EGC), although some patients experienced surgical failure or recurrence. The purpose of this study was to analyze the patients' clinicopathologic features from the SENORITA trial who were allocated to LSNNS with stomach-preserving surgery but ultimately did not preserve stomach or experienced recurrence. **METHODS**: Patients were categorized into two groups: the failure group (stomach preservation failure or cancer recurrence after LSNNS) and the success group (stomach preservation without recurrence following LSNNS). This study analyzed the detailed clinicopathologic characteristics of patients in failure group from the SENORITA trial. **RESULTS**: Among 258 patients who underwent LSNNS, 65 patients (25.2%) were included in the failure group. Clinicopathologic features associated with failure included inaccurate preoperative staging, signet ring cell histology, tumor size/location near pylorus, inadequate sentinel basin node (SBN) harvest, and insufficient resection margins. Success group had a significantly higher proportion of T1a (64.8% vs. 44.6%) and N0 (95.3% vs. 63.1%) stages compared to failure group, while failure group showed greater proportions of advanced T stages (T2: 10.8% vs. 1.0%, T3: 9.2% vs. 0.5%) and N stages (N1: 23.1% vs. 4.7%, N2: 9.2% vs. 0.0%, N3a: 4.6% vs. 0.0%), with all differences being statistically significant ($p<0.001$). **CONCLUSION**: Preoperative assessment improvements are essential for identifying patients at risk of LSNNS failure. The accurate resection with sufficient number of harvested SBN is necessary to succeed the LSNNS.

GPA2

Predominance of Peritoneal Metastasis in the Recurrence Pattern of T4 Colorectal Cancer: A Retrospective Cohort Study

Jin Gi, Chang[1]; In Ja, Park[1]; Young Il, Kim[1]; Jong Lyul, Lee[1]; Yong Sik, Yoon[1]; Chan Wook, Kim[1]; Seok-Byung, Lim[1];

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INTRODUCTION: Peritoneal metastasis (PM) following curative resection for

colorectal cancer (CRC) remains difficult to detect and is associated with limited therapeutic options. This study aimed to assess recurrence patterns of PM after curative CRC surgery and to identify associated risk factors. **METHODS:** A retrospective cohort study included 3,079 patients with pathologically confirmed T3 or T4 CRC who underwent curative resection at a tertiary center from January 2012 to December 2017. Recurrence site distribution, recurrence-free survival (RFS), and peritoneal metastasis–free survival (PMFS) were analyzed by T stage. Risk factors for PM were also evaluated. **RESULTS:** Of 3,079 patients, 471 had T4 CRC, with a higher recurrence rate than T3 cases (33.3% vs. 12.7%). In T4 CRC, PM was the most common recurrence site (13.0%), surpassing lung (9.8%) and liver (6.6%) metastases. PM rates were highest in right-sided colon cancers (17.6%). The 5-year PMFS was significantly lower in T4 than in T3 (84.6% vs. 98.0%, p < 0.001). Stratified analysis showed a higher cumulative incidence of PM in T4N0 disease compared to T3N+ disease (9.3% vs. 3.2%, p < 0.001). Independent risk factors for PM included T4 stage (HR 5.18; 95% CI, 3.41–7.87), nodal positivity (HR 2.61; 95% CI, 1.61–4.21), advanced age, higher CEA level, preoperative obstruction, right colon cancer, inadequate lymph node harvest, signet ring cell carcinoma, and perineural invasion. **CONCLUSIONS:** Pathologic T4 CRC exhibits a distinct recurrence pattern characterized by a predominance of peritoneal metastasis. These findings may inform future surveillance protocols and treatment planning.

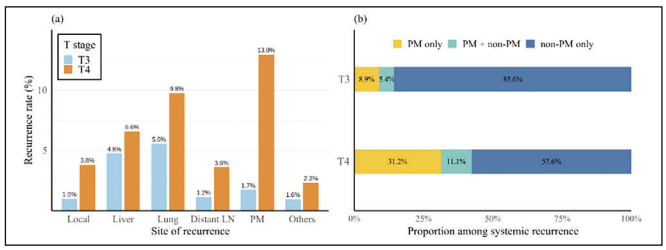

Figure (a) Distribution of recurrence sites by T stage: T3 vs T4. (b) Systemic recurrence pattern by T stage. LN, lymph node; PM, peritoneal metastasis

GPA3

Functional Outcomes Of Infrahyoid Flap Reconstruction In Oral Cavity Malignancies - (93 Cases From A Tertiary Care Centre)

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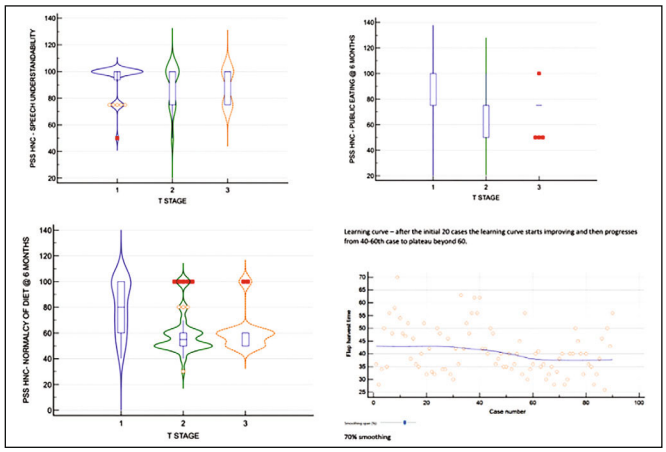
INTRODUCTION: Wang et al first described Infrahyoid myocutaneous flap (IHMCF) in 1986. It is a loco-regional pedicled flap based on Superior thyroid artery. IHMCF is used to reconstruct small to medium sized defects of various subsites of oral cavity after resection of primary. Most of the studies focusses on different techniques of flap and its modifications rather than functional outcomes except few. In this study, we have focused on functional outcomes with IHMCF for various subsites of oral cavity post completion of treatment including adjuvant. Variables for functional outcomes in our study focusses on speech and swallowing. This study is unique and first of its kind in evaluating functional outcomes for this flap in published literature. **METHODS:** The outcomes were recorded using two clinician rated outcome measures, namely, Functional Oral Intake Scale (FOIS) and Performance Status Scale for Head and Neck Cancer (PSS-HNC). This evaluation was done at 6 months' post completion of treatment. Patient who needed adjuvant radiation was also included in study after completion of radiation. The PSS HNC scale is divided into three subsections: Normalcy of Diet (NOD), eating in Public and Understandability of speech. For each of these sections, scoring is done from zero to 100, where increasing values indicate better outcomes. Statistical analysis is done using chi squared test and kruskall Wallis test. Variables taken into consideration are public eating, normalcy of diet, functional oral intake scale and understand ability of speech. **RESULTS:** Learning curve – after the initial 20 cases the learning curve starts improving and then progresses from 40-60th case to plateau beyond 60. FOIS score while comparing t1 to other stages – significant difference on chi square test – patients with t1 stage had a relative higher proportion of FOIS score of 7. P value – 0.0007. PSS HN normalcy of diet scores while comparing different t stages – significant difference on Kruskall Wallis non-parametric ANOVA – patients with t1 stage had a relative higher median PSS HN normalcy of diet score scores than other stages (median 80 vs 55 and 60 for others). P value 0.0003. PSS HN public eating scores while comparing different t stages – significant difference on Kruskall Wallis non-parametric ANOVA – patients with t1 stage had a relative higher median score than other stages (median 100 vs 75 for others). P value 0.002. PSS HN understandability of speech scores while comparing different t stages – no significant difference on Kruskall Wallis non-parametric ANOVA – patients with each t stage had similar median score (median 100). P value 0.31. Comparison of RMT versus other subsites for achievement of fois score 7 – no significant difference on chi square test – p 0.2. PSS HN normalcy of diet scores while comparing RMT versus other subsites – significant differences on Kruskall Wallis non-parametric ANOVA – patients RMT cancers had higher median score (median 100 vs 60). P value 0.026. Almost 60 % of patients received adjuvant radiation. However even after radiation, FOIS score for all patients remained ≥ 4. Patients with FOIS score 7 had significantly lesser proportion of those having received adjuvant RT (chi squared test) p value <0.0001. **CONCLUSIONS:** All the patients who got Infra hyoid flap reconstruction with stage T3 or less had a minimum fois score of 4 (total oral intake without tube dependency) in our study. More than 60% of patients of stage T3 and more than 80 % with stage T2 or less returned to normal oral intake with good understandability of speech irrespective of adjuvant radiation. Infrahyoid flap has once again proved to be the best flap in terms of functionality too in places of resource limited setting where free flaps are neither possible due to co morbidities nor due to logistics.



Functional outcomes – infra hyoid flap – analysis chart

Clinical images of infra hyoid flap recon for different subsites

GPA4

Long-term changes in Quality of Life and Bowel Function in Rectal Cancer Patients Managed with a Watch-and-Wait Strategy After Clinical (Near-)Complete Response

Charlotte Ceuppens, MD[1,2]; Celeste ter Heegde, BSc[3,4]; Brechtje A. Grotenhuis, MD PhD[1]; Petra A. Custers, MD PhD[1,2]; Sander M.J van Kuijk, MD PhD[5]; Stephanie O. Breukink MD[2,4] PhD; Geerard L. Beets MD PhD[2,4]; on behalf of the Dutch Watch-and-Wait Consortium

[1]Department of Surgery, Netherlands Cancer Institute-Antoni van Leeuwenhoek, Amsterdam, the Netherlands; [2]GROW School for Oncology and Reproduction,

Maastricht University, Maastricht, the Netherlands; [3]Faculty of Health, Medicine and Life Sciences, Maastricht University, Maastricht, the Netherlands; [4]Department of Surgery, Maastricht University Medical Centre, Maastricht, the Netherlands; [5]Department of Clinical Epidemiology and Medical Technology Assessment, Maastricht University Medical Centre, Maastricht, the Netherlands

INTRODUCTION: To evaluate long-term changes in quality of life (QoL) and bowel function in rectal cancer patients managed with Watch-and-Wait (W&W) after a clinical (near-)complete response to neoadjuvant (chemo)radiotherapy. **METHODS:** 176 patients from a Dutch prospective cohort (2014-onwards), with both 2 and 5-year follow-up data were included. QoL was assessed using EORTC QLQ-C30 and colorectal cancer-specific QLQ-CR29; bowel function was evaluated using the Low Anterior Resection Syndrome (LARS) score. **RESULTS:** Of the 176 patients, 91 (67%) were male, with a median age of 64 years (range 44–84). At 5 years, 149 (85%) were still in W&W, 8 (4%) underwent local excision, and 19 (11%) underwent total mesorectal excision. In the W&W group, QLQ-C30 scores remained largely stable between 2 and 5-year follow-up, with only a small decline in physical functioning (mean diff = -1.69, $p = 0.034$). CR29 analyses (available for n = 101) revealed significant worsening of flatulence ($p = 0.038$), fecal incontinence ($p = 0.041$) and a substantial decrease in sexual interest in both men and women (all $p < 0.001$). Mean LARS scores increased from 20.2 to 21.4 ($p = 0.046$). However, no statistically significant difference was observed in the distribution of LARS categories between 2 and 5 years (McNemar's test: $\chi^2(3) = 3.43$, $p = 0.33$). **CONCLUSIONS:** At 5 years, rectal cancer patients managed with W&W maintained good QoL and stable bowel function, with no shift in LARS categories. Some deteriorations were observed in selected colorectal-specific domains, which may partly reflect aging effects. Overall, these findings support favorable long-term functional outcomes with W&W.

GPA5

Social Vulnerability, Poverty, and Postoperative Mortality Following surgeries for digestive neoplasms: A Nationwide Analysis from Brazil (2017–2024)

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[1]AFECC Hospital Santa Rita de Cássia; [2]Carbone Cancer Center- University of Wisconsin-Madison; [3]Brazilian Society of Surgical Oncology; [4]Universidade de São Paulo (USP)

INTRODUCTION: Socioeconomic conditions are recognized determinants of surgical outcomes; however, the relative roles of absolute poverty, structural social vulnerability, and income inequality remain poorly defined. We conducted this study to evaluate the association between these socioeconomic dimensions and postoperative mortality following major oncologic surgery within a nationwide public health system. **METHODS:** We conducted a retrospective population-based study using data from the Brazilian Public Health System (DATASUS- SIH/SUS) between 2017 and 2024. We identified surgical procedures related to digestive cancers (gastrointestinal, colorectal and hepatobiliary cancers). Postoperative in-hospital mortality was calculated using the number of surgeries and deaths. Socioeconomic exposures included state-level poverty rates, the Social Vulnerability Index, and the Gini Index. Panel regression models with state and year fixed effects were used to evaluate temporal associations with poverty and Gini index. Aggregated state-level analyses were performed to assess the association between structural social vulnerability (SVI) and average postoperative mortality over the study period. **RESULTS:** Postoperative mortality following major gastrointestinal surgery for cancer showed substantial geographic and temporal variation across Brazilian states between 2017 and 2024. In panel analyses with state and year fixed effects, temporal variation in poverty within states was inconsistently associated with postoperative mortality, suggesting a limited role of short-term economic fluctuations in explaining outcome differences. Income inequality, measured by the Gini index, was not significantly associated with postoperative mortality in linear regression or panel-based approaches, even after adjustment for year effects, likely reflecting the low temporal variability of this indicator. In aggregated state-level analyses, the Social Vulnerability Index demonstrated a positive but weak correlation with average postoperative mortality over the study period. **CONCLUSION:** Poverty showed limited and unstable associations over time, while income inequality alone was not predictive of outcomes. In contrast, structural social vulnerability, captured by the Social Vulnerability Index, demonstrated a consistent directional relationship with mortality at the state level, suggesting that chronic social and infrastructural conditions may play a more relevant role than short-term economic changes. These findings highlight the multifactorial nature of surgical outcomes and underscore the importance of addressing structural social vulnerability, alongside economic deprivation, to improve equity in oncologic surgical care.

GPA6

No-Doppler Chest Wall Perforator Flaps (CWPFs) for Partial Breast Reconstruction: Surgical and Patient-Reported Outcomes from a Tertiary Cancer Center in India.

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INTRODUCTION: Oncoplastic breast surgery (OBS) seeks to preserve aesthetic outcomes without compromising oncological safety. Various flap techniques based on tumor location exist, yet limited evidence exists evaluating perforator-based oncoplastic breast reconstruction. This study evaluates surgical and patient-reported outcomes of partial breast reconstruction using CWPFs without Doppler assistance. **METHODS:** The study included 137 patients who underwent CWPFs post-January 2020 and completed one year of follow-up before July 2024. Data were analysed from a prospectively maintained database, recording demographics, perioperative events, and surgical outcomes. Patient satisfaction was assessed with the BREAST-Q™ questionnaire six months after radiotherapy completion. **RESULTS:** The mean age of the study population was 48.1 years. LICAP, MICAP, and AICAP were performed in 59.1%, 28.5%, and 12.4%, respectively. Mean operative time for flap harvesting and insetting was 41, 23, and 25 minutes, respectively. Postoperative complications, graded using the Clavien-Dindo classification, included minor wound dehiscence (9.49%), marginal flap necrosis (2.91%), seroma (2.18%), and hematoma (0.72%). Adjuvant radiation therapy was completed by 97.08% of patients. The BREAST-Q™ questionnaire, answered by 113 patients (82.4%), revealed the highest satisfaction scores for breast surgeon, medical team, and office staff (median (IQR) of 100 (0)), while sexual well-being scored lowest (median (IQR) of 72 (46)). **CONCLUSIONS:** No-Doppler CWPFs represent a reliable and reproducible technique for partial breast reconstruction, demonstrating favorable outcomes without the prerequisite for advanced intraoperative imaging modalities. This approach achieves high patient satisfaction and maintains oncological safety. CWPFs offer a muscle-sparing, cost-effective alternative to traditional flaps, supporting their role in oncoplastic surgery. Further multicenter studies are needed to validate outcomes.

GPA7

From Inoperable to Resectable: Redefining Surgical Boundaries in Thymic Malignancies with Neoadjuvant Chemotherapy

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INTRODUCTION: Locally advanced thymic malignancies pose a significant surgical challenge because of their proximity to vital mediastinal structures such as the aortic arch, pulmonary artery, superior vena cava, and myocardium. Complete surgical resection (R0) remains the most important prognostic factor in thymic neoplasms; however, many tumors are deemed unresectable or borderline resectable at presentation. Neoadjuvant chemotherapy (NACT) is frequently employed with the intent of tumor downstaging and improving resectability, but high-level evidence supporting its benefit remains limited. This study presents a single-institution experience evaluating the impact of neoadjuvant chemotherapy on resectability and oncologic outcomes in patients with locally advanced thymomas and thymic carcinomas treated at a tertiary cancer center in India. **METHODS:** This was a retrospective analysis of a prospectively maintained institutional database conducted between January 2005 and June 2025. Patients with histologically confirmed thymoma or thymic carcinoma who received neoadjuvant chemotherapy prior to surgical exploration were included. Patients who underwent upfront surgery without neoadjuvant therapy, those with metastatic disease at presentation, and those

with incomplete treatment or missing essential data were excluded. Tumors were classified as:

- Unresectable: involving aortic arch/branches, main pulmonary artery, SVC–aortic recess, or myocardium.
- Borderline resectable: involving SVC, brachiocephalic vein, pulmonary artery branches, or lung parenchyma.

All patients received cisplatin-based multi-agent neoadjuvant chemotherapy regimens, most commonly the CAP regimen comprising cisplatin, doxorubicin, and cyclophosphamide. Clinical and radiologic reassessment was performed after every two to three cycles using contrast-enhanced computed tomography of the thorax. Tumor volume was calculated using the ellipsoid formula: $\pi/6 \times$ (length × width × height). Treatment response was assessed using RECIST version 1.1 criteria in conjunction with percentage reduction in tumor volume. Surgical outcomes, resection status, perioperative morbidity and mortality, recurrence patterns, and survival outcomes were analyzed. Survival was assessed using Kaplan–Meier methodology, with comparisons based on resection status. **RESULTS:** The most frequently involved critical mediastinal structures at presentation included major vascular structures and adjacent organs, reflecting the locally advanced nature of the disease.

- The mean tumor volume was 655.8 cm^3 (range 90.4–4212.0 cm^3); Following neoadjuvant chemotherapy, tumor volume reduction was observed across histological subtypes, with the greatest mean reduction noted in thymoma B2 tumors at 54.8%.
- Resection outcomes: After NACT, 23.7% of unresectable and 51% of borderline cases achieved R0 resection.

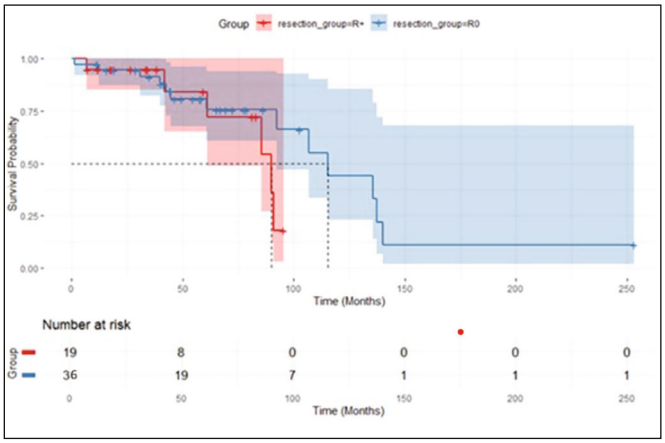
Neoadjuvant chemotherapy resulted in improved resectability, allowing surgical exploration and resection in patients initially categorized as unresectable or borderline resectable. R0 resections were achieved in a subset of patients following downstaging. Perioperative morbidity and mortality were acceptable, with no excess treatment-related mortality attributable to neoadjuvant therapy.

- Morbidity and mortality: Perioperative morbidity was minimal, with no treatment-related mortality.
- Survival: Median survival was 115.4 months for R0, 90 months for R1, and 85 months for R2 resections. R0 resection correlated with the best survival, though not statistically significant (p=0.2).

The median follow-up duration was 65.18 months. Survival analysis demonstrated that patients who achieved R0 resection had superior overall survival compared with those with R+ resections or unresectable disease, although this difference did not reach statistical significance (p = 0.2 for R0 vs R+). Kaplan–Meier analysis comparing R0, R1, and R2 resections similarly demonstrated a trend toward improved survival with complete resection (p = 0.4). Recurrence was observed in 13 patients, with 10 local recurrences and 3 systemic recurrences. **CONCLUSION:** R0 resection remains the strongest prognostic factor in thymic malignancies. NACT can convert a significant proportion of unresectable and borderline tumors into R0 resections, translating into prolonged survival with minimal added risk. These findings highlight the importance of NACT in expanding surgical boundaries and improving outcomes in this rare disease, warranting prospective multicentric validation.

Deemed Unresectable (n= 38)	After Neoadjuvant	N (%)
Persistent unresectability/ Progression		16 (42%)
Proceeded to surgery n=22	R0 Resection	9 (23.68%)
	R1 Resection	4 (10.53%)
	R2 resection	5 (13.16%)
	On table inoperable	4 (10.5%)

Borderline resectable (n = 53)	After Neoadjuvant	N (%)
Persistent unresectability/ Progression		11 (20.7%)
Proceeded to surgery n=42	R0 Resection	27 (50.94%)
	R1 Resection	6 (11.32%)
	R2 Resection	4 (7.55%)
	On table inoperable	5 (9.4%)



GPA8

Delta by CROSS, Can metabolic response predict complete pathologic response and survival in locally advanced squamous cell carcinoma oesophagus treated as per CROSS?

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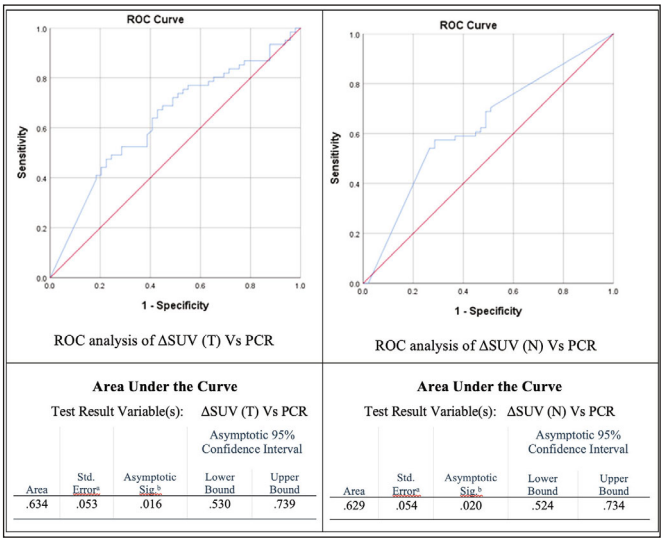
INTRODUCTION: Oesophageal squamous cell carcinoma (ESCC) carries a high mortality despite multimodality treatment. In India, ESCC represents the predominant histology and presents at a younger age. Neoadjuvant chemoradiotherapy (nCRT) as per the CROSS protocol improves pathological complete response (pCR) and survival; however, reliable predictors of response are lacking. PET/CT-derived metabolic parameters, particularly percentage change in standardized uptake value (ΔSUV), may predict treatment response and oncologic outcomes. **METHODS:** A retrospective analysis was performed on 110 patients with locally advanced ESCC treated with nCRT according to the CROSS protocol between 2017 and 2024. All patients underwent baseline and post-nCRT 18F-FDG PET/CT followed by esophagectomy. Percentage change in SUV of the primary tumor (ΔSUVT) and lymph nodes (ΔSUVN) was calculated. The primary endpoint was pCR (ypT0N0). Secondary endpoints included overall survival (OS). Statistical analysis involved logistic regression, receiver operating characteristic (ROC) analysis, and Kaplan–Meier survival estimation. **RESULTS:** The median age was 54 years, with a female predominance (68.5%). Distal-third tumors accounted for 63% of cases. Pathological complete response was achieved in 56.3% of patients. At a mean follow-up of 35 months, 73.6% remained disease-free. Patients achieving pCR demonstrated significantly greater metabolic response (ΔSUVT 83.3% vs 70.5%; ΔSUVN 60.4% vs 40.2%) and superior OS (38 vs 33 months; p=0.023). ROC analysis identified a ΔSUVT cutoff of 67% for predicting pCR (AUC 0.634, sensitivity 80%). Each unit increase in ΔSUVT increased the odds of achieving pCR by 2.5%. No demographic or tumor-related factors independently predicted pCR. **CONCLUSION:** In a homogeneous cohort of ESCC treated with the CROSS protocol, metabolic response assessed by ΔSUV strongly predicted pCR and survival. PET/CT-based metabolic assessment is a valuable non-invasive tool for response prediction and may aid surgical decision-making and postoperative risk stratification. Prospective validation and integration with molecular biomarkers are warranted.



Area Under the Curve

Test Result Variable(s): ΔSUV (T) Vs PCR

Area	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval Lower Bound	Upper Bound
.634	.053	.016	.530	.739

Area Under the Curve

Test Result Variable(s): ΔSUV (N) Vs PCR

Area	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval Lower Bound	Upper Bound
.629	.054	.020	.524	.734

Figure. ROC analysis of ΔSUV (T) and ΔSUV (N) to predict pCR amongst patients with locally advanced carcinoma oesophagus treated as per CROSS protocol.

GPA9

Drain-free mastectomy and flap fixation – the final analysis of the randomised controlled non-inferiority SARA-trial.

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INTRODUCTION: Seroma formation is the most common complication after mastectomy, which could lead to pain, impaired wound healing, or infection. In cases in which an intervention is required, a seroma is classified as a clinically significant seroma (CSS). Postoperative drainage reduces seroma formation, however its effect on CSS is limited. Standardised flap fixation is a proven and cost-effective method reducing CSS and seroma incidences after mastectomy. This study aims to evaluate whether omission of drainage after mastectomy with standardised flap fixation is non-inferior to postoperative drainage. **METHODS:** In this single-centre randomised controlled non-inferiority trial, patients undergoing mastectomy with standardised flap fixation were randomised 1:1 for postoperative drainage after mastectomy vs. drain-free mastectomy. Primary outcome was the incidence of CSS. The non-inferiority limit was set at 10%. Secondary endpoints were seroma formation, surgical reinterventions, wound complications, extra visits, cosmetic results and pain. The follow-up period was six months. **RESULTS:** A total of 220 patients with 250 mastectomy procedures with standard flap fixation were randomised, 125 for postoperative drainage and 125 for drain-free mastectomy. CSS occurred in 9/125 patients (7.2%) with drains and in 15/125 patients (12%) without drains (+4.8%, 95%CI: -2.7% to +12.4%), which was generally within the predefined non-inferiority margin. Seroma formation was common, 51% in the drain-group vs. 63% in the drain-free group (+12%, 95%CI: -0.3 to 23.8%). The rates of surgical reinterventions, wound complications, extra visits, cosmetic outcomes, and pain scores were comparable between groups, with no statistically significant differences observed. Correction for clinical confounders attenuated the protective effect of drainage on the outcome measures. **CONCLUSIONS:** The omission of drainage in mastectomy with standardised flap fixation is considered to be non-inferior with regards to CSS, wound complications, seroma-related morbidity and patient-reported outcome.

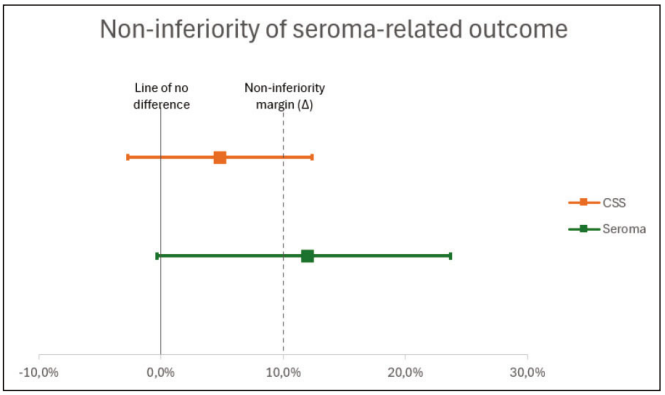

Figure 1: Non-inferiority of CSS and seroma formation assessed by the difference in proportions with 95% confidence intervals. The non-inferiority margin (Δ) was defined at 10%.

GPA10

Intraductal Papilloma Diagnosed by Core Needle Biopsy with Consideration of Non-Mass Lesions: A Single-Institutional Quantitative Analysis Following Vacuum Assisted Breast Excision

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INTRODUCTION: To evaluate the cancer upgrade rate and underestimation rate of intraductal papilloma (IDP) diagnosed on core needle biopsy (CNB) following vacuum-assisted breast excision (VABE), and to quantitatively analyze cancer risk of benign IDP and identify candidates for surveillance. **METHODS:** All patients underwent histopathological diagnosis by VABE following CNB. The primary objective was to determine the cancer upgrade rate of IDP, while the secondary objective was to assess the cancer upgrade rate of IDP without atypia. Each variable was analyzed using the chi-square test, and univariate and multivariate analyses were performed using a binary logistic regression model. **RESULTS:** In our institutional dataset, 277 cases of benign IDP underwent VABE. The overall cancer upgrade rate of IDP was 6.4% (18/277), while the upgrade rate for IDP with atypia was 36% (7/19). In multivariate analysis, independent risk factors for malignancy included the presence of atypia, older age, larger tumor size, and marked vascularity. In the subgroup of 258 IDP cases without atypia, the cancer upgrade rate and the underestimation rate were 4.2% and 8.5%, respectively. Significant risk factors for cancer upgrade included older age, larger tumor size, larger tumor height, tumor base characteristics, and higher elastography score. **CONCLUSION:** In cases IDP without atypia, the overall cancer upgrade rate was 4.2%. Among these, patients aged ≥ 50 years (12%), with lesion size ≥ 1.5cm (9.8%), elastography score ≥ 30 (10.5%), lesion height ≥ 0.7cm (7.6%) and absence of a clearly defined narrow base (7.28%) demonstrated higher upgrade rates, suggesting that VABE. For IDPs without the above risk factors, the cancer upgrade rate was 1.28% (1/78) and the underestimation rate was 2.56% (2/78), supporting their suitability for future active surveillance studies.

ePoster Presentations

GEP1

Predictors of stomas reversal and factors contributing to stoma related complications

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INTRODUCTION: Stomas are a common surgical procedure done for either bridge or palliative relief of intestinal obstruction or as a covering for a distal colorectal anastomosis. This study aimed at finding the real-life incidence of stoma reversal, risk of complication related to stoma and/or stoma reversal in our community to guide our practice and patient counselling. **METHODS:** This was a retrospective study, where the institutional registry at oncology center Mansoura University (OCMU) is thoroughly revised for Rectal cancer cases that attended the hospital from 2006 till August 2020. The primary outcome was the rate of stoma reversal and factors predicting failure of reversal. While the secondary outcomes were complications related to stoma. **RESULTS:** 40% of the patients closed their initially planned temporary stomas. The occurrence of intestinal leak, wound sepsis within 30 days of the operation were predictors of failure to reverse the stomas. Hartmann's procedure was uncommon in our practice, only 9% of those who underwent Hartmann's have had it reversed. On other hand, stoma construction as and end colostomy significantly increased stoma related complications, Median time to stoma closure was 8 months, however early closure did not correlate to complications. **CONCLUSIONS:** Still, there is a high rate of temporary stomas converting to permanent ones. Early postoperative complications are a main contributing factor. Hartmann›s procedure is at high risk of non0reversal and of stoma related complications.

GEP2

The effect of postoperative supplemental parenteral nutrition (SPN) in gastric cancer patients who underwent gastrectomy: a multicenter prospective randomized controlled trial

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INTRODUCTION: Few studies have investigated the impact of early supplemental parenteral nutrition (SPN) initiation on gastric cancer surgery patients to mitigate catabolic consumption and improve outcomes. This multicenter prospective randomized controlled trial (RCT) aimed to evaluate the efficacy and safety of postoperative SPN in providing sufficient calories during hospitalization and its effect on body weight preservation after gastric cancer surgery. **METHODS:** Patients (BMI ≤23 kg/m² or ≥5% weight loss in preceding two months) undergoing gastric cancer surgery were randomized into experimental group (oral intake on postoperative days [POD] 2–7 with SPN on POD3–7) and control group (oral intake-only on POD2–7). Co-primary endpoints were total calorie intake during hospitalization, and body weight difference at two months postoperatively. Secondary outcomes included changes in body weight, BMI, fat-free mass (FFM), skeletal muscle mass (SMM), laboratory parameters, cytokine levels, postoperative outcomes, chemotherapy initiation, oncological outcomes, and quality of life. **RESULTS:** From December 2020 to June 2023, 104 patients were randomized, and 87 patients completed the protocol. Experimental group (N=52) received significantly more calories during hospitalization than control group (N=52) (9,680.2kcal vs. 3,804.1kcal, p<0.001), while body weight at two months did not differ significantly (p=0.787). In experimental group, FFM and SMM reached their lowest levels at POD21 and increased thereafter, with the statistical differences from control group approaching near significance at one year (p=0.085, 0.083). Other secondary outcomes showed no significant differences. **CONCLUSIONS:** SPN ensured sufficient caloric support during hospitalization. SPN did not significantly prevent weight loss after gastrectomy but may offer a potential muscle-sparing effect at one year.

GEP3

The Expression of Stemness Markers in Organoids According to Histological Subtypes of Gastric Cancer

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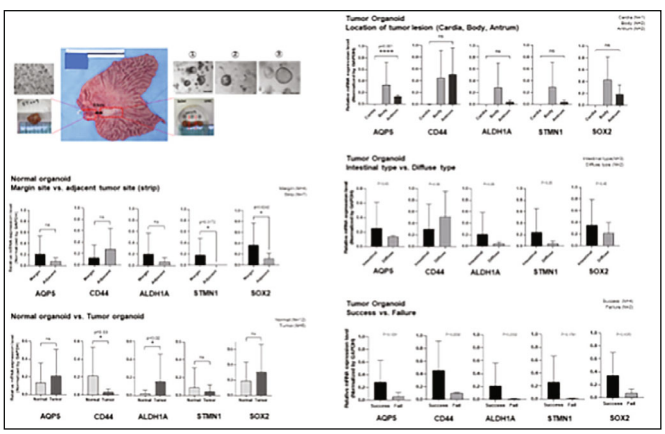
INTRODUCTION: Organoids derived from pluripotent or adult stem cells are widely used as powerful platforms for basic and preclinical research. However, the efficiency of organoid establishment varies substantially across tissue types, with gastric cancer organoids showing markedly lower success rates than their normal counterparts. The success rate appears to be correlated with stem cell marker expression, yet the connection remains poorly understood. In this study, we aim to identify key markers that regulate the successful establishment and maintenance of gastric cancer organoids. **METHODS:** Normal gastric and gastric cancer tissues were dissected and stored in tissue preservation buffer at 4°C. Organoids were established from both tissue types, including samples derived from linearly stripped tumor regions (samples 9-12). Tissues were enzymatically dissociated and embedded in Matrigel. Organoids were cultured in growth medium supplemented with Wnt, R-spondin, Noggin, EGF, and FGF, and maintained from passage 0 to passage 6 with weeklyb passaging. Established organoids were cryopreserved in FBS- and DMSO-containing medium and stored in liquid nitrogen. Total RNA was extracted from 32 orgnoid samples using Trizol, and 18 samples met quality criteria for analysis. After cDNA synthesis, quantitative real-time PCR was performed using SYBR Green to evaluate expression of stem cell-associated markers (AQP5,CD44,ALDH1A,STMN1, and SOX2). **RESULTS:** Normal gastric organoids exhibitted higher CD44 expression than tumor organoids (p=0.03), particularly in organoids adjacent to tumor regions. Margin-derived normal organoids showed increased STMN1 (p=0.0172) and SOX2 (p=0.0242) expression, whereas ALDH1A expression was elevated in tumor organoids. Tumor organoids were derived from the cardia, body, and antrum. Although statistical significance was limited by sample size, AQP5 expression was higher in body-derived organoids (p<0.001). CD44 expression was higher in diffuse-type organoids, while AQP5,ALDH1A,STMN1, and SOX2 tended to be higher in intestinal-type cases. Tumor organoids showed lower establishment and growth rates than normal organoids. Successful organoid exhibited higher expression of stemness markers, suggesting their involvement in organoid establishment efficiency. **CONCLUSIONS:** Successful gastric cancer organoids showed elevated stemness marker expression, implicating these markers in organoid establishment and growth. Further studies with larger, histologically diverse cohorts are required for validation.



GEP4

The relationship of tumor–immune–microbiome interactions with the Ki-67 index in breast cancer

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INTRODUCTION: Breast cancer is the most prevalent malignancy in women and a leading cause of cancer-related mortality, mainly due to metastasis and recurrence, which are closely associated with systemic immune status. Growing evidence suggests that host immunity and the microbiome contribute to tumor progression. Ki-67 is a well-established biomarker of tumor cell proliferation and is widely used for prognostic assessment and evaluation of treatment response. However, studies integrating Ki-67 with immune cell composition and the blood microbiome remain limited. This study examines the relationships among tumor Ki-67 index, peripheral blood leukocyte profiles, and the blood microbiome in breast cancer to explore potential tumor–immune–microbiome interactions. **METHODS:** Patients with breast cancer were classified into three groups based on tumor tissue Ki-67 index: <20%, 30–49%, and >50%. White blood cell count, absolute neutrophil count, neutrophil percentage, lymphocyte percentage, and neutrophil-to-lymphocyte ratio were quantitatively analyzed. The blood microbiome was profiled using whole-metagenome sequencing. Relative microbial abundance was visualized using volcano plots to identify taxa with significant intergroup differences. Associations between microbial taxa and leukocyte subtypes were examined, and predicted metabolic products and protein synthesis pathways were analyzed to explore potential links with immune function. **RESULTS:** A higher Ki-67 index was associated with distinct alterations in leukocyte subset composition, including a significant increase in neutrophil-to-lymphocyte ratio ($p<0.05$). Metagenomic analysis identified several taxa, including Rhizobium-related genera, Lachnospiraceae, and Ruminococcaceae UCG-013, that differed according to Ki-67 level. These taxa were associated with predicted metabolic products and protein synthesis pathways potentially related to immune cell activity, inflammatory responses, and the tumor microenvironment. These findings suggest that increased tumor proliferative activity may be accompanied by changes in both immune cell composition and the blood microbiome. **CONCLUSIONS:** In breast cancer, a higher Ki-67 proliferation index may be associated with alterations in systemic immune cell distribution as well as changes in blood microbiome composition. These findings indicate that Ki-67 may reflect not only tumor proliferative status but also tumor–immune–microbiome interactions. This study highlights the importance of considering both immune responses and microbial ecology in breast cancer and provides a basis for future immune- and microbiome-targeted therapeutic strategies.

GEP5

Comparison of Intestinal Metaplasia Progression in the Remnant Stomach After Proximal Gastrectomy Versus Distal Gastrectomy

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INTRODUCTION: There is a concern that the persistence of intestinal metaplasia (IM) in the remnant stomach after distal gastrectomy (DG) and proximal gastrectomy (PG) may contribute to the development of remnant gastric cancer. This study aims to compare IM status in the remnant stomach after PG and DG. **METHODS:** We retrospectively reviewed 8,492 patients who underwent curative gastrectomy for gastric cancer between January 2013 and April 2025. Baseline characteristics included sex, age, type of surgery, surgical approach, reconstruction method, and several pathologic findings. Preoperative endoscopic biopsies were taken from the gastric antrum and body. Postoperative biopsies were performed according to the surgery; remnant antrum and body after PG, and remnant body and fundus after DG. **RESULTS:** 4,824 underwent DG and 401 underwent PG. Preoperative pathologic evaluation of IM was available in 512 DG and 57 PG patients. In DG, absent IM was 48.4% preoperatively and 83.0%, 82.6%, 93.3%, 100.0% at 1~4 years. Mild IM was 20.9% preoperatively, and 9.0%, 7.6%, 3.3%, 0.0% postoperatively; moderate IM was 18.2% preoperatively, and 4.8%, 4.5%, 3.3%, 0.0%; marked IM was 12.5% preoperatively, and 3.2%, 5.3%. In PG, absent IM was 61.4% preoperatively, and 58.6%, 46.2%, 100.0% at 1~3 years. Mild IM was 21.1% preoperatively, and 20.7%, 7.7%; moderate IM was 3.5% preoperatively, and 6.9%, 38.5%; marked IM was 14.0% preoperatively, and 13.8%, 7.7%. The patients who received consecutive endoscopic follow-up, assessed preoperatively and at least one time postoperatively, was 63 DG and 6 PG patients. In DG, absent IM was 41.3% preoperatively and in 89.5%, 84.6%, 100.0% at 1~3 years. Mild IM was 23.8% preoperatively, 8.8% 0.0% postoperatively; moderate IM was 15.9% preoperatively, and 1.8%, 7.7; marked IM was 19.0% preoperatively, and 0.0%, 7.7%. In PG, absent IM was 83.3% preoperatively, and 50.0%, 0.0% at 1~2 years. Mild IM was 0.0% preoperatively, and 33.3% postoperatively; moderate IM was 0.0% preoperatively, and 16.7%; marked IM was 16.7% preoperatively, and 0.0. **CONCLUSIONS:** Follow-up endoscopic biopsies after PG revealed a higher proportion of IM-positive cases, particularly those with advanced grades, compared with DG. Structured endoscopic surveillance is essential.

GEP6

Transcriptome-Based Molecular Classification as a Predictor of Response to Preoperative Chemoradiotherapy in Rectal Cancer

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INTRODUCTION: Preoperative chemoradiotherapy (PCRT) is the standard treatment for locally advanced rectal cancer (LARC), but clinical responses are heterogeneous. Robust biomarkers are needed to identify patients likely to benefit from standard PCRT and those who may require alternative or intensified neoadjuvant strategies. We sought to define transcriptomic tumor subtypes associated with PCRT sensitivity and to develop a compact signature for response prediction. **METHODS:** We retrospectively analyzed 102 patients with stage II–III rectal adenocarcinoma treated with long-course PCRT followed by curative resection at a single center (2010–2015). Treatment response was graded using the Mandard tumor regression grade. Unsupervised clustering of tumor gene-expression profiles was used to define molecular subtypes. Associations between subtype and favorable response were tested and examined for independence from clinical and treatment factors. A 16-gene predictive signature was developed in the training cohort and externally validated in independent public cohorts (GSE139255 and GSE46862). **RESULTS:** Two reproducible subtypes were identified: immunogenic and non-immunogenic. Favorable response to PCRT occurred in 90.3% of the immunogenic subtype compared with 50.7% of the non-immunogenic subtype. Molecular subtype was strongly associated with response and remained an independent predictor ($p<0.001$). The 16-gene signature demonstrated excellent discrimination in the training cohort (AUC 0.962) and maintained significant predictive power in external validation ($p<0.001$). **CONCLUSIONS:** Transcriptome-based molecular subtyping predicts PCRT response in rectal cancer. The immunogenic subtype is markedly more sensitive to PCRT, and the 16-gene signature provides a practical framework for biomarker-driven personalization of neoadjuvant therapy, including rational de-escalation for likely responders and intensification or novel approaches for likely non-responders.

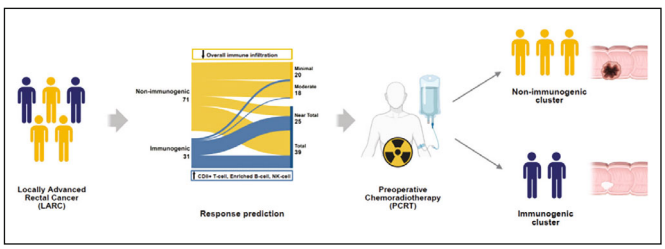

Figure. Immunogenic subtype as a predictor of response to PCRT

GEP7

Intermuscular Adipose Tissue as a Prognostic Biomarker for Overall Survival in Colorectal Cancer

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INTRODUCTION: The prognostic value of intermuscular adipose tissue (IMAT) in colorectal cancer (CRC) patients depends on both the anatomical site selected for CT imaging and the analytical technique employed. This study assessed the clinical significance of IMAT-related parameters in CRC patients. **METHODS:** We reviewed stage I–III CRC patients who underwent surgery between 2005–2014. CT scans at the L3 level measured skeletal muscle and IMAT area and radiodensity. Sex-specific cutoffs for IMAT index (IMAI: IMAT area/height²) and IMAT radiodensity (IMAD) were defined using the X-tile program. Patients were further categorized into IMAT-combined groups (G1, G2, G3, and G4) according to the cutoff values of IMAI and IMAD. Survival was analyzed using Kaplan-Meier curves, log-rank tests, and Cox regression. Prognostic accuracy was evaluated with the concordance index (C-index). **RESULTS:** Among 1080 patients (59.4% male), lower IMAI and IMAD correlated with better overall survival (OS). IMAT-combined groups were independent prognostic factors, with G2–G4 showing significantly better OS than G1. Patients were reclassified into two groups (G1 vs. G2–G4), termed the "IMAT model." The C-index demonstrated that incorporating the IMAT model yielded superior predictive performance compared to SMI alone (0.629 vs. 0.579; bootstrap mean difference = 0.050, 95% CI: 0.021–0.091) and SMD alone (0.617 vs. 0.590; bootstrap mean difference = 0.027, 95% CI: 0.009–0.052). **CONCLUSIONS:** The IMAT model is a significant independent prognostic factor for CRC patients. Its use may enhance prognostic accuracy and support personalized treatment planning.

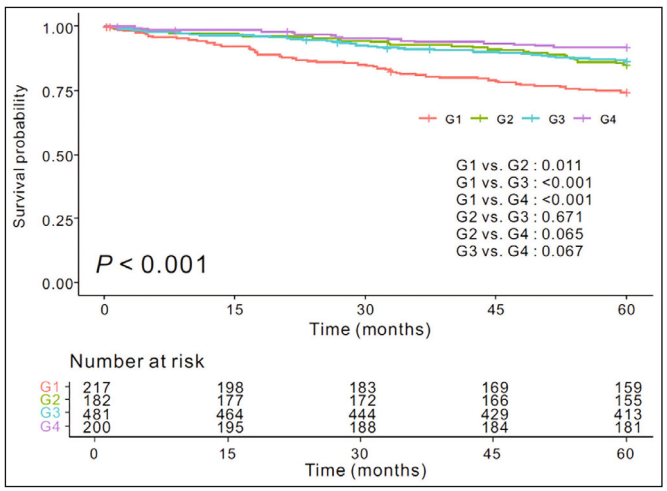

Figure. Kaplan-Meier survival curves to compare the probability of survival among four distinct groups, designated as G1, G2, G3, and G4. According to the Kaplan-Meier survival curve, overall survival was significantly worse for groups G2 (*P*=0.011), G3 (*P*<0.001), and G4 (*P*<0.001) when each was compared to group G1. In contrast, comparisons between groups G2, G3, and G4 did not reveal any significant differences in overall survival (G2 vs. G3: *P*=0.671; G2 vs. G4: *P*=0.065; G3 vs. G4: *P*=0.067).

GEP8

Oncologic Impact of Anastomotic Leakage After Curative Rectal Cancer Resection: Early vs. Late Leakage

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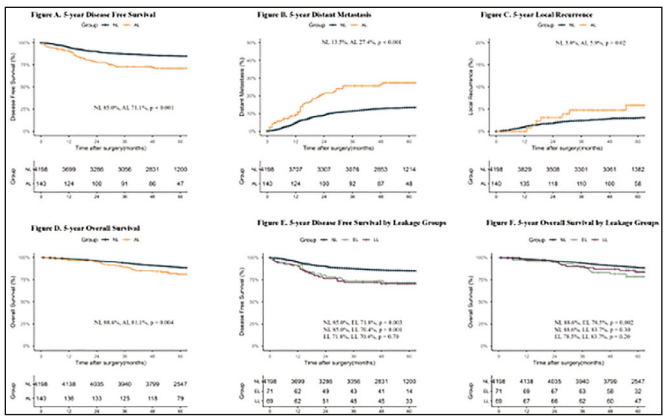
INTRODUCTION: Although the short-term impact of anastomotic leakage (AL) after curative rectal cancer surgery is well recognized, its long-term oncologic effect remains unclear. We aimed to evaluate the impact of AL on survival after curative rectal cancer surgery and to determine whether leakage timing influences oncologic outcomes. **METHODS:** We retrospectively identified patients who underwent curative resection with anastomosis for stage 0–III rectal adenocarcinoma between 2012 and 2020. AL was classified as early (≤30 postoperative days, EL) or late (>30 days, LL). The primary outcomes were disease-free survival (DFS) and overall survival (OS); secondary outcomes included local recurrence and distant metastasis. Survival outcomes were estimated using the Kaplan–Meier method and compared with log-rank tests. Anastomotic leakage was analyzed as a time-dependent covariate in multivariable Cox regression models for disease-free (DFS) and overall survival (OS). **RESULTS:** AL occurred in 140 patients and was categorized as early (≤30 postoperative days, n=71) or late (>30 days, n=69). AL was associated with worse DFS (71.1% vs. 85.0%, p = 0.011) and OS (81.1% vs. 88.6%, p < 0.001) than no leakage. Local recurrence (5.9% vs. 3.0%, p = 0.02) and distant metastasis (27.4% vs. 13.5%, p < 0.001) were also significantly more frequent in the AL group. Both EL and LL were associated with inferior DFS compared with no leakage (early vs. no leakage: 71.8% vs. 85.0%, p = 0.003; late vs. no leakage: 70.4% vs. 85.0%, p < 0.001). With respect to OS, EL group showed significantly worse survival than the no-leakage group (78.5% vs. 88.6%, p = 0.002), whereas no significant difference was observed between LL and no leakage. In multivariable Cox regression analyses, time-dependent AL remained an independent predictor of worse DFS (HR 1.67, 95% CI 1.13–2.49, p = 0.011) and OS (HR 1.98, 95% CI 1.40–2.81, p < 0.001). **CONCLUSIONS:** Anastomotic leakage was independently associated with worse disease-free and overall survival after curative rectal cancer surgery. Both early and late leakage were associated with inferior disease-free survival compared with no leakage, whereas overall survival was significantly worse only in patients with early leakage.



GEP9

Towards Safer Exenterations - Predictive Risk Factors For Major Complications In Pelvic Exenteration Surgeries

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INTRODUCTION: Pelvic exenteration surgeries have been performed for nearly 85 years, since Brunschwig described the procedure in 1948. The most common indication of pelvic exenteration surgery is in recurrent, locally advanced gynecological malignancies. Performed even as a palliative surgery in patient with severe pain due to advanced pelvic malignancies. PelvEx Collaborative reported a perioperative mortality rate of 5 % and an overall morbidity rate around 40% in a large international cohort. **METHODS:** This study is an Ambispective analytical cohort study. Duration – June 2019 to December 2024. Data were recorded on prescribed proforma .Post operative complications were classified using Clavien Dindo classification.FACT –G, FACT –Site Specific questionnaires were given preop and 90 days post surgery.

RESULTS:
- The mean age of the study population was 53.95 ± 12.44 years and most of them were females (88.9%), with males comprising 11.1% of the cohort.
- The most common diagnosis was carcinoma ovary (39.7%), followed by anorectal malignancies (33.3%). Other diagnoses included carcinoma cervix and urothelial malignancies.
- Exenteration surgeries were primarily performed for persistent disease (74.6%), followed by recurrent disease (16%) and primary presentation (9%).
- The most common type of exenteration was posterior exenteration (60.3%), followed by total pelvic exenteration (28.6%) and anterior exenteration (11.1%).
- R0 resection was achieved in 84% of cases, reflecting adequate oncologic clearance.
- The overall minor complication rate (Clavien-Dindo grade I–II) was 29.8%, while the major complication rate (Clavien-Dindo grade III or higher) was 14.7%.
- Univariate analysis showed that the following factors were significantly associated with major complications:
  - Preoperative hemoglobin < 9 g/dL (p = 0.006)
  - Preoperative albumin < 3 g/dL (p = 0.003)
  - Primary diagnosis (p = 0.012)
  - Type of exenteration (p = 0.025)
  - Surgical intent (p = 0.009)
- On binary logistic regression, the following were identified as independent predictors of major postoperative complications:
  - Preoperative hemoglobin < 9 g/dL (p = 0.028)
  - Preoperative albumin < 3 g/dL (p = 0.029)
  - Salvage surgical intent (p = 0.029)

CONCLUSIONS: Posterior exenteration, particularly when performed for ovarian carcinoma, can be undertaken safely and is associated with favorable postoperative quality of life outcomes. Pelvic exenteration performed with curative intent demonstrated lower complication rates, underscoring the importance of early and appropriate surgical intervention. Total pelvic exenteration undertaken as a salvage procedure was associated with a significantly higher risk of major complications.

GEP10

Patient-led follow-up after curative colorectal cancer surgery: The primary outcome analysis of the prospective, multicentre FUTURE-primary implementation study

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INTRODUCTION: A structured follow-up regimen is standard for most cancer survivors. As this population grows, there is increasing interest in more sustainable and patient-centred follow-up strategies. Previous studies suggest that home-based follow-up after curative treatment is non-inferior to hospital-based care regarding survival and quality of life. The FUTURE-primary study aims to evaluate the feasibility of a patient-led, home-based follow-up model for colorectal cancer survivors. **METHODS:** The FUTURE-primary study is a prospective, multicentre implementation study. Patients who had undergone curative-intent surgery for primary colorectal cancer and were eligible for standard follow-up could personalise their care pathway. Options included the frequency of follow-up, location of blood sampling (home, local facility, or hospital), and communication method ('silent', telephone, or in-person). The minimal follow-up schedule consisted of seven mandatory consultations over five years, in accordance with national guidelines. In addition, seven optional follow-up moments were available, allowing patients additional follow-up where needed. **RESULTS:** Data from 209 patients were analysed. Of 1463 optional follow-up moments, 488 (33%) remained unused, surpassing the predefined threshold of 25% and thereby meeting the primary endpoint. Home-based blood sampling was preferred by 66% of patients, while 70% chose telephone consultations over physical appointments. **CONCLUSIONS:** Patient-led follow-up after curative colorectal cancer surgery is feasible and acceptable. The model may reduce unnecessary hospital visits, improve patient autonomy, and contribute to more sustainable cancer survivorship care. Its principles are potentially applicable to other tumour types and care pathways.

GEP11

Node marking techniques and targeted axillary dissection in cN1 patients undergoing neoadjuvant chemotherapy: Analysis of initial 1000 participants in ATNEC Trial.

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INTRODUCTION: In the ongoing neoadjuvant ATNEC breast cancer trial (NCT04109079), cT1-3N1M0 patients receive neoadjuvant chemotherapy (NACT) followed by sentinel node biopsy (SNB) or targeted axillary dissection (TAD). If the nodes convert to benign (ypN0), patients are randomised to receive Axillary Treatment vs. no Axillary Treatment. Standardised node marking is encouraged. **METHODS:** Data from 1080 patients registered between Dec 21 and Sep 25 who completed NACT and surgical treatment were analysed. This study evaluates node marking techniques, identification rates, and concordance between marked and sentinel nodes in the initial 1000 participants. **RESULTS:** The median age was 53 years (range 25-81), with a median of 4 nodes (IQR 3-5) removed during SNB/TAD. Among 1063 patients with node marking data, 76% (812) had the involved node marked. The overall identification rate was 93%, with the marked node also being a sentinel node in 76% (577/758) of cases. In 20% of ypN0 patients the marked node showed no signs of downstaging, whereas in 6% of patients with residual nodal disease, the marked node was negative. In 10.4% of patients, the marked node contained residual cancer despite a negative sentinel node. Common techniques used for node marking included clip/coil only before NACT (24%), clip/coil before NACT followed by a wireless marker (23%), upfront wireless marker (22%), carbon dye before NACT (14%) and clip/coil followed by wire (5%). The "clip/coil only" method showed a lower identification rate (88%) and was used as reference in a logistic regression model which showed a statistically significant association between the localization method and whether the marked node was successfully removed. The "clip/coil followed by wireless marker" (OR 8.81, p <0.001) and the "upfront wireless marker" (OR 3.04 p 0.009) both outperformed the "clip/coil only" method, while other methods did not reach statistical significance vs the reference in this model. **CONCLUSIONS:** 76% of patients underwent node marking, with an intra-operative identification rate of 93%, demonstrating the successful implementation of node marking in the UK through the ATNEC trial. The type of localisation method significantly influences the likelihood of successful removal of the marked node.

GEP12

Neoadjuvant immunotherapy for patients with resectable stage III cutaneous melanoma – a comparison between lymph node and in-transit metastasis

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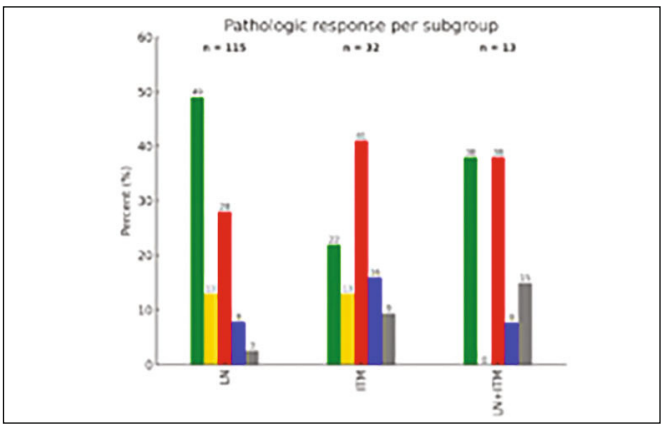
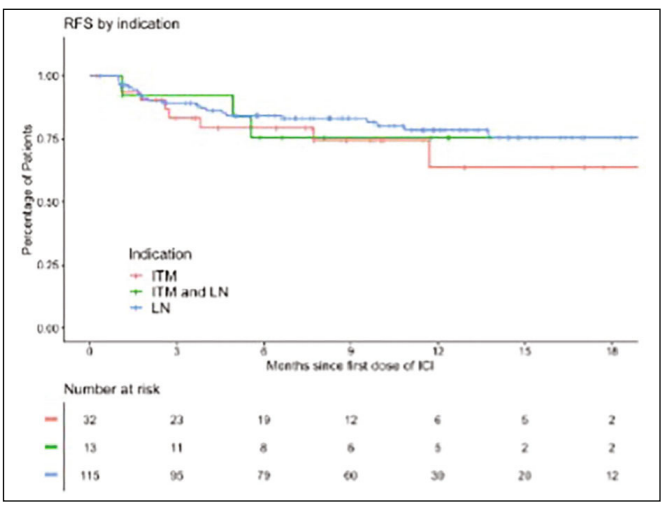
[10]Department of Surgery, Kristianstad Hospital, Kristianstad, Sweden; [11]Department of Medical Oncology, Netherlands Cancer Institute, Amsterdam, Netherlands; [12]Department of Immunology, Genetics, and Pathology, Uppsala University, Uppsala, Sweden; [13]Department of Oncology, Uppsala University Hospital, Uppsala, Sweden

INTRODUCTION: Randomized clinical trials have shown that neoadjuvant immunotherapy offers superior event-free survival compared to adjuvant treatment in patients with resectable stage III cutaneous melanoma. While these results are promising, data from unselected patient populations remain limited. Sweden was among the first countries to implement neoadjuvant immunotherapy into standard care, providing a unique opportunity to assess real-world effectiveness. Evidence regarding response to immunotherapy in patients with in-transit metastasis (ITM) is especially scarce. **PURPOSE:** Evaluate response to immunotherapy in neoadjuvant setting for stage III melanoma patients with in-transit metastasis compared to lymph node metastases. **METHOD**: This retrospective study included patients treated at four academic medical centers in Sweden. Eligible patients had macroscopic stage III cutaneous melanoma and received neoadjuvant immune checkpoint inhibitors (ICIs) with intention to perform radical surgery between January 1, 2022, and September 30, 2024. Outcomes were analyzed separately for patients with lymph node (LN) metastasis only, ITM only, and for patients with both ITM and LN metastasis. **RESULT**: A total of 160 patients were included, with a median follow-up time of 12 months. The overall response rate (MPR+pPR) in the group with LN metastasis was 62%, with ITM 35%, and with both LN and ITM 38% (p=0.02). **CONCLUSION**: These real-world findings are consistent of those from clinical trials, and support the effectiveness of neoadjuvant immunotherapy for resectable stage III melanoma. The response rate in patients with ITM was markedly lower than in patients with lymph node metastasis, however without any effect on RFS, highlighting the need for further investigation. There was no difference in 12-month recurrence-free survival (RFS) (p=0.70):

- LN metastasis 76% (95% CI 69-87)
- ITM 61% (95% CI 41-91)
- LN and ITM 73% (95% CI 52-100)





Patient characteristics and treatment	ITM n = 32	ITM and LN n = 13	LN n = 115
Age - years, Median (Q1-Q3)	72 (60-78)	73 (52-78)	69 (57-76)
Females, No. (%)	9 (28%)	4 (31%)	37 (32%)
Primary tumor site, No. (%)			
Extremity	13 (41%)	4 (31%)	43 (37%)
Trunk	10 (31%)	4 (31%)	46 (40%)
Head and Neck	6 (19%)	4 (31%)	8 (7.0%)
Unknown primary tumor	3 (9.4%)	1 (7.7%)	18 (16%)
Time since primary melanoma - years, Median (Q1-Q3)	2.2 (1.2-3.9)	1.5 (0.6-2.9)	2.0 (1.0-4.5)
Previous adjuvant treatment (ICI or TT), No. (%)	2 (6.3%)	2 (15%)	7 (6.1%)
BRAF V600E/K mutation, No. (%)	10 (31%)	4 (31%)	43 (37%)
Stage, No. (%)			
IIIB	20 (63%)	0 (0%)	48 (42%)
IIIC	12 (38%)	10 (77%)	58 (50%)
IIID	0 (0%)	3 (23%)	7 (6.1%)
Missing	0 (0%)	0 (0%)	2 (1.7%)
Neoadjuvant treatment, No. (%)			
Ipilimumab 1 mg/kg and Nivolumab 3 mg/kg	1 (3.1%)	2 (15%)	2 (1.7%)
Nivolumab 480 mg	21 (66%)	10 (77%)	83 (72%)
Nivolumab 6 mg/kg	5 (16%)	0 (0%)	11 (9.6%)
Pembrolizumab 200 mg	2 (6.3%)	0 (0%)	8 (7.0%)
Pembrolizumab 400 mg	3 (9.4%)	1 (7.7%)	11 (9.6%)
Number of neoadjuvant cycles, No. (%)			
1	2 (6.3%)	1 (7.7%)	3 (2.6%)
2	22 (69%)	7 (54%)	83 (72%)
3	7 (22%)	2 (15%)	25 (22%)
4	1 (3.1%)	1 (7.7%)	3 (2.6%)
5	0 (0%)	2 (15%)	1 (0.9%)
Surgery, No. (%)			
Lymph node dissection (TLND)	0 (0%)	0 (0%)	105 (91%)
Resection of ITM	21 (66%)	0 (0%)	0 (0%)
Resection of ITM and TLND	3 (9.4%)	12 (92%)	0 (0%)
Surgery not performed	5 (16%)	1 (7.7%)	9 (7.8%)
Other	3 (9.4%)	0 (0%)	1 (0.9%)
Time to surgery - weeks, Median (Q1-Q3)	7.7 (6.4-10.9)	9.3 (7.3-13.4)	7.7 (6.7-9.1)
Reason for no surgery, No. (%)			
Clinical response	2 (40%)	0 (0%)	1 (11%)
Progressive disease, stage IV	3 (60%)	1 (100%)	7 (78%)
Other	0 (0%)	0 (0%)	1 (11%)
Adjuvant treatment, No. (%)			
No adjuvant treatment	6 (19%)	5 (38%)	29 (25%)
Continued ICI in the waiting for pathology	2 (6.3%)	1 (7.7%)	14 (12%)
Prolonged ICI	19 (59%)	4 (31%)	67 (58%)
Radiotherapy	0 (0%)	1 (7.7%)	1 (0.9%)
Targeted therapy	4 (13%)	2 (15%)	3 (2.6%)
Other	1 (3.1%)	0 (0%)	1 (0.9%)

GEP13

Nomograms for Estimating Sentinel Node Macrometastatic Burden in Early Breast Cancer

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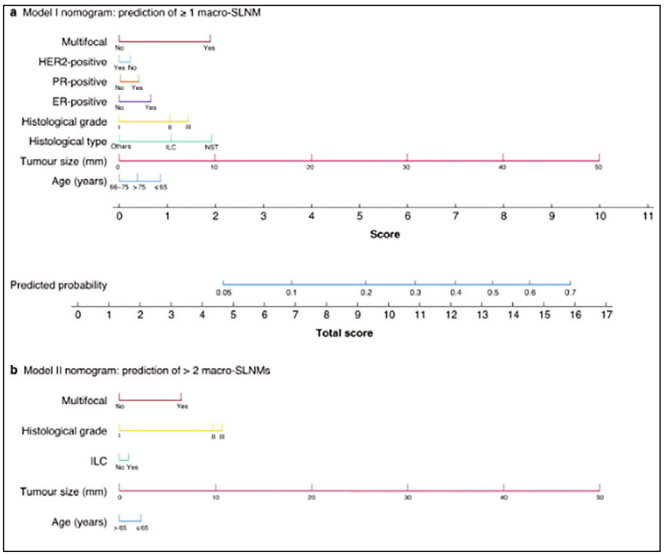
INTRODUCTION: The number and presence of macrometastatic sentinel lymph nodes (macro-SLNMs; >2 mm) in early breast cancer influence decisions on axillary surgery, regional nodal irradiation, and breast reconstruction. Accurate preoperative risk estimates of sentinel node macrometastases could support treatment planning. This study aimed to develop and validate two predictive

models, presented as nomograms, using routinely available clinical data. The first estimates the probability of at least one macrometastatic sentinel node (≥1 macro-SLNM), consistent with current indications for regional radiotherapy. The second estimates the probability of more than two macrometastatic sentinel nodes (>2 macro-SLNMs), reflecting exclusion criteria in trials assessing omission of nodal irradiation in patients with limited nodal metastasis. **METHODS:** This population-based study included 18,185 women with clinically node-negative (cN0), T1–2 invasive breast cancer diagnosed between 2014 and 2017 in the Swedish National Breast Cancer Quality Register. Exclusion criteria were bilateral tumors, neoadjuvant therapy, palpable axillary nodes, and incomplete sentinel node data. Models were developed using adaptive LASSO logistic regression in a training cohort of 13,656 patients and validated in an independent cohort of 4,529. Variables included age, tumor size, histological type and grade, multifocality, and ER, PR, and HER2 status. Performance was assessed using AUC and calibration. **RESULTS:** At least one macrometastatic sentinel node was found in 13.2% of patients; more than two in 1.5%. In validation, the ≥1 macro-SLNM model achieved an AUC of 0.708 (95% CI, 0.684–0.731), slope 1.03, intercept −0.11. The >2 macro-SLNM model achieved an AUC of 0.740 (95% CI, 0.682–0.799), slope 0.98, intercept 0.20. The nomogram for ≥1 macro-SLNM adjusted individual risk estimates, ranging from 1.6% to 74.6%, compared with the population baseline of 13.2%. Tumor size and multifocality were the strongest predictors. **CONCLUSIONS:** These nomograms provide noninvasive, individualized estimates of macrometastatic nodal burden. They could support multidisciplinary planning of axillary surgery, nodal irradiation, adjuvant therapy, and shared decision-making regarding breast reconstructive options.



GEP14

Beyond TI-RADS: Can CEUS (Contrast Enhanced Ultrasonography) Redefine Risk Stratification in Bethesda III–V Thyroid Nodules?

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INTRODUCTION: The increasing incidence of thyroid malignancy has amplified diagnostic challenges, particularly in indeterminate thyroid nodules (ITNs). Greyscale ultrasonography (US) shows considerable overlap between benign and malignant nodules, limiting its diagnostic accuracy as a standalone test. Real-time elastography (RTE) improves sensitivity but lacks sufficient specificity when used in isolation. Fine-needle aspiration cytology (FNAC), though standard, yields indeterminate results in approximately 30% of cases (Bethesda III, IV, and V), often resulting in over- or undertreatment. Contrast-enhanced ultrasonography (CEUS), by assessing dynamic microvascular perfusion, may improve malignancy risk stratification and guide surgical decision-making. **METHODS:** The objective of our study is to assess the diagnostic accuracy of CEUS combined with greyscale US and RTE for differentiating benign from malignant nodules in Bethesda III–V thyroid lesions. This prospective interventional study included patients with ITNs planned for surgery. All patients underwent greyscale US, strain elastography (RTE), and CEUS using Bracco's SonoVue® contrast agent (59 mg sulphur hexafluoride with 25 mg lyophilized powder). Imaging findings were recorded and analyzed. Final histopathology (HPE) was considered the gold standard. **RESULTS:** Sixty-six ITNs were evaluated. On final histopathology, 72.72% (n = 48) were benign and 27.28% (n = 18) were malignant. Notably, 83.33% (n = 15) of malignant nodules were classified as TI-RADS 3 on greyscale US, indicating only mild suspicion. On RTE, most malignant nodules demonstrated predominantly green and blue color patterns, reflecting variable tissue stiffness without definitive malignant differentiation. Among seven CEUS parameters analyzed, early contrast arrival, heterogeneous enhancement pattern, enhancement area >50%, centripetal/centrifugal enhancement, and high degree of enhancement were significantly associated with malignancy ($p < 0.001$). Diagnostic performance was as follows:

Greyscale US: Sensitivity 81.6%, Specificity 100%
RTE: Sensitivity 81.8%, Specificity 72.7%
CEUS: Sensitivity 87.2%, Specificity 100%
Combined US + RTE + CEUS: Sensitivity 98%, Specificity 77.8%

CONCLUSIONS: In patients with indeterminate thyroid nodules, the combined application of greyscale ultrasonography, real-time elastography, and contrast-enhanced ultrasonography markedly improves preoperative malignancy risk prediction. This multimodal imaging approach enhances diagnostic confidence and supports more precise and individualized surgical decision-making in Bethesda III–V thyroid lesions.

GEP15

Factors Predicting Inoperability in Radiologically Resectable Gallbladder Malignancies

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INTRODUCTION: Gallbladder cancer (GBC) is an aggressive malignancy in which surgical resection offers the only chance of cure. Despite advances in imaging and work-up, a subset of patients deemed radiologically resectable are found to be inoperable at staging laparoscopy or exploration. Identifying reliable preoperative predictors of inoperability is critical to reduce non-therapeutic laparotomies. **METHODS:** This retrospective cohort study analysed a prospectively maintained database of 2535 patients operated for gallbladder surgery at a tertiary cancer centre between January 2010 and April 2025. Patients radiologically staged as resectable and planned for surgery were included and classified as operable or inoperable based on findings at staging laparoscopy or exploratory laparotomy. Presentation with obstructive jaundice, tumour markers (CEA, CA 19-9), and radiological parameters were evaluated. Univariate and multivariate logistic regression analyses were performed to identify predictors of inoperability across primary GBC (PGBC), locally advanced GBC (LAGBC), and incidental GBC (iGBC) cohorts. **RESULTS:** Of 2,047 eligible patients with malignancy, 333 (16.3%) were deemed inoperable intraoperatively. Inoperability rates were comparable across upfront surgery for PGBC (34.2%), LAGBC (35.4%), and iGBC (30.3%). The most common causes were peritoneal disease (38.6%), inter-aortocaval nodal metastases (20.2%), liver metastases (11.4%), and vascular involvement (12.1%). On multivariate analysis, elevated CA 19-9 (>35 IU/mL) and CEA (>5 ng/mL) were independent predictors of inoperability across cohorts. Hepatic infiltration and suspicious metastases on imaging ($p<0.05$) were significant in iGBC. In LAGBC, hepatic artery invasion, biliary infiltration, elevated tumour markers, and distant nodal disease independently predicted inoperability. ($p<0.05$). Presence of obstructive jaundice was not a significant predictor of inoperability. **CONCLUSIONS:** A significant proportion of radiologically resectable gallbladder cancers are found to be inoperable at surgery. Elevated tumour markers, hepatic infiltration, periportal or distant nodal disease, and vascular involvement are key predictors of inoperability. Integrating clinical, biochemical, and radiological parameters with selective staging laparoscopy can improve preoperative risk stratification and reduce non-therapeutic laparotomies.

GEP16

Multivisceral resection in extensive pancreatic ductal adenocarcinoma: Safety and efficacy compared to standard resection: A propensity-score matched analysis

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INTRODUCTION: Multivisceral resection (MVR) in pancreatic ductal adenocarcinoma (PDAC) involves en bloc resection of adjacent organs due to direct invasion. Despite its clinical significance, adjacent organ invasion is not included as a determinant in AJCC staging or NCCN resectability criteria. This study aimed to evaluate the safety and efficacy of MVR compared to standard resection. **METHODS:** We analyzed 1,222 patients who underwent surgery for PDAC between 2009 and 2019 at a tertiary institution. Patients with stage IV disease, recurrent operations, incomplete data, or MVR performed for non-oncologic reasons were excluded. Propensity Score Matching (PSM) was conducted at a 1:2 ratio, matching for operation type and AJCC T/N stages. Short- and long-term outcomes were compared between two groups. **RESULTS:** Before PSM, 42 MVR cases and 1,099 standard resections demonstrated similar postoperative hospital stay lengths (11.4 vs. 12.6 days, p=0.094), major complications (23.8% vs. 19.0%, p=0.566), and clinically relevant postoperative pancreatic fistula (11.9% vs. 6.6%, p=0.310). However, MVR showed poorer long-term outcomes including 2-year overall survival rate (2YSR) (33.3% vs. 49.9%, p=0.006), 2-year disease-free survival rate (2YDFSR) (11.3% vs. 25.9%, p=0.018), and 2-year local recurrence rate (2YLRR) (41.3% vs. 30.9%, p=0.319). After PSM, both groups maintained similar short-term outcomes and showed no statistical difference in 2YSR (33.3% vs. 43.4%, p=0.143), 2YDFSR (11.3% vs. 19.3%, p=0.279), and 2YLRR (41.3% vs. 25.4%, p=0.362). **CONCLUSION:** MVR demonstrates comparable short- and long-term outcomes to standard resection and should be considered for selected patients with suspected organ invasion. These findings reinforce current staging and resectability criteria and support surgical decision-making for PDAC.