



ABSTRACTS

2020 Annual and Scientific Meeting

Resident Paper Competition

October 27, 28 and 30, 2020
Virtual Meeting

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

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Learning Objectives:

1. The learner should be aware of surgical research taking place in Connecticut.
2. The learner will be able to discuss the new surgical knowledge generated by residents, fellows and medical students in Connecticut.
3. The learner will have a basis from which they can further examine new surgical techniques
4. The learner will be able to explain the frameworks and fundamentals of surgical QI and manage its challenges,
5. The learner will recognize the role third party payers play in current healthcare environment.

All sessions are open to all meeting participants.

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Prize Certificates awarded in the following categories:

	First Place	Second Place
Clinical Oncology	X	
Sultan Ahamed, MD, MBA, FACS General Surgery	X	X
Medical Students	X	
Quality, NSQIP & ERAS	X	X
Specialty Surgery	X	X
John MacArthur, MD, FACS Trauma	X	X

Conflict of Interest Disclosure



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CTACSPA 2020 ANNUAL MEETING OCTOBER 27, 28 AND 30 VIRTUAL MEETING

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<p>Financial Relationships: Relationships in which the individual benefits by receiving a salary, royalty, intellectual property rights, consulting fee, honoraria, ownership interest (e.g., stocks, stock options or other ownership interest, excluding diversified mutual funds), or other financial benefit. Financial benefits are usually associated with roles such as employment, management position, independent contractor (including contracted research), consulting, speaking and teaching, membership on advisory committees or review panels, board membership, and other activities from which remuneration is received, or expected. ACCME considers relationships of the person involved in the CME activity to include financial relationships of a spouse or partner.</p>
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SPEAKERS / MODERATORS / DISCUSSANTS	NOTHING TO DISCLOSE	DISCLOSURE		
		COMPANY	ROLE	RECEIVED
Alan Meinke, MD, FACS	N			
Alexander Ostapenko, MD	N			
Alexandra SanowskiBell, MD	N			
Amanda Neider, MD	N			
Andrew Seto, MD	N			
Ashley Althoff, MD	N			
Brienne Ryan, MD	N			
Brittany Davis, MD	N			
Christine Van Cott, MD, FACS	N			
David Shapiro, MD, FACS	N			
Diego Accorsi, MD	N			
Felix Lui, MD, FACS	N			
Gary Kaml, MD, FACS	N			
Georgios Mihalopoulos, MD	N			
Heather Toskos, MD	N			
Jennifer Hansen	N			
Jeremy Fridling	N			
Jillian Fortier, MD	N			
Joe (Pat) Patton, MD, FACS	N			
Karri Hester, MD	N			

Kathleen O'Neill, MD	N			
Kevin Schuster, MD, FACS	N			
Kristen Anderson, MD, MPH	Y	SymphonyRM	Clinical Advisor	Stock Options
Lindsay Bliss, MD	N			
Meaghan Broderick, MD	N			
Manuel Moutinho, MD	N			
Michael Geraghty, MD	N			
Mohammad Ali, MD	N			
Neville Patel, MD	N			
Nicholas Druar, MD	N			
Olohirere Ezomo	N			
Pat (Joe) Patton, MD, FACS	N			
Philip Corvo, MD, FACS	N			
Rami Alaref, MD	N			
Rekha Singh, MD, FACS	N			
Royd Fukumoto, MD, FACS	N			
Santosh Swaminathan, MD	N			
Sepehr Karimi, MD	N			
Sumun Khetpal, MD	N			
Suraj Panjwani, MD	N			
Thomas Tritt MD, MD	N			
Vijay Jayaraman, MD, FACS	N			
Vikram Bhatt, MD	N			
PLANNING COMMITTEE	NOTHING TO DISCLOSE	DISCLOSURE		
		COMPANY	ROLE	RECEIVED
Alan Meinke, MD, FACS	X			
Christopher Tasik	X			
Christine Van Cott, MD, FACS	X			

Order of Presentation

Tuesday - October 27th - 6pm Start

John MacArthur Trauma/Critical Care - Hosted by the CT Committee on Trauma

Karri Hester, MD	Danbury Hospital	Mortality Associated With Intubation and Mechanical Ventilation in Patients with COVID-19
Nicholas Druar, MD	Saint Mary's Hospital	A single community institution evaluation of trauma triage based on Injury Severity Score
Rami Al-Aref, MD	Stamford Hospital	Bilateral Brachial Plexopathy in the Context of COVID 19 Pneumonia
Santosh Swaminathan, MD	Saint Mary's Hospital,	Use of Engineered Exosomes Isolated from Thioredoxin-1 Overexpressed Mice Subjected to Cecal Ligati
Alexandra Sanowski-Bell, MD	Waterbury Hospital	A close call - survival after penetrating knife trauma with retrohepatic IVC injury
Suraj Panjwani, MD	Saint Mary's Hospital,	Those Who Build for Us Have Nowhere to Go! – NTDB Analysis of Non-Fatal Construction Injuries
Kathleen O'Neill, MD	Yale New Haven Hospi	"The cops didn't make it any better": Perspectives on Police and Firearm Carriage among Survivors of F
Meaghan Broderick, MD	Stamford Hospital	Utility of Repeat Head CT in Detecting Delayed Intracranial Hemorrhage in Falls on Novel Oral Anticoag

Surgical Quality, NSQIP and ERAS - Hosted by the CtsQC

Vikram Bhatt, MD	STMH	The use of 0.05% Chlorhexidine significantly reduces the rate of surgical site infections in elective colo
Ashley Althoff, DO	University of Connecti	Evolving Role of Urinary Catheters in Elective Colon and Rectal Resection
Vikram Bhatt, MD	Saint Mary's Hospital,	The use of 0.05% Chlorhexidine does not increase surgical site infections in elective hip and knee repli
Alexander Ostapenko, MD	Danbury Hospital	Longer Operative Times for Claudicants Undergoing Endovascular Revascularization Procedures are Ass
Santosh Swaminathan, MD	Saint Mary's Hospital,	Outcomes Following Elective Minimally Invasive Bariatric Surgery in High Risk Patients: A MBSAQIP ana
Alexander Ostapenko, MD	Danbury Hospital	Trends in Bowel Preparation in Patients Undergoing Elective Colectomy: A lack of standard of care in m
Brienne Ryan, MD, MS	Stamford Hospital	The Effects of a Preoperative Optimization Program on Surgical Cancellation Rates
Alexander Ostapenko, MD	Danbury Hospital	The impacts of COVID-19 on Surgical Resident Education

Medical Student Research - Hosted by the CTACSPA

Olohirere Ezomo, MPH	Frank H. Netter School	The State of Racial And Ethnic Disparities in Primary Total Hip Arthroplasty: Analysis of a National Datal
Jennifer Hansen, MHS	Frank H. Netter MD Sc	Region, Size, and Teaching-Status: Identifying Hospital-Level Factors that Impact Surgery Unit Patient S

Wednesday - October 28th - 6pm Start

Clinical Oncology - Hosted by the CT Commission on Cancer

Andrew Seto, MD	Stamford Hospital	Lupus Mastitis and Breast Asymmetry: Clinical Resemblance to Breast Carcinoma
Heather Toskos, MD	Stamford Hospital	Splenic Cystic Mass: A Rare Presentation for Pseudomyxoma Peritonei

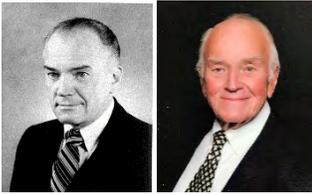
Sultan Ahamed, MD, FACS General Surgery - Hosted by the CTACSPA

Georgios Mihalopoulos, MD	Waterbury Hospital	Foramen of Winslow Hernia: A Rare Cause of Bowel Obstruction
Santosh Swaminathan, MD	Saint Mary's Hospital,	Immediate Postoperative Outcomes following Elective Outpatient Robotic Assisted Surgery: Early Resu
Jeremy Fridling, BA	Frank H. Netter MD Sc	Cystic Duct Remnant Calculus as a Cause of Post-Cholecystectomy Syndrome
Santosh Swaminathan, MD	Saint Mary's Hospital,	Overexpression of Pellino-1 in Cardiomyocytes Limits Systemic Inflammation, Cardiac Cell Death and Pr
Thomas Tritt, MD	Stamford Hospital	Analysis of Transient Hyperbilirubinemia Following Laparoscopic Cholecystectomy
Michael Geraghty, MD	Waterbury Hospital	Rare Case of Gastric Diverticulum in a Young Healthy Patient Presenting with Abdominal Pain

Surgical Subspecialties- Hosted by the CTACSPA

Sumun Khetpal, BS, BA	Yale University School	Trends in the Utilization of Ambulatory Surgery Centers (ASCs) For "Medically-Necessary" Aesthetic Pla
Olohirere Ezomo, MPH	Frank H. Netter School	Nationwide analysis of Racial Disparities Among Black Patients Undergoing Primary Total Knee Arthrop
Brittany Davis, MD	Stamford Hospital	Surgical Treatment of the Neurogenic Etiology of Median Arcuate Ligament
Neville Patel, MD	Waterbury Hospital	Strongyloides Stercoralis Hyperinfection Secondary To Large B-cell Non-Hodgkin's Lymphoma
Amanda Neider, MD	Waterbury Hospital	A Case Study of Early Detection of Small Bowel Ischemia in Closed-Loop Small Bowel Obstruction
Thomas Tritt, MD	Stamford Hospital	Epistaxis in a Patient with History of Nasopharyngeal Cancer: Carotid Blowout Syndrome
Alexander Ostapenko, MD	Danbury Hospital	A five-year review of ultrasound reliability in diagnosing gallbladder polyps at a community hospital
Mohammad Ali, MD	Waterbury Hospital	Small Bowel Follow Through: Treatment for SBO or delaying the inevitable?
Alexander Ostapenko, MD	Danbury Hospital	An analysis of the use of percutaneous cholecystostomy at a community hospital
Diego Accorsi, MD	Saint Mary's Hospital	Thioredoxin-1 Engineered Exosomes are a Promising Strategy to Stimulate Angiogenesis and Increase
Heather Toskos, MD	Stamford Hospital	Perirectal Sepsis Complicated by Fournier's Gangrene s/p Open Hemorrhoidectomy
Meaghan Broderick, MD	Stamford Hospital	Pediatric Acute Abdomen Secondary to Infected Mesenteric Cystic Lymphangioma
Sepehr Karimi, MD	Waterbury Hospital	Results of Implementation of ACS Guidelines for COVID-19 in an Academic Community Setting

John D. MacArthur, MD, FACS Trauma Competition



John MacArthur, MD, FACS was born in Minnesota. Dr. MacArthur was graduated from the University of Minnesota Medical School. He completed his General

Surgery Residency at Peter Bent Brigham (now Brigham and Women's Hospital) with Dr Fanny (Francis) Moore.

Dr. MacArthur joined Bridgeport Hospital as Chair of Surgery in 1979. In the 80's he worked with Lenworth Jacobs, MD, FACS, Chip Baker, MD, FACS, James Barone, MD, FACS, and Tony Morgan, MD, FACS to modernize the medical transportation system in Connecticut. Their work also included EMT training and certification. In the early 90's they testified in front of the State Senate encouraging Connecticut to adopt the ACS trauma designation system and use the "optimal resources" document as bases for the designation. They were successful and forever changed the way trauma patients are cared for in our state.

He served as President of this organization from 1995-1996 and retired from practice in Connecticut in the late 90s. Dr. MacArthur continued to practice on Nantucket for many years before moving to Colorado, where he now resides.

Moderator: Kevin Schuster, MD, MPH, FACS, FCCM
Associate Professor of Surgery (Trauma), Yale School of Medicine, Chair, Connecticut Committee on Trauma, President, Connecticut Surgical Quality Collaborative

Judge: Alan Meinke, MD, FACS
Private Practice, Surgeons of Westport, Westport, CT
Vice Chairman, Department of Surgery and Director of Surgical Quality, Nuvance Health, Norwalk Hospital
Past President, CT Surgical Quality Collaborative & CTACSPA

Mortality Associated with Intubation and Mechanical Ventilation in Patients with COVID-19

Patrick W. Zimmerman, DO¹; Stephanie J. Stroever, PhD²;
Timothy Burton, MD¹; Karri E. Hester, MD¹; Minha Kim, MD¹;
Ryan T. Fahy, DO¹; Kimberly A. Corbitt, DO¹; Joann R.
Petrini, PhD²; Jeffrey Nicastro, MD, FACS, FCCM¹

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²Department of Research and Innovation, Nuvance Health, Danbury, CT, USA

Objective: The need for critical care, hemodynamic support, renal replacement therapy, and mechanical ventilation have emerged as key features of the SARS-nCoV-2 (COVID-19) pandemic with approximately 5% of diagnosed infections requiring intensive care. The primary aim of this study was to determine the in-hospital mortality rate of mechanically ventilated patients. We also sought to determine the risk of in-hospital mortality by age, gender, race, ethnicity, and body mass index.

Design: We performed a retrospective cohort study to determine the mortality rate among inpatient adults with COVID-19 on mechanical ventilation in the Nuvance Health system between March 1, 2020 and July 17, 2020.

Setting: Multi-institutional study within the Nuvance Health system (CT, NY).

Patients: We included 304 patients in our cohort. Patients were included if they were 18 years or older, had a laboratory confirmed COVID-19 diagnosis, were admitted to hospitals within the Nuvance Health network, and were on mechanical ventilation at any time during their inpatient stay.

Interventions: N/A

Measurements & Main Results: Overall mortality in our cohort was 53.3%. Multivariable logistic regression including age, gender, race, ethnicity, and BMI demonstrated patients over 71 years old had greater risk of mortality compared to patients ages 61-70, and females had half the risk compared to males. There was no significant difference in risk of mortality given race, ethnicity, or BMI. **Conclusions:** In adult patients with confirmed COVID-19 infection requiring mechanical ventilation and intensive care, advanced age (>71 years old) and male gender are associated with increased risk of mortality. This information, combined with other descriptive data, contributes to a collective body of evidence to support ongoing planning and decision-making among clinicians and for directed infection prevention programming.

A single community institution evaluation of trauma triage based on Injury Severity Score

Nicholas Druar, MD, MPH
Saint Mary's Hospital

Introduction: Trauma patients continue to represent a major source of mortality and morbidity for hospitals. Trauma triage has been extensively described as a key component of an effective trauma program. The importance of triaging a patient both prior to arrival to an emergency department and on arrival determines the level of care a patient will initially receive. It has been previously demonstrated that non-compliance with trauma guidelines can lead to increased mortality. Trauma centers utilize a combination of field data, mechanism of injury and studied standards to triage trauma activations. Here we analyze the success of a single community center in appropriately triaging trauma patients based on injury severity score.

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Method(s): A single level II institution's trauma registry from 2012-2018 was utilized to evaluate the effectiveness of triage and to evaluate for opportunities for improvement in trauma triage protocols. Characteristics of trauma patients including but not limited to age, gender, and injury severity score (ISS) were included. Missing data points were not included in the final study. Statistical software was utilized to analyze level of trauma activation with injury severity score. Pediatric patients were excluded.

Results: 4116 patients were initially included in the study but 463 were eliminated due to age less than 18 for a total of 3653. Patients ranged in age from 18-105 (mean of 58). 55% of the patients were male. Level of activation was broken down into three levels. A one-way between subjects ANOVA was conducted to compare the effects of injury severity score on four levels of activation. There was a significant effect at the $p < 0.05$ for the level of activation [$F(39,3603) = 10.4, p = < 0.001$].

Conclusion(s): In a single institution study from a community hospital setting the triage of patients was significant when considering injury severity score. Further analysis is required to better understand the impact of different factors in triage and the long term prognosis of patients in the community trauma setting.

Bilateral Brachial Plexopathy in the context of COVID-19 Pneumonia

Rami Al-Aref, MD; Cory Rosenstein, MD
Stamford Hospital

Introduction: The generally accepted definition of acute respiratory distress syndrome (ARDS) is acute onset hypoxic respiratory failure, bilateral pulmonary infiltrates on imaging that are not cardiogenic in nature, and hypoxemia with a $PaO_2/FiO_2 < 200$ mmHg. The management of these patients centers around the idea that using low-volume lung protective ventilation allows you to help improve patients' oxygenation and treat their underlying cause. There are a plethora of different strategies that exist to improve oxygenation in these patients; placing these patients prone has been shown to not only improve oxygenation but when used for greater than 12 hours can decrease mortality. COVID-19 as a disease process has taken our comprehension of ARDS and its management to a new level, one that is fraught with new questions, new complications, and new understandings. This then has created a paradigm shift in how we manage these patients in the critical care setting where management of ventilatory status is equally as important as preventing the complications of that management.

Case: 61 year-old male who presented with acute hypoxic respiratory failure after testing positive for COVID-19 a week prior. Initially he was admitted to an intermediate care unit for close respiratory monitoring; however his respiratory status continued to deteriorate requiring eventual transfer to the intensive care unit and intubation. Given the severity of the patient's ARDS he was chemically paralyzed and placed on a 16/8 prone-to-supine schedule. He had a prolonged hospital course with eventual tracheostomy and PEG tube placement and eventual discharge to a rehab facility in a severely deconditioned

John D. MacArthur, MD, FACS Trauma Competition

state. His ability to ambulate effectively returned with strength training and rehabilitation; however he presented on follow-up with diffuse bilateral distal weakness with wasting/atrophy of his hands bilaterally and complete wrist drop on the right. He had sensory deficits in a C8/T1 distribution. MRI of his cervical spine demonstrated chronic cervical spondylosis, no acute process. EMG studies showed bilateral pan-brachial plexitis.

Discussion: COVID-19 is a disease process unlike anything that we have seen in modern times; the severity of the inflammatory response along with the prolonged ventilatory times has brought forth unique complications that may become more prevalent in coming months. The rapidly evolving pandemic has left the medical community scrambling to identify ways to help manage these patients and in-turn impact on their survival and morbidity. It is unclear as to what the long-term complications of a COVID-19 infection entails; however the acute management of these patients has resulted in unique complications. Our patient developed a bilateral brachial plexopathy that involves the entire brachial plexus. Is this an apraxic injury secondary to prolonged pronation versus post-infection brachial plexus neuritis which tend to be more unilateral? We must consider that while this could be a unique feature of COVID-19, if it is indeed a stretch injury then it must be accounted for with long-term pronation. Since long-term pronation is central to the management of patients with COVID-19 pneumonia, identifying techniques to prevent bilateral brachial plexitis will be key to the management of these patients.

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Physician, Resident. "The Down Side of Prone Positioning: The Case of a COVID-19... : American Journal of Physical Medicine & Rehabilitation." *LWW*, journals.lww.com/ajpmr/Abstract/9000/The_Down_Side_of_Prone_Positioning__The_Case_of_a_97934.aspx.

Use of Engineered Exosomes Isolated from Thioredoxin-1 Overexpressed Mice Subjected to Cecal Ligation and Puncture Leads to Prolonged Survival following Severe Sepsis

^{1,2,3} Santosh Swaminathan, MD; ^{1,2} Mahesh Thirunavukkarasu, Ph.D.; ^{1,2} Seetur R. Pradeep Ph.D.; ^{1,2,3} Diego Accorsi, MD; ² David W. McFadden, MD, FACS; ³ J. Alexander Palesty, MD, FACS; ^{1,2} Nilanjana Maulik, Ph.D., FAHA

¹Molecular Cardiology and Angiogenesis Laboratory, ²Dept of Surgery, UConn Health, Farmington, CT; ³The Stanley J.

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Dudrick Department of Surgery, Saint Mary's Hospital, Waterbury, CT

Introduction: We have shown increased survival, and improved heart function, after severe sepsis in thioredoxin-1 overexpressed (Trx-1^{Tg/+}) mice subjected to Cecal Ligation and Puncture procedure (CLP). The engineered exosomes from these mice (Trx-1^{Tg/+Exo}) likely contain potentially beneficial cargo. Preprocedural blockade of innate exosomes with GW4869 has shown survival benefit. The present study explores the ability of Trx-1^{Tg/+Exo} treatment with GW4869 in improving survival post incitement of sepsis.

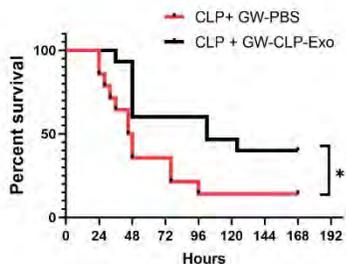
Methods

Exosome Isolation: Trx-1^{Tg/+Exo} was isolated from plasma, collected 8-hours post CLP in Trx-1^{Tg/+} mice.

Experimental Design: 8-12-week-old (Male and Female) CD-1 mice, subjected to severe sepsis by CLP, received either PBS (n=13) or PBS with GW4869 (GWPBS; n=14) or Trx-1^{Tg/+Exo} alone (n=14) or Trx-1^{Tg/+Exo} in combination with GW4869 (GW-Trx-1^{Tg/+Exo}; n=15), 2-3 hours post-CLP. Mice were monitored for the next 7 days for survival.

Results: There was no significant difference in survival between the PBS and Trx-1^{Tg/+Exo} groups at 4 days (23 vs 29%) and 7 days (15 vs 14%) and between PBS and GWPBS groups as well at 4 days (23 vs 14%) and 7 days (15 vs 14%).

However, mice concurrently injected with GW4869 and Trx-1^{Tg/+Exo} (GW-Trx-1^{Tg/+Exo}) exhibit significantly higher survival at 4 and 7 days (60% vs 14% and 40% vs 14%) compared to GWPBS and median survival was 102 vs 46.5 hours in GWPBS (Log-rank p value = 0.02, See Figure).



Conclusions: Therefore, administration of Trx-1 engineered exosomes leads to improved survival in the absence of innate exosomes in a murine severe sepsis model.

A close call - survival after penetrating knife trauma with retrohepatic IVC injury

Alexandra Sanowski-Bell, MD

Frank H. Netter Quinnipiac School of Medicine - Waterbury Hospital

Traumatic inferior vena cava (IVC) injuries have a high mortality rate. The mortality rate of a retrohepatic IVC injury is 71.4% and 68.8% in a suprarenal IVC injury. Factors that influence the mortality of IVC injuries are the mechanism of injury, the anatomic location, associated injuries, as well as physiologic status, such as hypotension, elevated lactate levels, and base deficit.

Our patient is a 25-year-old male with no significant past medical history who presented to our facility as a full trauma after he sustained multiple stab wounds following a domestic dispute. On arrival to the trauma bay, primary and secondary surveys were performed with findings of significant hypotension and stab wounds to the right upper

John D. MacArthur, MD, FACS Trauma Competition

abdominal quadrant, the left upper abdominal quadrant with eviscerated omentum, and the superior aspect of the left anterior thigh. He was emergently taken to the operating room for a trauma laparotomy. Operative findings were a left upper quadrant wound that violated the left diaphragm causing a left pneumothorax, a 2cm gastric laceration on the greater curvature, a 4 right upper quadrant laceration that went through the liver into the gallbladder, a near retrohepatic anterior longitudinal IVC laceration with involvement of the posterior wall, a lateral laceration through the second portion of the duodenum (D2), and a left groin linear laceration that tracked superiorly to the inguinal ligament without any involvement of the underlying vascular structures. Operative interventions performed were a primary repair of right lobe liver laceration, open cholecystectomy, primary repair of D2 laceration, pyloric exclusion with gastro-jejunostomy and Braun entero-enterostomy, primary repair of left diaphragmatic laceration, left surgical chest tube placement, primary repair of greater curvature gastric laceration, primary repair of IVC injury and placement of bovine pericardial patch, left groin primary laceration repair, and esophagogastroduodenoscopy (EGD).

The patient had an uncomplicated postoperative course and was transferred to the regular floor on postoperative day 2 without any pressor requirements. He was started on a diet, which he tolerated and was discharged on postoperative day 8. He was discharged on aspirin 81 mg. The patient was seen in the clinic on postoperative day 15 and did not have any complaints. He was tolerating a diet and had no significant lower extremity swelling. There are also plans for outpatient follow up with our vascular surgery team.

Those Who Build for Us Have Nowhere to Go! – NTDB Analysis of Non-Fatal Construction Injuries

Suraj Panjwani MD^{1,2}, Amanda Fazzalari MD², J Alexander Palesty MD², Mitchell Cahan MD, MBA¹

1 – Department of Surgery, University of Massachusetts Medical School, Worcester, MA

2 - Department of Surgery, St. Mary's Hospital/Trinity Health of New England, Waterbury, CT

Introduction Every seven seconds, somewhere in the US, a worker is injured while on the job. Construction industry provided jobs to 11.2 million people in 2018. However, it is one of the high risk industries that is prone to work related injuries. We sought to evaluate how many patients with construction as an occupation who suffered from non-fatal work related injuries did not have an adequate source of insurance to bear their hospital costs. We then evaluated whether insurance status affected hospital length of stay and discharge disposition.

Methods The National Trauma Data Bank (NTDB) 2012-2016 was queried to identify work related injuries amongst patients that belonged to the construction industry. All patients who were dead on arrival, died in the emergency department or during their hospital stay were excluded. All patients with injury severity score (ISS) > 15 (major trauma) were excluded. Demographic characters such as age, gender, race (white vs. non-white), ethnicity (Hispanic vs.

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non-Hispanic), insurance status (insured vs. self-pay) and US region were considered and differences based on insurance were primarily studied. Multivariate analysis was performed to identify independent predictors of discharge to a rehabilitation facility

Results We identified 176,546 (4%) adult patients who reported a work related injury. Out of these, 30,493 (17%) patients had 'construction' listed as their occupation. Proportion of construction related work injuries increased every year from 2012-2016. After excluding major trauma and fatal injuries, we analyzed 24,600 patients. Twenty-one percent patients paid their hospital costs out of pocket. Apart from being younger, majority of self-pay patients identified themselves as white, Hispanic and belonged to the southern US region compared to insured patients (Table 1.) Length of stay was shorter for self-pay patients compared to insured patients (median 2 vs. 3 days, $p < 0.0001$). Only 2.4% self-pay patients were discharged to a rehabilitation facility compared to nine percent insured patients ($p < 0.0001$). After controlling for all demographic factors including age and sex, we found that self-pay status (OR 0.30, $p < 0.0001$), Hispanic ethnicity (0.83, $p < 0.0001$) and residing in the southern US region (OR 0.79, $p < 0.0001$) were all independent negative factors, and increasing age (1.03, $p < 0.0001$) was an independent positive factor for discharge to a rehabilitation facility.

Conclusion Majority of self-pay patients that suffer from construction related work injuries are Hispanic in ethnicity and are concentrated in the southern US region. Self-pay patients have shorter hospital stays and lesser proportion of discharges to rehabilitation facilities. This we may attribute to their inability for self-affording high hospital and rehabilitation facility costs.

Table 1 – Demographic characteristics based on insurance status.

Variable	Insured	Self-pay	p value
Age- Median (IQR) years	40 (30-51)	37 (28-46)	<0.0001
Gender			0.044
Female	1.53%	1.14%	
Male	98.47%	98.86%	
Ethnicity			<0.001
Non-Hispanic	60.4%	40.7%	
Hispanic	29.3%	54.6%	
Unspecified	10.3%	4.7%	
Race			<0.0001
White	66.6%	51.7%	
Non White	27.6%	43.6%	
Unspecified	5.7%	4.8%	
Region			<0.0001
Midwest	20%	11%	
Northeast	19%	7%	
South	40%	73%	
West	20%	8%	

“The cops didn’t make it any better”: Perspectives on Police and Firearm Carriage among Survivors of Firearm Violence

Kathleen O’Neill MD MHS
Yale School of Medicine

John D. MacArthur, MD, FACS Trauma Competition

Background: Survivors of firearm violence in the United States (US) are twenty times more likely to be re-injured with a firearm and three times more likely to be arrested under a violence or a weapons-related charge compared with the general population. The mechanisms for these outcomes are multifactorial and remain largely understudied in the field of public health. We aimed to examine perspectives on both the criminal justice system and firearm carriage among survivors of firearm violence in order to better understand these poor outcomes.

Methods: We conducted a secondary analysis of qualitative data from a study that examined the post-hospitalization recovery experience of survivors of firearm violence. Using a conceptual framework derived from sociology literature around firearms and police-community relations, two primary coders applied the constant comparative method of qualitative analysis to assign conceptual codes to interview transcript data. A coding team made up of researchers, community members and two former police officers then met to consolidate the codes and arrive at a consensus list of themes with exemplar quotes.

Results: The data set included interviews with 20 survivors of firearm violence that were all Black males, aged 20 to 51 years conducted in 2018 and 2019. The recurring themes around the perceptions of the criminal justice system included: (1) Legal cynicism: “I don’t like police, none of them”; (2) Negative interactions with the police in a medical setting: “The cops didn’t make it any better” and (3) Ambiguity around police presence within the community: “That’s their job to protect me, too.” Themes related to firearm carriage encompassed: (1) The availability of firearms: “Getting a gun is about as easy as buying a pair of sneakers”; (2) Symbolic meaning: “Guns give them courage”; (3) Social meaning: “I just let them know: I have a gun, too” and (4) Strategic meaning: “It’s just for protection” and “You live by the sword, you die by the sword.”

Conclusions: Survivors of firearm violence describe deep distrust for the US criminal justice system, wide availability of firearms, and symbolic, social and strategic meaning to owning a firearm within their communities. The interaction between these themes suggests a mechanism for the increased risk for both firearm injury and arrest for a violence or a weapons charge seen in survivors of firearm violence. Lack of faith in the criminal justice system contributes to survivors of firearm violence deciding to carry a weapon in response to a disrupted sense of safety following injury. The weapon of choice is usually a firearm because they are easily accessible and have cultural value that confers social status and therefore perceived protection from harm. Interventions to decrease firearm violence should address both the cultural value of a firearm as well as the wide availability of firearms. Efforts to improve police relations with Black communities should be a central priority for the public health sector seeking to curb the firearm violence epidemic.

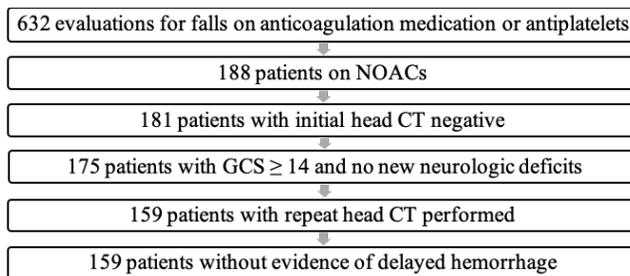
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John D. MacArthur, MD, FACS Trauma Competition

Theme: Perceptions of the criminal justice system	
Theme	Exemplar quote
Legal cynicism	<i>They got the cops out here acting crazy, harassing, beating, killing people... They don't get arrested or nothing... I don't like police, none of them... They go home and have peace while we mourn. (Participant #15)</i>
Negative interactions with police in the medical setting	<i>The cops didn't make it any better. The cops, they got there like at the same time with the ambulance. The cops were standing in the doorway blocking the ambulance, like really about to let me die because I didn't know who shot me. He was like, "I know you know who shot you." (Participant #9)</i> <i>I remember the officer—I won't say his name—he came in the emergency room. I was there and he said, "Hey, hey, are you okay? Are you all right?" And I was like, "Yeah" I said, "I'm all right." They cut all my clothes up and stuff; I was shot with a really big gun. He was like, "Do you know who shot you?" I said, "I have no idea." He said, "Fuck you, I hope you die." That was what he said to me. So, after he left, the doctors went out for a minute, they left me and I left the hospital. (Participant #4)</i>
Ambiguity around police presence within community	<i>When you are doing dirt, you are always going to feel like the police are against you. When you are living a righteous life, you realize that the police is there for you... That was their job... That's their job to protect me too. (Participant #10)</i> <i>Police presence—even though they don't really like the police. Just the presence of the police being there, lets you know that somebody ain't going to start shooting because the police is there. (Participant #4)</i>

CT, if one was performed. Patients were excluded if their initial GCS was less than 14 or if they presented with new neurologic deficits, if there was evidence of traumatic intracranial pathology on initial head CT, if they were taking antiplatelet agents or other anticoagulants in addition to NOACs, or if a repeat head CT was not performed.

Results: We identified 632 patients evaluated by the trauma team from January 2016-December 2018 for falls on anticoagulation or antiplatelet therapy. As seen below, 159 (25%) of patients were included in the retrospective review. Ages ranged from 19-98 years old, with 151 patients over the age of 60. There were 99 females and 60 males included in the sample. Eighty patients were taking apixaban, 29 were taking dabigatran, and 50 were taking rivaroxaban. Ten patients presented with GCS of 14 and the remaining 149 patients had an initial GCS of 15. Twelve patients presented to the emergency room > 6 hours after their fall, and as such only had one head CT. No delayed hemorrhages were detected in this population.



UTILITY OF REPEAT HEAD CT IN DETECTING DELAYED INTRACRANIAL HEMORRHAGE IN FALLS ON NOVEL ORAL ANTICOAGULANTS

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Introduction: One of most common traumatic presentations in the elderly is a ground level fall, which is often complicated by the use of anticoagulation and antiplatelet agents. One of the most feared complications of falls in this population is intracranial hemorrhage (ICH). Delayed ICH (dICH) is defined as the appearance of ICH on a repeat head CT after a negative initial head CT and has been reported at a rate of 0.6-6% in patients taking anticoagulants or antiplatelet agents. Studies have shown that patients on warfarin therapy have a small but persistent rate of dICH. This led to the development of our head injury protocol for patients on warfarin, which requires a head CT 6 hours after presentation. When we first reported our data in 2011, we had a 2.5% rate of dICH for patients on warfarin. As patients on novel oral anticoagulants (NOACs) – edoxaban, dabigatran, rivaroxaban, and apixaban - became more prevalent, we followed the same protocol as data regarding dICH in this population was lacking. In a second review of our data in 2015, the first 50 patients on NOACs had no dICH. The purpose of this study is to determine incidence of dICH in a larger group of patients and to determine if a change to our current protocol would be feasible.

Conclusion: The necessity of a repeat head CT in patients who experience blunt head trauma secondary to fall while taking NOACs is not currently well defined in the literature. Review of the trauma database at a level II trauma center failed to demonstrate any delayed hemorrhage in 159 neurologically intact patients after head strike on NOAC, suggesting that there is no indication for follow-up imaging if the GCS remains above 13. This data, in combination with our previous reviews, allows us to feel confident in eliminating mandatory repeat head CTs in patient on NOACs from our protocol.

Methods: After IRB approval was obtained, a retrospective review of trauma evaluations for falls on NOACs at a Level II Trauma Center from January 2016-December 2018 was conducted. All charts meeting these criteria were reviewed for Glasgow Coma Score (GCS) on arrival, presence of new neurologic deficit as noted in initial trauma note, NOAC use, result of initial head CT and findings on delayed head

Surgical Quality, NSQIP and ERAS



Moderator: Kevin Schuster, MD, MPH, FACS, FCCM, Associate Professor of Surgery (Trauma), Yale School of Medicine, Chair, Connecticut Committee on Trauma, President, Connecticut Surgical Quality Collaborative

Judge: Alan Meinke, MD, FACS

Private Practice, Surgeons of Westport, Westport, CT
Vice Chairman, Department of Surgery and Director of Surgical Quality, Nuvance Health, Norwalk Hospital
Past President, CT Surgical Quality Collaborative & CTACSPA

Surgical Quality, NSQIP and ERAS

The Use Of 0.05% Chlorhexidine Significantly Reduces the Rate Of Surgical Site Infections in Elective Colon Cases

Vikram Bhatt, MD, Nicholas Druar, MD, MPH, Philip Corvo, MD, MA, FACS
Saint Mary's Hospital

Introduction: Surgical site infections remain a major source of morbidity for all surgical procedures. Surgical site irrigation is a standard practice in many procedures to prevent infections postoperatively. This is particularly true in open bowel cases where there is concern for contamination to the surgical field from open bowel. Chlorhexidine 0.05% (CHG) represents a new option for irrigation of surgical incisions prior to closure. Here we present preliminary data of an intervention study aimed at reducing surgical site infections in surgical colon resections.

Method(s): Retrospective chart review of consecutive cases at a single institution prior to and after implementation of the chlorhexidine irrigation was conducted. Cases were included regardless of the surgeon operating. Charts were reviewed for documentation of surgical site infection within 30 days following surgery. Documentation of surgical site infection or cellulitis was considered to be evidence of irrigation failure. Emergent cases were not included in the study. Data was analyzed using Fisher exact statistic.

Results: A total of 80 patients were included in the study, 30 patients in the chlorhexidine group and 50 in the standard treatment group. There was a total of 0 infections in the chlorhexidine group and 7 in the standard treatment group. Fisher exact analysis showed there was a statistically significant association between chlorhexidine use and surgical site infection, $p=0.04$.

Conclusion(s): The implementation of chlorhexidine irrigation for wound irrigation statistically reduced the incidence of surgical site infections at a single institution in consecutive elective colon cases. While this represents preliminary data further analysis is warranted to help

elucidate the true reduction and understand factors associated with surgical site infection.

	Surgical Site Infection	No Surgical Site infection	
Chlorhexidine	0	30	$p=0.04$
Standard Treatment	7	43	
Total	7	73	80

Evolving Role of Urinary Catheters in Elective Colon and Rectal Resection

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Introduction: The duration of urinary catheterization following colorectal surgery and its impact on urinary dysfunction has been debated throughout the years. With the evolution of Enhanced-Recovery-After-Surgery protocols, which promotes decreased hospital stay and cost with hastened return to baseline function, early urinary catheter removal has been incentivized. Current guidelines recommend catheter removal within 24 hours following elective colon and upper rectal surgery. We hypothesize that urinary catheter removal can occur safely at even shorter post-operative intervals.

Methods: We conducted a retrospective analysis of patients undergoing elective colorectal resection enrolled in the Enhanced-Recovery-After-Surgery protocol at a multihospital system from 2018 to 2019. Patients were characterized based on duration of catheterization. Methods of comparison include Chi-square test of proportions and a Wilcoxon rank sum test.

Results: A total of 641 patients were included in analysis: 7.4% (2) patients experienced urinary retention without catheter placement, 7.2% (18) when catheters were removed at procedure completion, 4.7% (10) when catheters were removed less than 24 hours postoperatively, and 3.3% (5) when catheters were removed after 24 hours ($p=.301$). An increased incidence of urinary tract infections 3.3% was observed in those with catheterization time greater than 24 hours. Overall, shorter duration of catheterization was associated with decreased length of stay.

Conclusion: The use of urinary catheters for elective colon resection is evolving. Decreasing or eliminating urinary catheters may lead to fewer urinary tract infections and a lower length of stay without a significant increase in urinary retention.

The Use Of 0.05% Chlorhexidine Does Not Increase Surgical Site Infections In Elective Hip And Knee Replacements Compared To Standard Irrigation

Vikram Bhatt, MD, Nicholas Druar, MD, MPH, Philip Corvo, MD, MA, FACS
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Introduction: Surgical site infections remain a major source of morbidity for all surgical procedures. Surgical site irrigation is a standard practice in many procedures to prevent infections postoperatively. Standard wound irrigation includes either normal saline or antibiotic irrigation to prevent surgical site infection. Chlorhexidine 0.05% (CHG) represents a theoretically viable alternative for wound irrigation in the prevention of surgical site infections. Here we present an intervention study where CHG was implemented in wound irrigation for elective total hip and knees.

Method(s): Retrospective chart review of consecutive cases at a single institution prior to and after implementation of the chlorhexidine irrigation was conducted. Charts were reviewed for documentation of surgical site infection within 30 days following surgery. Documentation of surgical site infection or cellulitis was considered to be evidence of irrigation failure. Emergent cases were not included in the study. Data was analyzed using Fisher exact statistic.

Results: A total of 300 patients were included in the study, 100 patients in the chlorhexidine group and 200 in the standard treatment group. There was a total of 1 infections in the chlorhexidine group and 2 in the standard treatment group. Fisher exact analysis showed there was no significant association between chlorhexidine use and surgical site infection $X^2(1, N=300) = 0.38, p=0.54$.

Conclusion(s): The implementation of chlorhexidine irrigation for wound irrigation did not significantly increase the risk of surgical site infections in elective total hip and knee replacements compared to standard antibiotic irrigation. The use of chlorhexidine represents a safe alternative to standard irrigation.

	Surgical Site Infection	No Surgical Site infection	
Chlorhexidine	1	99	p=0.54
Standard Treatment	2	198	
Total	3	297	300

Longer Operative Times for Claudicants Undergoing Endovascular Revascularization Procedures are Associated with an Increase in Adverse Outcomes

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Introduction: Historically, longer operative times for open infrainguinal revascularization have been associated with higher perioperative complication rates, particularly with respect to surgical site infections and extended lengths of stay. We sought to determine if an association existed between length of procedure and morbidity and or mortality after elective lower extremity endovascular interventions performed for relief of claudication.

Methods: We conducted a cross-sectional retrospective analysis of the targeted Lower Extremity NSQIP database

for 2012 to 2017. We included patients who were either asymptomatic or presented with claudication. Primary outcome was a severe adverse outcome, which included one or more of the following: death, myocardial infarction (MI), amputation, and bleeding. We performed a univariate logistic regression analysis to determine if patients with longer operative time had higher odds of having a severe adverse outcome. We performed a multivariate analysis utilizing a logistic regression model to identify variables predictive of the outcome of interest.

Results: A total of 4,081 patients were included. There were 3,478 patients with claudication and 603 who were asymptomatic; patients with unknown disease or critical limb ischemia were excluded. The number of patients with interventions in the femoropopliteal region was 3,646 (89.3%); those with interventions in the tibial region numbered 406(10.0%). Median operative time for all procedures was 84 minutes. On univariate analysis, operative time >121 minutes was a significant predictor of a severe adverse outcome (p<0.0001). We utilized a forward selection method to identify confounders, and subsequently performed multivariate logistic regression. Even after controlling for confounders, operative time >121 minutes remained a significant predictor of severe adverse outcomes.

Conclusions: In patients with claudication or asymptomatic, prolonged operative times for elective endovascular procedures are associated with poor outcomes. After controlling for confounders, we demonstrate a statistically significant association between procedure length and adverse outcomes. Specifically, operating times 2 hours had significantly higher odds of experiencing a death, MI, amputation, or bleeding. Consequently, vascular surgeons should weigh the benefits and types of endovascular interventions against the risks of prolonged procedures performed solely for the relief or improvement in non-limb threatening symptoms.

Outcomes Following Elective Minimally Invasive Bariatric Surgery in High Risk Patients: A MBSAQIP Analysis

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Introduction: Bariatric surgery has proven to be an important modality in treating obesity related comorbidities. There has been a rise in the number of bariatric surgeries performed every year, creating a cohort of patients undergoing elective procedures who are at a higher risk for postoperative adverse outcomes due to their medical comorbidities. The postoperative surgical outcomes for this cohort are currently unclear.

Methods: Patients who underwent elective minimally invasive sleeve gastrectomy and Roux-en-Y-gastric bypass from 2015-2018 were identified using the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database. Patients were grouped based on their American Society of Anesthesiologists (ASA) classification and their postoperative outcomes were analyzed.

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Results: Majority (70%) of patients were classified as ASA 3 and this group was adopted as the reference population. ASA 4 patients were considered high risk and referred to as the study population. A total of 22,135 (4%/year) were classified as ASA 4. In addition to having increased comorbidities, this group was significantly older, had a higher BMI, higher incidences of RYGB, and conversion to open procedures. Multivariate analysis demonstrated an increase in 30-day morbidity, cardiac arrest, myocardial infarction, unplanned intubation and ICU admission, renal complications, need for transfusion, 30-day- readmission, re-operation and intervention (Table 1).

Conclusion: Elective bariatric surgery is performed in 4 % high-risk patients every year. This population is at a significantly increased risk for postoperative adverse outcomes warranting closer postoperative monitoring.

Table1. Multivariate analysis - Postoperative outcomes of ASA 4 patients expressed as an odds ratio (95% CI)

Postoperative Complication	Odds Ratio	95% CI	P value
30-day mortality	1.283	0.984-1.673	0.065
30-day morbidity	1.442	1.334-1.559	<0.001*
30-day readmission	1.250	1.176-1.328	<0.001*
30-day reoperation	1.339	1.208-1.484	<0.001*
30- day intervention	1.144	1.029-1.271	0.013*
Cardiac arrest requiring CPR	1.802	1.239-2.62	0.002*
Myocardial infarction	1.64	1.039-2.589	0.034*
Unplanned intubation	1.740	1.412-2.145	<0.001*
Unplanned ICU admission	1.552	1.397-1.724	<0.001*
Acute Renal Failure	1.694	1.276-2.248	<0.001*
Renal insufficiency	1.876	1.411-2.495	<0.001*
Bleeding requiring transfusion	1.412	1.236-1.613	<0.001*

*P < 0.05 indicating significantly significant variable

Trends in Bowel Preparation in Patients Undergoing Elective Colectomy: A lack of standard of care in minority populations

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Introduction: Mechanical bowel preparation (MBP) and antibiotic bowel preparation (ABP) prior to colorectal surgery has been extensively investigated with noted benefits including reduction of surgical site infections, anastomotic leaks, and post-operative ileus. The ASCRS Practice Guidelines support both MBP and ABP for all elective colorectal surgeries as the standard of care. Nonetheless, many colectomies are still performed with a single type (ABP or MBP) or no bowel preparation at all. The objectives of this study were to 1) assess trends in bowel preparation from 2012 to 2018 by type (i.e. none,

ABP only, MBP only, both), and 2) assess patient-related factors predictive of bowel preparation use or lack thereof.

Methods: We conducted a retrospective analysis of the targeted colectomy subset of the National Surgical Quality Improvement Program database for 2012 to 2018. We excluded emergent operations, patients greater than 90 years, and those with missing or unknown bowel preparation. A time trend analysis was performed for ABP alone, MBP alone, dual preparation, or none. We used univariate logistic regression to determine significant predictors of bowel preparation among patients who had any bowel prep and those who had none. Subsequently, we used multivariate logistic regression to determine the independent effect of relevant variables on any bowel preparation.

Results: After applying exclusion and inclusion criteria, 145,201 patients were used for analysis; 62,701 (43.2%) had dual bowel preparation, 41,677 (28.7%) had MBP or ABP, and 40,823 (28.1%) had no bowel preparation. The time trend analysis demonstrated statistically significant linear trends for all groups from 2012 to 2018. The rates of dual preparation and ABP alone increased, while rates of MBP alone and no bowel preparation decreased. On univariate analysis, lower BMI (p<0.001), female sex (p<0.0001), African American race (p<0.0001), Hispanic ethnicity (p<0.0001), and abnormal kidney function (p<0.0001) were identified as significant predictors of a lack of bowel preparation. Multivariate logistic regression confirmed these predictors were consistently significant after controlling for confounding factors (Table).

Conclusions: Our analyses demonstrated a significant linear increase in dual ABP and MBP and a reciprocal decline in the group with no bowel preparation from 2012 to 2018. These trends are encouraging as there is strong evidence that bowel preparation can prevent negative post-operative outcomes. However, important disparities remain, particularly among minority populations, who are significantly less likely to complete the standard of care for bowel preparation. Further studies are needed to determine the best approach to increasing bowel preparation in these populations.

The Effects of a Preoperative Optimization Program on Surgical Cancellation Rates

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Introduction: Unplanned perioperative delays and cancellations increase hospital costs and may be the result of poor preoperative optimization of medically complex patients. Preoperative clinics afford a dedicated opportunity to reduce morbidity and mortality through optimization of medical comorbidities. The purpose of this study is to evaluate the impact of our institution’s Preoperative Optimization Program (POP) on day of surgery (DOS) cancellation rates.

Methods: The authors conducted a retrospective data analysis of all elective surgical procedures with planned same day inpatient admission at our institution from

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October 2018 to January 2020. Primary outcome was defined as all-cause DOS cancellations comparing patients who participated in POP clinic and those who did not.

Results: A total of 5352 cases were included. Of those cases, 2934 patients attended the POP clinic prior to surgery. Initially, only 39% of patients were seen in POP, but with increasing surgeon acceptance, 69% of patients are now seen. The total number of cancellations among patients who underwent POP was 0.55% (16 of 2934) versus 12.4% (300 of 2418) in the non-POP group (p -value < 0.00001). POP patients constituted only 0.3% of all-cause DOS cancellations compared to 5.6% for the non-optimized group. DOS cancellations for POP patients were mainly attributed to acute change in status or noncompliance with preoperative instructions whereas incomplete workups were a significant cause in the non-optimized population.

Conclusions: Formalized preoperative optimization programs can significantly decrease day of surgery cancellations rates.

The Impacts of COVID-19 on Surgical Resident Education

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Introduction: This study aims to identify the effects of the COVID-19 pandemic on surgical resident training and education at Danbury Hospital.

Methods: We conducted an observational study at a Western Connecticut hospital heavily affected by the first wave of the COVID-19 pandemic to assess its effects on surgical residents, focusing on surgical education, clinical experience, and operative skills development. Objective data was available through recorded work hours, case logs, and formal didactics. In addition, we created an anonymous survey to assess resident perception of their residency experience during the pandemic.

Results: There are 22 surgical residents at our institution; all were included in the study. Resident weekly duty hours decreased by 23.9 hours with the majority of clinical time redirected to caring for COVID-19 patients. Independent studying increased by 1.6 hours (26.2%) while weekly didactics decreased by 2.1 hours (35.6%). The operative volume per resident decreased by 65.7% from 35.0 to 12.0 cases for the period of interest, with a disproportionately high effect on junior residents, who experienced a 76.2% decrease. Unsurprisingly, 70% of residents reported a negative effect of the pandemic on their surgical skills.

Conclusions: During the first wave of the COVID-19 pandemic, surgical residents' usual workflows changed dramatically, as much of their time was dedicated to the critical care of patients with COVID-19. However, the consequent opportunity cost was to surgery-specific training; there was a significant decrease in operative cases and time spent in surgical didactics, along with elevated concern about overall preparedness for their intended career.

Medical Student Research

Moderator and Judge: Philip Corvo, MD, MA, FACS
Chairman of Surgery, The Stanley J. Dudrick
Department Surgery and Director of Surgical Critical
Care at Saint Mary's Hospital

The State of Racial and Ethnic Disparities in Primary Total Hip Arthroplasty: Analysis of a National Database from 2011 – 2017

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¹Frank H. Netter SOM ²Univ. of Connecticut SOM ³Baylor University Dept of Orthopedic Surg.

Background: The objective of this study is to provide contemporary data on the racial and ethnic disparities in total hip arthroplasty (THA) among the major minority groups in the United States.

Methods: 134,961 primary, elective THAs captured in the 2011-2017 American College of Surgeons National Surgical Quality Improvement Program were retrospectively reviewed. Five minority racial and ethnic groups (Black/African American, Hispanic/Latino, Asian, American Indian/Alaska Native, and Native Hawaiian/Pacific Islander) were compared to white race. The primary outcomes were in the differences in demographic, disease-burden, perioperative characteristics, THA utilization, and length of stay (LOS) and 30-day postoperative outcomes (readmission, reoperation, and complications).

Results: All groups except Asians were more likely to be younger, obese and smoke tobacco compared to whites ($p < 0.0001$). There were higher rates of non-primary osteoarthritis, procedure length exceeding 100 minutes, and comorbidity burden among all minority groups. 86% of THAs were performed in white patients. All groups, except Hawaiians/Pacific Islanders, were more likely to require LOS > 2 days. Blacks were more likely develop any complication (OR 1.15, 95% CI 1.01–1.30) and Hispanics/Latinos were more likely to develop surgical complications (OR 1.28, 95% CI 1.0–1.64). Asians were more likely to undergo reoperations (OR 1.191, 95% CI 1.23–2.97). No differences were observed in readmission or mortality rates between the different groups

Conclusion: Despite the passage of the Affordable Care Act in 2010, significant disparities have persisted among minority groups with respect to disease burden, THA utilization, LOS, and complications. Blacks and Hispanics/Latinos appear to be the most impacted by these disparities.

Region, Size, and Teaching-Status: Identifying Hospital-Level Factors that Impact Surgery Unit Patient Safety Culture

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Introduction: Research on patient safety has grown since the IOM's 2000 report on medical errors.¹ In response, the Agency for Healthcare Research and Quality (AHRQ) developed the Hospital Survey on Patient Safety (HSOPS™) to study safety culture. While hundreds of U.S. hospitals now complete the survey, the data and results tabulated by the AHRQ are conditioned to remain secret. While not disclosing results supports honesty in reporting, transparency in reporting would provide an incentive for hospitals to improve low scores.² The purpose of this research is to understand whether hospital characteristics such as regional location, number of beds, and teaching status significantly influences the Hospital Survey on Patient Safety (HSOPS™) score for surgery units. Secondary aims are to identify whether institution-level characteristics affect a surgery unit's likelihood to see change in HSOPS™ scores over time, specifically in the New England region.

Method(s): The HSOPS™ is a well-validated 42-item questionnaire administered to hospital employees with 12 distinct subscales.³ IBM SPSS v. 26.0 was used to run mixed model regression analyses. The dependent variables are the composite of the percent positive of the 12 subscales (Comp %+) for patient safety. Independent variables included teaching-status, number of beds (size), region, and year. HSOPS™ is reported across all hospital units. This analysis focused on the HSOPS™ scores for surgical units.

Results: There were 86,184 surgery unit respondents from 2010-2016, 90.1% of whom described themselves as being in a "patient-facing" role. National mixed model regression analyses showed that hospitals' Comp %+ significantly differed on the basis of size (number of beds), region, and teaching status. Significant change in Comp %+ was noted to occur over time, however, these changes are not attributable to an interaction with any of the tested hospital-level factors. When looking at national data, Comp %+ significantly differed on the basis of teaching status with the surgery units of teaching hospitals having a lower Comp %+ than non-teaching hospitals (49.4% vs 49.8%, $p < 0.001$). However, when looking solely at responses from New England surgery units, teaching hospitals had significantly higher scores for patient safety than non-teaching hospitals (51.2% vs. 48.7%, $p < 0.001$). Additionally, analyses of responses from surgery units specific to New England showed that the number of beds in a hospital lost significance as a predictor of HSOPS™ score.

Conclusion(s): The significant regional differences in patient safety culture on surgery units calls for further exploration of whether state-level legislative and/or regulatory directives contribute to differences in hospital safety culture. The finding that Comp %+ decreases as the number of beds increases and that teaching-status affects patient safety culture illustrates how HSOPS™ data can facilitate transparency to healthcare consumers and incentivize action by underperforming hospitals. Importantly, the differences between the national findings and those specific to the New England region pertaining to number of beds and teaching status can serve as a valuable source from which to learn how New England hospitals' surgery units appear to be immune to the trend of inverse HSOPS scores and number of beds and why teaching

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hospitals actually have higher scores than non-teaching hospitals, unlike in other regions of the country. To assess the clinical relevance of small, but statistically significant, differences, future research should aim to expand beyond measures of patient safety culture and analyze concrete patient safety data.

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Disclosure: The SOPS™ data used in this analysis was provided by the SOPS Database. The SOPS Database is funded by the U.S. Agency for Healthcare Research and Quality (AHRQ) and administered by WeStat under Contract Number HHSP2332015000261 / HHSP23337004T.

Clinical Oncology

Moderator: Christine Van Cott, MD, FACS,
Hartford HealthCare Group/ St. Vincent's Medical
Center Campus, Surgical Clerkship Director and
Professor of Surgery, Frank H. Netter MD School of
Medicine, Quinnipiac University, Chair, Connecticut
Commission on Cancer

Judge:
Lindsay Bliss, MD, MPH
Hartford HealthCare Medical Group

Lupus Mastitis and Breast Asymmetry: Clinical Resemblance to Breast Carcinoma

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FACS¹
¹Stamford Hospital

Introduction: Lupus mastitis (LM) is form of lupus
panniculitis characterized by subcutaneous inflammation of
the breasts. It is a rare disease that can occur independently
or as a clinicopathologic variant of systemic lupus
erythematosus (SLE). Since its first description in 1883, less
than 40 cases have been reported in the literature.¹⁻³
Patients present with single or multiple tender breast
nodules, plaques, induration, and lipoatrophy.⁴ Histologic
findings commonly include a pattern of plasma cells,
hyaline fat necrosis, lymphocytic lobular panniculitis with
germinal centers, as well as lymphocytic vasculitis.⁵ In this
case report, we present a unique patient with SLE who was
referred for a breast surgical consultation after progressive
and disproportionate loss of volume in both breasts
resulting in breast asymmetry.

Case: A 47-year-old female with a longstanding history of
systemic lupus erythematosus presented for a breast surgical
consultation with a concern that her right breast had
decreased in size over the preceding six months. On clinical
exam, the right breast was mildly tender to palpation and
was smaller than the left. There was diffuse nodularity and
bilateral inframammary fold ridges with no palpable
masses or adenopathy noted. The patient had previously
undergone breast imaging for clinically palpable masses
and biopsies were negative for atypia and malignancy.
Histologic sections demonstrated extensive fat necrosis and
diffuse infiltration of adipose tissue by lymphocytes,
histiocytes, and plasma cells consistent with lobular
panniculitis. However, given the patient's new breast
asymmetry, she was again referred for imaging. On
bilateral diagnostic mammogram, there were no suspicious
masses or microcalcifications identified on either side
(Figure 1). On MRI, there were benign areas of
enhancement and enlarged bilateral axillary lymph nodes,
which were thought to represent lupus adenopathy. Her
new onset volume loss and breast asymmetry was believed
to be secondary to her underlying SLE. Although
infiltrating lobular carcinoma could not be excluded,
avoidance of additional biopsies to decrease tissue trauma
and further fat necrosis was desired. A conservative

approach with a six-month follow up clinical examination,
ultrasound, and MRI was therefore agreed upon.

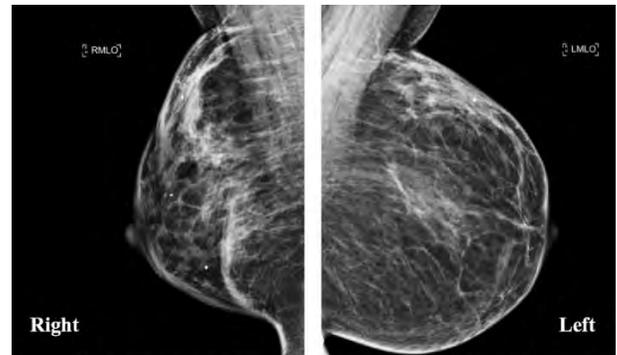


Figure 1. Mammogram showing global asymmetry in the right breast; Note the smaller size of the right breast compared to the left breast.

Discussion: In a patient presenting with nodularity or
breast asymmetry, recognition of lupus mastitis and the
various manifestations of this disease is essential for proper
management. Clinical exam findings on initial presentation
are often concerning for malignancy and must be
investigated further. Diagnostic imaging is usually
indeterminate, necessitating biopsy and pathologic
analysis. Although complete surgical excision may be
beneficial in certain patients refractory to medication,⁶
medical therapy alone can successfully treat the symptoms
of LM. Avoiding unnecessary interventions and further
invasive procedures is advised as this may precipitate an
additional flare of the lupus mastitis.⁷

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Splenic Cystic Mass: A Rare Presentation for Pseudomyxoma Peritonei

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Introduction: Pseudomyxoma peritonei (PMP) is an
uncommon clinical diagnosis, with its incidence ranging
from approximately 1 to 2 million cases per year.¹² Typically,
the most common etiology for PMP is a perforated

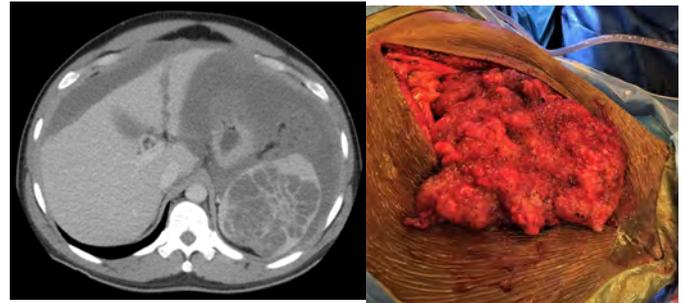
Wednesday – October 28th

Clinical Oncology

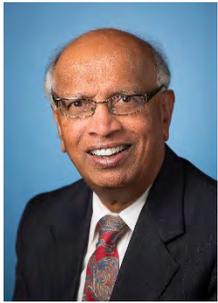
appendiceal epithelial tumor, typically mucinous in nature.² This entity is considered benign, but its behavior is closer to malignant, progressing in some cases to severe abdominal distension with diffuse involvement of the abdominal cavity. In a recent case series, it has been shown that the most common presentations include: acute appendicitis (27%), followed by worsening abdominal distension (23%), and finally, most commonly, new onset hernia (13%).³ It is rare to have this disease present primarily with left upper quadrant pain and cystic splenic metastasis. Only a handful of cases have been described as having a splenic component at the time of diagnosis.⁴ The standard of care for PMP is cytoreductive surgery (CRS) with heated intraperitoneal chemotherapy (HIPEC). A recent large, multicenter retrospective study showed approximately a 63% 10-year survival rate in those that received definitive CRS with HIPEC.⁵

Case Presentation: A 35-year-old male without any significant past medical or surgical history presented to Stamford Hospital with approximately 5 weeks of worsening abdominal distention and left upper quadrant abdominal pain. A CT of the abdomen and pelvis showed that there was a large splenic mass associated with a large amount of ascites with a proteinaceous component. Additionally, there was also peritoneal seeding and scalloping of the liver, suggestive of metastases. Follow up pelvic and abdominal MRI showed that there was diffuse abdominal seeding that included the spleen, liver, peritoneum, and omentum. The patient went for paracentesis and splenic biopsy under CT guidance. The CT guided biopsy of the spleen came back negative for malignant cells and the paracentesis showed an exudative effusion suggestive of malignancy. Given these findings, the decision was made to schedule the patient for exploratory laparoscopy, with possible appendectomy, to look for a primary source for the disseminated disease. On laparoscopy, there was found to be significant ascites and diffuse peritoneal, omental, and intestinal metastases, which were biopsied and sent for frozen section. Pathology confirmed low grade mucinous neoplasm, and the decision was made to remove the appendix at the time of operation to obtain an etiology. Pathology confirmed that the appendix did, in fact, contain a low-grade mucinous tumor that appeared to have perforated. At this point, the operation was concluded. The patient was discussed at a multidisciplinary tumor board and the decision was made to attempt CRS with HIPEC. Approximately one month following the appendectomy, the patient underwent exploratory laparotomy with CRS with the hope of HIPEC. The disease, however, was deemed too extensive at the time of operation to make CRS size criteria of 2mm feasible, due to gross involvement of the liver, entire stomach, pelvic metastases, and multiple sites of extensive colonic and small bowel involvement. Omentectomy was performed, resecting omental metastasis off the large bowel. A splenic laceration warranted splenectomy. Continuing CRS, HIPEC was not deemed to be worthwhile, and the case was aborted. The patient stayed in the hospital for approximately one week for monitoring. His course was complicated by postoperative fevers that resolved. Finally, he received his appropriate vaccinations, and was discharged home with close follow up.

Conclusion: This is a rare presentation of a patient with appendiceal mucinous neoplasm that ruptured, which led to severe, advanced pseudomyxoma peritonei. The patient never exhibited signs or symptoms consistent with appendicitis, but instead presented with worsening abdominal distension and left upper quadrant tenderness. This case highlights the wide spectrum of clinical presentations for pseudomyxoma peritonei as well as the complex, multidisciplinary surgical and oncologic approach to the disease.



Sultan Ahamed, MD, MBA, FACS General Surgery Competition



Sultan Ahamed, MD, MBA, FACS, was graduated from the University of Madras, India in 1966. He completed his residency training at the Hospital of Saint Raphael, Yale University in New Haven, CT. Dr. Ahamed served as President and Chairman of medical professional liability insurance provider CMIC Group from 1993-2017. He is also

the past President of the New London County Medical Association and Connecticut State Medical Society. Dr. Ahamed also served as Chairman of the Board of the Physicians Insurance Association of America.

Moderator: Jillian L. Fortier, MD, Assistant Professor of Surgery, UConn Health

Judge: Rekha Singh, MD, FACS, Chief, Surgery, The Hospital of Central Connecticut

Foramen of Winslow Hernia: A Rare Cause of Bowel Obstruction

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Waterbury Hospital

Introduction: Internal hernias are a rare etiology of intestinal obstruction accounting for only 0.2-0.9%. Due to the risk of a closed-loop obstruction resulting in compromise of the blood supply, failure to identify and alleviate the obstruction can result in as high as a 49% mortality rate. Foramen of Winslow hernias account for 8% of all internal hernias, and although rare, should be recognized in a timely manner to avoid increased mortality. To follow is a case report demonstrating a bowel obstruction caused by herniation of the cecum into the foramen of Winslow that was operatively managed.

Case: A 46 year old women presented to the emergency department with a one day history of acute onset epigastric pain associated with nausea, vomiting and obstipation. Her vitals were within normal limits, and her labs were unremarkable, as was her chest x-ray. A CT was obtained and demonstrated an abnormally positioned cecum high in the epigastrium herniating through the foramen of Winslow into the lesser sac. The cecum was moderately dilated, with a transverse diameter of 6.6 cm. The terminal ileum was additionally observed herniating into the lesser sac but no upstream small bowel obstruction resulted. With concern for an internal hernia, and subjectively increasing abdominal pain and distention, the decision was made to proceed to the operating room.

Intraoperatively, the cecum was found to be herniated through the foramen of Winslow. Laparoscopic reduction of the hernia was attempted, but unsuccessful. Conversion to an open operation was conducted, and with gentle bowel traction, the hernia was reduced. The cecum was found to be redundant, therefore to prevent future potential herniation or cecal volvulus, an ileocectomy was conducted. Prior to discharge, the patient had return of bowel function and resolution of her obstructive symptoms.

Discussion: Internal hernias are caused by a protrusion of the viscera through the peritoneum or mesentery and into a compartment in the abdominal cavity. The epiploic foramen of Winslow is an orifice that allows communication between the lesser and the greater sac, anterior to the IVC and posterior to the hepatoduodenal ligament. Herniation is rare due to the normal architecture of the internal organs that prevents them from entering into this orifice and the normal intra-abdominal pressure that keeps the peritoneal orifice closed. There are three main mechanisms that continue to herniation: excessive viscera mobility, abnormal enlargement of the foramen and changes in the intra-abdominal pressure.

CT imaging remains the diagnostic study of choice. Findings include presence of mesenteric adipose tissues and intestinal loops behind the hepatic pedicle, abnormal localization of the cecum, gas and/or fluid in the lesser sac, evidence of bowel obstruction in the lesser sac, associated with mesenteric vessels stretching anteriorly to the inferior vena cava and posteriorly to the portal vein, and displacement of the stomach anteriorly and laterally.

Approaches to resolution include reduction of the herniated organs via gentle traction, opening the lesser sac via a wide Kocher's maneuver, or opening of the gastrohepatic ligament. An open approach remains dominant, but a laparoscopic approach has been gaining utilization.

Conclusion: Herniation into the foramen of Winslow is not a common occurrence, but once confirmed on imaging, must be corrected with prompt surgical intervention in order to reduce mortality.

Immediate Postoperative Outcomes following Elective Outpatient Robotic Assisted Surgery: Early Results from a Community Outpatient Surgery Center

Santosh Swaminathan MD, Suraj J. Panjwani MD,
J.Alexander Palesty MD FACS
Saint Mary's Hospital

Introduction: There is a growing impetus for outpatient same day surgery. Some Robotic Assisted Surgical (RAS) procedures that were mainly carried out at major hospitals are now increasingly being performed at ambulatory surgery centers. The worrisome factors in such a setting would be need for conversion to an open procedure and unpleasant post anesthesia recovery resulting in transfer to an inpatient setting/emergency room (ER) for further management. We evaluated the incidence of such above-

mentioned outcomes from our early experience with outpatient RAS procedures performed at an ambulatory surgery center.

Methods: A retrospective review of our ambulatory surgery center patient database was performed. We included all RAS procedures performed between Dec 2017 (first case) and July 2019. Preoperative patient demographics, comorbidities, perioperative nerve blocks, intraoperative details and 2-week postoperative outcomes were analyzed.

Results: One hundred and thirty-three patients were identified. Procedures performed included RAS inguinal, ventral, incisional hernia repairs and cholecystectomy. The incidence of transfer to the hospital/ER was 3% (4 patients). Reasons for transfer included acute hypoxic respiratory failure (2), inadequate pain control (1) and acute blood loss anemia requiring transfusion (1). There were no conversions to an open approach and none underwent re-operation or additional intervention. Two weeks following the procedure, readmission rate was 5% (7 patients) and reoperation/intervention rate remained zero (See Table 1.)

Conclusion: Our initial experience performing outpatient elective RAS procedures at an ambulatory surgery center depicted a low incidence of transfer to inpatient facility and nil conversion to open procedures, suggesting that this is a safe approach.

most cases of residual gallstones occur due to an incomplete removal of the gallbladder.

Case Description: A 27-year-old obese female with a history of cholelithiasis presented to the Emergency Department (ED) with one week of biliary colic. She was treated for pain and nausea and discharged with an order for outpatient sonography. Her ultrasound showed a contracted gallbladder and cholelithiasis but no wall thickening or pericholecystic fluid, and her common bile duct (CBD) was measured at 5.8 mm and observed to be free of stones. One month later, she presented again with symptomatic cholelithiasis and no evidence of acute cholecystitis, and her CBD measured 7 mm. She was managed symptomatically and referred to the surgery service. Five days later she underwent a successful laparoscopic cholecystectomy, during which the cystic duct was triply clipped and divided close to the clip at the gallbladder. She followed up in the general surgery clinic on post-operative day 11 with no major complaints. On post-operative day 21, she returned to the ED with right upper quadrant pain and nausea. Magnetic Resonance Cholangiopancreatogram showed a 7.9 mm filling defect in the distal cystic duct remnant with proximal cystic duct dilation, representing a retained stone (Image). The next day, she underwent successful laparoscopic resection of the cystic duct remnant and retained calculus. She followed up two weeks later with no complaints.

Table 1. Table showing preoperative and postoperative outcomes following outpatient robotic surgery

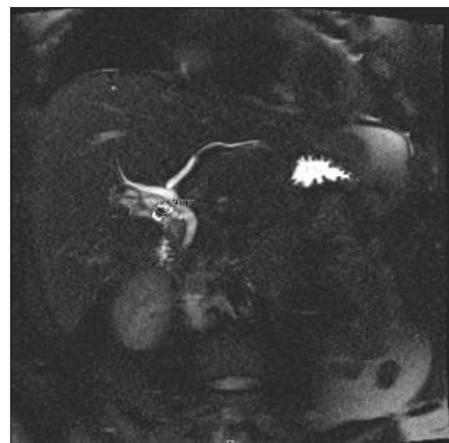
VARIABLE	DESCRIPTION
Average age of the patients	52.3 years
Male gender	66.2%
Average BMI (kg/sq.m)	30.1
Average ASA status	1.92
Smoker	43.6%
Regional nerve block	54.1%
Conversion to open procedure	0%
PACU to ER transfer	3% (4 patients)
14-day Readmission rate	5% (7 patients)

Conclusion: In open surgery, intraoperative steps can be taken to reduce the likelihood of remnant cystic duct calculi; however, laparoscopy has changed the paradigm of dissecting the cystic duct at the CBD junction. There are no clear laparoscopic recommendations to prevent retained stones, and, unless there is known choledocholithiasis, the effort to milk the cystic duct is not always made. During this patient’s cholecystectomy, no stones were felt in the cystic duct, so it was not expressly milked towards the gallbladder prior to clipping and transection. Future research should measure the incidence of retained calculi and the associated morbidity, and minimally invasive surgeons should develop techniques to mitigate the risk.

Cystic Duct Remnant Calculus as a Cause of Post-Cholecystectomy Syndrome

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Frank H. Netter MD School of Medicine at Quinnipiac University

Introduction: Post-cholecystectomy syndrome, biliary-type pain after removal of the gallbladder, is a known occurrence following cholecystectomy, described as early as 1947. Many possible etiologies have been described, but its true incidence has not yet been pinpointed and is currently estimated as between 10 and 41%. One explanation is Cystic Duct Stump Syndrome, disease in a cystic duct remnant greater than one centimeter in length. In many of these cases, however, the pain is often attributed to causes other than the stump. Residual gallstones following incomplete gallbladder removal is another well-known etiology, but



Overexpression of Pellino-1 in Cardiomyocytes Limits Systemic Inflammation, Cardiac Cell Death and Preserves Cardiac Function in a Murine Sepsis Model

Wednesday – October 28th

Sultan Ahamed, MD, MBA, FACS
General Surgery Competition

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Thirunavukkarasu, Ph.D., ^{1,2,3}Diego Accorsi, MD,
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Introduction: Sepsis-related mortality remains a significant problem in the intensive care unit till today. Nearly a quarter of the deaths in people with heart failure is caused by sepsis. We have observed overexpression of mammalian Pellino-1 (Peli1), an E3 ubiquitin ligase, causes inhibition of apoptosis, oxidative stress, and preservation of cardiac function in a myocardial infarction model. Therefore, in the present study, we explored the possibility to impede sepsis mediated heart failure by overexpressing Peli1 (AMPEL1^{Tg/+}) in a mouse model of severe sepsis.

Methods: C57BL/6J (WT) and AMPEL1^{Tg/+} mice were divided into Wild-type sham (WTS), Wild-type Cecal Ligation and Puncture (WTCLP), AMPEL1^{Tg/+}sham (AMPEL1^{Tg/+}S) and AMPEL1^{Tg/+}CLP. Cardiac function (LVEF, FS) by two-dimensional echocardiography was assessed pre-procedure, at 6, and 24 hours post-surgery. Serum IL-6 and TNF-alpha (ELISA) at 6 hours and cardiac apoptosis (TUNEL assay) at 24 hours were measured. Results are expressed as mean ± SEM.

Results: Cardiac function demonstrated by echocardiographic parameters were similar across the sham groups and there was a marked preservation of LVEF in the AMPEL1^{Tg/+}CLP at the 6 hour (AMPEL1^{Tg/+}:52.7 ± 3.71 vs WT:40.7 ± 2.46, p=0.013, n=10-11) and 24-hour time point (AMPEL1^{Tg/+}:63.1 ± 2.62 vs WT:49.3 ± 4.41, p=0.002, n=9-11) compared to WT. Similar results noted with FS (%) at 6 hours (AMPEL1^{Tg/+}:26.3 ± 2.22 vs WT:19.3 ± 1.37, p=0.014, n=10-11) and 24 hours (AMPEL1^{Tg/+}:32.4 ± 1.89 vs WT:24.4 ± 2.67, p=0.031, n=9-11). The marked preservation of cardiac function was further reiterated by an accompanied decrease in cardiac apoptosis (% TUNEL positive cells) at 24 hours in the AMPEL1^{Tg/+}CLP group (4.7 ± 0.94 vs 11.7 ± 2.82, p=0.040, n=6,) compared to WTCLP. Serum IL-6 (AMPEL1^{Tg/+}:259.7 ± 18.70 vs WT:483.2 ± 24.01, p<0.0001, n=6, pg/mL) and TNF-alpha (AMPEL1^{Tg/+}:86.89 ± 14.36 vs WT:161.8 ± 20, p=0.012, n=6, pg/mL) were significantly reduced in the AMPEL1^{Tg/+}CLP at 6 hours.

Conclusions: Our results indicate that overexpression of Peli1 is a novel approach that preserved cardiac function, reduced inflammatory markers, and apoptosis following severe sepsis in a murine genetic model.

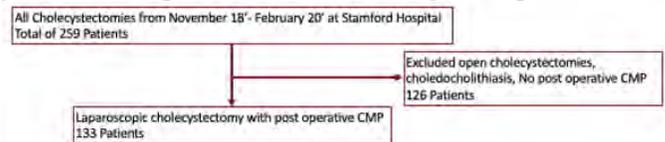
Analysis of Transient Hyperbilirubinemia Following Laparoscopic Cholecystectomy

Thomas Tritt MD, Kristin McCoy MD, Mohamad Zanbrakji MD FACS
Stamford Hospital

Introduction: During routine testing for patients following a laparoscopic cholecystectomy, hyperbilirubinemia and

elevated liver enzymes often cause concern, and therefore, may result in an extensive workup. Hyperbilirubinemia is indicative of the obstruction of bile due to gallstones or injury to the bile ducts. In recent practice it has been noted that many patients following a laparoscopic cholecystectomy will have a transient increase in their bilirubin levels, but remain asymptomatic. The question is whether these patients should undergo further workup when the suspicion is low.

Methods: We designed retrospectively case controlled study who underwent laparoscopic cholecystectomy at Stamford Hospital during an inpatient admission for acute cholecystitis from Nov 2018 to Feb 2020, We analyzed the post-operative serum levels of total bilirubin, alanine transaminase (ALT), aspartate transaminase (AST), and alkaline phosphatase (ALP) in these patients. Groups that had common bile duct injury vs. total population of laparoscopic cholecystectomy were analyzed (Exclusion criteria included: Laparoscopic converted to open, ERCP prior to cholecystectomy, No CMP, Diagnosis of Choledocholithiasis as confirmed by MRCP imaging). Preoperative antibiotics were given to all patients and CO₂ pressure during the cases were set to 15 mm Hg



Results:

Average	Uninjured group (n=129) (95% CI)	CBD injury (n=4) (95% CI)	p-Value (α=.05)
Total Bilirubin	1.06±.23	4.0 ±7.95	.001
AST	95.2± 28.8	203.25±212.7	.099
ALT	130.8± 30.0	235.75± 361.9	.118
Alk Phos	114.0± 15.5	240± 261.4	.004
Total OR time	1:44± 0:08	2:48± 0:53	.006

Figure 1. Results of average LFTs and OR time for Injured vs. Uninjured CBD during Laparoscopic Cholecystectomy. Confidence interval was calculated with alpha=.05, All p-values were obtained using a student's t-test, one-sided, two sample with equal variances.

Conclusions: Total Bilirubin, Alkaline Phosphatase, and Total OR time were all statistically significant different between injured and uninjured groups. Majority of patients had clinically insignificant elevated Liver Function tests, these results when combined with clinical exam findings should lead to further investigation

Rare Case of Gastric Diverticulum in a Young Healthy Patient Presenting with Abdominal Pain

Michael Geraghty MD, Sepehr Karimi MD, Juan Diego Holguin MD
Waterbury Hospital

Introduction: Gastric diverticula are uncommon outpouchings of the gastric wall that can be acquired or congenital. The prevalence is rare and has been reported as low as 0.01% on endoscopy studies and 0.02% on autopsy studies. Patients have been reported to present with vague abdominal symptoms; halitosis, dyspepsia, abdominal pain

and GI bleeding. However, many are discovered incidentally on imaging of asymptomatic patients.

Case Presentation: In August 2020, a 22-year-old male without any past medical or surgical history presented to the emergency department due to 24-hour history of abdominal pain associated with nausea. He received CT scan at that time which revealed a 2.5 cm thin-walled fluid collection with a locule of air contiguous with the posterior gastric cardia likely representing a gastric diverticulum. He later underwent upper GI study and upper endoscopy which both confirmed the presence of this gastric diverticulum, as well as, the lack of any associated inflammation or obstruction. He was discharged with PPI therapy and outpatient follow-up with consideration of elective resection.

Conclusion: Gastric diverticula are rare outpouchings of the stomach wall that are more commonly found in patients between the age of 40-60. Patients can present with vague abdominal symptoms or they can be discovered in asymptomatic patients on imaging. Management of symptomatic individuals includes PPI therapy and/or surgical resection if appropriate.

Surgical Subspecialties

Moderator:

David S. Shapiro, MD, MHCM, FACS, FCCM, Vice Chair of Surgery, Chief of Critical Care and Chief Quality Officer, Saint Francis Hospital & Medical Center
Associate Professor of Surgery University of Connecticut School of Medicine & Frank L. Netter Schools of Medicine

Judges:

Gary J. Kaml, MD, FACS, Medical Director of Emergency General Surgery, Saint Francis Hospital & Medical Center

Manuel Moutinho, MD, Trauma Program Assistant Medical Director, Saint Francis Hospital & Medical Center, Assistant Professor of Surgery, University of Connecticut & Frank L. Netter Schools of Medicine

Vijay Jayaraman, MD, FACS, Director of Surgical Education & Site Director, Surgical Residency, Saint Francis Hospital & Medical Center, Assistant Professor of Surgery University of Connecticut & Frank L. Netter Schools of Medicine

Trends in the Utilization of Ambulatory Surgery Centers (ASCs) For “Medically-Necessary” Aesthetic Plastic Surgery Procedures amongst Medicare Beneficiaries

Sumun Khetpal, BS, BA, Joseph, Lopez, MD, MBA, and Adnan Prsic, MD
Yale University School of Medicine

Introduction: Aesthetic surgery represents a burgeoning field within plastic surgery. These operations are often performed in multiple settings, which include the hospital inpatient department (HIPD), hospital outpatient department (HOPD), and ambulatory surgical centers (ASCs). Endorsed by the Center for Medicare and Medicaid Services (CMS), ASCs offer many benefits, including cost reduction, patient satisfaction, and convenience. This study elucidates trends in the utilization of ASCs for “medically-necessary” aesthetic surgery procedures from 2011 to 2018. Given the CMS’ financial incentives of ASCs, we hypothesized that ASCs would serve as the dominant facility for all common “medically-necessary” aesthetic surgery procedures.

Method(s): A retrospective analysis of procedures performed by plastic surgeons for Medicare beneficiaries was conducted between January 1, 2011 to December 31, 2018. The top ten highest volume aesthetic procedures (augmentation mammoplasty, liposuction, blepharoplasty, rhinoplasty, rhytidectomy, abdominoplasty, mastopexy, dermabrasion, neck lift, and breast reduction) were gathered from the 2019 American Society of Plastic Surgeons Statistics Report. Of note, Medicare beneficiaries received financial coverage for these procedures given their status as “medically necessary” for certain indications (i.e.

rhinoplasty for facial trauma, rhytidectomy for facial reconstruction, etc.).

Results: From 2011 to 2018, rhinoplasty, liposuction, mastopexy, and augmentation mammoplasty did not display remarkable percentage differences by number in each place of service (POS). Abdominoplasties (52%) and neck lifts (63%) predominately occurred in HIPDs in 2011, but shifted dramatically towards POs, ASCs, and HOPDs in 2018. A total of 73% of breast reduction cases occurred at ASCs in 2018. Dermabrasions transitioned from principally physician offices (PO) (74%) procedures in 2011 to HOPDs (50%) in 2018. The location of rhytidectomies largely did not change from 2011 to 2018; ASCs (48%) to HOPDs (50%), respectively. Finally, blepharoplasties were increasingly performed at POs, shifting away from ASCs (77% in 2011 to 29% in 2018). These findings are summarized in **Figures 1 and 2**.

Conclusions: Overall, plastic surgeons have shifted remarkably towards the utilization of ASCs and HOPDs, as opposed to HIPDs and POs, for the treatment of Medicare beneficiaries in need of “medical necessary” aesthetic procedures. Future studies can further characterize the impact of the growing prominence of ASCs, and explore patient safety and surgical outcomes.

Figure 1. Service of Care for Top Ten Medically Necessary Aesthetic Procedures in 2011

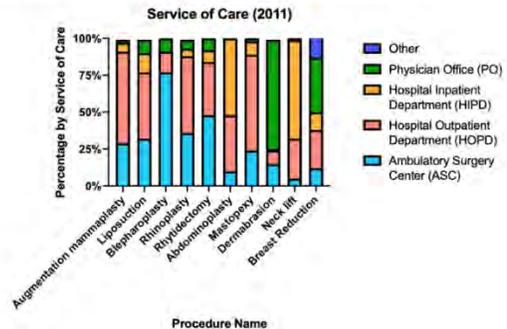
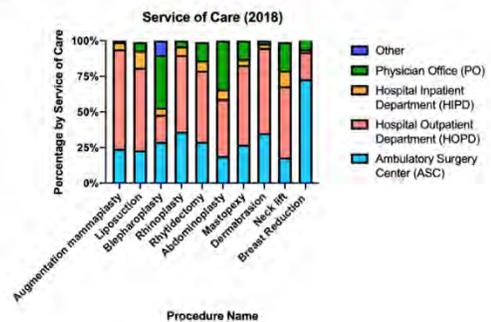


Figure 2. Service of Care for Top Ten Medically Necessary Aesthetic Procedures in 2018



Nationwide Analysis of Racial Disparities Among Black Patients Undergoing Primary Total Knee Arthroplasty: A Receding Tide?

Akash Trivedi MD¹, Olohirere Ezomo MPH², Christian Gronbeck³, Mohamad Halawi MD¹

campus remain isolated and may appear less accessible to trainees without prior experience. To help design more inclusive global surgery opportunities, we evaluated the trainee-outreach of the first three implementations of a local global surgery symposium at our institution.

Methods: Since 2017, the global surgery symposium was run three times as free single-day gatherings targeted at local trainees. Each program included over twenty local and outside speakers from multiple surgical specialties, anesthesia, nursing, and public health, spanning academic, non-profit, and public initiatives. Attendees were recruited through posters, social media, and mailing lists.

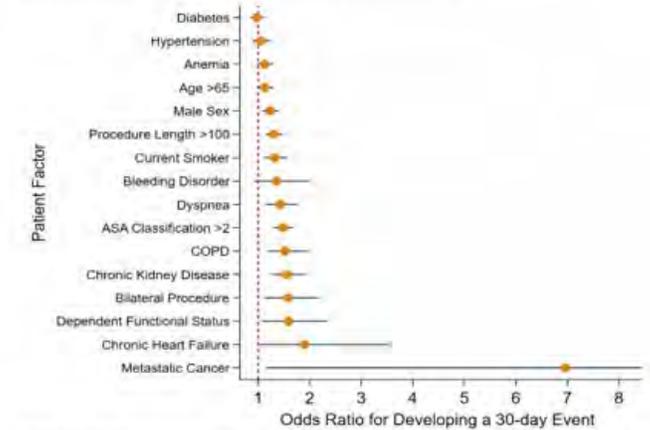
Background: Racial disparities have been reported in the utilization and outcomes of black patients undergoing total knee arthroplasty (TKA). However, there remains limited contemporary national data on the incidence, risk factors, and time trends for postoperative adverse events (AEs) in this racial group.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) was queried for all Black/African American patients who underwent primary TKA between 2011 and 2017. Demographic variables, comorbidities, perioperative data, and postoperative outcomes were assessed. Postoperative outcomes included hospital length of stay (LOS) as well as 30-day readmissions, reoperations, medical complications, surgical complications, and mortality. Multivariate logistic regression analyses were performed to develop a predictive model for 30-day AEs.

Results: 19,496 patients were analyzed. Significant risk factors for developing an AE were male sex, tobacco smoking, ASA score >2, dependent functional status, congestive heart failure, chronic obstructive pulmonary disease, metastatic cancer, dyspnea, chronic kidney disease, bilateral TKA, and operative time > 100 minutes. Since 2011, there has been an increase in TKA utilization accompanied by a decrease in LOS and AEs (particularly surgical complications) among black patients which were accompanied with improved comorbidity profiles.

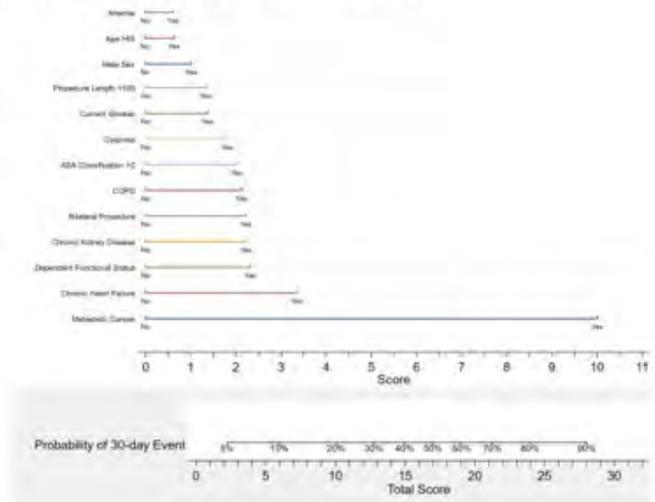
Conclusion: A predictive model for 30-day AEs among black patients undergoing primary TKA was developed. Racial disparities in utilization and 30-day outcomes among black patients undergoing TKA appear to be receding.

Figure 1. Multivariate logistic regression analysis for development of a 30-day postoperative event.



A multivariate logistic regression was utilized to yield odds ratios for development of a post-surgical event, defined as any combination of a medical complication, surgical complication, mortality, readmission, or reoperation. Patient factors previously demonstrating ($p < 0.05$) or approaching significance ($p < 0.10$) between the patient groups (Table 1) were controlled for in the regression analysis. Continuous variables (age, BMI, ASA score) were converted to nominal variables according to Youden's index so as to maximize the discriminative capacity of the cutoff value. ASA = American Society of Anesthesiologists physical classification system, ASA = American Society of Anesthesiologists physical classification system, COPD = chronic obstructive pulmonary disease.

Figure 2. Predictive nomogram for the development of a 30-day postoperative adverse event.



Surgical Treatment of the Neurogenic Etiology of Median Arcuate Ligament

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Introduction: Median arcuate ligament syndrome (MALS) is due congenital variation in the anatomic position of the median arcuate ligament. The low-lying median arcuate ligament exerts compression on the celiac artery, causing significant epigastric pain, which may be associated with nausea, vomiting, and weight loss. These symptoms were believed to be from ischemia. However, long-term success rate of pain relief after median arcuate ligament release varies greatly, and recurrence of pain is frequent. The etiology of pain in MALS has been challenged in recent literature, and some have raised the possibility of neurogenic etiology due to compression and subsequent inflammation of the nerves associated with the celiac plexus. Although compression of the celiac artery may occur, there is robust collateralization between the three mesenteric arteries, and experience with patients with

atherosclerotic disease involving the mesenteric vessels show that the patency of a single mesenteric artery is adequate to ensure adequate mesenteric perfusion. Thus, it is believed inflammation of the celiac ganglion may be contributing to MALS pain.

Methods: 125 patients across 2 institutions underwent resection of the MAL along with celiac ganglionectomy. Patients were asked to rate their MALS symptoms after a post-operative period of recovery. The results of this survey were then compared to the existing literature of symptom relief in those with solely a MAL resection. leading to 97% of patients reporting they are symptom free, compared to anywhere from 50-60% with just median arcuate ligament resection. Statistical analysis was performed with paired T tests to calculate whether symptom were significantly different at multiple follow up time periods (P <0.05).

Results: 97% of the patients reported significantly improved symptoms at follow up check ins.

Conclusions: MALS is not solely a disease of ischemia, but is caused by neurogenic inflammation of the celiac plexus. The standard of care for all patients with MALS should be resection of both the MAL and celiac ganglion. This approach results in the highest likelihood of symptoms relief in these patients.

Strongyloides stercoralis Hyperinfection Secondary to Large B cell Non-Hodgkin's Lymphoma

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Introduction: Due to its prevalence in the warm tropics and subtropical climates, *Strongyloides* is a parasite which is highly uncommon in the Northeastern United States. In its classic life cycle, the female nematode, *Strongyloides*, travels from the skin, to the lungs, and then to the gastrointestinal (GI) tract of its host. In the more serious form, termed hyperinfection syndrome, the organism reproduces faster than the immune system can suppress it, leading to an increased parasite burden. *Strongyloides* hyperinfection is a rare infection usually found as the sequelae of an immunocompromised individual infected with *S. Stercoralis*.

Methods: In this case report, we present a 58-year-old male from Dominican Republic who was suffering from chronic abdominal pain with recently diagnosed Stage IV Large B cell non-Hodgkins lymphoma (NHL). The patient's abdominal pain was worked up as *H. Pylori*-induced gastritis with minimal response to triple therapy. After an initial CT scan showed diffuse abdominal lymphadenopathy, lymph node biopsy was conducted which showed Large B cell NHL. Due to the gravity of this disease, the patient was quickly started on CHOP chemotherapy with Rituxan. Two days after his last dose of chemotherapy, approximately three months after diagnosis, he presented to the emergency department with severe abdominal pain and a CT scan confirmed perforated viscus with abdominal lymphadenopathy. The patient was taken to the operating room emergently where an exploratory laparotomy with washout was completed and was found to have purulent peritonitis, stricture and perforation of small bowel in distal jejunum. A small bowel

resection with side-to-side anastomosis was completed at the distal jejunum.

Results: Our patient likely acquired the infection while living in the Dominican Republic and has maintained chronic infection since that time. It is known that *S. Stercoralis* can live unnoticed in an individual for many years with vague symptoms such as abdominal pain. During the patient's post-operative ICU stay, he continued to remain intubated with high ventilatory support with increased positive end expiratory pressure, after which, a right sided pneumothorax was discovered. Loeffler's syndrome, another rare sequelae of *Strongyloides*, has a high susceptibility of causing lung damage analogous to the pathogenesis of *Strongyloides*-induced bowel perforation. Pathology of the resected small bowel showed fragments of parasitic organisms, and both stool and tracheal aspirate from O&P in the ICU setting were positive for *Strongyloides rhabditiform* larvae. Finally, as the patient's mental status deteriorated, a CT scan of the head was obtained which demonstrated an acute infarct. This was followed by an MRI which showed large left temporoparietal acute infarct with multiple other small cerebral and cerebellar acute infarcts indicating a central embolic source. *S. Stercoralis* is known to harbor pathogens such as gram-negative rods, such as *Escherichia coli*, and gram-positive cocci, such as *Streptococcus bovis*, that are known to cause septic emboli to become lodged in the brain.

Conclusion: On initial ED visit for chronic abdominal pain, lab studies highlighted an eosinophilia of 7.1% with a normal WBC count. Had this patient, with prior history of travel to the tropics, had a thorough workup of parasitic infection via stool O&P studies prior to starting CHOP therapy, a *Strongyloides* hyperinfection could have possibly been avoided. The patient continued to have high ventilatory support and was unable to be weaned. His mental status did not improve with the addition of Ivermectin to his already growing list of antibiotics. He continued to have vasopressor requirements. The patient was seen by family, and after an extended conversation, elected for comfort measures only. The ETT was removed, vasopressors stopped, and he expired shortly after.

A Case Study of Early Detection of Small Bowel Ischemia in Closed-Loop Small Bowel Obstruction

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Introduction: Small bowel obstruction is one of the most common causes of emergency room visits in the US, and adhesions are the most common cause of SBO by a significant margin. Management of SBO has shifted from routine immediate surgery towards nonoperative treatment, making early detection of ischemia critical in determining if immediate surgery is indicated. However, clinical signs and laboratory findings for small bowel ischemia are not sensitive nor specific. CT abdomen pelvis with IV contrast is the current diagnostic test of choice for SBO with 91% sensitivity and 89% specificity, but while CT is both highly sensitive and specific in detection of SBO, the

criteria for determining small bowel ischemia remain vague and inconsistent. Certain findings such as closed-loop obstruction, increased unenhanced bowel wall attenuation, decreased enhancement of bowel wall, and significant mesenteric edema are highly predictive of acute ischemia and indicate urgent need for immediate surgery for patients with SBO but no formal CT scoring system currently exists despite many studies' previous attempts to develop one. In this paper, a case report of adhesive SBO with acute ischemia that presented to Waterbury Hospital will be discussed as an example of successful early detection via CT with good surgical outcome.

Methods and Results: The patient, a 77-year-old male with a past medical history of atrial fibrillation on apixaban, colonoscopy 5 days prior to onset of symptoms, and no previous surgeries presented with sudden onset of abdominal pain less than an hour prior to arrival in the ED. CT abdomen/pelvis with IV contrast demonstrated dilated loops of small bowel filled with fluid, mesenteric edema, and clustering of small bowel loops around a distinct point in the right lower quadrant suggesting closed loop obstruction secondary to twisting of the mesentery. He underwent diagnostic laparoscopy converted to exploratory laparotomy with intraoperative discovery of hemorrhagic peritoneal fluid and distended ischemic small bowel. A resection of 26 cm of ischemic small bowel and stapled side-to-side functional end-to-end small bowel anastomosis was performed. Pathology confirmed early small intestinal ischemic changes with edema, mucosal hemorrhage, and mesenteric vessel congestion. He was discharged on post-operative day 2 with no complications.

Conclusions: Early detection of small bowel ischemia secondary to adhesive SBO is a priority in determining which patients with SBO require emergent surgery to prevent morbidity and mortality associated with small bowel necrosis and peritonitis. CT abdomen/pelvis with IV contrast remains the gold standard for detection of small bowel ischemia, though no formal diagnostic scoring system currently exists to determine severity and likelihood SBO-associated ischemia and need for subsequent surgical intervention. When clear evidence of closed-loop obstruction and other highly specific findings are detected on CT, emergent intervention can be performed and frequently leads to good surgical outcomes. However, CT findings are frequently equivocal, and a formal scoring system based upon large, multi-centric trials investigating findings of CT abdomen/pelvis with IV contrast for patients with adhesive SBO would be highly beneficial in early detection of intestinal ischemia.

Epistaxis in a Patient with History of Nasopharyngeal Cancer: Carotid Blowout Syndrome

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Introduction: Carotid blowout syndrome (CBS) is a rare but often fatal complication seen in patients with history of head and neck cancers who have undergone surgery and radiation. Patients often present with oral bleeding, but

can present with epistaxis as well. Prompt recognition of this syndrome and stabilization of the patient are essential for decreasing risk of mortality. While surgery was previously considered the mainstay of therapy, endovascular techniques are now the gold standard, given decreased rates of neurologic morbidity and mortality.

Case Presentation: A 75-year-old male with remote history of nasopharyngeal cancer for which he was treated with brachytherapy seeds, presented to the emergency room with significant epistaxis. His nares were packed, successfully stopping the bleeding and was discharged home without imaging. The following day, the patient developed recurrent epistaxis. He was hypotensive en route to the hospital and was transfused two units pRBC in the emergency room with appropriate response. The patient's nares were repacked and he was admitted to the hospital. The morning after admission, he developed large volume epistaxis causing significant aspiration with PEA arrest. He was intubated and his oropharynx was packed. ROSC was achieved and the patient was transferred to the ICU, at which time ENT and interventional radiology were consulted. Removal of packing in the ICU demonstrated continued hemorrhage suspected from the internal carotid artery, so the decision was made to proceed with endovascular intervention. A diagnostic angiogram was performed, which confirmed active extravasation from the left internal carotid artery at the skull base and a complete Circle of Willis. The vessel occluded with coil embolization after a covered stent was unable to be placed given acute angle of the vessel at the location of the extravasation. Completion angiogram showed no further extravasation from the carotid artery. The packing was removed with no additional episodes of bleeding. The patient was extubated the next day and no neurologic deficits were identified. A CT scan was obtained demonstrating absence of bone, mucosa or muscle surrounding bilateral carotid arteries in the carotid canal and nasopharynx, suggesting that the patient was at risk for developing right sided CBS as well. After discussion with the patient, he was transferred to a tertiary facility for further management. Given the high risk of stroke with intervention on the right carotid artery, the patient opted for observation and was discharged without further procedures.

Discussion: CBS is one of the most feared complications in head and neck surgery and is the result of necrosis of the arterial wall. This phenomenon is seen almost exclusively in patients undergoing radiation, with rates of 0-2.4% in radiotherapy naïve patients and 4.5-21.1% in patients who have had and neck radiation. Other risk factors include neck dissection, wound infections, formation of mucocutaneous fistulae, recurrent tumors and poor nutrition status. CBS presents in one of three ways. Threatened carotid blowout (CB), seen in 8% of patients, occurs when the carotid is exposed without bleeding. Impending CB, making up 24% of patients, presents with a sentinel bleed, which is a self-limited bleeding event, as occurred on our patient's initial presentation to the ER. The remaining 68% of patients present with active carotid bleed or rupture, with bleeding occurring either through the skin or the mucosa, with the most common site of bleed being near the tonsil. Management depends on the stability of the patient and the presence or absence of

active bleeding. For patients who are not actively bleeding, a CT neck with contrast should be obtained to assess for risk of rupture. If high risk of rupture based on imaging, the patient should proceed for diagnostic angiography and potential intervention. For patients with active bleeds, the initial priority is stabilizing the patient and securing the airway, as hemodynamic instability, not amount of blood loss, is the major contributor to morbidity and mortality. Once the patient has been stabilized, they should proceed to interventional radiology for angiography. If the external carotid is the culprit vessel, embolization can be performed without concern for long term neurologic sequelae. Conversely, if the internal or common carotid is found to be the source of the bleeding, a balloon occlusion test should be performed to assess for an intact circle of Willis prior to occlusion of the vessel. If the patient fails the balloon occlusion test, a stent should be placed to limit risk of stroke. Historically, surgical ligation was the mainstay of treatment for cases of CBS, but advances in neuro-interventional radiology have rendered surgical management of acute bleeds obsolete. After successful management of an acute episode of CBS, it is essential to obtain adequate soft tissue coverage of the carotid artery to decrease risk of recurrence. Although rare, it is essential to consider carotid blowout as a potentially fatal cause of epistaxis in patients with previous history of head and neck cancer and irradiation.

A Five-Year Review of Ultrasound Reliability In Diagnosing Gallbladder Polyps At A Community Hospital

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Introduction: Polyps are reported on 1-10% of routine transabdominal ultrasound studies of the gallbladder. Prior studies have reported poor sensitivity and specificity for this diagnostic modality at determining malignant potential of polyps. The aim of this study is to determine the incidence of gallbladder polyps documented on ultrasound at a community hospital, evaluate the congruency of ultrasound with final histopathology, and explore factors which may improve ultrasound accuracy at diagnosing true adenomatous polyps.

Methods: We conducted a five year retrospective cohort study of patients undergoing cholecystectomy at Danbury Hospital between 2014 and 2019, identifying those with a pre-operative ultrasound mention of a "polyp" or "mass." We assessed the congruency of ultrasound findings with pathology reports.

Results: Of the 2,549 cholecystectomies performed, 1,944 (76%) had pre-operative ultrasounds. Of those, 98 (5.0%) reported a polyp, measuring an average of 8.1mm (SD 7.1mm). Three (3.1%) specimens were identified as adenomas on final histopathology; the majority were benign pathologies including cholesterol polyp (18), cholesterosis (20), adenomyoma (4), adenomyomatosis (7), and chronic or acute cholecystitis (44). Interestingly, only 1 of the 3 adenomas measured greater than 10mm on ultrasound, the accepted indication for surgical resection.

Conclusions: The accuracy of transabdominal ultrasound in diagnosing true polyps is poor, with only 3% of polyps identified as adenomas based on pathology. Surgeons should use caution when making clinical decisions based on polyps identified on ultrasound, and more stringent diagnostic criteria are needed in order to decrease the false positive rate for diagnosis and screening.

Small Bowel Follow Through: Treatment for SBO or delaying the inevitable?

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Introduction: The prevalence of small bowel obstruction (SBO) in developed countries is significant and one of the most common reasons for admission to a surgical service. In 2011 it was estimated there are nearly 1.5 million admissions and over 300,000 laparotomies performed for adhesion related obstructions every year. Non-operative management of adhesive SBO has demonstrated good success however recurrence rates have been seen in 15-20% of patients over a 5-year period with probability of additional recurrences at 50% for patients who have had 3 or more previous episodes. Although patients who undergo surgical management do have a decreased likelihood of recurrence, the risk of recurrence remains high. Small Bowel Follow Through (SBFT), consisting of serial X-rays with oral contrast, has been shown to decrease overall length of stay (LOS) in patients with adhesive SBO. However, the long term effects of this on recurrence are unknown. The aim of this study is to determine if SBFT administered to patients with SBO decreases recurrence.

Methods: IRB approved single institution retrospective study from 2010 to 2020 that included a total of 742 patients. These patients were organized into three groups, SBFT ≤ 24 hrs after admission (n=40), SBFT ≥ 24 hrs (n=198), and no SBFT (n=504). Readmission rates ≤ 30 days, ≤ 1 yrs, 1-3 years, and 3-5 years were evaluated using analysis of variance. Variables such as age, BMI, number of intra-abdominal surgeries, gender, and need for operative interventions during the admission were evaluated for any associations with recurrence.

Results: Recurrence rates did not demonstrate significant difference between groups with SBFT ≤ 24 hrs (p=0.338) or SBFT > 24 hrs (p=0.889) when compared to the no SBFT group. There was no statistical difference between, age (p=0.268), number of intra-abdominal surgeries (p=0.125), gender (p=.507), or most BMI groups (p=0.154). There was a significantly increased rate of 1 year recurrence associated with BMI < 25 (p=0.003), and significantly decreased 1 year and 3-5 year recurrence in patients that underwent operative intervention (p=0.037).

Conclusion: Use of small bowel follow through alone does not decrease readmission rate, however when leading to an operative intervention, patients had decreased recurrence rates. Furthermore, BMI < 25 was associated with increased recurrence within 1 year. In our study, factors such as age, number of abdominal surgeries or gender did not demonstrate any significant difference in recurrence rates.

Table 1: Outcomes with significant p values.

Recurrence timing	OR intervention	SBFT timing (hrs)	Previous surgeries	BMI kg/m ²	Age (years)	Gender
<1 yr	Yes (p=0.037) No (p=0.641)	<24 (p=0.338) >24 (p=0.889) No (p=0.664)	1-2 (p=0.125), >2-5 (p=0.125), >5 (p=0.125),	<25 (p=0.003) 25-29.9(p=0.154), 30-34.9 (p=0.154) 35-39.9 (p=0.154) >40 (p=0.154)	<30 (p=0.478) 30-50 (p=0.478) 50-70 (p=0.478) >70 (p=0.478)	M (p=0.507) F (p=0.507)

An Analysis of The Use Of Percutaneous Cholecystostomy At A Community Hospital

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Introduction: Laparoscopic cholecystectomy is the gold standard for treatment of patients with cholecystitis. Percutaneous cholecystostomy (PC) drains have been utilized as an alternative to surgery in critically ill patients in whom surgery carries an unacceptably high risk of morbidity and mortality. Though initial use of the procedure was primarily as a temporizing measure for patients recovering from an acute illness, the use of PC drainage has been rising. However, this practice has recently been challenged by the CHOCOLATE trial, which demonstrated a significant increase in complications in patients undergoing percutaneous drainage in comparison to those undergoing laparoscopic cholecystectomy.

Methods: We conducted a retrospective analysis of patients who underwent PC drainage or a cholecystectomy from 2014 through 2019 at our institution. We determined the rate of PC use and performed a linear regression analysis to determine if the use of percutaneous drainage has been increasing over time. In 2019 we reeducated resident and faculty on appropriate PC use and compare the rate of PC in 2019 to prior years.

Results: A total of 148 PCs and 3,163 cholecystectomies were performed over the study period. Of the cholecystectomies, 754 (23.8%) were performed in hospitalized patients under urgent or emergent condition. The percentage of patients with emergent cholecystitis that were treated with PC was 16.4%. Linear regression analysis demonstrated a statistically significant association between year and proportion of PC procedures performed (p<0.001). We observed a gradual increase in the use of PC between 2014 and 2018 from 14.5 to 22.5%. In 2019 a reeducation program along with formal policy regarding PC was instituted, after which the percentage of PCs dropped significantly to 10.9% (p=0.006). This was accomplished without an increase in common bile duct injuries.

Conclusions: Although the rate of PC drains at our institution is consistent with those reported in the literature, we observe a steady rise in their use despite a relatively stable rate of cholecystectomies. This would suggest that though the rate of biliary disease remains consistent, PCs are being selected as the procedure of choice with increasing frequency. Care needs to be taken to ensure that only appropriate patients are referred for percutaneous drainage, as indicated by the guidelines, especially in light of recent studies suggesting an increase

in complications as well healthcare costs for patients undergoing PCs compared to laparoscopic cholecystectomy.

Thioredoxin-1 Engineered Exosomes are a Promising Strategy to Stimulate Angiogenesis and Increase Blood Flow in a Murine Model of Hind Limb Ischemia

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Introduction: Peripheral arterial disease (PAD) is a narrowing of the arteries caused by atherosclerosis, and currently affects over 8.5 million Americans. Thioredoxin-1 (Trx-1) is a cytosolic protein with potent angiogenic effects; we have previously demonstrated that exosomes (30-100 nanometer vesicles) obtained from Thioredoxin-1 overexpressed mice can prevent cardiac dysfunction and ventricular remodeling after myocardial infarction (MI) in a murine MI model. Therefore we sought to explore the potential of stressed exosomes obtained from Trx-1 mice in a murine model of hind limb ischemia.

Method(s):
Exosome isolation: 8-12-week-old C57B1/6J wild type (WT) mice and Trx-1 overexpressing, transgenic (Trx-1^{tg/+}) mice were subjected to MI via left anterior descending (LAD) artery ligation, 8 hours after which plasma was collected for the isolation and quantification of wild type exosomes (WT^{Exo}) and Trx-1 exosomes (Trx-1^{tg/+Exo}).
Exosome treatment: A separate group of 8-12-week-old CD1 mice underwent 2-point right femoral artery ligation to induce right hind limb ischemia, followed by intramuscular injection of phosphate buffered saline (PBS), WT^{Exo} or Trx-1^{tg/+Exo}. Mice were followed over the course of 4 weeks via laser doppler imaging (LDI) and sacrificed on POD28 for tissue sampling and immunohistochemical analysis (IHC)

Results: Blood perfusion ratios (ischemic/non-ischemic) as measured with LDI were significantly improved in the Trx-1^{tg/+Exo} group at days 7 [0.40±0.02 vs. 0.36±0.04 and 0.32±0.03] and 28 [0.72±0.07 vs. 0.52±0.05 and 0.53±0.04; (n=11-12); p<0.05], compared to the PBS and/or WT^{Exo} groups. Immunohistochemical and immunofluorescence analysis revealed increased arteriolar density [(33.75 vs 25.61; counts/mm²; (n = 5-6; p < 0.05)] as well as increased qualitative levels of VEGF expression in the Trx-1^{tg/+Exo} group. IHC also revealed decreased levels of tissue fibrosis [11.64%± 1.9 vs 19.47% ±1.02; (n = 5-6; p=0.006)] in the Trx-1^{tg/+Exo} group.

Conclusion(s): Our results support our hypothesis that exosomes obtained from Trx-1^{tg/+} mice exposed to stress (MI) can have a role to play in the management of PAD by improving blood perfusion, increasing arteriolar density and decreasing fibrosis.

Perirectal Sepsis Complicated by Fournier’s Gangrene s/p Open Hemorrhoidectomy

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Introduction: Pelvic sepsis is a rare, but severe complication after elective hemorrhoidectomy. Transient bacteremia can occur in about 8% of all cases, but clinically significant infections are extremely uncommon¹. Rates of abscess formation after hemorrhoidectomy have been reported between 0.4% and 4%, of which immunosuppressed patients are at highest risk^{2,3,4}. Early identification with cross sectional imaging, broad spectrum antibiotics, and surgical debridement are critical to preventing multi-system end organ failure.

Case Presentation: 76 YO F with PMHx of DM2, HTN, HLD presented with progressively worsening rectal pain and active drainage s/p elective open hemorrhoidectomy for grade 4 hemorrhoids post-operative day 6. Patient experienced a hypoglycemic episode, which was accompanied by a near syncopal fall. She was noted to have 48 hours of purulent drainage from her anus that was associated with chills and fevers. She had extreme pain that was focal to the anus and extended into her left gluteal region. Vitals showed tachycardia to the 110s and BP's to the 90/50's. On exam, there was left gluteal erythema on the posterior aspect with tenderness and active purulent drainage. She had a WBC of 21 with an 88% shift. CT Abdomen/Pelvis without IV contrast showed a 6cm x 4 cm x 5cm left-sided perirectal abscess. Patient was admitted to the surgical floor, resuscitated, started on Zosyn, and went to the OR for urgent incision and drainage with wound debridement. In the OR, a small opening was found on the lateral wall of the anus, which extended into the abscess cavity with necrotic tissue, purulence, and stool noted. The cavity was debrided, cleaned, and a seton was placed. The patient was brought to the IMCU for hypotension requiring pressors. POD#1, the patient was taken back to the OR due to persistent gluteal induration and rising WBC. Necrotic tissue extended into the ischioanal fossa, but viable muscle tissue was present. Patient was brought to the ICU remaining on pressors in a guarded state. Cultures grew *P. aeruginosa*, *E. coli*, and *C. tropicalis*. She was subsequently treated with Zosyn, Flagyl, Vancomycin, and Clindamycin. POD#2 the patient continued to have worsening mentation, pressor requirement and WBC. She was then taken back to the OR for emergent exploratory laparotomy, sigmoidostomy, and wound debridement. A diverting sigmoidostomy was made for wound protection and the patient was brought to the PACU, intubated, and in grave condition. Over the course of the next few months, the patient had several wound debridements and vac therapy placement over the wound. Despite the patient having a prolonged hospital course, she remained stable and had wound granulation. The patient subsequently developed anal stricture; however, anal manometry showed adequate sphincter function, and is now being treated with serial anal dilations. The colostomy was successfully reversed and the patient is fully continent at this time.

Conclusion: Prompt aggressive surgical debridement is advised in the treatment of pelvic sepsis complicated by necrotizing fasciitis. Immunocompromised patients require

aggressive follow up and close monitoring after hemorrhoidectomy due to increased risk of abscess formation.

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Pediatric Acute Abdomen Secondary to Infected Mesenteric Cystic Lymphangioma

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Introduction: Mesenteric cystic lymphangiomas (MCL) are uncommon benign tumors seen most often in the pediatric population, with incidence reported between 1/20,000 and 1/250,000. These cystic tumors have a broad range of potential presentations, from asymptomatic to acute abdomen. Currently, surgery is the mainstay of treatment for these rare lesions. We present the case of a toddler with mesenteric cystic lymphangioma as the cause of an acute abdomen requiring percutaneous drainage and surgical resection.

Case Presentation: A 19-month-old female presented to the emergency room with two-day history of nausea, vomiting, fever and constipation. She had been evaluated the day prior but discharged home given benign physical exam. On re-presentation, she was found to be persistently febrile and to have a firm, distended abdomen. The patient was unable to cooperate for ultrasound, so CT scan of the abdomen and pelvis with IV contrast was obtained, and revealed a large, fluid-filled mass with fine internal septations occupying most of the peritoneal cavity. The appendix was not visualized and there was no evidence of bowel obstruction. Labs revealed elevated CRP to 198.3 and white blood cell count of 5.1 with 21 bands. Broad spectrum antibiotics were initiated and she was admitted to the surgical service. On hospital day 2, a percutaneous drain was placed with subsequent evacuation of brown fluid. Sclerotherapy was considered, but given that there were multiple cysts and active infection, the decision was made to proceed with operative intervention. Intraoperatively, two cystic structures were identified: one tethered to the transverse colon and containing serous fluid, and one in the right lower quadrant that contained the percutaneous drain and purulent fluid. The right lower quadrant cyst fluid grew pan-sensitive *Klebsiella variicola*, consistent with

preoperative cultures. Final pathology demonstrated dilated cystic spaces with smooth muscle bundles, consistent with lymphangioma. Post-operatively, the patient defervesced and her leukocytosis resolved. She was discharged home on post-operative day 3, at which time she was tolerating a regular diet. Ultrasound performed six weeks after surgery showed no evidence of recurrence.

Discussion: Mesenteric cystic lymphangiomas (MCL) are rare benign tumors, with less than 200 cases reported in the literature to date. While the exact etiology is unclear, a congenital mechanism is favored given that 65% of these tumors are present at birth and 60% are diagnosed before age 5. It is suspected that blind-ending lymphatics that lack proper connection to the venous system proliferate and dilate forming the MCL. Other proposed etiologies include bleeding and inflammation leading to proliferation, trauma, neoplasms, degeneration of lymph nodes, radiation, and surgical disruption of lymphatic drainage. Cystic lymphangiomas are most commonly found in the neck or axilla, and < 1% of tumors are found in the mesentery, omentum or retroperitoneum. In the peritoneal cavity, 70% of MCL arise from the small bowel mesentery, of which 50-60% are ileal.

Presentation of MCL is wide-ranging. Patients may be asymptomatic, have vague abdominal symptoms (pain, distension, nausea, bilious vomiting, diarrhea or constipation), or present with an acute abdomen as seen in this case. Half of patients will have ascites. MCL confers risk of traumatic rupture, intracavitary or intraabdominal bleeding, intestinal obstruction and necrosis, volvulus, and cyst infarction. Children tend to present more acutely, while adults tend to present with chronic complaints. Initial imaging includes ultrasound, which is sensitive and specific for evaluating cystic masses and avoids exposure to ionizing radiation. CT and MRI are useful for operative planning, providing necessary information regarding cyst size and anatomical location, involvement of surrounding structures, characteristics of the fluid, and detail regarding solid components. While imaging may be suggestive of MCL, presence of an endothelial lining with smooth muscle fibers and connective tissue on pathology is required for definitive diagnosis.

Surgery is the mainstay of treatment for patients with MCL. The goal is complete resection of the lesion, although this may require bowel resection and may not be possible depending on the location of the tumor and the degree of invasion of vital structures. Complete resection carries a 0-27% risk of recurrence. Partial resection or marsupialization may be attempted, but this comes with high risks of complications, including hemorrhage, infection and fistula, and a 10-100% chance of recurrence. Sclerotherapy is emerging as a promising, less invasive treatment option for these lesions. Potential sclerosing agents include bleomycin, alcohol, doxycycline and OK-432. Finally, drainage may be trialed, but is associated with high rate of recurrence and perforation. Our case demonstrates that, while uncommon, MCL should be included in the differential for acute abdomen, particularly in the pediatric population and with cystic structures found on imaging.

Results of Implementation of ACS Guidelines for COVID-19 in an Academic Community Setting

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Objective: In 2020 a novel strain of coronavirus (COVID-19) caused a global pandemic. The first reported case in the state of Connecticut was on March 8, 2020. The American College of Surgeons (ACS) recommended that surgeons curtail the performance of elective surgical procedures. The ACS put out guidelines from various specialties, facilities, and leaders to help inform the decision making at the local level. We therefore instituted these guidelines on vascular surgery and applied them to Waterbury Hospital, an academic community based hospital. Our objective was to minimize the risk of COVID infection, and maximize medical and surgical benefit for those in need of vascular intervention.

Methods: We gathered data from March 20th to May 11th on patients admitted and cared for by our 4 vascular surgeons. We then assessed the measures taken to minimize risk of infection, risk stratification of patients based on the ACS guidelines, number of patients that were admitted and cared for by our vascular surgeons, and the percentage of who were affected by COVID-19. We also analyzed the cases that were scheduled and subsequently cancelled due to COVID and the consequence of delaying these interventions.

Results: During this 51-day period, there were 48 vascular operations performed on 28 patients. Using the ACS guidelines for COVID 19 elective case triage, 81% of the operations performed fall under the Tier 3 category - do not postpone; 17% were Tier 2b operations - postpone if possible; and the remaining 1% were Tier 2a - consider postponing.

Of the patients who underwent these operations none have tested positive for COVID-19 and 15 patients tested negative for COVID during their hospital stay. On multiple occasions however we noticed that during the pandemic patients were hesitant to be seen in the office which lead to progression of disease and the need for more aggressive and urgent treatment.

Conclusions: The ACS guidelines were effective and safe after implementation. The clear majority of operations performed were ones that the ACS guidelines supported continuing without delay, and the remaining could not be postponed due to various patient factors. Furthermore, none of our patients tested positive for COVID-19 before, or after, their operation making the guidelines safe for our community setting. The negative impact of post-poning operations that fell in the tier 1 (postpone) or 2 (consider postponing) can have serious delirious effects. Over the following months, we will continue to evaluate this and assess the implications. Although we believe these guidelines were safe and effective at our institution, it is an area where further research and review is important as the healthcare environment continues to adapt.