

THE ROLE OF LATERALITY IN THE ENDOSCOPIC AND SURGICAL MANAGEMENT OF MALIGNANT POLYPS OF THE COLON

S Boatman, J Kohn, L Weaver, S Olson, L Welton, A Troester, S Mott, P Goffredo

Introduction: Current guidelines consider endoscopic resection as appropriate treatment for malignant colon polyps (pT1) in the absence of high-risk features. However, if present, or due to patient preferences, a segmental colectomy is indicated. While the worse prognosis for advanced stage proximal vs. distal colon cancers following curative treatment has been demonstrated, there is limited data on the prognostic impact of laterality for malignant polyps, with recent studies suggesting similar lower survival for proximal pT1s. To date, the drivers of this observation remain unknown, potentially including genetic profiles, epigenetic changes, microbiome dysbiosis, or technical challenges inherent to endoscopic interventions. We hypothesized that proximal location would be associated with lower survival after endoscopic resection alone, and that treatment with colectomy would mitigate any survival difference between proximal and distal pT1s.

Methods: The Surveillance, Epidemiology, and End Results (SEER) database was queried for adult patients with a T1NxMx colon adenocarcinoma who underwent endoscopic polypectomy (2003-2019) or T1N0-3M0/x colon adenocarcinoma who underwent partial or subtotal colectomy (2000-2019). Patients with overlapping or unknown tumor location, treated with radiation, and >1 lifetime diagnosis of cancer were excluded. Patients in the endoscopic polypectomy group were also excluded if they received chemotherapy. Survival probabilities were estimated using the Kaplan-Meier method. Cox proportional hazard models were employed to estimate the effect of patient and disease characteristics on overall survival (OS) and cancer-specific survival (CSS).

Results: A total of 3,398 patients who underwent endoscopic resection (17% proximal pT1) and 28,334 who underwent colectomy (49% proximal pT1) were identified. Patients with proximally located malignant polyps, regardless of resection modality, were more often older, of Black race, and single. Proximal pT1s treated by endoscopic resection had higher rates of poorly or undifferentiated histology than distal lesions. Proximal pT1s treated by colectomy displayed higher rates of well differentiation and mucinous/signet ring histology, and lower odds of lymph node involvement and receipt of chemotherapy. In multivariable analysis, the effect of laterality on OS differed by resection approach (Figure 1a-b); the disparity in OS between proximal and distal polyp location was significantly more pronounced for patients who underwent endoscopic polypectomy compared to colectomy (HR 1.70, 95% CI 1.46-1.98 vs. HR 1.11, 95% CI 1.06-1.16). Similarly, the effect of malignant polyp location on CSS significantly differed by resection approach (Figure 1c-d); patients with proximal pT1s who underwent endoscopic polypectomy had increased risk of cancer-specific mortality, while this survival discrepancy was no longer observed in those treated by colectomy (HR 1.92, 95% CI 1.35-2.72 vs. HR 1.08, 95% CI 0.97-1.20, respectively).

Conclusion: In this U.S. population-based cohort, proximal location was independently associated with both lower OS and CSS following endoscopic resection. However, in the surgical cohort, while patients with proximal pT1 tumors had marginally worse OS, treatment with colectomy improved CSS so that it was comparable to that of distal lesions.

These findings suggest that, regardless of the mechanism portending worse outcomes for proximal pT1s, laterality should be taken into account when managing malignant polyps, and proximal location could be considered among the high-risk features warranting a colectomy.

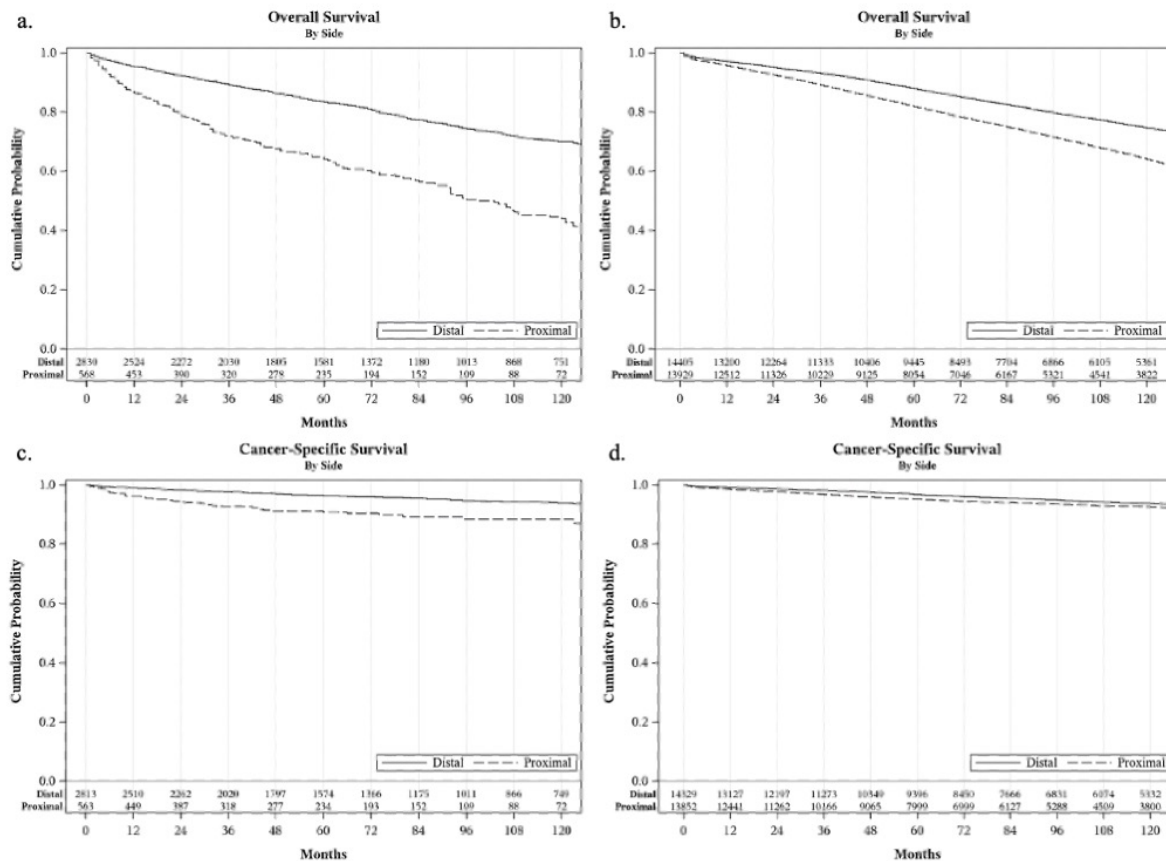


Figure 1. Overall survival of patients with pT1 colon tumors treated with endoscopic resection (a) and colectomy (b) separated by laterality. Cancer-specific survival of patients with pT1 colon tumors treated with endoscopic resection (c) and colectomy (d) separated by laterality.

USE OF VV-ECMO IN PATIENTS WITH ACUTE RESPIRATORY DISTRESS SYNDROME DUE TO FUNGAL PNEUMONIA

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Introduction: Patients with fungal pneumonias sometimes progress to acute respiratory distress syndrome (ARDS). Mortality has been reported as high as 60-90% in this group. Venovenous extracorporeal membrane oxygenation (VV-ECMO) can be used to support such patients, however, outcomes are not well understood.

Methods: This was a retrospective study across the four adult ECMO centers in Minnesota for one decade (2012-2022). The outcomes of interest were duration of ECMO, survival rate, and complications. Data was extracted from the electronic medical record and analyzed using descriptive statistics.

Results: Fungal pneumonia was the etiology of ARDS in 22 of 422 (5%) adults supported with VV-ECMO during the 10-year study period. Median patient age was 43 years (interquartile range [IQR] 35 to 56) and 68% were male. By type of fungal infection, 16 (72%) had blastomycosis, 5 (22%) had pneumocystis, and 1 (5%) had cryptococcus. Of the 16 patients with blastomycosis two were immunosuppressed while all five of the pneumocystis patients were immunosuppressed. The overall survival rate was 73%; the majority of patients with blastomycosis (67%) and pneumocystis (80%) survived to hospital discharge. The duration of ECMO support was greater for the pneumocystis group (median 30 days [IQR 21-43]) as compared to blastomycosis (median 10 days [IQR 8-18]).

Conclusion: Our findings support the use of VV-ECMO for ARDS due to fungal pneumonias in select immunocompetent and immunocompromised patients. While survival was high, patients with pneumocystis required longer ECMO runs.

LONG-TERM REOPERATION RATES FOLLOWING PANCREATODUODENECTOMY FOR PANCREATIC ADENOCARCINOMA

L Lu, C Zhang, A Zironda, P Starlinger, R Smoot, S Cleary, M Kendrick, M Truty, S Warner, C Thiels

Introduction: Short-term outcomes after pancreatoduodenectomy (PD) are well-studied while long-term reoperation rates and indications remain poorly characterized.

Methods: Retrospective chart review was performed on patients who underwent PD for pancreatic adenocarcinoma between 1/2011-12/2021 at one tertiary care medical center. Reoperations occurring ≥ 90 days after PD were defined as either related or unrelated to index PD or pancreatic adenocarcinoma.

Results: Six-hundred twenty-eight patients were included in analysis. Fifteen percent required procedures ≥ 90 days after PD, with 10% requiring a related reoperation. Patients with related reoperations (n=63) underwent a total of 83 procedures (78% underwent one reoperation; 18%, two; and 5%, three or more). Recurrent cancer was the most frequent indication for related reoperations (50.6% of related reoperations, 5% of patients overall); followed by hernia (25.3% of reoperations, 3% of patients); PD-related complications including leak and fistula (18.1% of reoperations, 2% of patients); and small bowel obstruction (9.6% of reoperations, 1% of patients). Most reoperations occurred over one year after PD (69.9% vs. 30.1% <1 year, median 18.3 [IQR 11.1, 36.0] months). Within the entire cohort, 11% required endoscopic or interventional radiology-based procedures. Overall, 22% of patients required an additional surgery or procedure more than 90 days after PD.

Conclusion: One in six patients required additional surgery more than 90 days after PD for pancreatic adenocarcinoma, of which two in three had operations for related indications. Related reoperative indications included recurrence, hernia, PD-specific complications, and small bowel obstruction. However, the rate of each of these reoperations was relatively low.

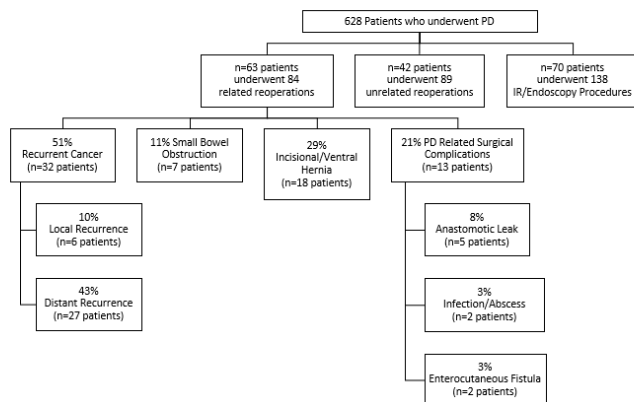


Figure 1. Patients receiving procedural intervention more than 90 days after PD.

MODIFICATION OF PENILE INVERSION VAGINOPLASTY TO IMPROVE OUTCOMES OF INTRAOPERATIVE RECTAL INJURY – A TECHNIQUE PAPER.

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Introduction: Penile inversion vaginoplasty (PIV) is the most common technique used in Male to Female gender reaffirmation surgeries for vaginoplasty. However, PIV can have complications that can negatively impact the quality of life and satisfaction post-surgery.

Methods: This paper describes a modification to PIV surgery that may help manage rectal injuries and minimize the risk of fistula formation.

Results: PIV involves the creation of neovagina using the penile skin and scrotal tissue. During this procedure, the surgeon creates a space between the rectum and the bladder, called the recto-vesical space, to make room for the neovagina. The dissection between the rectum and bladder involves the separation of the two organs by blunt dissection. This is typically done by using surgical instruments to carefully push the rectum and bladder apart, creating a space between them. This space is then filled with tissue, which will eventually form the lining of the neovagina. This blunt dissection between the rectum and bladder during PIV can result in rectal injury and fistula formation.

The bulbospongiosus muscle is a muscle that surrounds the bulb of the penis and plays a role in ejaculation and urination. During a modification of the penile inversion technique for vaginoplasty, the bulbospongiosus muscle is released from its attachment to the corpus spongiosum and left posteriorly attached. This provides a good arc of rotation, an extra layer of tissue coverage to repair in case of complications such as rectal injury to reduce risk of fistula formation. The reliable blood supply to the muscle also ensures that it remains healthy and viable, which is important for optimal healing and functional outcomes.

Conclusion: The modification of the penile inversion technique with preservation of the bulbospongiosus muscle attachment can provide an effective and safe option for vaginoplasty, with good aesthetic and functional results. Long-term follow-up is needed to demonstrate the benefits of this technique, including decreased risk of fistula formation. A cadaveric study could also be conducted to illustrate the exact vasculature.

USE OF THE LATISSIMUS DORSI MUSCLE FOR INTRATHORACIC RECONSTRUCTION AFTER DIVISION OF THE THORACODORSAL VESSELS AND LATISSIMUS DORSI

S Cherukuri, S Blackmon, K Bakri, S Mardini, S Moran, W Gibreel

Introduction: The latissimus dorsi muscle is the workhorse flap for intrathoracic reconstruction. Prior thoracotomy that severs the latissimus dorsi muscle limits the limits the option to transpose the muscle intrathoracically on a pedicle based off the thoracodorsal vessels. The authors present their experience with using the distal portion of the muscle for intrathoracic reconstruction when the muscle is based off an intercostal vessel branch. We also demonstrate the ability of flap chimerism with inclusion of a separate skin paddle depending on the branching pattern of the intercostal vessels.

Methods: A retrospective medical record review was performed for all patients who underwent intrathoracic reconstruction using a perforator-based intercostal artery latissimus dorsi flap in a single institution between September 2021 and July 2022

Results: 3 patients underwent intrathoracic reconstruction utilizing a distal latissimus dorsi muscle flap based on a perforator of a branch of the intercostal artery. The mean age and BMI was 54(+/- 9.5) years and 26.6(+/- 5.6) kg/m². The intrathoracic fistulae were successfully repaired and buttressed with the harvested muscle flap, without recurrence or reoperation. All patients had clinical evidence of flap viability. There were no intrathoracic complications. 1 patient had a flap site complication. Mean follow-up duration was 11 months (3-14 months).

Conclusion: In cases where previous thoracotomy has disrupted the thoracodorsal vessels to the latissimus dorsi, intercostal artery perforators provide a reliable source of blood supply, enhancing the versatility of the latissimus dorsi muscle for intrathoracic reconstruction. In addition, the intercostal vessels provide the option of flap chimerism which helps with more complex intrathoracic reconstructions.

Patient Number	Patient Age	Primary Surgery	Adjuvant Radiation Therapy	Intrathoracic Pathology	Flap utilized	Intercostal Space	How Flap was used	Complications	Followup length
1	53	Ivor-Lewis Esophagectomy	Yes	Bronchopleural Fistula	Pedid ed muscle flap of latissimus dorsi and skin paddle supported by Intercostal muscle	7th	Buttressing site of bronchopleural fistula and obliteration of empty space	Aspiration Pneumonia	14 months
2	65	Aortic Repair	No	Aorto-esophageal fistula	Pedid ed muscle flap of latissimus dorsi	6th	Cardiac coverage following repair of fistula with serratus anterior flap	None	9 months
3	45	Thoracotomy	No	Bronchoesophageal fistula	Pedid ed muscle flap of latissimus dorsi	8th	Buttress site of esophageal repair	Flap site Seroma	3 months

ASSESSMENT OF THE IMPACT OF THE AMERICAN SOCIETY OF BREAST SURGERY GUIDELINES ON CONTRALATERAL PROPHYLACTIC MASTECTOMY RATES FOR UNILATERAL BREAST CANCER

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Introduction: Mid-2016, the American Society of Breast Surgeons (ASBrS) published guidelines discouraging contralateral prophylactic mastectomy (CPM) for unilateral breast cancer (UBC) in average-risk women, or those with advanced disease or significant comorbidities, recommending shared decision-making. We incorporated this into structured patient counseling. We aimed to assess the impact of this initiative on CPM rates.

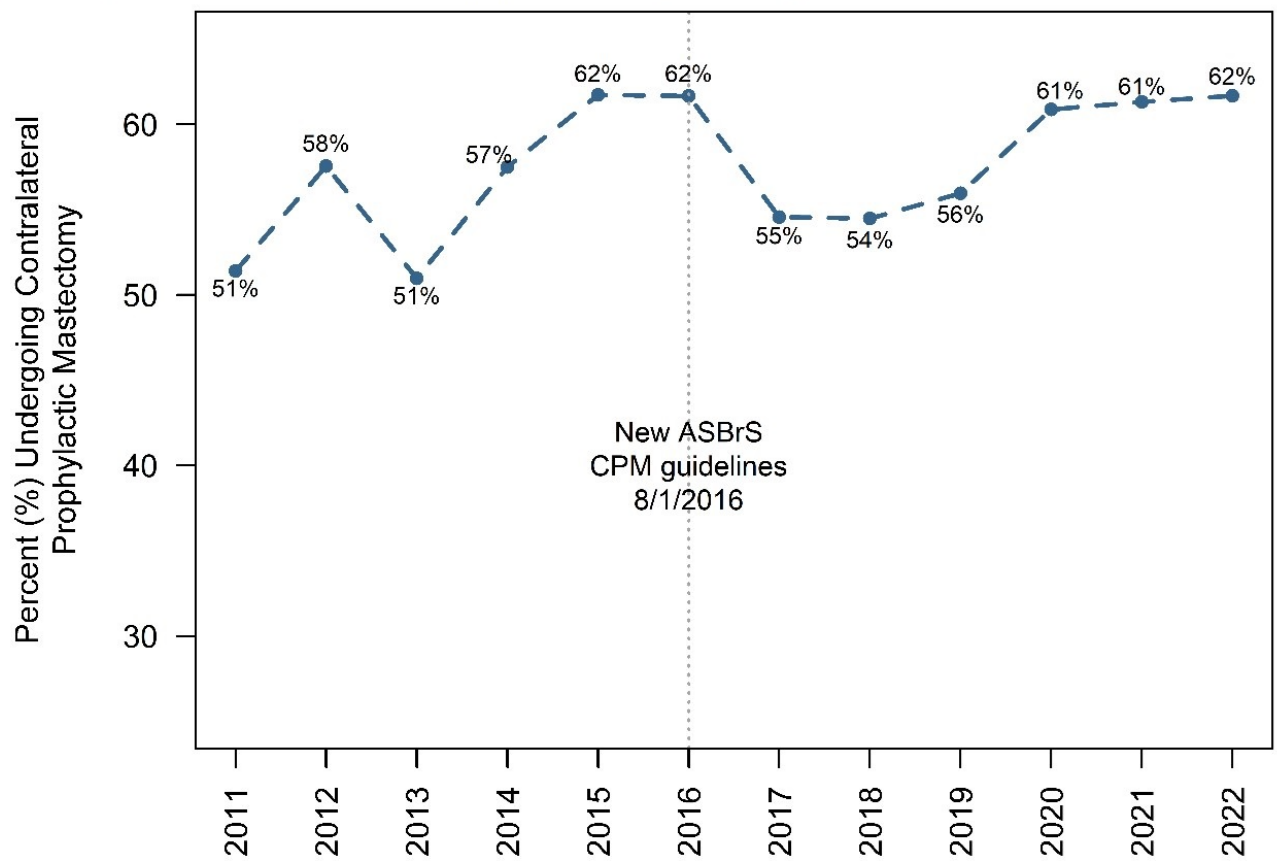
Methods: We identified female patients with UBC undergoing mastectomy 1/2011-11/2022 from our prospective breast surgery database. Association of relevant variables with CPM was analyzed using Wilcoxon rank-sum or chi-square tests. Trends over time were assessed using chi-square tests.

Results: Among 3,214 patients, median age 54 years, 1,370 (43%) had unilateral mastectomy (UM) and 1,844 (57%) also had a CPM. We noted a significant post-implementation CPM decrease for 2017-2019 (56%) versus 2015-2016 (62%), $p < 0.001$, but a subsequent increase 2020-2022, Figure. Immediate breast reconstruction (IBR) rate was 63% overall, (78% with CPM and 44% without CPM, $p < 0.001$). Other variables associated with CPM were younger age, white race, mutation status and earlier stage disease. Only genetic testing changed substantially over the study period: increasing from 27% pre-guideline to 48% 2017-2019 and 70% 2020-2022, $p < 0.001$, as did the percentage identified as pathogenic mutation carriers (4% pre-guideline, 8% 2017-2019, 11% 2020-2022, $p < 0.001$) in whom 91% underwent CPM, a rate stable over time. Among non-mutation carriers CPM declined from 60% 2015-2016 to 52% 2017-2019 ($p = 0.002$) before increasing to 58% 2020-2022 ($p = 0.02$ vs 2017-2019; $p = 0.45$ vs 2015-2016).

Conclusion: Implementation of specific patient counseling recommendations was initially effective in decreasing CPM rates but not sustained. The association with IBR suggests that counseling based on cancer risk considerations may be complicated by other factors including a desire for symmetry, avoidance of future breast-specific screening imaging, and social media influence. Despite our educational efforts on the minimal oncologic risk reduction of CPM, we did not see a sustained nor substantial decrease in CPM rates in average risk women, a choice which appears governed by patient choice, particularly in the setting of planned reconstruction.

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Figure. Trends per Year 2011-2022 in Contralateral Prophylactic Mastectomy Rates Among Patients with Unilateral Breast Cancer



EVALUATION OF PATIENT REGRET AFTER SURGERY FOR GASTROINTESTINAL MALIGNANCY

McKenzie J White, Anna Rauzi, Madison Kolbow, Saranya Prathiba, Ariella Altman, Jane YC Hui, David Brauer, Jacob Ankney, Christopher LaRocca, Schelomo Marmor, Wolfgang Gaertner, Eric H Jensen, Todd M Tuttle

Introduction: Decision regret, a negative state of mind resulting from the conviction that a different choice would have led to a better outcome than the present outcome, is an area of interest in oncology. Regret has been studied in breast cancer surgery, in which patients may choose between different operations with similar oncologic outcomes. Regret is less studied in gastrointestinal malignancies, where quality oncologic outcomes may dictate a more uniform operative approach with potential for significant changes in quality of life, but with limited patient input. Our objective was to evaluate decision regret in patients undergoing surgery for GI malignancy and describe variables associated with regret after surgical resection.

Methods: In this single-institution retrospective study, patients who underwent surgical resection of gastrointestinal malignancies (pancreatic cancer and peritoneal surface malignancies) between January 2017 and May 2020 completed surveys by mail that included: demographic information, Brehaut Decision-Regret Scale (DRS), Functional Assessment of Cancer Therapy-Hepatobiliary (FACT Hep QoL), and the RAND 36-Item Health Survey (SF-36). The DRS is a 5 question Likert scale survey validated to report patient regret. Of 45 patients recruited, 33 patients were included. Patients were excluded due to incomplete consents and incomplete outcome of interest (DRS scale). Patient demographic, diagnostic, and treatment variables were described. A fisher's exact test was used to compare groups. Survival was calculated as time from operation to date of last follow up in our system or death. Surgical complications were considered any event which required re-admission or re-intervention within 90 days of surgery. Surveys were scored and analyzed according to validated tools.

Results: Of 32 patients, all were non-Hispanic White, 65% were female, median age at time of surgical treatment was 63 years (range 23-76 years). Primary pathology was pancreatic adenocarcinoma [head/neck or tail] (n=15, 45%), low grade appendiceal mucinous neoplasm (n=11, 33%), pancreatic neuroendocrine tumor (n=3, 9%). Patients underwent cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (HIPEC) (n=13, 39%), pancreaticoduodenectomy with or without vascular reconstruction (n=12, 36%), distal pancreatectomy with or without splenectomy (n=7, 21%). There were 6 complications requiring re-admission or re-intervention within 90 days. Survival ranged from 18-58 months for patients with low grade mucinous neoplasm of the appendix and from 1-58 months for patients with pancreatic adenocarcinoma. According to the DRS, most patients did not regret their treatment choice (Score of 0) (n=22, 67%).

Patients reported a high quality of life following surgical resection (FACT-Hep total average = 140 (scale 0-180, 180 being best quality of life)). In eight domains of health evaluated with the SF-36 questionnaire, patients reported more favorable mean scores for role limitations due to personal or emotional problems (80.2), social functioning (79.4), emotional well-being (79.6), physical functioning (78.6), and bodily pain (76.7), while less

favorable mean scores were reported for role limitations due to general health perception (64.5), role limitations due to physical health (60.2), and energy/fatigue (56.1). Decisional regret was associated with the following variables: lower emotional well-being ($p=0.03$), role limitations due to physical health ($p=0.01$), and social functioning ($p<0.01$)

Conclusion: In this single-institution survey-based study of decisional regret related to surgery for gastrointestinal malignancy, rates of regret were low. Patients who reported decisional regret require additional support in post-operative recovery, particularly given the association of regret with role limitations. Future studies should evaluate patient decision-making prospectively, while physicians could incorporate these findings into conversations with patients who are uncertain about pursuing operative management of GI malignancy.

IMPACT OF PROTON PUMP INHIBITORS ON PATHOLOGIC RESPONSE RATES FOLLOWING FLUOROPYRIMIDINE-BASED NEOADJUVANT CHEMOTHERAPY IN PANCREATIC CANCER PATIENTS

J Steadman, C Day, A Lammers, Z Jin, M Truty, C Thiels

Introduction: Proton pump inhibitors (PPIs) negatively impact fluoropyrimidine-based (FP) chemotherapy efficacy in colorectal cancer. This study aimed to assess PPI therapy impact on pathologic response rates of pancreatic adenocarcinoma (PDAC) patients receiving FP-based chemotherapy.

Methods: An institutional retrospective review of resected PDAC patients receiving neoadjuvant FP-based chemotherapy (98% FOLFIRINOX) from 2011-2021 was conducted. Outcomes were stratified by use or non-use of PPIs within 6 months of NAC. Primary outcome was major pathologic response (mPR) defined as complete or near complete response. Kaplan Meier estimates and Cox models were used to assess the impact of PPIs on overall survival (OS). Using one-sided test with $\alpha=0.05$, for 80% power, 557 patients were needed to detect a 30% difference in mPR.

Results: 540 patients were included, the median age was 64 (IQR 12.0) years, 297 (55%) were male, and 202 (37%) were PPI users. MPR was seen in 170 (32%) cases, with similar rates among PPI users and non-users, 59 (29%) and 111 (33%) patients respectively ($p=0.38$). In subset analysis, no difference in mPR was seen between PPI users and non-users receiving chemoradiation (35% vs 35%, $p=0.98$) or ≥ 8 cycles of NAC (33% vs 36%, $p=0.55$). Median OS for PPI users was 30.9 vs 31.7 months for non-users ($p=0.62$). On multivariable analysis, PPI therapy was not associated with decreased survival (Table 1).

Conclusion: PPI usage did not significantly influence mPR rates following neoadjuvant IV fluoropyrimidine-based chemotherapy in resected PDAC patients. Further analysis of all patients, not just those who underwent resection, is required.

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Table 1: Multivariable Predictors of Overall Survival

Variable	Hazard Ratio (95% Confidence Interval)	p-value
Age	0.99 (0.98-1.01)	0.92
Race		
Non-White	1.0 (ref)	
White	0.85 (0.51-1.41)	0.54
ASA		
1-2	1.0 (ref)	
3-4	1.24 (0.93-1.66)	0.14
PPI Therapy		
Non-user	1.0 (ref)	
User	1.04 (0.80-1.35)	0.76
Neoadjuvant Chemoradiation		
No	1.0 (ref)	
Yes	1.16 (0.83-1.61)	0.38
Neoadjuvant Chemotherapy		
< 8 cycles	1.0 (ref)	
≥ 8 cycles	0.97 (0.74-1.26)	0.80
Pre-operative CA 19-9		
< 35	1.0 (ref)	
≥ 35	1.38 (1.05-1.80)	0.02
Surgical Procedure*		
PD	1.0 (ref)	
DP	1.83 (1.36-2.46)	<0.001
TP	1.21 (0.83-1.77)	0.33
CP	1.73 (0.23-12.93)	0.59
Any Vascular Resection		
No	1.0 (ref)	
Yes	1.48 (1.13-1.94)	0.004
Major Pathologic Response		
No	1.0 (ref)	
Yes	0.49 (0.37-0.66)	<0.001

*PD: Pancreatoduodenectomy; DP: distal pancreatectomy; TP: total pancreatectomy; CP: completion pancreatectomy

ONCOLYTIC ADENOVIRUS EXPRESSING THE SODIUM IODIDE SYMPORTER: A NOVEL PLATFORM FOR IMAGING AND THERAPY OF COLORECTAL CANCER

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Introduction: Colorectal cancer (CRC) is one of the most common causes of cancer death worldwide and many patients will develop metastatic disease at some point during their treatment course. For these patients, many of whom will not be surgical candidates or will progress through standard lines of systemic therapies, innovative therapies are needed. Oncolytic viruses represent a potential novel treatment approach for these patients with advanced CRC.

Methods: Oncolytic adenoviruses (OAd) expressing the sodium iodide symporter (NIS) were generated (OAd-NIS). These viruses are infectivity-enhanced, tumor-selective, and express NIS with each cycle of viral replication. Cytocidal effects and NIS transgene expression were evaluated in vitro in multiple human CRC cell lines. An in vivo mouse model and PET/CT imaging were used to test the degree to which viral-mediated NIS expression can enable radiotracer (¹²⁴I) uptake and imaging in CRC tumors.

Results: The OAd-NIS virus demonstrated robust cytocidal effects across multiple CRC cell lines in crystal violet cell viability assays. In vitro immunohistochemical staining with an anti-human NIS antibody demonstrated strong NIS transgene expression in all tested cell lines. For the in vivo experiment, subcutaneous CRC tumors were established in the flanks of nude mice and treated with OAd-NIS. Radiotracer was administered and small animal PET/CT images were acquired. Tumors in the mice demonstrated high levels of ¹²⁴I signal, confirming the NIS-expressing adenovirus' ability to support radionuclide-based imaging for CRC.

Conclusion: Our OAd-NIS vector has demonstrated strong in vitro cell-killing effects across multiple CRC cell lines. The adenovirus supports strong levels of NIS transgene expression which facilitates imaging with radioactive iodine. Future work will investigate modifications to the adenovirus genome structure to further optimize viral infection and replication in CRC. Additionally, radioactive iodine (¹³¹I) will be utilized in combination with OAd-NIS in therapeutic studies in murine models.

MELANOMA IN BLACK PATIENTS: DISTINCT PRESENTATION CAN INFORM STRATEGIES TO IMPROVE OUTCOMES

J Steadman, A Glasgow, N Neequaye, E Habermann, T Hieken

Introduction: Guidelines for cutaneous melanoma focus on Non-Hispanic White (NHW) patients who more frequently present with earlier stage disease than Non-Hispanic Black (NHB) patients.

We aimed to identify features of melanoma in NHB patients to address this knowledge gap and strategies for earlier detection and treatment.

Methods: We studied 540,375 melanoma patients with known T and N categories without metastatic disease (M0) from 2004-2019 Surveillance, Epidemiology, and End Results (SEER) cancer registry data. Multivariable analysis and Kaplan-Meier cancer-specific survival (CSS) estimates with Cox proportional hazard modeling were used to compare characteristics between NHB and NHW patients and within NHB patients.

Results: Of 540,375 patients, 491,098 (91%) were NHW and 1,499 (0.3%) NHB. NHB patients were younger (21% vs 17% < age 50) and more commonly female (54% vs 41%) than NHW patients, both $p < 0.0005$. In NHB patients, anatomic site was most frequently lower extremity (52% vs 15% for NHW patients), $p < 0.0001$. T category was less favorable in NHB vs NHW patients (55% Tis-T1 vs 82%; 27% T3-T4 vs 8%, $p < 0.0001$) and clinical stage higher with 34%, 16%, and 19% of NHB patients presenting with Stage I, II, and III, vs 43%, 5%, and 6% for NHWs, $p < 0.0001$. Sentinel lymph node surgery for T1b-T4 patients was performed less frequently for NHB (68%) than NHW patients (74%), $p = 0.001$. Within the NHB cohort, 808 (54%) were female and 691 were male. NHB males were older, and more often pN+ than females, but there were no differences in T category, mitotic rate, stage and surgical treatment. 5-yr CSS for stage III disease was worse for NHB males than females, adjusting for age and clinical nodal status (42% vs 71%, HR 2.48), Figure.

Conclusion: NHB melanoma patients presented with tumor characteristics distinctly different from NHW patients. Among NHB patients, despite no significant differences in T category and tumor mitotic rate, females with stage III disease had markedly superior CSS than males. These data may inform strategies to improve detection, treatment and cancer outcomes for NHB melanoma patients. Further study of the interaction between sex and survival in NHB patients is warranted.

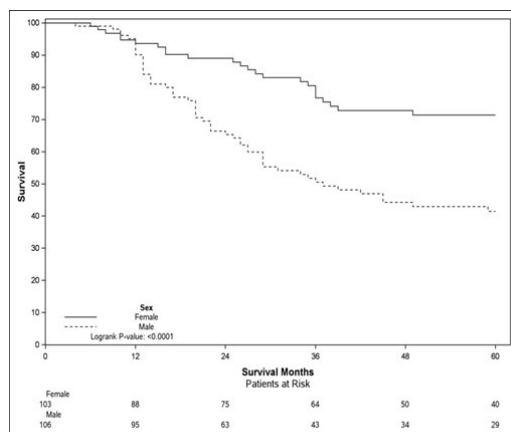


Figure: Cancer-Specific Survival for Stage III Melanoma in NHB Patients

INSTITUTIONAL CASE SERIES REPORT OF MRI LYMPHANGIOGRAPHY TO AID IN THE DIAGNOSIS OF RETROPERITONEAL LYMPHATIC MALFORMATION

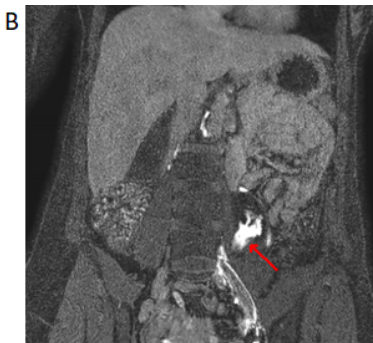
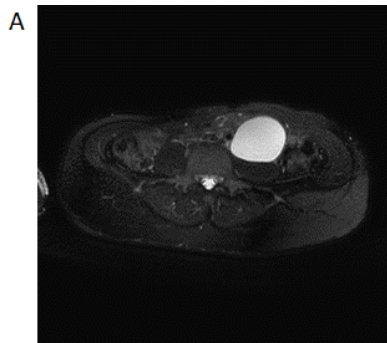
S Abdulmoneim, T Grotz, S. Thompson, E Bendel, J Collins, C Thiels

Introduction: Retroperitoneal lymphatic malformation a very rare benign disease that can be difficult to diagnose. The differential diagnosis often include malignant and pre-malignant conditions and therefore surgical excision is often performed to confirm the diagnosis. Here in we report the novel use of MRI lymphangiogram in the workup of suspected retroperitoneal lymphatic malformation.

Methods: A retrospective review was performed of all MRI lymphangiograms performed for the diagnosis of suspected retroperitoneal lymphatic malformation at Mayo clinic from 2012 to 2023. Patient characteristics as well as, imaging, cytology/pathology, and outcomes were abstracted from the medical records.

Results: Four adult patients underwent MRI lymphangiogram (2 male, 2 female). One patient had a potential related history of congenital cavernous malformation and history of sclerotherapy to the retroperitoneal cyst. One patient had previously undergone surgery with recurrence, one patient had previously undergone sclerotherapy with recurrence, and one patient had a newly diagnosed mass. All patients underwent baseline CT scans which suggested possible diagnosis of retroperitoneal lymphatic malformation as well as differential diagnosis of mesenteric duplication cyst, germ cell tumor, cystic teratoma and myxomatous neoplasm. MRI lymphangiography was performed utilizing ultrasound guided injection of Gadavist contrast in the inguinal lymph node followed by dynamic MR imaging. No complications were reported during and after the lymphangiography. MR imaging demonstrated a pre contrast T2 hyperintense cystic structure in four patients (Figure 1a) and demonstrated two patients with hypointense T1 vs one patient with hyperintense T1 with Lymphangiography demonstrated active lymphatic leak into the lymphocele with progressive enhancement of the wall in one patient (Figure 1b), relatively delayed transit of contrast secondary to mass effect from extensive abdominal lymphatic malformation in the second patient, enhancement of the cyst wall following injection of lymphatic contrast in the third patient and there was filling in the cystic wall that is consistent with cystic lymphatic origin in the fourth patient. These findings were felt to be consistent with a benign lymphatic malformation in all patients.

Conclusion: MRI lymphangiograms is a safe and potentially beneficial modality to aid in the diagnostic confirmation retroperitoneal lymphatic malformation. Further research is needed to confirm the diagnostic accuracy and long-term outcomes.



PERI-OPERATIVE OUTCOMES OF LOBECTOMY FOR NSCLC IN PATIENTS WITH COMPROMISED PULMONARY FUNCTION

C Powell, L Tapias, S Saddoughi, S Cassivi, KR Shen, F Nichols, S Blackmon, J Reisenauer, D Wigle

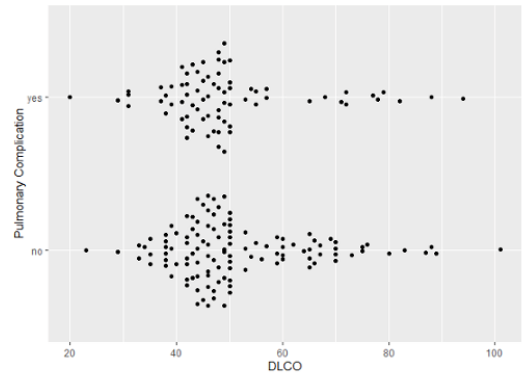
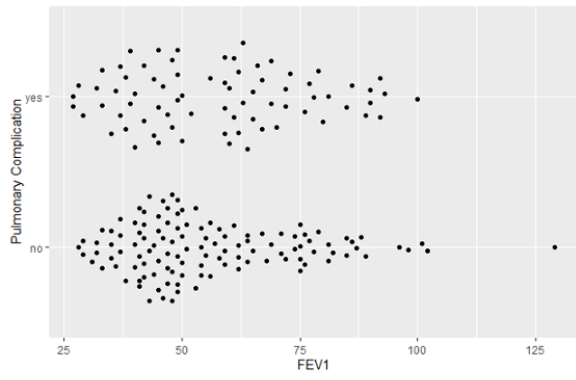
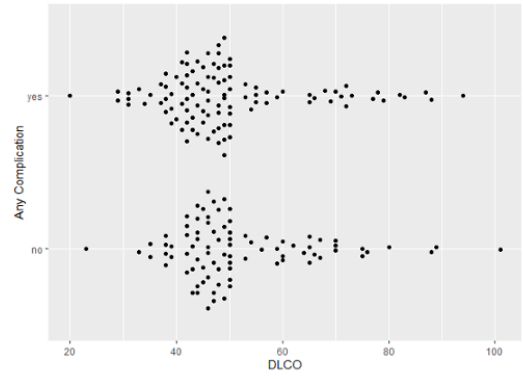
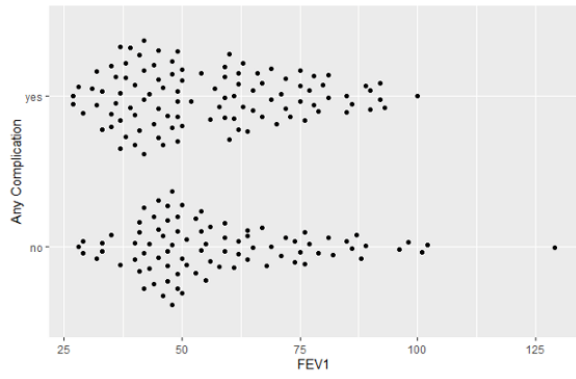
Introduction: Patients with lung cancer can be denied potentially curative surgery because of reduced pulmonary function and concern regarding increased morbidity and mortality with surgical resection. We examined the outcomes of patients considered high risk for pulmonary resection based on their pulmonary function tests.

Methods: We evaluated patients with FEV1 and/or DLCO $\leq 50\%$ predicted who underwent lobectomy for non-small cell lung cancer between 2000 and 2019 to determine the relationship of preoperative pulmonary function tests to postoperative morbidity and mortality.

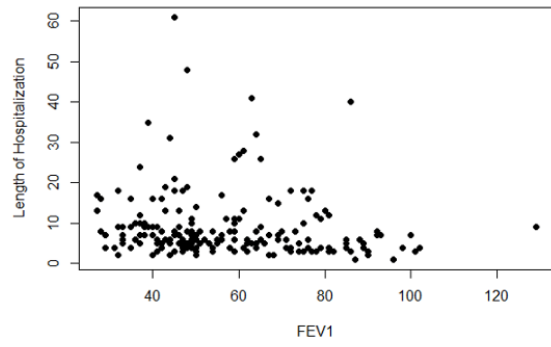
Results: We identified 191 consecutive high-risk patients (105 male, 86 female) who underwent pulmonary resection after a thorough preoperative pulmonary function evaluation. The mean age at surgery was 68 ± 8.3 years and the mean body mass index was 28 ± 5.3 . Mean FEV1 was 57 ± 18.6 percent predicted, and mean DLCO was 51 ± 13.6 percent predicted. Eighty-five (44.5%) had stage I NSCLC, 62 (32.5%) stage II, 43 (22.5%) stage III, and 1 (5.2%) stage IV. We found an operative 30-day mortality of 1.6%, compared to the most recent published Society for Thoracic Surgeons database lobectomy mortality of 1.5%. Neither the type of PFT deficit (FEV1, DLCO, or both) nor the severity of PFT deficit predicted overall morbidity, pulmonary morbidity, length of hospitalization, or operative mortality. Patients who underwent a minimally invasive procedure had decreased length of hospitalization than patients who underwent an open procedure, but overall morbidity, pulmonary morbidity, and operative mortality was unaffected by approach.

Conclusion: Carefully selected patients with compromised pulmonary function can safely undergo a potentially curative lung resection.

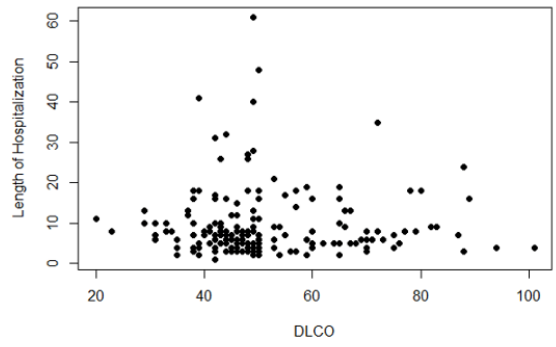
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FEV1 vs. Length of Hospitalization



DLCO vs. Length of Hospitalization



FIBEROPTIC BRONCHOSCOPY IS NOT ASSOCIATED WITH SURVIVAL BENEFIT IN PATIENTS WITH INHALATION INJURY

S Kemp, L Kindt, C Brod, F Endorf, R Nygaard,

Introduction: Inhalational injury is a relatively common comorbidity in burn patients, diagnosed in up to 20% of admitted burn. Defined as lung injury due to direct thermal damage of airways or the inhalation of chemicals associated with fire; its presence is associated with increased mortality, increased resuscitation needs, and the likelihood of ongoing pulmonary complications. The prevalence of inhalational injury is highest in patients with larger TBSA burns and is an independent predictor of mortality. Fiberoptic bronchoscopy (FOB) is the current gold standard for diagnosis of inhalation injury, although there is controversy about its routine use when diagnosis can be made based on history and presentation.

Methods: A retrospective cohort study was performed using the prospectively maintained burn registry and trauma database to identify all patients admitted from 2007 to 2021 with diagnosed inhalational injury. Charts were reviewed to determine if FOB was performed.. Demographic and injury details gathered for each patient included burn TBSA, smoking status, and significant medical comorbidities. The Baux score was calculated for each patient. Descriptive statistics compared data for the bronchoscopic versus non-bronchoscopic population. Univariable and multivariable regression analysis was performed to assess survival as well as secondary outcomes.

Results: We identified 420 patients with a diagnosis of inhalational injury. Of these, 143 (34%) underwent FOB. There were no significant differences identified among those who received bronchoscopy based on factors like sex, race, or presence of medical comorbid conditions. There was no significant difference in survival between the FOB cohort and those who did not receive bronchoscopy when adjusting for factors associated with mortality. Bronchoscopy demonstrated a statistically significant association with pneumonia, likely due to the use of therapeutic bronchoscopy.

Conclusion: In this retrospective cohort, routine FOB in patients with inhalational injury does not offer survival benefit, or demonstrate an improvement in rates of pneumonia, duration of ICU stay, or days on the ventilator. Future study should include a randomized trial to assess benefit of FOB in a larger burn population.

Table 1: Regression analysis of factors impacting patient survival, development of pneumonia, ICU days, and ventilator days.

Risk factor	Survival		Pneumonia		Vent Days		ICU Days	
	aOR (CI)	P*	aOR (CI)	P*	aOR (CI)	P*	aOR (CI)	P*
Smoker	1.95 (1.11, 3.45)	0.21	0.71 (.44, 1.14)	0.153	-1.78 (-4.64, 1.07)	0.22	-2.5 (-6.5, 1.48)	0.216
Baux Score	0.93 (.096, 0.98)	<0.001	0.99 (0.99, 1.00)	0.524	.049 (0.01, 0.09)	0.1	0.030 (-.02, .08)	0.256
Bronch	1.23 (0.67, 2.25)	0.495	4.13 (2.63, 6.51)	<0.001	1.16 (-1.90, 4.21)	0.457	1.71 (-2.56, 5.98)	0.431
Pneumonia	1.51 (0.81, 2.83)	0.198	-	-	15.19 (12.02, 18.36)	<0.001	20.57 (16.1, 25.0)	<0.001
Comorbidity	1.18 (0.64, 2.17)	0.584	1.37 (0.83, 2.25)	0.214	2.72 (-.315, 5.77)	0.079	2.57 (-1.68, 6.83)	0.0236

BRACHIAL ARTERY ANEURYSMS: A 22-YEAR EXPERIENCE

A Nguyen, T Tallarita, I Sen, J Beckermann, Y Erben, V Davila, T Carmody, R De Martino

Introduction: True brachial artery aneurysms (TBAA) are rare. A prior upper extremity dialysis access procedure, immunosuppression or connective tissue disorders seem to link more strongly to causation than atherosclerosis alone. There are no standardized guidelines on optimal management of TBAA. We describe the clinical presentation and treatment outcomes of TBAA at our institution.

Methods: All patients evaluated for TBAA were reviewed from August 2000 to July 2022. Demographics, imaging, operative details, and outcomes were analyzed retrospectively.

Results: Twenty-four patients (18 male, 6 female, median age 51 [range 1-75] years) with TBAA were identified. Atherosclerotic risk factors included hypertension in 19 (79%), a smoking history in 13 (54%), hyperlipidemia in 9 (38%), and coronary artery disease in 5 (21%). Seventeen (71%) had a history of end stage renal failure (94% had a prior fistula in the affected arm, 76% history of kidney transplant, and 59% were taking immunosuppressants), 4 (17%) had a history of aneurysm at other locations, and 3 (13%) had been diagnosed with a connective tissue disorder. Fourteen (58%) were symptomatic at the time of presentation, with 11 (46%) complaining of local pain. Median aneurysm size was 25 mm (range 5-88 mm). Nineteen (79%) patients underwent surgical repair for either symptoms (11/19 [58%]) or potential risk of distal embolization from thrombus (8/19 [42%]). Median aneurysm size in asymptomatic patients surgically treated was 25 mm (range 11-65 mm). Surgical reconstruction included interposition graft in 10 (53% [8 saphenous veins, 1 ringed PTFE graft and 1 cryopreserved graft]), bypass with nonreversed saphenous vein in 3 (16%), primary end-to-end brachio-brachial anastomosis in 3 (16%), simple ligation of the brachial artery in 2 (11%), and was unknown in 1 (5%). Two (11%) patients experienced postoperative complications (1 wound infection managed conservatively and 1 hematoma requiring evacuation). At mean follow-up of 4.2 years (\pm 5.2 years), 11/13 (85%) grafts remained patent. Three patients developed graft thrombosis but did not require restoration of in-line flow.

Conclusion: TBAA were most frequently identified in male patients with a history of arterio-venous fistula or connective tissue disorder. Surgical repair of true brachial artery aneurysms was performed for symptoms or presence of intraaneurysmal thrombus. Saphenous vein interposition graft was the most common reconstruction with good long-term outcomes.

ROBOTIC-ASSISTED REPAIR OF ARCUATE LINE HERNIA MASQUERADING AS AN INCARCERATED SPIGELIAN HERNIA

J Sample, H Rezaei, J Bingener-Casey

Background: The arcuate line (AL) is key anatomic landmark in abdominal surgery. The AL delineates the point at which the aponeurotic layers of the internal oblique, external oblique, and transversus abdominal muscles no longer pass posterior to the rectus abdominis muscle. An arcuate line hernia (ALH) occurs when intraperitoneal contents protrude into the interparietal orifice created superior to the AL. This type of hernia is poorly described in the literature and is without established consensus regarding repair. We report the case of an arcuate line hernia masquerading an incarcerated Spigelian hernia repaired using robotic-assisted approach.

Summary: Herein we present the unique case of intermittent partial small bowel obstruction secondary to arcuate line hernia. Preoperative computed tomography (CT) enterography suggested a right-sided Spigelian hernia. Robotic-assisted herniorrhaphy was chosen and the diagnosis of ALH was made at the time of surgery. This is the third reported case of ALH successfully repaired using a robotic-assisted approach (1,2).

Case Description: The patient was a 52-year-old female who presented to an outpatient surgical clinic describing one-year of intermittent right-sided flank pain and obstructive-like symptoms. This resulted in multiple visits to the emergency department and a hospital admission for conservative management of small bowel obstruction (SBO). Medical history was notable for obesity with a body mass index (BMI) of 42 kg/m². Surgical history was significant for elective laparoscopic hysterectomy one year prior to this presentation. On examination, the patient's abdomen was tender to palpation of the right mid-axillary line near the costal margin. Preoperative CT-enterography showed incarcerated loops of small intestine within the right abdominal wall suggesting a Spigelian-type hernia.

The patient was taken to the operating theatre for elective herniorrhaphy using robotic-assisted approach. Successful entry into the peritoneum revealed no evidence of a Spigelian-type hernia. Interestingly, there was an obvious bilateral arcuate line defect with peritoneal folds creating an interparietal space between the rectus abdominis muscle and posterior rectus fascia (figure 1). This defect was asymmetric and noticeably larger on the right side. No bowel was observed within this defect at the time of surgery, and it was thought to have been reduced with establishment of pneumoperitoneum and subsequent abdominal wall expansion. Because of the patient's significant clinical manifestations now presumed to be secondary to this AL defect, repair was carried out.

Robotic monopolar scissors were used to create a pre-peritoneal flap several centimeters superior to the border of the right arcuate line. This flap dissection was meticulously carried inferiorly towards the AL. The inferior border of the posterior rectus fascia was grasped to reflect the interparietal space in order to continue the peritoneal dissection into and through the orifice of the ALH. The dissection was continued until an adequate peritoneal flap was created inferiorly to the AL. At this point, careful attention was paid to the location of the inferior epigastric vessels and perforating vessels of the rectus muscle. Next, a similar dissection was performed along the left side to create a continuous

peritoneal flap to incorporate the mesh. Hemostasis was achieved with electrocautery before two pieces of Parietene mesh were introduced into the abdominal cavity. The mesh was sutured to the abdominal wall using Vicryl suture with overlap along the midline. The peritoneal flap was reapproximated with a running absorbable barbed suture. The patient tolerated the procedure well and discharged the same day of surgery. The patient has had no known complication or recurrence related to this surgery.

Discussion: Abdominal wall anatomy and its relationship with surgical pathology is of paramount importance to a surgeon. The arcuate line is an anatomic landmark delineating the point at which the aponeurotic layers of central abdominal wall no longer pass posterior to the rectus abdominis muscle. The AL can also be thought of as the inferior edge of the posterior rectus sheath. For reasons unknown, an internal space can exist where the overlying peritoneum and transversalis fascia fold into the plane between the rectus abdominis muscle (anterior) and posterior rectus sheath (posterior). The resultant interparietal orifice is described as an arcuate line hernia. The prevalence of ALH is not well established. There is no consensus regarding surgical management of ALH. However, there is a growing body of literature describing ALH that is mostly limited to case reports and series.

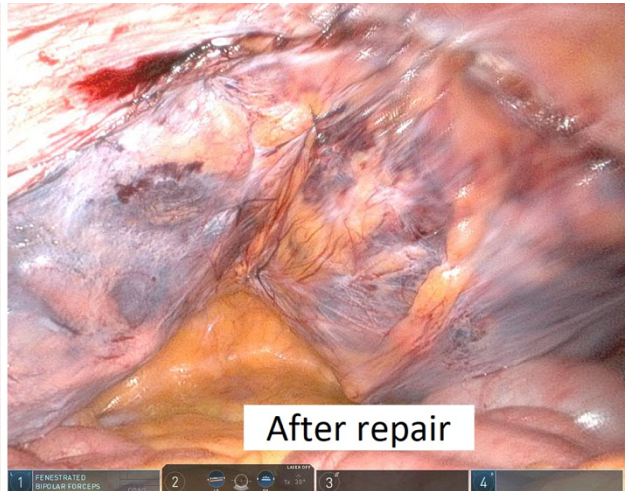
The orifice of arcuate line hernia tends to be large, which may be the reason for the intermittent nature or absence of symptoms. It is unclear as to why our patient was symptomatically obstructed on several occasions given the large size of the defect seen intraoperatively. We theorize that peritoneal adhesions within the hernia orifice may have transiently incarcerated loops of bowel.

This is not the first report of an ALH being mistaken for a Spigelian hernia during preoperative evaluation (3,4). Careful review of preoperative high-resolution CT scans is an effective method for recognizing ALH and avoiding misdiagnosis (5). Ultimately, diagnostic laparoscopy will confirm the diagnosis. There were multiple benefits to using robotic-assisted approach. Firstly, initial diagnostic laparoscopy allows for correct identification of the type of hernia(s). In our case, the ALH was not identified until the time of surgery. Secondly, laparoscopy allows excellent exposure of the anterior abdominal wall for approaches such as the transabdominal preperitoneal mesh placement. The articulation and precision of robotic-assisted laparoscopy allowed for easy and successful creation of the peritoneal flap.

Conclusion: Reports of arcuate line hernia repair are limited, especially regarding robotic-assisted repair. Based on our experience, robotic-assisted approach is a safe and effective method for arcuate line hernia repair. We encourage surgeons to be aware of arcuate line hernia and how to properly identify this pathology on preoperative imaging.

Lessons Learned: It is important for surgeons to be aware of interparietal-type hernias and their recognition on preoperative abdominal imaging. Robotic-assisted preperitoneal herniorrhaphy with mesh placement is an effective option to consider for surgical repair of arcuate line hernia.

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CECAL HERNIATION INTO THE LESSER SAC VIA FORAMEN OF WINSLOW: TWO CASES WITHIN NINE MONTHS

R Friberg, J Zietlow

Background: Cecal bascule is a rare form of volvulus. It is described as an upward folding of the cecum in an anteromedial orientation without torsion. Causes for this include a hypermobile cecum, long mesentery, and lack of retroperitoneal fixation. This unique type of volvulus makes up 5-20% of all cecal volvuli. The foramen of Winslow is a normal communication between the greater and lesser peritoneal cavities. The boundaries of the foramen of Winslow include the inferior vena cava, hepatoduodenal ligament, first portion of the duodenum, and the caudate lobe of the liver. Internal hernias through the foramen of Winslow are extremely rare events and constitute approximately 8% of all internal hernias. A cecal bascule herniating into the lesser sac via the foramen of Winslow accounts for only 0.02% of all internal hernias.

Summary: Here, we present two cases of cecal bascule with herniation through the foramen of Winslow that occurred at our institution within nine months of each other. Both patients presented with generalized abdominal pain and diagnosis was confirmed with cross sectional imaging. The patients underwent abdominal exploration and a right hemicolectomy with stapled anastomosis was completed. These two cases highlight a rare form of cecal volvulus and herniation into the lesser sac. While it is known that the treatment is surgical, the optimal surgical intervention is unknown. Regardless, early identification and treatment is paramount to prevent morbidity and mortality associated with cecal volvulus and herniation.

Case Description: The first patient is a middle-aged female who presented with a 24 hour history of acute onset of abdominal pain, nausea and vomiting, and lack of flatus and bowel function. Physical exam revealed epigastric tenderness and mild abdominal distension. Her labs were notable only for a mildly elevated white blood cell count. The second patient is an elderly female with hypertension who presented after a few hours of sharp abdominal pain. Physical exam revealed diffuse abdominal tenderness and mild abdominal distension. All laboratory values were within normal limits. Neither patient had any significant abdominal surgical history. On initial examination, both patients were afebrile and hemodynamically normal. A CT scan of the abdomen and pelvis with IV contrast was obtained for both and revealed the cecum to be absent from the right lower quadrant with cecal herniation through the foramen of Winslow. No ischemia was noted, but the cecum was dilated to approximately 8 cm and 6 cm, respectively. The second patient's portal vein was noted to be narrowed due to extrinsic compression from the bowel. Neither had evidence of free intraperitoneal air. Both patients were taken to the operating room for laparoscopic abdominal exploration requiring conversion to open. Bowel was easily reduced in the younger patient, while the elder required needle decompression with a 16-gauge needle prior to reduction due to the significant cecal dilation. Despite finding viable bowel, the decision was made to perform a formal right hemicolectomy with stapled anastomosis in both cases to prevent future episodes of herniation. Both patients tolerated the procedure and recovered quickly without complication, discharging on post-operative days two and four. No follow-up was required.

Discussion: Cecal bascule with herniation into the lesser sac via the foramen of Winslow is an extremely rare occurrence that mandates surgical exploration and reduction. Prompt diagnosis based on physical exam and cross-sectional imaging is essential. Despite the number of case reports discussing this rare phenomenon steadily increasing, there is still a lack of consensus regarding optimal treatment. Described treatments include reduction of the herniated bowel open or laparoscopically, with or without cecopexy, right hemicolectomy with anastomosis, or closure of the foramen of Winslow. Bowel resection is obviously critical when the bowel is nonviable, and choice of anastomosis is surgeon dependent. Interestingly, there are yet no reported cases of recurrent herniation through the foramen of Winslow, regardless of which surgical treatment is chosen (2). This would suggest that formal right hemicolectomy for every case of cecal bascule with herniation may be unnecessary. That being said, other options such as closing the foramen of Winslow are not without theorized risks such as portal vein thrombosis and associated vasculature or bowel injury (3). Based on case reports, optimal surgical treatment is based on local conditions noted in the operating room as well as surgeon preference and expertise.

Conclusion: Despite increasing medical knowledge of and experience treating this rare phenomenon, there is still no consensus regarding the optimal treatment of cecal bascule with herniation through the foramen of Winslow. Laparotomy with hernia reduction and right hemicolectomy is safe and effective but may soon be replaced by more minimally invasive approaches.

Lessons Learned: More is not always necessary, as seems to be the case of surgical management for cecal bascule with foramen of Winslow herniation. However, without rigorous data to support treatment decisions, additional work needs to be undertaken to ensure that patients are being provided optimal therapy. We plan to search our own institution's database to see if there are enough reported cases to conduct a small cohort analysis.



ASCITES DUE TO SEVERE PROTEIN-CALORIE MALNUTRITION AFTER DUODENAL SWITCH: A CAUTIONARY CASE REPORT

A Scott, D Leslie, S Ikramuddin, N Dutta, S Amateau, E Wise

Background: Bariatric surgery, while the most effective method of durable and significant excess weight loss, can lead to severe malnutrition. Like historical operations such as the jejunoileal bypass, the duodenal switch involves bypass of the duodenum and most of the small intestine. Consequences of these operations can be life-threatening.

Summary: The case presented highlights a key risk of bariatric surgery- pathologic and refractory malnutrition. Patients with malabsorptive operations require long term followup to surveil for malnutrition. The case presented is a representative example of surgically-induced protein-calorie malnutrition (kwashiorkor).

Case Description: The case presented is of a 36 year old female with a body-mass index (BMI) of 59 kg/m², who underwent a laparoscopic duodenal switch, with a 100 cm common channel. Within two years, her BMI was 18, and she underwent a 100 cm lengthening of her common channel. The patient presented to the emergency room 11 years later, with a BMI of 18, and severe abdominal pain with distension. In the ED, her serum albumin was 1.7 g/dL, and she was a smoker. She was found to have significant ascites with free air, and underwent a negative diagnostic laparoscopy, with evacuation of her ascites. The patient is currently on TPN to gain weight and improve protein stores, and will ultimately require a restoration of all common channel length.

Discussion: The duodenal switch, the most malabsorptive bariatric operation, involves a sleeve gastrectomy as well as significant intestinal bypass. While the most effective bariatric procedure for weight reduction and diabetes remission, it represents only ~2% of procedures in the United States. Severe malnutrition is common after duodenal switch, and these patients require life-long supplementation of micronutrients and protein. Signs of protein-calorie malnutrition include edema and ascites, dry brittle hair, hair loss and muscle wasting, all of which were exhibited by this patient. The ascites is frequently mistaken for liver failure. Treatment is complex, and may require oral and intravenous protein supplementation, feeding tube placement or major reversal surgery.

Conclusion: Great caution and consideration of the risk-benefit ratio must be taken when offering a malabsorptive procedure to a patient interested in bariatric surgery. The duodenal switch, in particular, can generate symptomatic protein-calorie malnutrition that can be difficult to treat.

Lessons Learned: Ascites after bariatric surgery is frequently due to protein-calorie malnutrition rather than liver cirrhosis. Pneumoperitoneum may be a benign finding in patients with ascites from malnutrition, though solid organ perforation must still be ruled out. These complications underlie the importance of fully considering ramifications of operations such as the duodenal switch, that necessitate non-physiologic intestinal rearrangement.

**A RARE CAUSE OF PAIN IN A PATIENT FOLLOWING ROUX-EN-Y
CHOLEDOCHOJEJUNOSTOMY, A CASE REPORT**

K Sather, G Trikudanathan, G Beilman

Background: Roux-en-Y choledochojejunostomy (RYCJ) and hepaticojejunostomy (RYHJ) are considered the standard methods of biliary reconstruction, and are most commonly performed to repair benign or iatrogenic biliary strictures, or for benign or malignant common bile duct (CBD) obstruction. Compared to the more historical choledochoduodenostomy (CDD), these operations have lower rates of recurrent choledocholithiasis, gastritis/reflux, and sump syndrome. The aim of this case is to describe a rare postoperative complication in a patient who had undergone RYCJ.

Summary: Sump syndrome is an uncommon complication after RYCJ and should be considered in patients with recurrent abdominal pain.

Case Description: A 69-year-old man presented with recurrent right upper quadrant abdominal pain following end-to-side RYCJ for recurrent primary choledocholithiasis three years prior. Imaging showed a dilated intrapancreatic portion of the CBD, (a blind end and no longer contiguous with the proximal CBD bypassed with the RYCJ). He underwent ERCP with removal of a large amount of debris. Symptoms initially resolved but recurred and six months later he underwent another ERCP with the same findings of debris and CBD stent left in place.

Discussion: "The most common long term complications of RYCJ or RYHJ include recurrent cholangitis, anastomotic stricture formation, incisional hernia, duodenal ulcer, and adhesive bowel obstruction. Although rare, sump syndrome is an infrequent complication that should be considered and can be treated with ERCP. The pathophysiology of sump syndrome varies based on surgical technique. Following bilioenteric anastomosis, in general, the CBD serves as a reservoir, or "sump

Conclusion: for debris and stone formation. In our patient debris accumulated in the distal blind end of the CBD due to the reflux of enteric contents retrograde via the ampulla of Vater. ERCP was initially successful in our patient though due to re-accumulation, he required a second ERCP with CBD stent left in place.

Lessons Learned: The pathophysiology of sump syndrome varies based on surgical technique, but should be considered in a patient with abdominal pain following any operation with bilioenteric anastomosis.

Although sump syndrome is classically associated with abdominal pain and cholangitis following CDD, abdominal pain alone is not an infrequent presentation and end-side RYCJ does not rule out developing this complication. It is important to consider this given the potential for pancreatitis, cholangitis, along with the effect on quality of life recurring abdominal pain can have on a patient.

USE OF THE MODIFIED ELOESSER FLAP FOR THE MANAGEMENT OF BRONCHOPLEURAL FISTULAS: A CASE SERIES

N Jagadesh, A Salami, I Diaz, R Andrade

Background: Bronchopleural fistulas (BPF) are catastrophic complications of lung resections that are characterized by an abnormal connection between the tracheobronchial tree and the pleural space. BPF can occur following lung resection, treatments for malignancy, including neoadjuvant radiotherapy and chemotherapy, and occasionally in the setting of bacterial, tuberculous, or fungal infections. Patients with BPF commonly present in the late postoperative period with dyspnea, chest pain, and occasionally tension pneumothorax. Due to its complexity, the management of BPF requires a multidisciplinary approach.

Summary: The management of BPF includes thoracostomy tube drainage, treating pleural space infections, maximizing nutrition, and surgically repairing or revising the bronchial stump. When revision is either not feasible or fails, open window thoracostomy such as an Eloesser flap is considered. We present two patients with chronic BPF that were managed with Eloesser flaps.

Case Description: A 70-year-old male underwent a left pneumonectomy for hilar non-small cell lung cancer. His postoperative course was complicated by a BPF secondary to a long residual bronchial stump. He underwent an Eloesser flap creation and subsequent transcervical resection of the proximal residual bronchial stump. The Eloesser flap was closed 4 years after initial creation. A 59-year-old female who underwent a right middle lobe wedge resection for recurrent pneumothoraces secondary to rheumatoid lung nodules. Her postoperative course was complicated by a BPF that was managed with an Eloesser flap. She underwent Eloesser closure 2.5 years after creation.

Discussion: The Eloesser flap is a rarely performed surgical intervention for the management of chronic BPF. The procedure carries a significant morbidity and mortality risk. Our patients required repeated bronchoscopic and surgical interventions to manage the BPF, including serial dressing changes, debridements, and argon plasma coagulation of bronchial stump mucosa. In both patients, the Eloesser flap helped to maintain a clean wound bed and allowed for the formation of healthy granulation tissue to facilitate healing.

Conclusion: Eloesser flaps are a surgical option for the management of chronic BPF that have failed prior interventions. Patients undergoing this procedure must be educated on possible complications including persistent air leaks, recurrent infections, need for repeated dressing changes, further procedures, and the possibility of an inability to close the flap.

Lessons Learned: The Eloesser flap is a useful modality for managing refractory chronic BPF but carries its own risk of morbidity and postsurgical complications.

ANTICOAGULATION-FREE VENO-VENOUS ECMO IN COVID-19 PATIENT WITH LIFE-THREATENING BLEEDING

A Abutaka, R Bulander

Background: The use of VV ECMO as rescue therapy increased during the COVID-19 pandemic, with recent evidence showing mortality benefit in these patients. Thrombosis and coagulopathies caused synergistically by COVID-19 and the ECMO circuit complicated treatment in many patients by making it difficult to keep the fine balance between major bleeding, thrombosis and proper circuit function. Diffuse alveolar hemorrhage (DAH) has been described as a possible complication of COVID-19. It is also known that ECMO is a life-saving treatment for patients with DAH.

Summary: We present here a case of a patient with severe COVID-19 ARDS managed with VV ECMO who suffered from life-threatening bleeding complications during the ECMO run and was managed successfully with anticoagulant-free ECMO for a period of 10 days.

Case Description: This 26-year-old female patient, who was 2 weeks postpartum at the time, was transferred to our ECMO service after cannulation for severe ARDS secondary to COVID-19 pneumonia after three days of intubation. VV cannulae were placed in the right femoral vein (25 Fr) for drainage and right internal jugular vein (17 Fr) for infusion. Initial head CT scan showed small frontal hemorrhage that resolved on further scanning and she was started on anticoagulation on day 1 post cannulation per protocol with ACT goals of 160 – 180 seconds. On day 12 of the ECMO run, she developed presumed septic shock which required pressors. Thorough investigation led to the diagnosis of endometritis, which was managed nonoperatively by the obstetrics service until she developed massive vaginal hemorrhage on day 15. Dilation and curettage with insertion of a progestin intrauterine device (IUD) failed to control the bleeding, so bilateral uterine artery embolization was performed by interventional radiology with satisfactory results. Anticoagulation with heparin infusion was held, and resuscitation with blood products continued. One day after this event, a repeat CT scan showed large left pleural effusion suspicious of empyema which was drained. Shortly afterwards the patient started having massive hemoptysis with loss of tidal volumes. Emergent bronchoscopy confirmed DAH. At the same time the ECMO circuit and oxygenator became full of clots, the delta P rapidly rose with frequent circuit chugging, and flows could not be maintained. The patient quickly desaturated with PaO₂ of 21 on ABG. An emergent circuit change was done and the patient had a brief cardiac arrest of less than one minute with ROSC achieved with chest compressions. Flows and oxygenation improved significantly after circuit change. The flows were possibly preserved because of her cannula arrangement. Interventional pulmonologists performed multiple bronchoscopic washouts for continued hemoptysis, and during this period the patient stayed off anticoagulation for a total of 10 days. Once hemoptysis stopped, tidal volumes increased steadily. The patient continued to improve, tracheostomy and PEG tube were placed on day 30 of the ECMO run, and the patient successfully decannulated after 39 days of extracorporeal support. She was discharged home on day 78 of admission.

Discussion: DAH is reported to be a complication of COVID-19 pneumonia. The reported cases were managed with anticoagulated circuit ECMO 3 , but in our patient, we elected to

hold anticoagulation completely for 10 days due to the life-threatening hemorrhage from multiple sites. The cannula configuration might have played a role, by maintaining steady flows and preventing circuit failure while off anticoagulation.

Conclusion: This case highlights the complexity of managing patients with severe COVID-19 pneumonia who require ECMO support. In this case, the patient developed several complications, including DAH and septic shock caused by endometritis. The management of these complications required a multidisciplinary approach, involving intensive care specialists, obstetricians, interventional radiologists, and pulmonologists.

Additionally, the case demonstrates the importance of individualizing the management of patients on ECMO support based on their specific clinical situation. In this case, the decision to hold anticoagulation for ten days was made due to life-threatening hemorrhage, which may have been facilitated by the cannula configuration.

Overall, this case highlights the challenges and successes of managing complex cases in the setting of severe COVID-19 pneumonia and ECMO support, as well as the importance of a multidisciplinary approach to patient care.

Lessons Learned: - COVID-19 pneumonia can lead to severe ARDS, and in some cases, it can also result in other complications, such as DAH.

- In patients with COVID-19 pneumonia who require ECMO support, anticoagulation is generally recommended to prevent circuit clotting. However, in some cases, holding anticoagulation may be necessary to manage life-threatening hemorrhage from multiple sites.

- Thorough investigation is essential when patients on ECMO support develop new symptoms, as in this case where septic shock was ultimately found to be caused by endometritis.

PEDIATRIC BARIATRIC SURGERY: IMPLICATIONS OF THE 2023 AMERICAN ACADEMY OF PEDIATRICS RECOMMENDATIONS AND A CASE REPORT

A Scott, D Leslie, S Ikramuddin, N Dutta, S Amateau, E Wise

Background: Bariatric surgery is the most effective and durable treatment for obesity, yet is essentially irreversible and is considered the most aggressive intervention. Its use in the pediatric population is controversial, and warrants further examination.

Summary: The case presented is a representative patient seen in the Pediatric Obesity Clinic. The most severe cases are referred for bariatric surgical evaluation, and the patient presented herein ultimately had a laparoscopic sleeve gastrectomy after 8 years of medical and behavioral therapy for class 3 obesity.

Case Description: The patient is a male with significant family history of class 3 obesity, and whose mother had prior bariatric surgery, who presented to pediatric weight management clinic at age 6 at the 99.98th percentile for weight. His parents were in the middle of a divorce, and further weight gain ensued over the subsequent 8 years we was followed. He was diagnosed with Asperger's disease. His continued weight gain was refractory to behavioral interventions, anti-obesity medications (topairmate, liraglutide and stimulants). He developed hypertension, snoring, anxiety and impaired fasting glucose by age 11. After multidisciplinary decision making, he ultimately presented for laparoscopic sleeve gastrectomy at age 14, with a body-mass index of 44 kg/m². Within 6 weeks, he has lost 25 pounds, though is struggling with a restrictive diet.

Discussion: Its use in the pediatric population is limited, representing only 0.2% of all bariatric operations in the United States, according to the 2021 Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program Database. Of these cases, 6% were Roux-en-Y gastric bypasses and 94% were sleeve gastrectomies. Reported patients were in the age range of 13-17 years. While current data supports the use of bariatric surgery in pediatric patients, this case was chosen to highlight the recent seminal Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents with Obesity, published by the American Academy of Pediatrics (AAP; Pediatrics, January 2023). Upon a comprehensive review of pediatric obesity, early treatment at the "highest level of intensity appropriate for and available to the child" was recommended, representing the most definitive position so far in advocating for bariatric surgery, as well as use of anti-obesity medications, in this population.

Conclusion: Having long been controversial in patients under 18, bariatric surgery has formally been recognized by the AAP as an ideal treatment for severe obesity in pediatric patients. For patients with appropriate family and medical team support, options such as early Roux-en-Y gastric bypass and sleeve gastrectomy have never been more tenable for treatment of pediatric obesity

Lessons Learned: Bariatric surgery in pediatric patients is increasingly recognized as safe and effective. Thus, it should be considered earlier in treatment algorithms than previously considered, to prevent long-term sequelae of excess weight and associated comorbidities. The decision to operate on patients such as our case study must be made by pediatric obesity specialists in concert with psychologists and the surgical team.