

Quick Shots

General & Specialty Surgery Competitions

Quick Shots	Category		
Litton Whitaker, MD	Specialty	Danbury Hospital	Novel Management of an Anastomotic Groin Pseudoaneurysm and its Subsequent Recurrence
Emery Edmondson, DO	General	Waterbury Hospital	A Novel Technique to Temporize a Destructive Common Bile Duct Injury in an Unstable Poly-Trauma Patient
Julia Silverman, BS	General	University of Connecticut School of Medicine	Bile Leak From Duct of Luschka After Pancreaticoduodenectomy: A Case Report
Jacob Silverman, MD	General	Waterbury Hospital	Keyaxelate-Induced Colitis Leading to Perforated Viscus: A Rare and Life Threatening Complication
Jonathan Stern, MD	General	University of Connecticut School of Medicine	Small Bowel Obstructions: A Wide Range of Presentations
Herbert Downton Ramos, MD	Specialty	University of Connecticut School of Medicine	Case Report: "Severe Scalp Degloving Injury and Reconstruction After Dog Attack"
Paul Fata, MD	Specialty	Waterbury Hospital	Axillary follicular dendritic cell sarcoma, case report of a rare presentation and brief overview
Herbert Downton Ramos, MD	Specialty	University of Connecticut School of Medicine	Case Report: "Excision of Giant Mesenteric Cyst"
Paul Fata, MD	Specialty	Waterbury Hospital	Developing the National Accreditation Program for Rectal Cancer (NAPRC) in Waterbury CT
Sean Ramras, MD	Specialty	Waterbury Hospital	Rare Occurrence of Multiple Pancreaticoduodenal Artery Aneurysms in a Community Setting
Michael Chun, MD	Specialty	Stamford Hospital	Thoracotomy and Lobectomy for Mycobacterium Avium Complex Infection with Bronchopleural Fistula in a Patient with Pulmonary Fibrosis

SPECIALTY - Novel management of an anastomotic groin pseudoaneurysm and its subsequent recurrence Emery Edmondson DO, Georgios

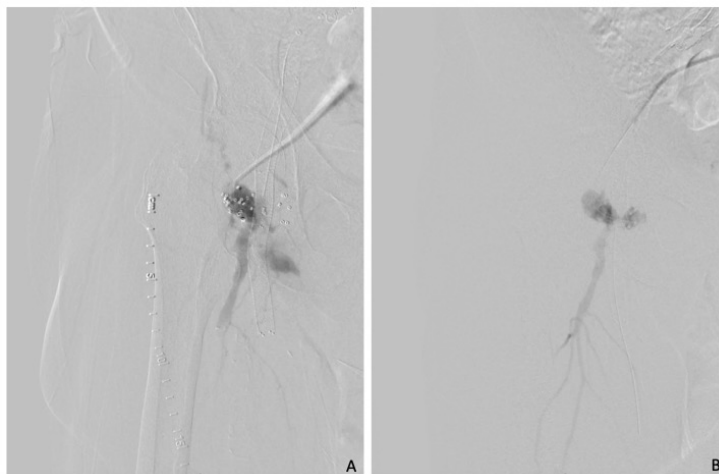
Litton F Whitaker MD¹, Keerthivasan Vengatesan MD¹, Amandeep Juneja MD¹, Alan Dietzek MD¹

¹Danbury Hospital, Nuvance Health

Introduction: There are few reports on the endovascular management of anastomotic pseudoaneurysms (APA). We describe endovascular repair of an APA between Dacron and saphenous vein bypass grafts (SVG) and its subsequent recurrence.

Case: A 76-year-old man with multiple comorbidities presented to clinic with an asymptomatic recurrent APA. Fourteen years prior, he underwent resection of a right common femoral artery (CFA) aneurysm with placement of a Dacron interposition graft between the CFA and deep femoral artery (DFA). During this same operation, a popliteal artery (PA) aneurysm was bypassed with reversed SVG from the Dacron graft to below-knee PA. Two years later, he presented with an enlarging APA (7 x 4.7 cm) from dehiscence of the proximal SVG from Dacron graft, which was managed by placement of covered stent grafts, extending from the external iliac artery to proximal SVG, and ligation of the DFA. One year postoperatively, the APA decreased in size to 4.8 x 2.8 cm. However, at two years, it began to enlarge again (5.1 x 3.3 cm), and CTA revealed retrograde flow from the DFA into the APA. This recurrence was managed by direct cannulation of the APA sac, contrast identification of a nidus with filling from the DFA by two large pelvic collateral branches (Figure 1A), and placement of 30 biodegradable shape memory polymer plugs into the nidus (Figure 1B). At one month, Duplex ultrasound revealed thrombosis of the DFA and decreased size of the APA.

Conclusion(s): This case was unique in that, despite dehiscence of the Dacron-SVG anastomosis, blood flow was preserved to the lower extremity through the APA. Additionally, we describe hybrid and endovascular approaches to treating a lower extremity APA between Dacron and vein graft. An endovascular approach was preferred to avoid the high risk of infection and bleeding associated with open resection, as well as increased risk of morbidity and mortality in this medically compromised patient.



General Surgery

Case Report: A Novel Technique to Temporize a Destructive Common Bile Duct Injury in an Unstable Poly-Trauma Patient

Emery Edmondson DO, Sean Ramras MD, Rebecca Jugo MD, Mohammad Ali MD, Meagan Kozhimala MD, Paul Fata MD, Colline Wong BS, Peter Zdankiewicz MD, Zhongqiu John Zhang MD. PhD

Introduction: Studies evaluating strategies to temporize CBD injuries are sparse and reports describing concomitant caval and portal injury are even more rare. Reports of these injuries are lacking, in part, because the outcomes of portal and caval injuries are so poor. Mortality associated with portal injuries has been described to be as high as 52%. Injury to the inferior vena cava, alone, due to penetrating trauma, carries 33% mortality before hospital arrival and 66% mortality within 24 hours. As a result of such poor outcomes associated with portal injuries, guidelines informing management of CBD injuries are limited and largely extrapolated from iatrogenic injuries following common procedures such as laparoscopic cholecystectomy. However, The World Society of Emergency Surgery (WSES) and American Association for the Surgery of Trauma (AAST) attempted to elucidate management of these injuries in a thorough review published in 2019. The vast majority of the guidelines proposed on extrahepatic biliary injury are graded as a 1C or 2C recommendation (strong recommendation and weak recommendation respectively - both based on low-quality evidence); further confirmation that evidence-based guidelines on these injuries remain elusive. The aim of this case is to report an extraordinary circumstance of a destructive CBD injury that was temporized for 6 days with a vascular shunt. This strategy has not been described previously in the literature and produced a favorable outcome.

Method(s): We report a case of a 26-year-old patient presenting as a polytrauma with multiple devastating injuries, including a 1 cm destructive injury to the common bile duct (CBD) along with a laceration to the inferior vena cava (IVC). Surgical treatment for injuries to the extrahepatic bile ducts are individualized based on location, severity, and stability. In stable patients with less than 50% circumference injuries and healthy common bile duct margins, definitive repair can be attempted primarily. Destructive injuries that encompass greater than 50% circumference in stable patients are more challenging and there is controversy surrounding early versus delayed biliary reconstruction. In this case, an adequately sized T-tube was not available, and closed suction drainage was dismissed due to potential complications with early reconstruction. Due to the patient's critical condition and extraordinary circumstances, a LeMaitre carotid shunt was used to temporize the common bile duct injury for 6 days, a technique not previously described. The patient was then reconstructed with a hepaticojejunostomy in Roux-en-y fashion with a favorable outcome.

Conclusions: This is a difficult case of an unstable polytrauma patient with critical injuries including laceration of the inferior vena cava requiring damage control. In the process of damage control, a destructive CBD injury was temporized for 6 days with a

LeMaitre vascular shunt due to extraordinary circumstances, a technique that has not been previously described. Strategies to temporize and reconstruct such an injury in trauma patients are few in the literature and we believe that this method of temporization may be an especially useful tool in the armamentarium of the surgeon practicing in an austere environment.

Bile Leak From Duct of Luschka After Pancreaticoduodenectomy: A Case Report

Julia Silverman BS¹, Jeremy Fridling MD^{1,2}, Oscar K. Serrano MD^{1,2}

¹ University of Connecticut School of Medicine, Farmington, CT.

² Department of Surgery, Hartford Hospital, Hartford, CT.

Introduction: The Duct of Luschka is a subvesical duct that runs along the gallbladder fossa that is present in 12-50% of patients. Bile leak from the duct of Luschka is a known complication of hepatopancreaticobiliary surgery, including cholecystectomy, but has yet to be described as a postoperative complication from a Whipple pancreaticoduodenectomy. We present a case of postoperative bile leak from a Duct of Luschka in an early post-Whipple patient.

Description of Case: An 82-year-old male with pancreatic ductal adenocarcinoma received neoadjuvant chemotherapy followed by pancreaticoduodenectomy without complication. On post-operative day two, the drain adjacent to the hepaticojejunostomy demonstrated low-volume bilious output. The patient was brought back to the operating room for re-exploration. Bile was noted to be leaking from an opening in the gallbladder fossa while the hepaticojejunostomy and ligated cystic duct stump were intact (Fig 1. A). Intraoperative cholangiogram demonstrated opacification of the right and left hepatic ducts, the common bile duct, and the small bowel via the hepaticojejunostomy. A wisp of contrast extravasated in the area of the gallbladder fossa (Figure 1. B). The right upper quadrant was then filled with saline, and air was injected into the cholangiogram catheter, resulting in bubbles emanating from the proximal gallbladder fossa (positive bubble test). Upon further inspection, a small biliary duct was visible in the gallbladder fossa suggestive of a Duct of Luschka. The biliary radical was oversewn, and an additional drain was placed. The drainage was non-bilious postoperatively and the patient recovered without further complications.

Conclusion(s): Leakage of bile is a feared complication after a Whipple pancreaticoduodenectomy. Although a bile leak from a Duct of Luschka has been reported in biliary surgery, it has never been described following a Whipple procedure. Ducts of Luschka are an uncommon source of a bile leak and should be considered when faced with a bile leak after a Whipple pancreaticoduodenectomy.

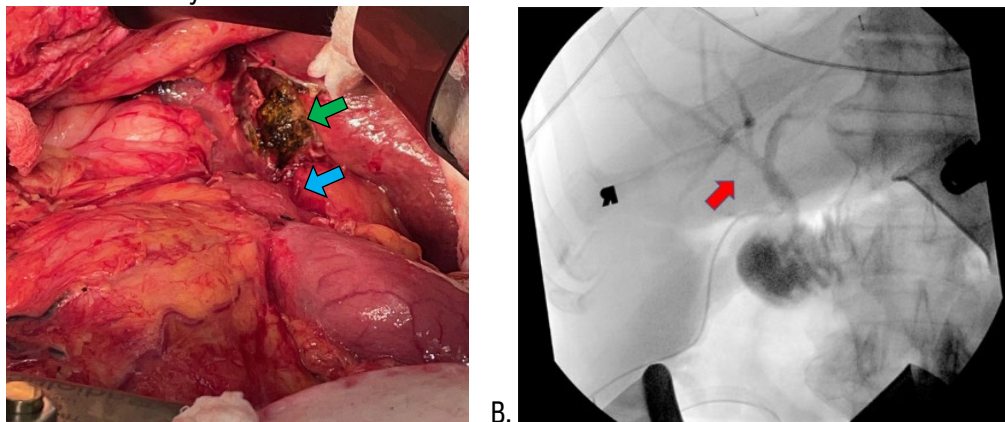


Fig. 1: A. Gallbladder fossa (green arrow) and intact hepaticojejunostomy (blue arrow). B. Intraoperative cholangiogram depicting right and left hepatic ducts, ligated cystic duct stump, and intact hepaticojejunostomy as well as a small subvesical Duct of Luschka (red arrow) leak.

Keyaxelate-Induced Colitis Leading to Perforated Viscus: A Rare and Life Threatening Complication

Jacob Silverman MD, Meagan Kozhimala MD, Zoe Garvey MS3, Gregory Ricketts MD
Waterbury Hospital

Introduction: Sodium polystyrene sulfonate, commonly known as keyaxelate, is a cation exchange resin used to manage hyperkalemia in clinical practice. While it is generally considered safe, there have been occasional reports of gastrointestinal complications associated with its use. Here we present a highly unusual and life threatening case of keyaxelate-induced colitis leading to a perforated viscus, underscoring the importance of recognizing and managing this severe adverse event.

Case Presentation: A 61-year-old male with a history of end-stage renal disease and recurrent hyperkalemia was admitted to our emergency department with complaints of severe abdominal pain, distension, and melanic stools for four days. The patient had recently been started on keyaxelate therapy for management of hyperkalemia. On physical examination he appeared acutely ill, with signs of peritonitis. Laboratory studies revealed a white blood cell count of 9.8 and an elevated serum creatinine of 4.66mg/dl. Abdominal imaging demonstrated pneumoperitoneum with free fluid in the pelvis as well as a distended right colon suggestive of a perforated viscus. The patient was taken to the operating room urgently. Intraoperative findings were significant for a posterior cecal wall perforation measuring 2x2cm which was thought to be secondary to a transverse colon mass. He underwent a subtotal colectomy with an end ileostomy. The specimen of the affected colon was sent for histopathological examination, which confirmed the diagnosis of keyaxelate-induced colitis. Postoperatively the patient was managed in the intensive care unit and gradually recovered over several days. He was eventually discharged home in a stable condition.

Discussion: Keyaxelate-induced colitis is a rare but recognized complication of this medication, characterized by direct mucosal injury and inflammation. In extremely rare cases, severe colonic inflammation can progress to bowel perforation, as seen in our patient. The exact mechanisms underlying this adverse event remain poorly understood. Clinicians should be aware of the potential life threatening complications associated with keyaxelate use, particularly in patients with comorbidities such as chronic kidney disease.

Conclusion(s): We report an exceptional case of keyaxelate-induced colitis leading to a perforated viscus, emphasizing the severity of this rare adverse event. While keyaxelate is generally considered safe, healthcare providers should exercise caution when prescribing it, especially in patients with renal impairment or other risk factors. This case highlights the critical importance of early recognition and intervention in managing severe complications of keyaxelate-induced colitis.

Small Bowel Obstructions: A Wide Range of Presentations

Jonathan Stern, MD1, Noubar M Kevorkian, MD2

Institution: 1. The University of Connecticut Health Center, 263 Farmington Avenue, Farmington, CT 06030.

2. The Hospital of Central Connecticut

Introduction: Internal hernia is an infrequent cause of small bowel obstruction that usually represents a surgical emergency. Broad ligament hernia is a rare subtype of internal hernias, in which abdominal viscera protrude through a defect in the broad ligament of the uterus. The defect in the broad ligament could either be congenital or acquired, caused by pregnancy, traumatic delivery, or prior abdominal or pelvic surgery. The resultant hernia could be classified as either Pouch or Fenestra type, depending on the involvement of either or both peritoneal surfaces of the broad ligament.

Case Description: We describe the case of a 32-year-old female with no obstetric history and a virgin abdomen, who presented with acute onset of diffuse abdominal pain, nausea, and vomiting. She was hemodynamically stable with no peritoneal signs on exam. Abdominal imaging revealed dilated small bowel loops consistent with small bowel obstruction, with a transition zone in the right lower quadrant. Subsequently, she failed Gastrografin challenge and urgently underwent diagnostic laparoscopy, which revealed an incarcerated loop of distal ileum through a defect in the broad ligament of the uterus causing the obstruction. The herniated loop of the bowel was gently reduced and noted to be viable. The defect was primarily suture closed. Other smaller defects were also encountered with no herniating contents that were also primarily repaired with absorbable sutures. Bowel function resumed on day one and she had an uneventful postoperative recovery.

Discussion: This is a rare case of Fenestra-type broad ligament hernia, likely through a congenital defect in the broad ligament of the uterus, given no history of pregnancy or previous abdominal surgeries. A high index of suspicion and early surgical intervention is crucial in avoiding strangulation, thus the need for bowel resection.

Specialty Surgery

“Severe Scalp Degloving Injury and Reconstruction After Dog Attack”

Herbert Downton Ramos MD¹, Christopher Lemoine MD¹, Alan Babigian MD, FACS²

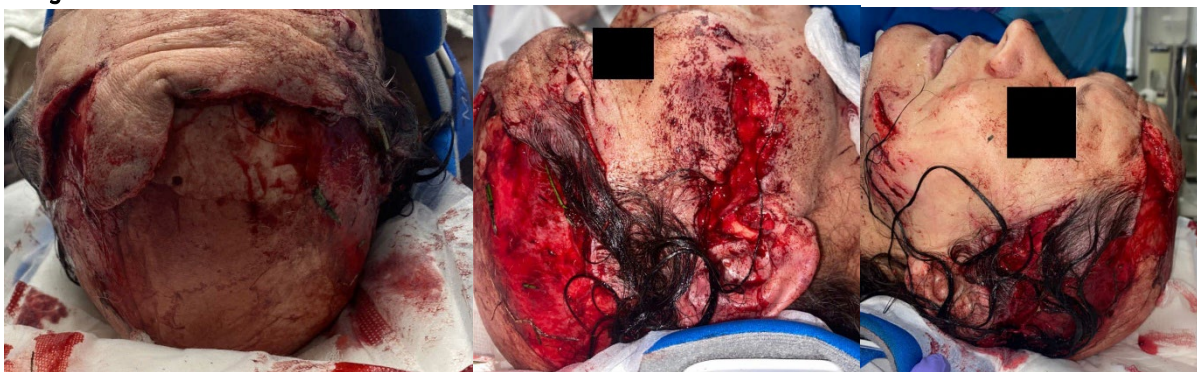
1. University of Connecticut School of Medicine, 2. Hartford Hospital

Introduction: It is estimated that 4.5 million dog bites occur in the US each year in both adults and children. Dogs are the animal most frequently implicated in causing bite injuries to the human face, and these are more prevalent in younger patients. Reconstruction of the scalp and calvarium is anatomically challenging due to the thin layer of overlying skin and soft tissue, their mechanical properties, and their distance from large vessels. Here we present a successful reconstruction of a severe scalp avulsion after a dog attack.

Case description: Patient is a 50 year old female with no past medical history who presented as a trauma after being attacked by an unknown dog. Primary survey was negative for life threatening injury and on secondary exam she was found to have a severe scalp degloving injury and dog bites to multiple other areas. She was taken immediately to the OR by trauma and plastic surgery for acute management of traumatic injuries. Ultimate her most severe injury was scalp degloving which was successfully treated over multiple OR sessions. Stable soft tissue cover was achieved with the use of Integra matrix and subsequent split thickness skin graft

Discussion and conclusions: Different options for scalp reconstruction have been proposed and include scalp replantation, microvascular free tissue transfer, utilization of synthetic matrixes and skin graft coverage. Traumatic scalp avulsion injuries can cause significant morbidity and psychosocial impact. The extensive surface area of exposed calvarium in such injuries and limited availability of vascularized tissues for coverage complicates definitive wound management, the surgeon should choose the ideal method of coverage taking into consideration the advantages and disadvantages of each method when managing such complex cases.

Images from initial trauma:



Axillary follicular dendritic cell sarcoma, case report of a rare presentation and brief overview

Paul Fata MD, Georgios Mihalopoulos MD, Scott Kurtzman MD, FACS

Waterbury Hospital

Case presentation: This is a case of a 76-year-old female with past medical history of hypertension, hyperlipidemia, diabetes, and osteoporosis and past surgical history of open cholecystectomy and open hysterectomy, who was referred by her primary care physician to the surgical clinic for evaluation of a right axillary mass. She reports she initially noticed a lump in this area around 2

years ago and has been growing since. The mass caused mild pain during activity. She also reported a 30-pound weight loss in 6 months. On physical examination, a relatively mobile and non-tender mass was observed with no overlying skin changes or active drainage. The patient did not have neurovascular deficits in the right upper extremity. A CT chest and MRI were performed, which revealed a heterogeneous mass versus an enlarged lymph node of approximately 10 cm in size suspicious for malignancy (Figure 1). Subsequently, an US-guided core needle biopsy was performed, which showed a malignant poorly differentiated epithelioid neoplasm whose origin could not be identified.

The case was discussed in a multidisciplinary meeting, and a decision was made to proceed with surgical resection. The patient underwent radical excision of the right axillary mass, and the surrounding capsule was removed intact. Although there was abutment to the axillary vein, no invasion into adjacent structures was observed (Figure 2). The patient tolerated the procedure well, had an uneventful postoperative course, and was discharged the following day. Final pathology, which was reviewed by multiple institutions, revealed an 11 cm follicular dendritic cell sarcoma (FDSC) with high-grade features and negative margins, with positive staining for CD21 and CD35.

Discussion: Follicular dendritic cell sarcoma (FDSC) is a rare mesenchymal dendritic cell sarcoma, first described around 50 years ago, with only a few hundred cases reported in the literature. It usually presents as a slowly growing, painless mass with characteristic histologic appearance, and is recognized as a low-grade sarcoma. The incidence is unknown due to the paucity of cases, but it constitutes less than 1% of soft tissue sarcomas, and the median age of presentation is in the fifth decade. FDSC is associated with Castleman's disease, and it can be present in up to 20% of cases.

In a pooled analysis of 462 cases, 31% of patients had isolated nodal disease, 58% had isolated extranodal disease, and 10% had both nodal and extranodal involvement¹. The lymph node groups most frequently involved are cervical, mediastinal, axillary, and intra-abdominal, while extranodal disease tends to be in the liver, lung, and spleen. Diagnosis is based on pathologic evaluation and identification of characteristic markers of dendritic cells². Typical histology includes oval to spindle shaped cells arranged in a whorled to sheet-like pattern in a reactive lymphocyte-rich background. Some tumors might exhibit more aggressive features including increased nuclear atypia and more than 5–10 mitoses per high power field. Definite diagnosis entails a positive stain for CD21, CD23 and CD35.

Given the low incidence of FDSC, treatment recommendations are not standardized. Localized disease usually involves surgical resection, and radiation therapy, chemotherapy, and targeted therapies are possible options if resection is not feasible or in recurrent or refractory disease, as well as in metastatic disease³. Prognosis is variable, and the disease has a tendency towards local recurrence after surgical resection and a low rate of systemic spread⁴.

Conclusion: we presented a diagnostically challenging case of an axillary follicular dendritic cell sarcoma. It is one of the rare entities that can present as an isolated axillary mass, however, is one that must be considered since surgical resection in many instances can be the main treatment. We hope this case would add to the reported cases in the literature and contribute to further research and a better understanding of the disease.

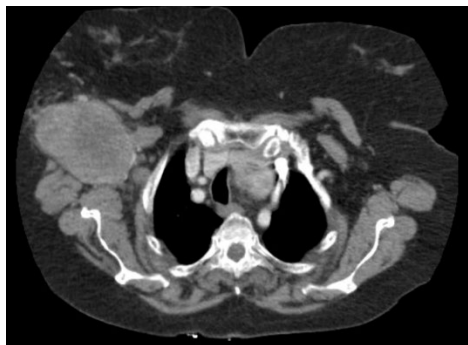


Figure 1. CT scan of the chest revealing a heterogeneous mass in the right axilla measuring 6.9 x 9.5 x 10.6 cm very suspicious for malignancy (*Cont. next page*)

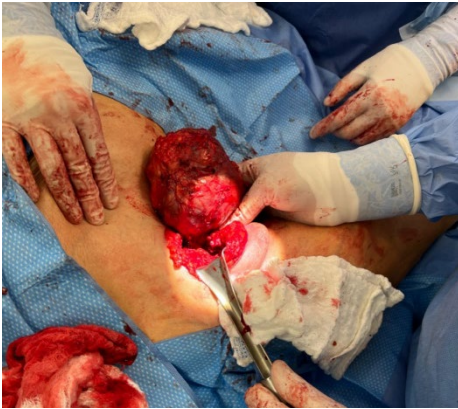


Figure 2. Intraoperative image of the right axillary mass after near complete mobilization

Case Report: “Excision of Giant Mesenteric Cyst”

Herbert Downton Ramos, MD¹, Christopher Lemoine, MD¹, Bret Schipper, MD, FACS, CPE²

1. University of Connecticut School of Medicine, 2. Hartford Hospital

Introduction: Mesenteric cysts are a rare surgical condition occurring approximately in 1/200,000–350,000 hospital admissions. A mesenteric cyst is defined as any cyst located in the mesentery; it may or may not extend into the retroperitoneum. They can occur anywhere in the mesentery of the gastrointestinal tract from the duodenum to rectum. In a review series of 162 patients, 60% of mesenteric cysts occurred in the small-bowel mesentery, 24% in the large-bowel mesentery, and 14.5% in the retroperitoneum (it was indefinite in 1.5% of cases). They can be simple or multiple, unilocular or multilocular, and they may contain hemorrhagic, serous, chylous, or infected fluid.

Case description: Patient is a 52 year old male with PMHx of ependymoma s/p resection and radiation, type 2 diabetes, vitamin D deficiency, auditory and visual hallucinations, hypertension, hyperlipidemia, migraines, seizures, class 2 obesity with no history of intraabdominal surgeries who presented to our ED complaining of 2 weeks of right sided abdominal pain, fullness, constipation that did not improve after taking Miralax, and pruritus over his right side of the abdomen. On exam fullness was noted over the right abdomen. CT of the abdomen revealed a multiloculated appearing hypodense mass involving the right hemiabdomen measuring 11.6 x 26.6 x 19.3 cm with intrinsic septations and displacing loops of bowel.

The patient was referred to a surgical oncologist, CT scan of the chest did not show signs of metastatic disease. Tumor board discussion decided for upfront surgical resection without biopsy due to risk of spilling the cystic mass. Patient underwent exploratory laparotomy with resection of large abdominal mass that was mobile, but densely adherent to the bowel and mesentery, with a pedicle densely adherent to the hepatic flexure of the colon. This was able to be removed from the mesentery without need for resection of bowel. Patient was advanced to a clear liquid diet on POD#1 and discharged on a regular diet home on POD#2. Pathology results: 28.1 x 20 x 11cm benign multiloculated mesothelial cyst with mesothelial cells. Patient is doing well one month post-op with no complaints.

Discussion: Approximately one-third of cases occur in children younger than 15 years; however, mesenteric cysts may occur in patients of any age. They can have a wide range of sizes, from less than a centimeter to over 30 (being 15cm the average in some case-series). They are often asymptomatic, although patients often present (as ours did) with lower abdominal pain and symptoms frequently associated with other abdominal conditions. Such symptoms are variable and non-specific including pain (82%), nausea and vomiting (45%), constipation (27%), and diarrhea (6%). An abdominal mass may be palpable in up to 61% of patients. The etiology can be lymphatic: simple lymphatic cyst and lymphangioma; mesothelial: simple mesothelial cyst, benign cystic mesothelioma, and malignant cystic mesothelioma; enteric: enteric cyst and enteric duplication cyst; urogenital; mature cystic teratoma (dermoid cysts); or non-pancreatic pseudocysts (infectious and traumatic cysts). Postulated origins include: a continual growth of congenitally malformed or malpositioned lymphatic tissue, secondary to trauma, degenerating lymph nodes. We believe this is an interesting case due to not only the infrequency of this pathology but also its large size. *(Cont. next page)*



Developing the National Accreditation Program for Rectal Cancer (NAPRC) in Waterbury CT.

Paul Fata MD, John Zhang MD, PHD, FACS

Introduction: Rectal cancer remains a significant global health challenge. While considerable progress has been made in understanding its biology, risk factors, and treatment strategies, it still presents unique challenges and complexities due to its anatomical location and constantly evolving treatment modalities and guidelines. Its impact on morbidity and mortality underscores the importance of ongoing research and clinical advancements in the field, as well as the impact of updated and standardized approach to treatment. As it has already been established, The NAPBC, or National Accreditation Program for Breast Centers, is a program in the United States that provides accreditation to breast centers that meet certain standards and criteria for providing high-quality breast care. It allowed to identify breast centers that adhere to high standards of care and are dedicated to providing the best possible outcomes for individuals with breast disease. Recently, the NAPRC has been gaining more attention as it has adopted the same principles and applied it to rectal cancer.

The importance of a multidisciplinary team (MDT) approach is emphasized and the cornerstone of the program. Given its recent uprise, it is not as well established as other programs and should be emphasized given the specialized care these patients require.

Method(s): This presentation will review the basic and overall process of the NAPRC, by focusing on the set of proposed standards pertaining to program structure and the process of patient care as well as the performance indicators.

We will also detail its application and establishment at a single institution in Waterbury, CT with focus on standardized staging, synoptic reports, and MDT approach to rectal cancer treatment.

Rare Occurrence of Multiple Pancreaticoduodenal Artery Aneurysms in a Community Setting

Sean Ramras, MD, Neville Patel, MD, Robert Botta, MD

Introduction: Pancreaticoduodenal artery aneurysms are rare, accounting for less than 2% of all visceral arterial aneurysms. Despite this rarity, these specific aneurysms carry a risk of rupture as high as reported of 50% and are associated with celiac artery stenosis or occlusion. Since intraarterial pressure is increased, there is a weakening of the vessel wall and formation of true aneurysm. Pancreaticoduodenal arteries may present with either single or multiple and may be present in the arcades or collateral vessels. Many cases are found incidentally, as demonstrated in the above cases. Most commonly these patients will present with an acute abdomen after rupture, requiring urgent treatment.

Case Presentation: Presenting the case of two incidentally found pancreaticoduodenal artery aneurysms found incidentally on CAT scans during emergency room admissions, for both pancreatitis and vague abdominal pain. First patient was a 37-year-old female with a 2.4cm inferior pancreaticoduodenal artery aneurysm characterized on CT angiogram. Patient underwent operative intervention in March 2022 with left brachial artery access, angiography, and coil embolization of both the anterior and posterior branches of the artery to ensure complete embolization. Patient had uneventful recovery and was discharged on anti-platelet therapy.

Our second patient was a 68-year-old female with a similarly identified superior pancreaticoduodenal artery aneurysm. Patient underwent operative intervention in February 2023 with left axillary artery access, angiography, and coil embolization of the aneurysm. Patient post-operative care complicated with return to the operating room on post-operative day #1 due to expanding extremity hematoma after failure of closure device. Patient underwent left axillary stent placement, which she tolerated well. This patient was discharged from the hospital within the following days. Both patients had no complaints of abdominal pain post-operatively and tolerated food without issue. On both completion angiograms, coils within the aneurysmal sac were in place with evidence of rupture or dissection.

Discussion: Currently the preferred method of treatment is, as described above, an endovascular approach with coil embolization which has reduced mortality to almost zero percent. Endovascular approach has minimal recurrence or recurrent bleeding noted. Previous surgical options included resection, endoaneurysmorrhaphy, or ligation. In some cases, patients would undergo pancreaticoduodenectomy to remove the aneurysmal arcades. Treatment of any concurrent celiac artery stenosis is controversial since there has been minimal if any reported recurrence after coil embolization.

Thoracotomy and Lobectomy for Mycobacterium Avium Complex Infection with Bronchopleural Fistula in a Patient with Pulmonary Fibrosis

Michael Chun, MD; Shubham Kanake, MD; Michael Ebright, MD
Stamford Hospital, Stamford, Connecticut

Introduction: Pulmonary fibrosis is a heterogenous group of chronic lung diseases characterized by aberrant inflammation and collagen deposition resulting in lung fibrosis. The mechanism behind this process is poorly understood and it is typically sporadic in nature.¹ However, familial pulmonary fibrosis may be diagnosed when two or more relatives within the same family develop pulmonary fibrosis.² Familial pulmonary fibrosis has been shown to predict worse survival compared to sporadic pulmonary fibrosis.³ Pulmonary fibrosis is associated with Mycobacterium avium complex (MAC) infections at rates higher than the general population.⁴ MAC infections are primarily treated with long-term antibiotics, however surgical intervention indications include failure of medical therapy, need to limit disease progression, and/or symptom control.⁵ The surgical management of MAC lesions has been well described^{6,7,8} however surgical intervention for MAC infection in the setting of underlying pulmonary fibrosis has not yet been described. Here, we present a patient with familial pulmonary fibrosis who developed a MAC infection with a cavitary lesion and bronchopleural fistula formation after transbronchial biopsy, ultimately requiring surgical intervention.

Case Description: We present a case of a 67-year-old man with a history of familial pulmonary fibrosis who initially presented with chronically worsening fatigue, dyspnea on exertion, and cough. He underwent a chest CT which demonstrated interstitial pneumonitis along with a left upper lobe consolidation with cavitary features. Given the concern for an infectious etiology, four days later he underwent a navigational bronchoscopy with bronchoalveolar lavage, transbronchial needle aspiration, and transbronchial tissue biopsy. During this procedure he was found to have purulent material within the airways bilaterally, but primarily from the left upper lobe bronchus. He tolerated the procedure well and no pneumothorax was seen on a post-procedure chest x-ray. Lavage and tissue cultures revealed non-tuberculous mycobacteria, however antibiotic therapy was deferred until speciation was finalized. On post-procedure day 25 he presented to the emergency department with acute worsening of his chronic shortness of breath, and on chest CT he was found to have a large loculated left hydropneumothorax with associated mild rightward mediastinal shift. A 14 French percutaneous pigtail catheter was inserted at the bedside which demonstrated a persistent air leak. Despite antibiotics, fevers and leukocytosis were persistent, as was a large air leak on underwater seal. The patient was becoming progressively debilitated. Therefore, a decision was made to surgically intervene with a left thoracotomy. There was a chronically thickened peel over the entire hemithorax requiring a total decortication. The bulla was only resectable with an anatomic upper lobectomy, buttressed with a latissimus dorsi rotational muscle flap to the bronchial stump. He was extubated the following day, and the two chest tubes were removed on post-operative days 8 and 23. He was discharged on post-operative day 25 to an acute rehab facility, and subsequently discharged home 13 days later.

Discussion: MAC infections in patients with underlying pulmonary fibrosis present a unique challenge to clinicians. Here we describe a case in which surgical resection of a diseased lobe was performed safely and resulted in clinical and symptomatic improvement, and ultimately discharge home without chest tubes in place.

References:

1. King, Talmadge E, Annie Pardo, and Moisés Selman. 2011. "Idiopathic Pulmonary Fibrosis." *The Lancet* 378 (December): 1949-61. [https://doi.org/10.1016/S0140-6736\(11\)60052-4](https://doi.org/10.1016/S0140-6736(11)60052-4).
2. Zhang, David, and Chad A. Newton. 2021. "Familial Pulmonary Fibrosis: Genetic Features and Clinical Implications." *Chest*. Elsevier Inc. <https://doi.org/10.1016/j.chest.2021.06.037>.
3. Cutting, Claire C., Willis S. Bowman, Nam Dao, Janelle Vu Pugashetti, Christine Kim Garcia, Justin M. Oldham, and Chad A. Newton. 2021. "Family History of Pulmonary Fibrosis Predicts Worse Survival in Patients with Interstitial Lung Disease." In *Chest*, 159:1913-21. Elsevier Inc. <https://doi.org/10.1016/j.chest.2021.01.026>.
4. Park, Sung Woo, Jin Woo Song, Tae Sun Shim, Moo Suk Park, Hong Lyeol Lee, Soo Taek Uh, Choon Sik Park, and Dong Soon Kim. 2012. "Mycobacterial Pulmonary Infections in Patients with Idiopathic Pulmonary Fibrosis." *Journal of Korean Medical Science* 27 (August): 896-900. <https://doi.org/10.3346/jkms.2012.27.8.896>.
5. Griffith, David E., Timothy Aksamit, Barbara A. Brown-Elliott, Antonino Catanzaro, Charles Daley, Fred Gordin, Steven M. Holland, et al. 2007. "An Official ATS/IDSA Statement: Diagnosis, Treatment, and Prevention of Nontuberculous Mycobacterial Diseases." *American Journal of Respiratory and Critical Care Medicine*. <https://doi.org/10.1164/rccm.200604-571ST>.
6. Mitchell, John D., Amy Bishop, Amanda Cafaro, Michael J. Weyant, and Marvin Pomerantz. 2008. "Anatomic Lung Resection for Nontuberculous Mycobacterial Disease." *Annals of Thoracic Surgery* 85 (June): 1887-93. <https://doi.org/10.1016/j.athoracsur.2008.02.041>.
7. Lu, Mimi, Dominic Fitzgerald, Jonathan Karpelowsky, Hiran Selvadurai, Chetan Pandit, Paul Robinson, and Ben J. Marais. 2018. "Surgery in Nontuberculous Mycobacteria Pulmonary Disease." *Breathe*. European Respiratory Society. <https://doi.org/10.1183/20734735.027218>.
8. Togo, Takeo, Jun Atsumi, Miyako Hiramatsu, Kiyomi Shimoda, Kozo Morimoto, Kazuhiro Uchimura, and Yuji Shiraishi. 2020. "Residual Destructive Lesions and Surgical Outcome in Mycobacterium Avium Complex Pulmonary Disease." *The Annals of Thoracic Surgery* 110 (November): 1698-1705. <https://doi.org/10.1016/j.athoracsur.2020.04.034>.

Plastic and Reconstructive Surgery

Plastic and Reconstructive		
Kevin Hu, BA	Yale School of Medicine	A Cost Comparison of Digital Nerve Repair Techniques
Kristina Kuklova, MD, MBA	University of Connecticut School of Medicine	Segmental Schwannomatosis of Left Lower Extremity
Kevin Hu, BA	Yale School of Medicine	Digit Replantation Rates and Associated Factors
Alex Kammien, BS	Yale School of Medicine	Hand Therapy Utilization Following Digital Flexor Tendon Repair
Kevin Hu, BA	Yale School of Medicine	Increased Provider Surgical Volume Decreases Procedural Costs in the Repair of Distal Radius Fractures
Alex Kammien, BS	Yale School of Medicine	Wide-Awake Digital Flexor Tendon Repair: A Nationwide Analysis of Postoperative Events and Reimbursement

A Cost Comparison of Digital Nerve Repair Techniques

Kevin G Hu, BA¹, Mica Williams, BA¹, Alexander Kammien, BS¹, Joseph Canner², Thayer Mukherjee, MD³, David Colen, MD³
1, Yale School of Medicine, New Haven, CT
2, Department of Surgery, Yale School of Medicine, New Haven, CT
3, Division of Plastic and Reconstructive Surgery, Department of Surgery, Yale School of Medicine, New Haven, CT

Introduction: Recent studies suggest cadaveric nerve allograft has equivalent outcomes compared to the gold standard autograft for treating short digital nerve gaps. We report the first direct cost comparison of various digital nerve injury reconstruction techniques and anticipate significant cost increases with use of allogenic implants.

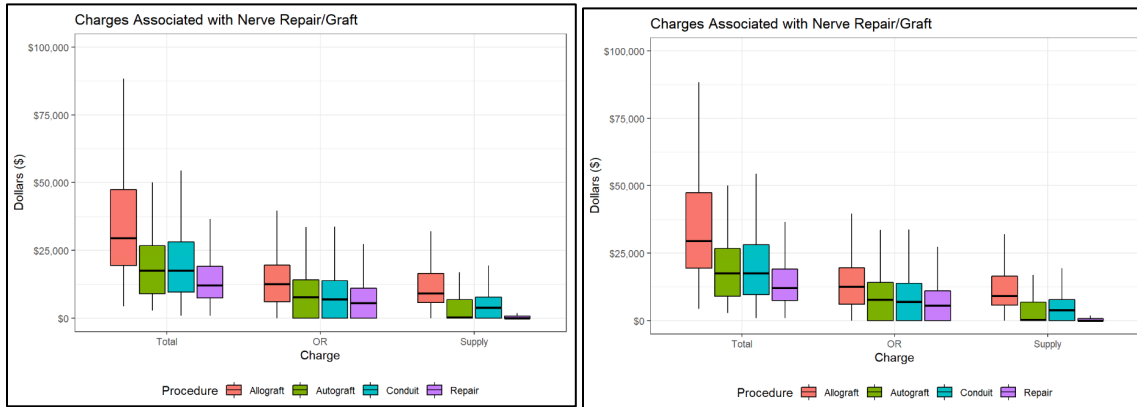
Methods: The current study analyzed encounter-level data from the State Ambulatory Surgery and Services Database for Florida, New York, and Wisconsin from 2015-2020. Patients with primary repair, short autograft, conduit, and allograft without other surgeries besides flexor tendon repair were identified. Total charges, surgical supply charges, and operating room charges were compared.

Results: The study sample comprised 5,250 patients: 3,124 primary nerve repairs (59.5%), 78 autograft (1.5%), 1,730 conduit (33.0%), and 318 allograft (6.1%). 3,030 patients were male (57.7%) with mean age 49.0 ± 16.4 years. Procedure frequencies were significantly different between states ($p < 0.001$), with the greatest percentage of allografts performed in Florida (7.7%, $n = 130/1,691$) compared to 5.5% ($n = 144/2,604$) in New York and 4.6% ($n = 44/955$) in Wisconsin. Procedure type was associated with ZIP code median household income quartile (ZIP-MHIQ; $p < 0.001$) and payer ($p < 0.001$). High ZIP-MHIQ, compared to low ZIP-MHIQ, had a higher percentage of primary repairs (61.6% vs 55.2%) and a lower percentage of allografts (5.4% vs 8.0%).

Across all three states, median total charges varied ($p < 0.001$) for each procedure, with the greatest median charges associated with allograft (\$29,528), followed by autograft (\$18,204), conduit (\$17,374), and primary repair (\$12,071). Median charges for surgical supplies was greatest for allograft (\$9,144), followed by conduit (\$3,738), autograft (\$213), and primary repair (\$0). Allograft was more expensive than all other methods with respect to total charges, supply charges, and operating room charges ($p < 0.001$). Analyzing each state separately, allograft was significantly more expensive than all other procedures with respect to total charges and supply charges ($p < 0.01$). There was no significant difference between allograft and autograft with respect to operating room charges in Florida ($p = 0.055$) and New York ($p = 0.077$). Medicare/Medicaid was the primary payer for 1,240 (23.6%) procedures, including 85 (26.8%) allografts, 21 (27.3%) autografts, and 431 (25.1%) conduits.

Conclusions: Nerve allograft is the most expensive method of digital nerve repair, most likely due to the cost of the implant. While nerve autograft is the gold standard for repair of digital nerve gaps in the literature, it is infrequently used in comparison with

the increasingly popular nerve allograft. These factors should be considered in a surgeon's choice of digital nerve repair technique.



Segmental Schwannomatosis of Left Lower Extremity

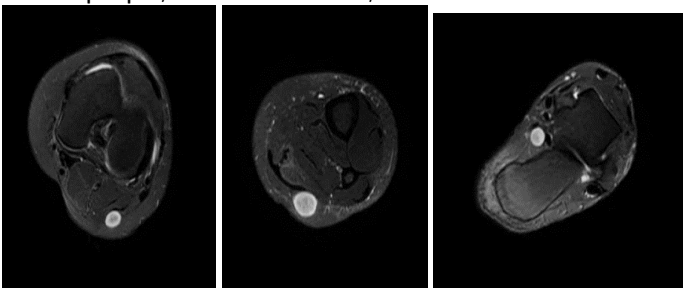
Kristina Kuklova, MD, MBA, Ammr Al-Houssan, MD, Austin Healy, MD, Lavanya Sambaraju, MS2, Alan Babigian, MD
University of Connecticut

Introduction: Schwannomatosis, otherwise known as neurofibromatosis type 3 (NF3), is a rare genetic disorder that is characterized by benign tumors formed as a result of uncontrollable growth of Schwann cells in the peripheral nervous system. About 30% of schwannomatosis affect one half of the body or a single limb. When the disease is limited to a sole extremity, it is defined as segmental schwannomatosis. We present a case of a 59-year-old female with segmental schwannomatosis of the left lower extremity.

Method(s): A single descriptive retrospective case study review design was used.

Results: Patient was diagnosed with segmental schwannomatosis of left lower extremity utilizing MRI. Three T2 bright solid enhancing masses were noted: posteromedially at the level of the distal tibial diaphysis, medial to calcaneus, and adjacent to the lateral gastrocnemius muscle. Patient was taken to the operating room and the largest mass was resected. She was successful treated operatively by excising the mass with subsequent resolution of symptoms.

Conclusion(s): Segmental schwannomatosis is an extremely rare disorder. It may develop early in life and most often diagnosed in adults over age 30. The exact incident is unknown, with reports varying the incidence between 1 in 40,000 people and 1 in 1.7 million people; there are under 1,000 cases in the United States reported.



Digit Replantation Rates and Associated Factors

Kevin G Hu, BA¹, Alexander Kammiem, BS¹, K. Lynn Zhao, MD², Brogan Evans, MD², David Colen, MD²

1, Yale School of Medicine, New Haven, CT

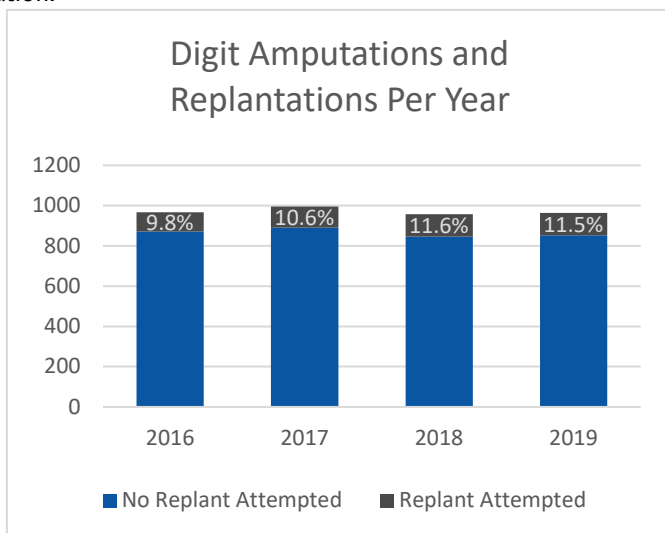
2, Division of Plastic and Reconstructive Surgery, Department of Surgery, Yale School of Medicine, New Haven, CT

Introduction: While digital replantation is most commonly performed at urban teaching hospitals, previous literature has demonstrated an overall decrease in replantation attempts in the United States between 2001 and 2014 regardless of hospital setting. This study re-evaluates trends in digital replantation and predictive factors driving attempted replantation.

Methods: Patients who sustained a digital amputation between 2016-2019 were identified from the National Inpatient Sample. Thumb, finger, and total replant rates were compared using chi-square tests and t-tests to evaluate differences in ZIP code median household income quartile (ZIP-MHIQ), patient demographics, hospital type, region, and insurance status. Replant likelihood was modeled with multiple logistic regression.

Results: Average replant rates were 8.0% (251/3134) for fingers and 16.0% (170/1075) for thumbs with no significant difference in replant rates by year ($p > 0.05$, logistic regression) (Figure 1). Finger replant and total replant rates were associated with age, race, Charlson comorbidity index, ZIP-MHIQ, hospital type, and hospital region ($p < 0.05$). Thumb replants were associated with age, ZIP-MHIQ, and hospital type ($p < 0.05$). Lower total replantation rates were associated with federal healthcare insurance (Medicare or Medicaid) compared to other insurance types, including private and worker's compensation ($p < 0.001$). Age greater than 60 was also associated with a lower likelihood of finger replant (OR = 0.47, 95CI:0.26 - 0.83, $p = 0.012$) and overall replantation attempts (OR = 0.54, 95CI:0.34 - 0.82, $p = 0.005$) (Table 2). Hispanic race was associated with fewer replants overall (OR = 0.73, 95CI:0.54 - 0.98, $p = 0.04$) and urban teaching hospitals were more likely to attempt replantation overall (OR = 2.52, 95CI:1.12 - 7.72, $p = 0.047$). ZIP-MHIQ within the bottom quartile was associated with decreased rates of finger and overall replantation attempts, whereas ZIP-MHIQ in the top quartile was associated with increased rates of thumb replantation attempts (OR = 0.015, 95CI:1.14 - 3.43, $p \leq 0.001$).

Conclusions: Rates of digit replantation have remained steady from 2016 to 2019. Socioeconomic factors including ZIP-MHIQ, race, and hospital type continue to impact replant rates. Continued efforts are warranted to ensure equitable distribution of care with respect to digit replantation.



Hand Therapy Utilization Following Digital Flexor Tendon Repair Christopher Lemoine MD, Austin Healy MD, Alan Babigian MD
Alexander J. Kammien, BS, Catherine T. Yu, BS, Jonathan N. Grauer, MD, David L. Colen, MD
Division of Plastic Surgery, Department of Surgery, Yale School of Medicine

Introduction: Physical rehabilitation is a critical component of postoperative care for digital flexor tendon repair (FTR). The current study assesses nationwide trends in therapy utilization following FTR from 2010 to 2020, determining risk factors for lack of therapy utilization and characterizing the timing and amount of therapy.

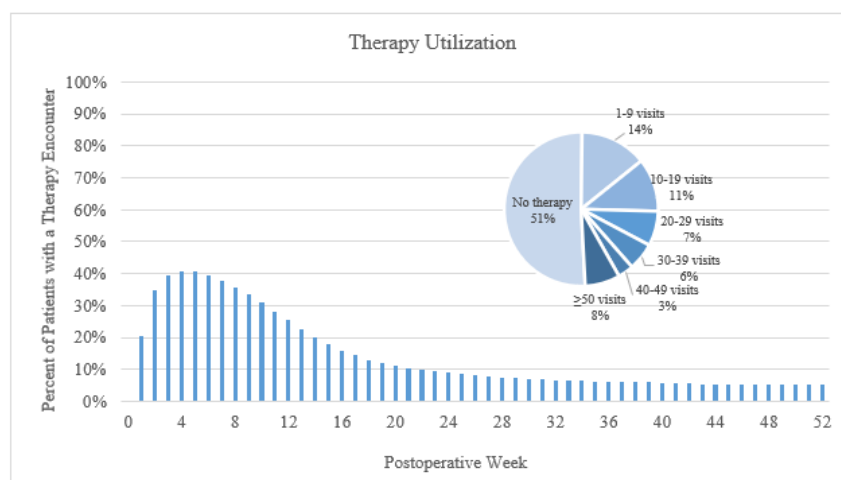
Methods: Patients with zone II FTR between 2010 and 2021 were identified in PearlDiver, a national administrative claims database. Patients with age <18 years, <1 year of follow-up and any concomitant upper extremity procedures besides nerve repair were excluded. Patients were stratified by therapy utilization, which was defined as the presence of procedural codes for evaluation by occupational or physical therapy within 6 months of surgery. Annual therapy utilization was assessed. Age, sex, Elixhauser Comorbidity Index (ECI) score, geographic region, insurance coverage, mean family income (based on zip code of residence), number of tendon repairs and presence of concomitant nerve procedure were extracted and assessed for association with lack of therapy utilization with t-tests, chi-squared tests and logistic regression. For patients with therapy utilization, time from surgery to therapy evaluation was determined. Within 1 year of surgery, the total number of therapy visits for each patient and the weekly therapy utilization were determined.

Results: The final cohort consisted of 6,700 patients with isolated zone II FTR. Of these, 3,319 utilized hand therapy and 3,381 did not. From 2010 to 2020, the proportion of patients lacking postoperative therapy utilization declined (56% in 2010; 42% in 2020, $p<0.001$). Therapy utilization improved to the greatest degree for patients with Medicaid insurance (75% without therapy in 2010, 38% in 2020), followed by those with Medicare (62% without therapy in 2010, 51% in 2020) and commercial insurance (53% in 2010, 42% in 2020).

Multivariate analysis identified several factors associated with lack of therapy utilization. Increased odds of not using therapy were associated with male sex (OR 1.20; $p=0.001$), geographic region (relative to patients in the Midwest, Northeast [OR 1.27; $p=0.005$], South [OR 1.48; $p<0.001$] and West [OR 1.69; $p<0.001$]), Medicare (relative to those with commercial insurance [OR 1.65; $p<0.001$]) and fewer tendon repairs (relative to patients with 4 or more repairs, 3 repairs [OR 1.27; $p=0.151$], 2 repairs [OR 1.54; $p=0.002$], 1 repair [OR 2.02; $p<0.001$]). Patients with greater comorbidity burden (greater ECI score) were less likely to miss therapy (OR 0.98; $p=0.039$).

For patients with therapy utilization, the average (standard deviation) time to therapy evaluation was 18 days (34 days) and median (interquartile range) was 9 days (15 days). Within 1 year of surgery, 3,381 (51%) of patients had no therapy. There were 931 (14%) with fewer than 10 visits, 742 (11%) with 10-19 visits, 458 (7%) with 20-29 visits, 383 (6%) with 30-39 visits, 218 (3%) with 40-49 visits and 487 (8%) with ≥ 50 visits. Weekly therapy utilization peaked in postoperative week 4 (40% of all patients visited a therapist) and declined to 10% by postoperative week 24 (Figure).

Conclusions: Despite the importance of hand therapy following digital FTR, many patients do not utilize it. Some characteristics such as sex, insurance coverage and injury severity may impact utilization of prescribed therapy. Surgeons can use this information to identify and target high-risk patients to increase therapy adherence. (*see chart on next page*)



Increased Provider Surgical Volume Decreases Procedural Costs in the Repair of Distal Radius Fractures

Kevin G Hu, BA¹, Alexander Kammiem, BS¹, Mica Williams, BA¹, Fortunay Diatta, MD MBE³, K. Lynn Zhao, MD³, Brogan Evans, MD³, Chin Siang Ong, MBBS, PhD², and David Colen, MD³

¹Yale School of Medicine, New Haven, CT

²Department of Surgery, Yale School of Medicine, New Haven, CT

³Division of Plastic and Reconstructive Surgery, Department of Surgery, Yale School of Medicine, New Haven, CT

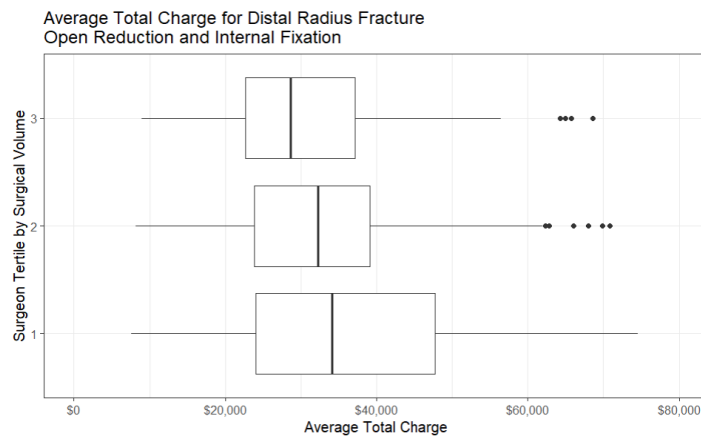
Introduction: The cost of open reduction and internal fixation (ORIF) of distal radius fractures (DRF) is largely attributed to the choice of hardware for fixation, but no studies have examined the impact of surgical volume on costs. This study examines whether surgeons who perform DRF fixation more frequently can decrease procedural costs.

Method(s): This study analyzed encounter-level data from the Florida State Ambulatory Surgery and Services database between 2015- 2020. Patients undergoing ORIF for distal radius fractures were identified by CPT code 25607 and ICD-10 code S52.5. The top and bottom 5% of procedures by cost were removed as outliers. Patients were grouped by attending surgeon. The upper tertile of surgeons by case volume was compared with the lower tertile of surgeons using the Mann-Whitney U-test. Overall charges and component charges were compared.

Results: 6,448 patients underwent DRF fixation with average age 58.7 ± 18.1 years and 1,323 males (20.5%). The most frequent payer was Medicare or Medicaid (48.3%, n = 3,116), followed by private insurance (38.6%, n = 2,490). One-way ANOVA found no significant effect of payer on total charges ($p = 0.09$). These procedures were performed by 890 unique surgeons.

ORIFs performed by the upper tertile of surgeons by case volume had lower total charges than the bottom tertile of operating surgeons (\$30,674 vs \$36,222, $p < 0.001$) and lower operating room charges (\$14,299 vs \$17,601, $p < 0.001$). On univariate linear regression, the number of cases performed by a surgeon significantly predicted total charges ($b = -1,016$, $p < 0.001$, $r^2 = 0.02$), operating room charges ($b = -609$, $p < 0.001$, $r^2 = 0.02$), radiology/imaging charges ($b = -66$, $p < 0.001$, $r^2 = 0.01$), and anesthesia charges ($b = -202$, $p < 0.001$, $r^2 = 0.02$). Case number tertile was neither associated with surgical supply charges (highest tertile: \$6,331; lowest tertile: \$6,532; $p = 0.897$) nor predictive of surgical supply charges ($b = -74$, $p = 0.35$, $r^2 < 0.01$). Multivariate linear regression including procedure year, patient age, sex, and ZIP code median household income quartile found surgical volume continued to predict total charges ($b = -627$, $p < 0.001$, $r^2 = 0.05$).

Conclusion(s): Increased surgical volume significantly decreases the cost of DRF fixation with respect to charges for the operating room, imaging, and anesthesia services, but not surgical supply. Increased surgeon experience may play a role in reducing resource utilization, resulting in decreased costs. (see chart on next page)



Wide-Awake Digital Flexor Tendon Repair: A Nationwide Analysis of Postoperative Events and Reimbursement

Alexander J. Kammiem, BS, Neil Parikh, BS, K. Lynn Zhao, MD, Jonathan N. Grauer, MD, David L. Colen, MD
Division of Plastic Surgery, Department of Surgery, Yale School of Medicine

Introduction: Institutional studies have suggested reduced cost and similar or improved outcomes for wide-awake digital flexor tendon repair (FTR) compared to those performed traditional anesthetic techniques. This study investigates these findings on a national scale, comparing cost and adverse events for FTR performed wide-awake versus with traditional anesthesia.

Methods: Adults undergoing zone II FTR between 2010-2022 were identified in a national administrative dataset (PearlDiver). Exclusion criteria were patients with other FTR, concomitant treatment for vascular injury, fracture or dislocation, age <18 years and <90 days of follow-up. Patients with traditional anesthesia were identified by procedural codes for general anesthesia, monitored anesthesia care, sedation and nerve blocks. Patients were matched 1:1 based on age, sex, Elixhauser Comorbidity Index (ECI) score, geographical region, insurance coverage, number of tendon repairs and presence of concomitant nerve repair.

30-day events (wound complications, emergency department visits, readmissions and filled opioid prescriptions) and 1-year reoperations (for rupture and for stiffness) were identified and analyzed with chi-squared tests and logistic regressions. Total reimbursement for surgery was determined by insurance type and analyzed with Wilcoxon rank-sum tests and linear regression. All regressions used patient age, sex, ECI score, region, insurance, number of repairs, presence of concomitant nerve procedure and anesthesia technique as independent variables.

Results: A total of 11,883 patients met the inclusion and exclusion criteria: 7,213 (61%) with traditional anesthesia and 2,563 (39%) with wide-awake surgery. After matching, 2,563 patients remained in each group with no significant differences in characteristics used for matching.

Within 30 days of surgery, fewer wide-awake patients visited the emergency department (2.7% vs 4.8%; OR 0.54; $p < 0.001$). There were no significant differences in 30-day wound complications (0.9% vs 1.2%; $p = 0.252$), readmissions (0.4% vs 0.5%; $p = 0.545$) or filled opioid prescriptions (67% vs 67%; $p = 0.916$). Within 1 year of surgery, there was no significant difference in reoperations for rupture (3.1% vs 3.3%; $p = 0.586$) or reoperations for stiffness (6.9% vs 7.8%; $p = 0.100$).

Of patients with commercial insurance, those with wide-awake surgery had lower total reimbursement for surgery (median \$1674 vs \$1951; $p = 0.012$). There was no significant difference for patients with Medicaid (median \$1347 vs \$1721; $p = 0.218$) and Medicare (\$863 vs \$830; $p = 0.203$). Multivariate linear regression identified wide-awake surgery to be a significantly associated with lower total reimbursement (regression coefficient -\$854; 95CI -1031, -677; $p < 0.001$).

Conclusions: Performing digital FTR using wide-awake techniques can reduce costs and increase efficiency while maintaining similar rates of postoperative events and reoperations compared to surgeries with traditional anesthesia.