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2014 Annual and Scientific Meeting

Resident Paper Competition Abstracts

The Stamford Hospital is accredited by the Connecticut State Medical Society to sponsor continuing medical education for physicians. The Stamford Hospital designates this educational activity for a maximum of 8.0 AMA PRA Category I Credit(s)TM. Physicians should only claim credit commensurate with the extent of their participation in the activity.

The purpose of this meeting is to provide attendees with a forum for the latest information regarding clinical practice and research in the field of surgery. Surgical Residents have a continued need to improve the research skills and a forum to present their research. Rural surgeons have a need to learn about emerging technologies. There is an on-going need to enhance patient safety and quality of patient care.

All Sessions are open to all meeting attendees.

***Uniting Surgeons to
Advance Patient Care in Connecticut***

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Prizes awarded as follows:

	First	Second
Trauma	\$100 + Plaque	\$50 + Plaque
Clinical Oncology	\$100 + Plaque	None Awarded
General Surgery	\$100 + Plaque	\$50 + Plaque
Specialty Surgery 1	\$100 + Plaque	\$50 + Plaque
Plastic Surgery	Plaque – Hon. Mention	
Bariatric Surgery	\$100 + Plaque	None Awarded
Case Reports	\$100 + Plaque	\$50 + Plaque

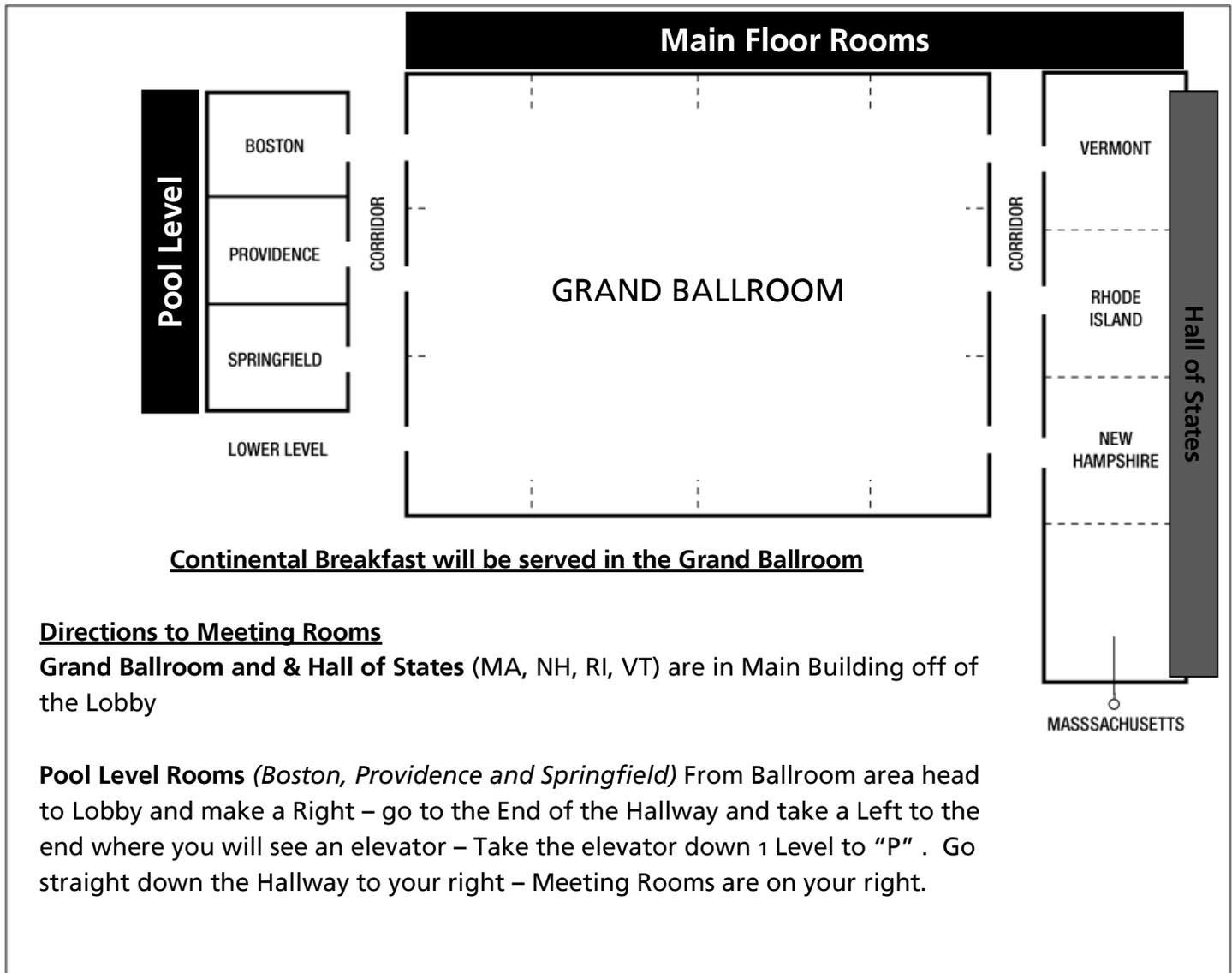
Map of the Farmington Marriott

Trauma & Bariatric: Boston – Pool Level

Plastic & Case Reports: Vermont

General Surgery: Providence – Pool Level

Clinical Oncology & Specialty: Springfield – Pool Level



Order of Presentation - Summary

Order	Category	Presenter	Title
Boston			
1	Trauma	Kamal Addagatla, MD	Comparing the Risk Profiles of Intracranial Hemorrhage Seen on Initial Computerized T
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5	"	Christian Cain, MD	Therapeutic Hypothermia Treatment in Near-Hanging: Outcomes from Cases at a Com
6	Bariatric	John Hwang, MD	The Role of Metabolic Surgery in the Treatment of Type II Diabetes in the Non-obese P
7	"	John Calhoun, MD	Median Arcuate Ligament Syndrome Following Gastric Bypass
8	"	Kevin Chysna, MS IV	The Evolving Field of Bariatric Surgery: Comparing Safety and Efficacy among three Bar
Vermont			
1	Plastics	Amrita Pandit, MD	A Novel method of managing MIS positive margins in melanoma
2	Case Report	Basil Nwaoz, MD	Congenital Agenesis of the Gall Bladder
3	"	Stuart Blackwood, MD	An Unusual Cause of Abdominal Catastrophe: Ruptured Pancreaticoduodenal Artery Ai
4	"	Daniella Vega, MD	Hyperbaric Oxygen Therapy for Recurrent Pilonidal Cysts with Associated Chronic Wou
5	"	Jason Jones, MD	An Endovascular Approach to a Celiac Artery Aneurysm: A Case Report and Literature F
6	"	Kostantinos Poulidakis, MD, MA	Polycythemia in Cardiac Surgery Patients as an Indicator for Antithrombin III Deficiency
7	"	Kristina Ziegler, MD	Case Report of a Small Bowel Obstruction Caused by Anisakiosis
8	"	Shrey Patel, MD	Crack Cocaine Induced Perforation of a Pre-Pyloric Ulcer
9	"	Victor Sanchez, MD	Case Report of a Retrorectal Epidermoid Cyst in an Adult Male
10	"	Neal Nolan, BA	The miRNA expression profile of human lymphatic malformations
11	"	Basil Nwaoz, MD	The Application of Latissimus Dorsi Flap for Persistent Air Leak
Providence			
1	General	Alph Emmanuel, MD	Surgical Quality & Leadership Curriculum
2	"	Affan Umer, MBBS/MD	Surgical outcomes related to Level of Assistance in the Operating Room
3	"	Hebroon Obaid, MD	Are Swallow Evaluations Enough to Prevent Aspiration?
4	"	Bruna Babic, MD	American College of Surgeons National Surgical Quality Improvement Program (ACS-NS
5	"	James Berry, MD	SUSP Implementation at SFHMC
6	"	Ann-Kristin Friedrich, MD	Robotic Cholecystectomy in a Community Hospital Setting: Short-Term Outcomes, Fea
7	"	Rakesh Hegde, M.D	Ligation of the Intersphincteric Fistula Tract (LIFT) :Best treatment option for Complex Fi
8	"	Ryan Bendl, DO	Outcomes in Diverticulitis Patients with Intramural Abscesses
9	"	Christopher Hughes, MD,MPH	CT Cares: The State of Global Surgery Efforts from Connecticut
Springfield			
1	Cancer	Tiffany Pierce Schatz, M.D.	Laparoscopic Polyp Resection as an Alternative to Partial Colectomy for Large Benign P
2	"	Andre Alcon, B.A.	Pedicle versus Free Flap Reconstruction in Patients Receiving Intraoperative Brachythe
3	"	Heather Player, MD	Synchronous Breast Cancers with Differential Responses to Neoadjuvant Chemotherap
4	"	George Ormond, MD	Jugular Vein Hemorrhage as a Complication of Pharyngocutaneous Fistula post Total La
5	"	Inam Shaikh, MD	Thioredoxin Overexpression Enhances Neovascularization and Reduces Fibrosis in Mou
6	"	Muhammad Rishi, MD	Adeno-Thioredoxin -1 delivery augments pro-angiogenic proteins, increases blood perf
7	"	Sandeep Sachidananda, MD	Use of Electromagnetic Navigational Bronchoscopy to localize small pulmonary nodule
8	"	Emilia Krol, MD	Color duplex ultrasound is a reliable means for the detection and long term follow-up c
9	"	Stuart Blackwood, MD	A Novel Hybrid Approach to the Management of Extensive Deep Venous Thrombosis

Boston, Providence and Springfield are on the Pool Level
Vermont is across from the ballroom

John D. MacArthur, MD, FACS Trauma Competition

Moderator:

Kevin Dwyer, MD, FACS, FCCM, Vice Chair, Department of Surgery, Director of the Surgical Residency Program and Director of Trauma and Surgical Critical Care, Stamford Hospital, Stamford, CT

Judge:

The Connecticut Committee on Trauma

Bariatric Surgery Competition

Moderator:

Nissin Nahmias, M.D., F.A.C.S., F.A.S.M.B.S., Saint Francis Medical Group, Inc, CT Chapter of the American Society of Metabolic and Bariatric Surgery, Hartford, CT

Judges:

CT Chapter of the American Society of Metabolic and Bariatric Surgery

Trauma Competition

FIRST PLACE PAPER

Comparing the Risk Profiles of Intracranial Hemorrhage Seen on Initial Computerized Tomography Scans in Patients Who Fall on Warfarin versus other Antithrombotic Therapy

Kamal Addagatla, MD; Heather Player, MD; Elise McKenna; MD, PhD, Neeta D. Chaudhary, MD, PhD

The Stamford Hospital, Columbia University College of Physicians and Surgeons

Introduction: With an aging population in the United States, an increased proportion of patients are burdened with chronic medical problems that are addressed with anticoagulation and antiplatelet therapy. It has been demonstrated that older patients with head injury have higher rates of mortality when accompanied by such antithrombotic agents. Current management of patients on non-warfarin anticoagulation or antiplatelet therapies is borrowed from protocols designed for patients on pre-injury warfarin with therapeutic INR's. These practice guidelines are here examined by review of initial head CT's among patients on warfarin versus other antiplatelet therapies.

Method(s): All patients admitted to The Stamford Hospital from May 2011 through April 2014 who were on aspirin (n=18), clopidogrel (n=11), dabigatran (n=13), enoxaparin (n=2), rivaroxaban (n=6), or warfarin (n=290) and evaluated by the trauma service were identified (n=340). Only patients with a history of a fall from three feet or less were included. Patients who were on dual therapy with more than one above agent or did not have an initial Head CT were excluded from our analysis to reduce confounding. The official radiology reports for all initial and repeat, six-hour follow-up CT scans were reviewed for mention of intracranial hemorrhage. A pairwise comparison test of hypothesis was conducted to compare the proportion of positive initial CT scans of warfarin to that of five other alternative medications.

Results: With 99% confidence, there is a statistically significant increase in the rate of intracranial hemorrhages seen on initial CT scans for patients on all of the following medications at a p-value < 0.01: aspirin, clopidogrel, and rivaroxaban as compared to those on warfarin. In this same analysis, no significant difference was seen between warfarin and the other medications including dabigatran and enoxaparin. We found no record of a case in which a non-warfarin patient's initial scan converted to a positive scan (n=50).

Conclusion(s): This study suggests that patients on aspirin, clopidogrel and rivaroxaban are more likely to present with an intracranial hemorrhage at the time of injury when compared to those on warfarin therapy. This suggests that not all antithrombotic therapy has an equal risk of intracranial bleed and, therefore, more appropriate selection is necessary when initiating antiplatelet or anticoagulation in a patient population that is prone to falls. However, given the limited sample size available in our database, future studies may find it useful to merge data from various institutions to further corroborate or refute our findings.

Endobronchial Valves for the Treatment of Prolonged Air Leak Following a Sternotomy

Mohamad Zanbrakji, M.D., Kostantinos Poulidakis, M.D., Michael Bernstein, M.D., William Feng, M.D.

The Stamford Hospital, Stamford, CT

Introduction: Prolonged post operative air leaks following thoracic surgeries are a relatively uncommon event. In recent years, endobronchial valves have offered a salvage mechanism for the closure of these air leaks. Prolonged air leak following sternotomy is an even less common event. We report the use of an endobronchial valve (Spiration Inc, Olympus, Redmond, WA) to close a prolonged air leak following a combined aortic and mitral valve replacement.

Method/ Discussion: This patient is a 75 year old male with history of COPD, obstructive sleep apnea on CPAP, and CAD with history of CABG 14 years prior. He presented with shortness of breath and fatigue secondary to severe aortic stenosis and mitral regurgitation. Patient underwent aortic and mitral valve replacement through a redo-sternotomy. Following the sternotomy, the adhered left upper lobe was believed to be injured. Despite chest tube drainage, patient continued to have persistent mediastinal air leak and ventilator dependence. On post operative day 18, patient had bronchoscopy with placement of two endobronchial valves in the apical segment of the left upper lobe. Forty-eight hours after placement, the leak completely closed and the patient was weaned from the ventilator.

Results: Use of endobronchial valves is a minimally invasive procedure that offers a feasible solution for prolonged post operative mediastinal air leak.

Conclusion: Prolonged postoperative air leaks after a sternotomy are rare, but very difficult to treat. Operative management options are not optimal in this patient group. We described the successful utilization of endobronchial valves such condition. This procedure was done under humanitarian device exemption of the FDA.

Hemoperitoneum Due to Traumatic Avulsion of a Single Leiomyoma Following a Motor Vehicle Collision

Timothy Feeney, MD and Hebroon Obaid, MD

Stamford Hospital

Introduction: Uterine leiomyomas are benign tumors consisting of smooth muscle, and are the most common tumor in the pelvis. They are clinically apparent in 12-25% of the female population, but are estimated to occur in approximately 70% of all women. [5] Traumatic injury and resultant hemoperitoneum in the setting of leiomyomas has been described since the 1960s [1]. However, despite descriptions of traumatic injury and hemoperitoneum associated with leiomyoma, it remains a rare complication associated with that condition [2, 3]. In this report we describe a patient who suffered massive hemoperitoneum due to traumatic avulsion of a single leiomyoma.

Method(s): Patient records were reviewed.

Results: The patient was a 45-year-old woman restrained passenger transported to Stamford Hospital as a level 1 trauma after a high-speed motor vehicle collision. Her primary complaints were severe abdominal pain, hypotension and tachycardia. Vital signs were initially labile with systolic blood pressure between 80 and 180 mm Hg. Primary examination revealed abdominal distention with significant tenderness to palpation. The patient's initial FAST examination was positive for fluid in Morrison's pouch. The patient had a stated history of uterine leiomyomas and menorrhagia. 2L normal saline and 2 PRBC were administered with appropriate response and she was transported for a CT scan for further evaluation.

Computed tomography evaluation of the chest, abdomen, and pelvis demonstrated large intra-abdominal contrast extravasation without a clear source. Due to the large hemoperitoneum and transient fluid response, the patient was taken to the OR for emergent exploratory laparotomy. Intraoperatively, a large free-floating fibroid measuring 16cmx15cmx11cm was identified. Additional intact mobile fibroids were also identified on exploration. Due to the volume of hemorrhage from the avulsion site and the difficulty of sustainable hemostasis, the decision was made to perform a supracervical hysterectomy in consultation with OB/GYN. The patient received another 9L of crystalloid, 8U of PRBCs, 6U of FFP, and 1U platelets in the OR. She was transferred postoperatively in stable condition to the intensive care unit where she recovered and the patient was discharged 14 days later.

Conclusion(s): While leiomyomas are clinically significant in only a small portion of the women who suffer from them, there are a large proportion of women in which asymptomatic fibroids are present [4, 5]. Hemoperitoneum from traumatic leiomyoma injury is a rare phenomenon. From the few described cases of traumatic avulsion of leiomyomas it is important to recognize that its presentation can be non-specific and wide ranging in type and severity of traumatic injury, occurring even in low energy traumas. Despite the utility of seatbelts as a safety mechanism, it is entirely likely in this patient that the deceleration energy transferred to the abdomen from the seatbelt inflicted traction injury onto the uterus and avulsed the leiomyoma. Our patient was able to report a history of symptomatic fibroids, which should increase suspicion of leiomyomatous injury as an etiology for hemoperitoneum. This need for high suspicion is particularly the case in any trauma that could possibly involve the abdomen or pelvis, and is especially important in those with a known past medical history of leiomyomas.[2, 3].

Failed Extubation Due to Upper Airway Edema: Are Intuitive Predictors of Edema Reliable in Trauma Patients?

N. Kevorkian, D. Joseph, I. Staff, K. Butler

University of Connecticut, Hartford Hospital, Hartford CT

Introduction: Extubation failure may increase patient morbidity and hospital cost. Upper airway edema (UAE) has been shown to be a contributing factor in failed extubations. It is unclear if intuitive predictors such as positive fluid balance, large endotracheal tube (ETT) size, or the absence of a cuff leak around the ETT can reliably detect trauma patients with UAE. The purpose of this study was to determine if fluid balance or qualitative cuff leak was associated with UAE in trauma patients who experienced early extubation failure.

Methods: We retrospectively reviewed consecutive trauma patients ≥ 18 years of age admitted to the surgical intensive care unit (SICU) between 01/01/2011 and 09/30/2013 and who required reintubation within 48 hours of extubation. Data collected included demographics, injury severity scores, presence of maxillofacial injury, endotracheal tube size, fluid balance, pre-extubation qualitative cuff leak, ICU and ventilator length of stay (LOS), and outcomes including tracheostomy and discharge disposition. Descriptive comparisons, including outcomes, were made between +UAE patients and -UAE patients. Length of stay data are presented as median with inter-quartile range [IQR].

Results: Forty four patients met inclusion criteria; of these, 36% had UAE. Mean age, gender, BMI, presence of maxillofacial injury, ETT size, and ICU-LOS were comparable in both groups. The +UAE group had a lower median ISS score (19 [9.25–26.8] vs. 24 [16.5–33.5]), a longer pre-extubation ventilator LOS (4.5 days [2.25–9.25] vs. 2.5 days [1.0–5.0]) but a shorter post re-intubation ventilator LOS (5.5 days [4–8.5] vs. 7 days [4–9.75]). Unexpectedly, at the time of extubation, more +UAE patients had a fluid balance less than 2000 ml as compared to -UAE patients (64% vs. 36%, $P=0.07$). While 97% of patients demonstrated a qualitative cuff leak, 38% of these patients had post-extubation upper airway edema. +UAE patients more frequently had a tracheostomy performed (56.3% vs. 34.6%) and were more likely to be discharged to a skilled nursing facility (81.3% vs. 40.7%) than -UAE.

Conclusions: UAE occurred in over one third of trauma patients requiring early re-intubation. Surprisingly, fluid balance or the presence of a qualitative cuff leak as intuitive predictors of UAE did not identify affected patients. UAE was associated with increased frequency of tracheostomy and subsequently decreased post-reintubation ventilator LOS. Early identification of UAE may reduce hospital cost and patient morbidity and improve ICU throughput.

Therapeutic Hypothermia Treatment in Near-Hanging: Outcomes from Cases at a Community Hospital

Christian D. Cain, MD and Xuewei Zhang, MD, Marissa DeFreese, MD

The Stamford Hospital, Stamford, CT

Introduction: Hanging is an act most commonly associated with suicide; however, it may occur accidentally or be utilized as a judicial punishment. For clinical descriptive purposes, the term near-hanging is used to describe unsuccessful attempt at nonjudicial hanging resulting in strangulation rather than a fatal cervical spine injury (1). The standard treatment of patients in comatose state without cardiac arrest due to near-hanging is supportive treatment in the intensive care unit. Therapeutic hypothermia has been demonstrated to have clinical neuroprotective benefits in comatose patients following cardiac arrest. Therefore, it is reasonable to assume neuroprotection in non-cardiac arrest patients, as well. Therapeutic hypothermia has been widely adopted since 2002 when Bernard et al demonstrated that hypothermia-treated patients with anoxic brain injury secondary to cardiac arrest had almost double the survival rate compared to patients without (3). Despite its standardized application in comatose patients, therapeutic hypothermia's efficacy in neuroprotection for patients after hanging has not been studied and recognized to the same extent.

Methods: Using the Stamford Hospital Trauma Registry, we identified 7 patient near-hanging admissions between 10/2012 and 08/2014. Patient charts were reviewed retrospectively. Patients classified as "dead on arrival" or "expired" were excluded from analysis. One patient who did not receive hypothermic therapy was also excluded. The remaining three patient charts were further reviewed for admitting/discharge Glasgow Coma Scale level, CAT scan, MRI scan, electroencephalogram results, suspension time, and complications. A primary outcome of discharge disposition was identified using discharge summaries.

Results: Since October 2012, there have been 7 near-hanging patient admissions. Three of those suffered death as a consequence of anoxic brain injury with cardiac arrest. Of the remaining four patients, one patient was excluded from analysis as there was minimal suspension time (<5 s per EMS report). The remaining three patients all had GCS 4T, were all male, and were comatose without cardiac arrest. They all received therapeutic hypothermia for a total of three days according to the Stamford Hospital Hypothermia Protocol. Length of stay ranged from 9 to 22 days. Complications noted were pneumonia and clostridium difficile infection (both in the same patient). Two of three patients were discharged to home with outpatient psychiatric care; one patient was discharged to inpatient psychiatric unit. None of the patients required neuro-cognitive rehabilitation following discharge. GCS 15 was recorded on discharge for all patients.

Conclusions: At Stamford Hospital, when patients present in a comatose state, the standard practice is to start therapeutic hypothermia following a return of systemic circulation after cardiac arrest unrelated to trauma or hemorrhage. Therapeutic hypothermia is often used to resuscitate patients who present to our center after near-hanging. While the neuroprotective benefits of therapeutic hypothermia in comatose patients with cardiac arrest are clear, the role of this intervention in non-cardiac arrest patients has not been thoroughly explored (2). Our case series is limited by the low number of patients reviewed and adds to the retrospective data that is available, however, prospective, randomized-control data is needed to clearly highlight the clinical benefits and risks.

References:

1. Borgquist O et al. "Therapeutic hypothermia for comatose survivors after near-hanging-a retrospective analysis." *Resuscitation*. 2009 Feb;80(2):210-2
2. Jehle D et al. "Beneficial response to mild therapeutic hypothermia for comatose survivors of near-hanging." *Am J Emerg Med*. 2010 Mar;28(3):390
3. Bernard SA et al "Treatment of comatose survivors of out-of-hospital cardiac arrest with induced hypothermia." *N Engl J Med* 2002; 245: 557-63

Bariatric Surgery Competition

The Role of Metabolic Surgery in the Treatment of Type II Diabetes in the Non-obese Population

John Hwang, MD, Kristina Ziegler, MD, James Bonheur, MD

The Stamford Hospital

Introduction: The proportion of normal weight (body mass index [BMI] < 25) adult Type 2 diabetics has been quoted at 12%. This population represents an understudied phenotype that has become increasingly common. Weight-loss independent resolution of diabetes after metabolic surgery is well described. Recently published results from the STAMPEDE trial show a 3-year diabetes remission rate of 38% in the gastric bypass arm versus 5% in the medical therapy arm. Although there is an ongoing movement to lower operative criteria to include the moderately obese (BMI 30-35), there is no significant interest to extend the indications to include normal weight diabetics.]

Method(s): The authors performed a review of published literature. The goal is to analyze the role of metabolic surgery in the treatment of diabetes in the normal weight population. We compared the benefits and morbidity associated with this potential treatment modality. Considerations examined include rates of diabetes remission after surgery, morbidity associated with surgery, morbidity of life-long pharmacotherapy, and morbidity of long term diabetic complications.

Results: Complications of laparoscopic gastric bypass includes bleeding (<4%), anastomotic leak (<4%), wound infection (<5%), thromboembolism (<1%), anastomotic strictures (2-16%), marginal ulcers (<5%), and bowel obstruction (3%). The 30-day mortality rate is quoted at 0.5%. 3-year post-operative diabetes remission is 38% while only 5% with medical therapy. Morbidity of life-long medical therapy and disease progression is harder to quantify but is significant and often devastating]

Conclusion(s): There is an ongoing discussion to lower the BMI indication for metabolic surgery however there is rarely any consideration of surgical therapy for diabetes in the non-obese population. Gastric cancer experience demonstrates that excessive weight loss is rarely a problem for normal weight individuals undergoing gastric bypass procedures. By all measures, metabolic surgery is relatively safe and often delivers tremendous health benefits. Normal weight diabetics do not have the option of lifestyle modification and appear to have higher mortality relative to overweight diabetics. The time has come to investigate the role of the metabolic surgeon in the treatment of normal weight diabetics.]

Median Arcuate Ligament Syndrome Following Gastric Bypass

John Calhoun MD, Elise McKenna MD, Ph.D, Daniel Davis DO

Stamford Hospital Department of Surgery

Introduction: Median arcuate ligament syndrome (MALS), also known as celiac axis syndrome, is a clinically uncommon and incompletely understood diagnosis thought to involve both vascular and neurogenic effects stemming from median arcuate ligament compression of the celiac trunk and celiac plexus. Postprandial pain, weight loss greater than 20 pounds (lbs), and an abdominal bruit make up a clinical triad used to guide diagnosis. Radiographically, Computed Tomography (CT) may reveal celiac trunk stenosis and post stenotic dilation. Duplex Ultrasound may demonstrate elevated blood flow velocity. As a diagnosis of exclusion, it is not uncommon for patients to have a history of diagnostic studies and procedures which have unsuccessfully described or resolved symptoms. While most patients achieve symptomatic relief in the immediate period following operative release of the median arcuate ligament, eventual outcomes vary widely. Improved success rates have been correlated with presence of postprandial pain characteristic of visceral ischemia, age 40-60 years, history of weight loss greater than 20 lbs, and the female gender. Decreased success rates were found in patients who fell outside these parameters and, in particular, were correlated with the presence of psychiatric conditions.

Case Study: This case examines the clinical history and operative course of a 24 year old female with an extensive past medical history of Schizophrenia and morbid obesity who underwent a successful gastric bypass procedure approximately two years ago and subsequently presented with postprandial pain of undetermined origin. The patient underwent a cholecystectomy for acute cholecystitis, and endoscopic balloon dilation of post gastric bypass anastomotic strictures, none of which resolved her postprandial pain. She was eventually diagnosed with MALS based upon CT. The patient underwent laparoscopic release of the median arcuate ligament with successful perioperative symptom relief. There is only one other report describing MALS in a patient with a history of gastric bypass. This report documents a patient much younger than the described mean age of 47 whose case is complicated by schizophrenia, a comorbidity associated with decreased postoperative treatment success. This report discusses a rare condition and further demonstrates the need for heightened awareness of MALS as a possible diagnosis in a patient with postprandial pain status post gastric bypass. It is also the suggestion of this report, in particular, that a clinician must be aware that in patients with a history of gastric bypass, weight loss is to be expected in high quantity, and this may cloud the diagnosis as weight loss greater than 20 lbs is an arm of the clinical triad for MALS.

The Evolving Field of Bariatric Surgery: Comparing Safety and Efficacy among three Bariatric Surgeries in a Community Hospital Setting

Kevin Chysna, MS IV. Sumanth Suresh, MD. Abdel Aziz Richi, MD. Shady Hafez Macaron, MD. J. Alexander Palesty, MD, FACS.

Stanley J. Dudrick Department of Surgery at Saint Mary's Hospital

Introduction: Obesity and its health-related complications constitute a major worldwide public health problem. Medical management has had little success in maintaining long-term weight loss. The most effective evidence-based treatment for weight loss and resolution of weight-related health complications remains surgical, but many questions remain unanswered due to conflicting efficacy and safety data. For these reasons, we performed a retrospective analysis comparing efficacy and safety data between three commonly performed bariatric procedures: sleeve gastrectomy (SG), Roux-en-Y gastric bypass (RYGB), and laparoscopic gastric banding (LGB).

Method(s): Patients from a single hospital center in Connecticut who underwent one of three bariatric procedures between 1/1/08 and 5/30/13 were included in the study. A total of 198 patient charts were abstracted. Body mass index (BMI), comorbidities, mortality rates, complication rates, hospital readmissions, surgical revisions, and misconstructions were examined at four times postoperatively: acutely, at 1 month, at 3 months, and at 12 months.

Results: The three groups had similar baseline characteristics in terms of age, BMI, female/male ratio, and comorbidities. Rate of major intraoperative complications and acute postoperative complications did not differ between groups. RYGB had more postoperative complications by 1 and 3 months than SG and LGB. Also, both RYGB and LGB had more complications than SG by 12 months. LGB had the least hospital stay time, highest mortality rate at 12 months, and greatest number of surgical revisions. Hospital readmissions within 12 months were significantly greater in the RYGB group than SG group. Preliminary postoperative BMI and comorbidity data suggest that SG and RYGB were equally more effective than LGB in weight reduction and comorbidity resolution by 12 months follow-up.

Conclusion(s): SG is the safest bariatric surgery and equally as effective as RYGB in weight reduction and comorbidity resolution for the first 12 months postoperatively. The cost of SG is comparable to gastric bypass. However, when factoring in fewer postoperative complications and less hospital readmissions, SG may be relatively more cost-effective than other procedures. Although rare, internal hernias and leaks are ongoing complications for RYGB and SG, respectively. Overall, our results suggest that SG may be the preferable bariatric surgery when safety, efficacy, and cost are considered. Limitations include small sample sizes and relatively short follow-up times, which may fail to capture weight regain seen in some bariatric patients.

Plastic & Reconstructive Surgery

Honorable Mention Paper

Case Reports Competition

Moderator:

J. Alexander Palesty, MD, FACS

Assistant Professor, University of Connecticut
School of Medicine, Farmington, CT, Director, Program
in Surgery, St. Mary's Hospital, Waterbury, CT

Judge:

Kathleen LaVorgna, MD, FACS,
Private Practice, Norwalk CT

Plastic & Reconstructive Surgery – Honorable Mention

A Novel Method of Managing MIS Positive Margins in Melanoma

Amrita S Pandit, MD¹; Erik J Geiger, BA²; Stephan Ariyan, MD, MBA²; Deepak Narayan, MD, FRCS²; Jennifer N Choi, MD³

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Background: The treatment of melanoma in situ (MIS) is controversial with current standard of care being surgical excision with clear margins. Alternative topical therapy with imiquimod has been proposed in recent studies as a possible treatment for MIS.

Objectives: This study aimed to evaluate the use of topical 5% imiquimod as an alternative approach for the treatment of residual melanoma-in-situ after ostensibly clear margins.

Methods: A retrospective chart review of all patients treated with topical 5% imiquimod for residual MIS following standard resection with 5-10 mm margins at Yale-New Haven Hospital from 2008 through 2014 was performed. The pre- and post-treatment results were confirmed by diagnostic tissue biopsy.

Results: Twenty-four patients were included in the study. One of these 24 patients was lost to follow up. 20 patients (83.33%) had complete resolution of their residual MIS and 1 patient did not respond to imiquimod (4.1%) and 2 patients have clinical resolution with biopsies pending for histological confirmation. No reports of recurrences were noted at the treatment sites.

Conclusion: For patients with residual melanoma in situ after the initial excision, topical 5% imiquimod appears to be a reasonable alternative treatment with good clinical and histopathologic success rates.



Figure 1 (a) 4 weeks into treatment with imiquimod 5% cream



Figure 1 (b) 11 weeks into treatment just before discontinuation of imiquimod cream



Figure 1 (c) 5 weeks after surveillance biopsies were performed, which revealed clearance

Case Reports

Congenital Agenesis of the Gall Bladder

Basil Nwoaz, MD, Kevin Miller, MD. The Stamford Hospital/Columbia University College of Physicians and Surgeons.

Introduction: Gall bladder agenesis is a rare entity with an estimated incidence of 0.01% to 0.04%. It was first reported in the literature by Bergman in 1702. However, there exists very little literature to date describing this condition. The etiology of agenesis of the gall bladder is still unclear although there seems to be a hereditary component. It has been associated with cases of biliary atresia, however isolated absence of the gall bladder is extremely rare. It is estimated that approximately 25% of cases may become symptomatic. It is likely that agenesis of the gall bladder will almost always be misinterpreted as some other biliary condition leading to unnecessary surgery. The rarity of this condition combined with the non specific nature of the symptoms and radiologic features make gall bladder agenesis indistinguishable from more common biliary conditions. Preoperative diagnosis is highly unlikely.

Case Description: This is a 48 year old male with 1 year history of chronic intermittent right upper quadrant abdominal pain that worsened over the last 24 hours. His vital signs were stable and he was afebrile. His hematological and biochemical studies were significant for a bilirubin of 1.8 with otherwise normal hepatic panel. On exam, he was tender in the right upper quadrant and epigastrium without rebound or guarding. No Murphy's sign was present. He had no surgical scars and denied any previous abdominal surgeries. A right upper quadrant ultrasound was obtained that showed absence of the gall bladder that was consistent with findings on previously obtained CT scan and prior ultrasound. Given his denial of previous abdominal surgery and absence of surgical scars we could not readily explain why no gall bladder was visualized. A HIDA scan was obtained. It showed a patent common bile duct with radiotracer entering the duodenum. The gall bladder was again noted as absent. We then obtained an MRCP which also did not visualize a gall bladder. The patient underwent medical treatment with complete resolution of his symptoms.

Discussion: Anatomic anomalies of the biliary tract are not unusual but congenital agenesis of the gall bladder is rare. It is oftentimes discovered incidentally or during autopsy. The mean age for discovery in adults is 45. The preoperative diagnosis of gall bladder agenesis is difficult to make. Heightened awareness of this condition coupled with advances in biliary tract imaging can prevent patients from needless operative interventions and morbidity associated with iatrogenic injury.

An Unusual Cause of Abdominal Catastrophe: Ruptured Pancreaticoduodenal Artery Aneurysm

Stuart Blackwood MD, Alan Dietzek MD

Danbury Hospital

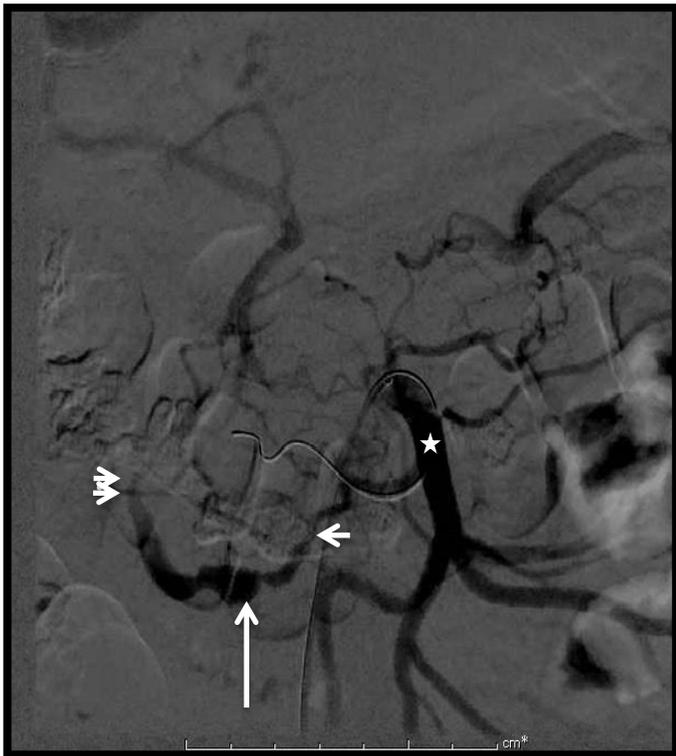
Introduction: Pancreaticoduodenal artery (PDA) aneurysm rupture is rarely reported and there is no consensus on how best to manage these emergent presentations. Currently the few cases reported have been evenly divided in management between ligation and embolization with varied success.

Method(s): We describe a case report of a patient who ruptured a inferior pancreaticoduodenal artery aneurysm shortly after chiropractor manipulation and presented in extremis. He was successfully treated with endovascular coil embolization.

Results: The operation was complicated by iatrogenic repeat rupture of the aneurysm while attempting to traverse the inferior pancreatic arcade. Coil packing was placed throughout the inferior pancreaticoduodenal artery and GDA. He currently remains symptom free at 3 month follow up

Conclusion(s): Aneurysms of the PDA can rupture at any size and carry a significant mortality. This endovascular technique is a minimally invasive method to treat a life threatening problem

Figure 1. Superior Mesenteric Artery (star) depicted here with Inferior Pancreaticoduodenal Artery (short horizontal arrow) and Inferior Pancreaticoduodenal Artery Aneurysm (long vertical arrow) are depicted here. Superior Pancreaticoduodenal Artery (two short arrows) also shown.



Hyperbaric Oxygen Therapy for Recurrent Pilonidal Cysts with Associated Chronic Wound

Daniella Vega, James Matino

St. Francis Hospital

Introduction: Wound complication, recurrence, and need for repeat surgery have long been described as complications arising from pilonidal cyst operations. There has been an effort to describe more conservative approaches to pilonidal treatment, including cleft closure and use of human dermal allograft. Chronic wound complications from repeat procedures and association with anaerobic bacteria still present a problem. Hyperbaric oxygen therapy has been used for several years to treat chronic, non-healing wounds. It has also been useful in helping to heal wounds associated with anaerobic bacteria.

Method(s): This is a case report of a 17-year-old male who had previously failed two surgical interventions for pilonidal cyst disease complicated by pilonidal recurrence as well as non-healing wounds. Given the patient's complex history and the surgeon's experience with hyperbaric oxygen therapy, the decision was made to move forward with a novel approach to pilonidal disease and associated chronic wounds and to treat his recurrence with hyperbaric oxygen therapy.

Results: The patient has so far had tremendous results with complete wound closure and no evidence of remaining pilonidal disease after several weeks of hyperbaric oxygen therapy. Long-term results remain to be evaluated.

Conclusion(s): In conclusion, given the historical success of hyperbaric oxygen therapy for use in chronic wounds and treatment of infection and wound associated with anaerobic bacteria, it is not unreasonable to treat recurrent pilonidal disease and associated chronic wound with hyperbaric oxygen therapy. This case report demonstrates preliminary success using this novel approach and opens the door for further investigation with prospective trials.

An Endovascular Approach to a Celiac Artery Aneurysm: A Case Report and Literature Review

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Introduction: Advances in imaging, CT and ultrasound, have allowed for both incidental and accurate timely detection of symptomatic cases of celiac artery aneurysms. Furthermore, endovascular approaches to treatment have been explored as a less invasive alternative to repair in the operating room. This case represents one of the few reported celiac artery aneurysm repairs conducted successfully with endovascular techniques.

Case Presentation: A 64 year old male with end-stage renal disease presented to the emergency department after dialysis with chest pain and a clinical picture of pneumonia. A CT scan of the chest incidentally revealed an aneurysm near the celiac trunk. A CT scan of the abdomen with IV contrast discovered an 8cm mass suggestive of an intact hepatic artery aneurysm. The patient was medically optimized for his pneumonia and an initial diagnostic aortogram was conducted. Successful splenic artery stenting and coil embolization of the aneurysm was performed, both through a right brachial artery approach. Left gastric and splenic artery patencies were confirmed. The patient had right and left hepatic artery collateralization from the superior mesenteric artery. Post operatively the patient developed a pseudoaneurysm in the right brachial artery that ultimately required surgical intervention after two attempts at direct thrombin injection.

Conclusion: While there is no consensus on whether a traditional surgical approach or an endovascular approach is preferred, the minimally invasive nature of endovascular therapies can decrease hospitalization time. Often a patient's comorbidities or other secondary risk factors due to complex anatomy and pathology act to prohibit traditional open surgery with general anesthesia. This case demonstrates another successful utilization of the minimally invasive features that endovascular intervention has to offer patients with celiac artery aneurysms; however, this patient's treatment was not without complication and is also an important example of the risks and limitations of endovascular intervention.

Polycythemia in Cardiac Surgery Patients as an Indicator for Antithrombin III Deficiency

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The Stamford Hospital

Introduction: Anticoagulation with high dose systemic heparin (>3.0mg/kg) is routinely given to patients in order to safely establish cardiopulmonary bypass (CPB) for cardiac surgery. Adequate heparinization is determined by the Activated Clotting Time (ACT), a point of care (POC) test. Polycythemia is a known hematologic presentation secondary to causative factors relating to oxygen delivery. A deficiency of Antithrombin, naturally occurring in the plasma, whether hereditary or acquired, can limit the effectiveness of Heparin and therefore these patients often require extreme doses of Heparin (>10 mg/kg) to achieve adequate heparinization. Treatment with supplemental and concomitant recombinant Antithrombin III with heparin can achieve adequate ACT for CPB without the need for potentially dangerous doses of unfractionated Heparin. Polycythemia may act as an indicator pre-operatively that patients have antithrombin III deficiency and allow for appropriate evaluation and treatment.

Methods/Discussion: This is a case report of a 57 year old male with a history of polycythemia, asthma, hypertension, pulmonary embolism, obstructive sleep apnea on continuous positive airway pressure who originally presented with non-ST segment elevation myocardial infarction. He was found to have multi-vessel coronary artery disease and taken for semi-urgent coronary artery bypass grafting. The patient was administered 3.5 mg/kg of bovine heparin prior to cannulation for CPB, without sufficient increase in activated clotting time (ACT). He was subsequently started on a recombinant form of antithrombin III that resulted in sufficient change in ACT to allow for the procedure.

Conclusion: The presence of polycythemia in a patient with a history of a large vessel venous embolus may indicate a hyper-coagulable state such as Antithrombin deficiency, preventing adequate ACT levels prior to cannulation for cardiac surgery. Recognizing these risk factors prevents over-administration of Heparin prior to cannulation.

Case Report of a Small Bowel Obstruction Caused by Anisakiosis

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Stamford Hospital

Introduction: Intestinal parasitic infection with *Anisakis* is a rare cause of small bowel obstruction. This usually occurs after consumption of raw or undercooked fish containing larvae, and thus is a more common problem in countries such as Japan and Spain where fish is often eaten raw. The incidence of parasitic causes of bowel obstruction in the United States has generally been extremely low. However, this has been increasing as foods such as sushi become more popular. Humans are incidental hosts for these oceanic parasites. Approximately 3% of cases of abdominal infection with *Anisakis* are intestinal with the majority presenting with gastric infection.

Methods: Case report.

Results: This is a rare case of a 53-year-old man with no past surgical history who presents with acute onset abdominal pain, nausea, and obstipation. He was diagnosed with a high-grade small bowel obstruction and was taken to the operating room for an urgent exploratory laparotomy. A dilated loop of small bowel was discovered with a palpable mass distally which was clearly the point of transition. This portion of the bowel was resected. Pathological examination of the specimen revealed cross-sectional evidence of a helminth as well as eosinophilic infiltration of the surrounding tissues. Further morphologic examination identified *Anisakis*. When the patient was questioned further he admitted to having eaten sushi and ceviche within the last 2 weeks. He recovered well from his surgery and has not had further complications.

Conclusions: Though parasitic infection leading to bowel obstruction is rare in the United States, the incidence is rising as more raw fish is consumed. In patients who present with a high-grade obstruction without a history of prior surgery, and with a history of eating raw or undercooked fish, the possibility of a parasitic infection should be considered.



Crack Cocaine Induced Perforation of a Pre-Pyloric Ulcer

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Saint Francis Hospital and Medical Center, University of Connecticut Department of General Surgery

Introduction: Crack cocaine, which was introduced into the streets of America in the mid 1980's has been associated with the perforation of gastro-duodenal ulcers. There seems to be a causal and temporal relationship between smoking crack and the onset of acute peritonitis secondary to perforation. However, the exact mechanism behind this phenomenon is not fully understood.

Case Presentation: We describe a 63 year-old male with no known history of peptic ulcer disease who presented to the Emergency Department with abdominal pain and nausea several hours after smoking crack. The patient had a normal WBC of 7.9 and free air under the diaphragm at the time of evaluation.

Management and Outcome: Our patient was successfully treated with exploratory laparotomy and graham patch closure. His post surgical course was uncomplicated and serology for H. pylori was negative.

Conclusion: Over the last three decades there has been an increased number of gastro-duodenal ulcer perforations secondary to crack cocaine use. These patients are generally young males and present with a normal WBC count compared to the elderly patient with known peptic ulcer disease who usually present with profound leukocytosis. Here we present a patient with acute perforation of a pre-pyloric ulcer several hours after the use of crack cocaine. The surgical management of these patients is the same regardless of the mechanism of perforation.

Case Report of a Retrorectal Epidermoid Cyst in an Adult Male

Victor Sanchez, Emilia Krol , Stuart Bussell

Danbury Hospital

Introduction: Retrorectal cysts are rare findings with a great variety in possible etiology, histology, and malignant potential. Literature review shows that these growths are often misdiagnosed as more common entities or unnoticed until incidental finding on exam or imaging studies. Even more uncommon is its discovery in men.

Methods: A case presentation and a brief literature review

Results: We present a case of a 39 year old male who suffered from a perirectal pain for 6 months. Patient also stated, he on occasion experienced feeling of incomplete defecation. No abnormalities were detected on physical exam, and patient underwent MRI of the pelvis. (Fig 1) The study showed a retrorectal mass, 5 cm in the widest diameter. Patient opted for surgical excision. He was brought to the operating room, and placed in the jack – knife prone position. Perianal transverse incision was performed and the cyst was removed in its entirety along with coccygectomy. The peritoneal cavity was not entered. Patient tolerated the procedure well and was discharged home the following day. The final pathology report showed the mass to be an epidermoid cyst.



Fig 1.

Conclusions: Retrorectal cysts are a rare entity, more common in females than males. Their presenting diagnosis is usually perianal pain, but most will be discovered incidentally. The main purpose of the differential diagnosis should be to exclude malignancy, which can be achieved by performing a biopsy or excising the mass entirely. Both midline laparotomy and perianal transverse incision were described in the literature as options for surgical resection.

The miRNA expression profile of human lymphatic malformations

Andre Alcon, Stephanie Douglas, Neal Nolan, Deepak Narayan

Yale University School of Medicine

Introduction: Aberrant lymphatic development is believed to result in lymphatic malformations (LM), benign vascular anomalies that consist of dilated lymphatic vessels that are disconnected from the rest of the lymphatic system. These lesions grow significantly in size over time as extracellular fluid accumulates, potentially resulting in infection or impairment of neighboring structures. Unfortunately, the underlying etiology of LMs is still at large, which has hindered the development of more advanced, possibly less invasive approaches to managing this disease.

MicroRNA's (miRNA's) are short (19-22 nucleotides), non-coding, single strands of RNA that post-transcriptionally repress protein expression. They have been found to regulate a vast array of cellular pathways. Given their broad involvement in cell biology and human disease, we sought to characterize the miRNA expression profiles of 12 human lymphatic malformations.

Method(s): RNA was extracted from human LM specimens and control human lymphatic endothelial cells for microarray analysis. miRNA databases were queried for several genes known to be involved in lymphangiogenesis- Prox1, GATA2, FOXC2, VEGC, VEGFR3, and LYVE1. These databases use bioinformatics to predict the miRNA regulators of a given gene. These miRNA's were cross-referenced with our list of aberrant miRNA's to identify miRNA that could be involved in LM development. **Results:** [state the exact results obtained]

Result(s): We identified the top ten most up-regulated and down-regulated miRNA's from 12 human LM specimens. Of these miRNA's, only two were predicted to regulate a gene known to be involved in lymphangiogenesis. miR-181b-5p was found to be expressed at significantly lower levels than controls and is a regulator of Prox1. On the other hand, miR-551b-3p was significantly up-regulated and predicted to regulate GATA2. Other miRNA's were identified as regulators of genes associated with lymphangiogenesis that are also aberrantly expressed in the LM specimens we analyzed.

Conclusion(s): This miRNA screen provides clues to better understand LM biology and the role of miRNA in lymphatic development. More in-depth bioinformatics are needed to delineate the specific pathways that might be altered by these miRNAs as well as additional *in vitro* studies assessing the significance these miRNA's might have on a cellular level.

The Application of the Latissimus Dorsi Flap for the Treatment of Persistent Air Leak

Basil Nwoaz, MD, Leif Nordberg, MD. The Stamford Hospital/Columbia University College of Physicians and Surgeons.

Introduction: The latissimus dorsi flap is a versatile musculocutaneous flap known for its diverse applicability. Mostly popularized for its use in breast reconstruction, it has occasionally been utilized for thoracic reconstruction to obliterate dead space and allow a vascularized surface for wound healing and delivery of antibiotic therapy. Persistent air leaks and pleural space dilemmas are common problems faced by thoracic surgeons following lung resection. This case is a remarkable application of the latissimus dorsi flap for the treatment of an air leak refractory to conventional management.

Case Description: This is a 69 year old male with history of Stage II non small cell lung cancer who underwent right upper lobectomy at our institution. His postoperative course was complicated by persistent air leak recalcitrant to prolonged thoracostomy tube and pleurodesis. He eventually returned to the operating room for pedicled latissimus dorsi flap closure of the pleural dead space. His chest tube was removed post operative day 4 without any residual air leak present upon discharge or at 3 month follow up visit.

Discussion: This case demonstrates the benefit of utilizing the pedicled latissimus dorsi flap for refractory air leak. There is limited literature regarding its application in this setting. The procedure is associated with minimal morbidity and deformity. It is an effective treatment option when more conservative or traditional methods have been ineffective and can reduce overall hospital stay if implemented efficiently.

General Surgery Competition

Moderator:

**Royd Fukomoto, MD, FACS, Western Connecticut Health Network,
Danbury Campus, Danbury, CT**

Judge:

**James Feeney, MD, FACS, Associate Director of Trauma and
the Director of Surgical Research, St. Francis Hospital and
Medical Center, Hartford, CT**

Surgical Quality & Leadership Curriculum

Emmanuel A, Sanzari L, Shames B, Shapiro D, Ellner S

Saint Francis Hospital and Medical Center

Introduction: Our organization has developed a Quality, Safety & Leadership curriculum for surgery residents, based on the ACS Quality In-training Initiative (QITI). The curriculum supports the ACGME core competencies, and fills an existing void in every surgical residency.

Method(s): The case-based curriculum includes seven 90-minute sessions in our current academic year. The sessions are divided into specific topics to prepare the modern surgical resident to be effective communicators and leaders in their healthcare communities:

1. Understanding the Basics principles of Quality in Healthcare
2. Provider Payment Reform
3. Civility and Leadership
4. Conflict Resolution and high-stress environment
5. Organizational Change
6. Communication strategies to enhance surgical safety and quality
7. Physician Feedback
8. Quality Improvement Techniques
9. Competitive Strategy
10. Health Care Finance

Results: A pre-curriculum Safety Attitudes Questionnaire (SAQ) was administered to gauge understanding of surgical safety. The survey will be readministered at the conclusion of the curriculum to track the improvement in knowledge. Resident performance will be tracked using phase analysis through the NSQIP database for patient outcomes—before and after the intervention—to objectively track the effect of the educational initiative, and QITI documented outcomes will be assessed in parallel.

Conclusion(s): A significant unmet need exists regarding safety and leadership education in existing surgical residencies. No other initiative exists to design and implement a curriculum addressing this void. If significant improvement in safety attitudes is demonstrated and resident knowledge and/or patient outcomes improve, it will be incorporated into the existing curriculum in our program and disseminated.

Surgical outcomes related to Level of Assistance in the Operating Room

Umer A, Shapiro D, Sanzari L, Emmanuel A & Ellner, S.

Saint Francis Hospital & Medical Center

Introduction: Surgical assistants vary in their level of training and experience. We used the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) to examine surgical complications compared to level of assistance during surgery.

Methods: Data for our center was obtained from the ACS NSQIP database from 2007 to 2012. 4235 cases were examined for complications based on the level of assistance received, and 674 cases had complete data available in the most commonly performed procedures (appendectomy, cholecystectomy, colectomy and inguinal hernia). The assistant groups examined were resident versus non-resident (PA, fellow, attending surgeon, surgeon alone). Logistic regression models controlling for age, BMI, ASA class, emergent case and level of assistance were performed to evaluate for NSQIP-mandated complications.

Results: Cases in which residents assisted (RA) were compared to cases with non-resident assistants (NR). Of 674 cases total, 47 were RA and 627 were NR. One complication was noted in the RA group and 34 in the NR group. Age, ASA, emergent cases and type of assistant were significant predictors of complications ($p < 0.001$).

Conclusion: Complications rates are higher in NR groups compared to RA. Other confounding variables are evident, including varying level of resident involvement and selection bias for complicated cases. As resident-associated outcomes are being scrutinized with NSQIP and QITI, this study provides an initial look at the large body of data but more work is needed to reach definite conclusions.

Are Swallow Evaluations Enough to Prevent Aspirations?

Hebron Obaid, MD, Mohomad Zanbrakji, MD, and Kevin Dwyer, MD

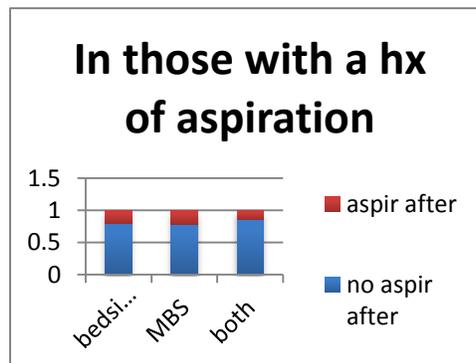
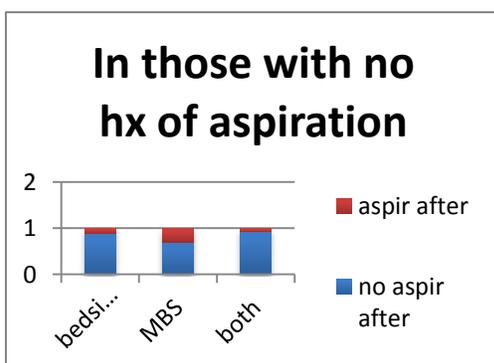
Stamford Hospital-Columbia University College of Physicians and Surgeons

Introduction: Aspiration leading to respiratory compromise, i.e. polymicrobial pneumonia or acute respiratory distress syndrome (ARDS), is a common, preventable morbidity associated with hospitalized patients, especially those elderly or critically ill. There exist multiple modalities of evaluating patients at risk of aspiration, to guide therapy, to decrease post-intervention risk.

Method(s): In this descriptive, retrospective study, we gathered data from 2008 to 2013 from the electronic medical records at a community hospital with university affiliation regarding those patients who were at risk of aspiration but did not have an acute event before evaluation and those who had experienced an aspiration event, and were at continued risk, thusly. Those patients who had received modified barium swallow study (MBS), bedside swallow evaluation (BSE) from a speech pathologist, or both at any point were identified and compared. These few groups were correlated so that we gathered data from those patients who had risk or had an event and had received some intervention. Care was taken to analyze data within the same groups—that is, looking at the pre- versus post-evaluation history of aspiration before comparing groups.

Results: We identified 789 patients who were at risk of aspiration given their clinical status, although they had no history of aspirations, and before starting them on a diet, a BSE, MBS, or both studies were conducted. It was calculated that patients who had both modalities of intervention had less frequent post-evaluation aspiration (6.9% with both methods of evaluation versus 11% with BSE versus 30% with MBS). 365 patients were selected who had an aspiration event prior to intervention. They too received BSE, MBS, or both forms of intervention. Incidence for post-evaluation aspiration was calculated, and surprisingly, there was not much difference between the groups (14.5% for both interventions versus 21% for BSE versus 22% for MBS).

Conclusion(s): Aspiration has proven to be a significant cause of morbidity and mortality associated with hospitalized patients. As such, it is necessary to discover some predictive indicator of aspiration risk that works for a wide patient population, to help establish some idea of at-risk patients, in whom therapy can be directed. While the data may suggest that the modality of evaluation makes no significant difference amongst those patients who received a MBS, BSE, or both evaluations after a history of aspiration, it is paramount to have some sense of patients' tolerance for feeding. In this manner, BSE seems the clear choice for a functional test, which has real world applications, and correlates well with how the patient will likely tolerate PO intake. Recommendations made based on BSE and MBS can help indicate the risk status of patients, but it is unlikely, at this stage, that the tests can be used to predict risk of aspiration with certainty. Moreover, it is paradoxical that both methods of evaluation seemingly benefitted the group that had no history of aspirations—who had lowered outcomes of post-evaluation aspiration when compared to the other group, with a prior history of aspiration. It would follow given the technique used for MBS studies that it may evidence anatomical defects, which may hinder the activity of swallowing. However, there is less real-world correlation between MBS and the actual act of swallowing. Regardless, it seems that in those patients who had no history of aspiration, having both studies to evaluate risk of aspiration may benefit that patient population in the long term.



American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) supports the use of an Early Warning System in identifying postoperative patients at risk for 30-day occurrences

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Introduction: Hospitalized patients may experience clinical deterioration which, if recognized in a timely fashion, can be acted upon to mitigate potential morbidity and mortality. Early Warning System (EWS) (Cerner Millennium®) is an evidence-based Electronic Medical Record (EMR) screening tool which triggers alerts based upon physiologic or laboratory abnormalities reflective of SIRS or organ dysfunction. ACSNSQIP is used to measure and improve quality of care in surgical patients. We hypothesize that postoperative EWS alert correlates with 30-day occurrences in our NSQIP database.

Method(s): A single institution new to NSQIP (9/2013) examined data prospectively for the period 9/23/2013 to 12/10/2013. EMR data for this period identified EWS alerts. Records of postoperative patients generating an alert (EWS+) were compared to those with no alert (EWS-), and 30-day outcomes were examined for both groups. Categorical data was analyzed using Fisher’s Exact test, and continuous data was analyzed using Student t test.

Results: All NSQIP cases for the study period were included (n=365), with 48 patients having 1 or more occurrences at 30 days, and 20 patients generating one or more postoperative EWS alerts during this period. There was no difference in patient characteristics (age, gender, ASA class, elective vs. emergency surgery) between the EWS+ and EWS- groups. EWS+ was positively associated with NSQIP reportable occurrences (p<.0001).

Conclusions: Using our early experience with NSQIP, we found that EWS identified postoperative patients at risk for 30-day occurrences. Integration of NSQIP and EWS may drive process improvement, leading to better postoperative outcomes.

	EWS+	EWS-	Total	Fishers		EWS+ Expected	EWS- Expected
OCCURRENCE +	13	35	48	<i>p 2-Tail</i>	2.86E-08	2.630136986	45.36986301
OCCURRENCE -	7	310	317	Chi-Sq	49.80515	17.36986301	299.630137
Total	20	345	365	<i>p</i>	1.7E-12		

SUSP Implementation at SFHMC

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Saint Francis Hospital and Medical Center

Introduction: Surgical quality has been a popular and evolving topic in recent literature. Many protocols have been developed to improve surgical outcomes with the ultimate goal of increasing patient safety and satisfaction while decreasing complication rates. The implementation of these protocols, however, remains an area of limited study. In the past, at Saint Francis Hospital and Medical Center (SFHMC), when effective protocols were initiated with positive outcomes, staff compliance to the protocols and even the positive outcomes themselves, declined over time. Surgical site infections (SSI) in colorectal surgery are one such endpoint that we aimed to reduce at SFHMC.

Method(s): We chose to implement the Surgical Unit based Safety Program (SUSP) toolset, developed at Johns Hopkins, and assembled a dedicated team to design an implementation strategy for this toolset. The Guideline Implementability Appraisal tool v2.0 (GLIA) was used to evaluate each step in the SUSP bundle.

Results: Full implementation of the SUSP protocol began in January 2014 and in the initial cohort of 101 patients undergoing colorectal surgery, there was an SSI rate of 8.9%. This was a significant drop from our pre-intervention rate of 21%.

Conclusion(s): The initial data from this project demonstrate that the planned implementation of an SSI reduction bundle (SUSP) can result in significantly lower SSIs. These findings also underscore the importance of implementation science in the world of surgical quality improvement.

Robotic Cholecystectomy in a Community Hospital Setting: Short-Term Outcomes, Feasibility and Cost-Analysis in Comparison to Laparoscopic Cholecystectomy

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Introduction: Since its introduction in 1997, robotic surgery has become an increasingly popular alternative to traditional laparoscopic surgery in General Surgery. Better cosmesis and a potentially safer technique are attractive to both patients and surgeons alike.

Method(s): A one year (January 2013 to January 2014) retrospective chart analysis was conducted to compare outcomes, cost-efficiency and safety of robotic cholecystectomy versus a conventional laparoscopic approach in an elective patient population. Outcomes, complications, total cost and total duration of procedure were analyzed for both groups.

Results: Data of 174 patients who underwent an elective outpatient procedure were analyzed. Of these, there were 131 women and 43 males. Average age was 47.6 years. 76 people underwent laparoscopic cholecystectomy, 98 patients had robotic-assisted cholecystectomy. Of the seven surgeons performing the procedures, 6 used both laparoscopic and robotic technique. One surgeon used laparoscopic technique exclusively. Average time of procedure and total procedure cost was higher for the robotic assisted cholecystectomy, 106 min and 14,869.90USD, compared to 74.6 min and 10,903.20USD in the laparoscopic group, respectively. Both techniques were feasible and safe. Single-site robotic cholecystectomy was cheaper and faster than multiport robotic-assisted technique. Observed postoperative morbidity for the robotic-assisted procedure was similar to laparoscopic cholecystectomy.

Conclusion(s): [Robotic assisted cholecystectomy is an efficacious and safe method of performing a cholecystectomy. It is, however, a procedure that is still associated with increased procedure time and cost. With further penetration of this technique into the general surgery marketplace, cost and operative times are expected to decrease, and robotic assisted cholecystectomy may eventually supplant traditional laparoscopic cholecystectomy as the standard of care.

Ligation of the Intersphincteric Fistula Tract (LIFT): Best treatment option for Complex Fistula in Ano

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Introduction: Management of complex fistula- in- ano is challenging with a high recurrence rate and risk for anal incontinence. The ligation of intersphincteric fistula tract (LIFT) technique for complex fistula –in-ano was first described by Rojanasakul et al in 2007 with a published success rate of 94%. The procedure is done in the outpatient setting under general anesthesia and requires no special equipment. Fistula tract found at intersphincteric plane is transected and ends are ligated, external opening dilated and tract curetted. Since then various authors have reported success rates varying between 40 and 94%. Our objective is to examine long term outcome in a community hospital following LIFT procedure for complex fistula-in-ano

Method(s): All patients from November 2011 to August 2014 who underwent LIFT procedure were prospectively followed. The procedure was performed by single colorectal fellowship trained surgeon in our institution. Patient demographics, procedure performed, previous repairs, post-operative data were collected and studied.

Results: A total of 22 patients underwent LIFT procedure, median follow up of 20 months (range, 2-34months) 15 patients were followed for more than 12 months. Primary healing at one month was 90 % (20 of 22). Both treatment failures occurred within six months of the operation. One patient was found to have an Intersphincteric fistula following LIFT and just needed fistulotomy; the other patient saw another surgeon and healed after placement of fistula plug. There were no intraoperative complications or patients with anal incontinence.

Conclusion(s): Our study demonstrates excellent long term results for complex fistula –in-ano treated with LIFT procedure. It is a simple cost effective safe procedure with a high success rate while maintaining anal continence.

Outcomes in Diverticulitis Patients with Intramural Abscesses

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Introduction: Four years after Cruveilhier first described colonic diverticula in 1849, Virchow described the inflammatory disease, diverticulitis, that accounted for nearly 300,000 hospital admissions in the United States in 2010.^{1,2} In recent years, the incidence of both non-complicated and complicated diverticulitis has risen.^{3,4} Since intramural abscesses were first described by Parulekar in 1985⁵ using ultrasound, studies using computerized tomography⁶⁻⁸ have also described this finding. At our institution, a trend in patients with diverticulitis presenting with intramural abscesses over the last several years has been identified. Review of the surgical literature unfortunately does not provide insight into the disease course, management, and outcomes of this subgroup of patients.

Methods: All patients between the ages of 18 and 89 who were admitted to the Stamford Hospital (Stamford, Connecticut) between October 1, 2008 and September 30, 2013 were screened. Patients who were admitted with a primary or secondary diagnosis of diverticulitis, as identified by using the ICD-9 code (562.11) for diverticulitis of the colon without mention of hemorrhage, were subsequently selected. The CT-scan reports on all selected patients during the study time period were reviewed. Patients who were noted to have an intramural abscess on the radiologists' reading were further sub-grouped. This final sub-group was divided into patients who did and patients who did not undergo surgical intervention.

In the operative group, development of an anastomotic leak, length of time between presentation and surgery, and findings at pathology were noted. Presenting leukocytosis, hospital length of stay, smoking status, age, and gender were noted in both operative and non-operative groups.

Results: A total of 667 patient-visits for 540 unique patients were screened, leading to the identification of twenty-one patients with an "intramural" finding. Of these, eighteen were found with an intramural abscess, two with intramural fistula tracts and one with an intramural phlegmon which demonstrated resolution on follow-up imaging. The latter three were excluded from further analysis.

Follow-up for all patients averaged 1173 days (range 383-2154 days) from the time of identification of the intramural abscess. As of August 31, 2014, eight of the eighteen patients (44.4%) have undergone surgical intervention. Two patients underwent surgical intervention during initial hospitalization while six had surgery on an elective basis. Both who had surgery during their initial hospitalization had repeat imaging five days after presentation and failed to demonstrate improvement. Of those undergoing elective surgery, time between inpatient admission date and surgical procedure date ranged between 71 and 1017 days (average 346 days). Pathologic examination of the specimens noted acute inflammation in all specimens except for two, one initial-hospitalization surgery and one elective. No malignancy was noted in pathologic specimens. No patients developed anastomotic leaks. Comparison between the two groups revealed no difference in white blood cell count on presentation, length of stay (if not undergoing immediate surgery), smoking status, and age. Interestingly, all eight patients in the operative group were female while 6 of 10 in the non-operative group were male.

Conclusion: With an increasing incidence of diverticulitis, we examined a subgroup of 18 patients that presented with intramural abscesses with the goal of gaining a better understanding of their clinical course and eventual outcome. The majority of those who are operated on in an elective setting, even longer than three years after initial presentation, were found to have ongoing acute inflammation in pathologic specimens. Despite active inflammation, we have not observed any anastomotic leaks. Future directions include looking at optimal timing for surgery and the duration for which patients should be on antibiotic therapy.

CT Cares: The State of Global Surgery Efforts from Connecticut

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Introduction: Surgery is emerging as a critical component of global healthcare worldwide. While surgery has become a substantial issue in horizontal health systems development projects like Rwanda's Human Resources for Health and the Lancet Commission on Global Surgery, most global surgical experiences remain based on a short-term "mission" model. Many Connecticut surgeons participate in these models, but little is known about the scale or scope of that participation. Additionally, little is known about the extent to which quality or outcomes are measured in these settings. The goal of this pilot survey project was to determine the level and breadth of participation in global surgery activities among surgeons in Connecticut.

Method(s): An electronic, online survey was sent to all practicing surgeons in the state of Connecticut via the CTACS registry and via the various departments of Surgery throughout the state. Invitations to take the online survey were emailed directly to surgical faculty, and participants were also iteratively sampled through encouragement of participants to send the survey link to potentially interested colleagues.

Results: 74 surgeons and surgical residents completed the online survey from 17 different hospitals throughout the state. Most were general surgeons or in general surgical training programs, but a spectrum of surgical specialties were represented. 19/74(25.7%) of respondents had participated in global surgery activities. Of these respondents, most participated yearly (56.3%) and for between 1-4 weeks during each experience (94.5%). Nearly half of this group reported no formal record of surgical outcomes during their global surgery experiences (52.9%), but 17/19 (89.5%) respondents reported that an accurate record of outcomes is beneficial to continued surgical care in resource poor areas. 89% reported a willingness to participate in a surgical quality and outcomes database, although only 11% would be willing to pay for participation in the theoretical program.

Conclusion(s): A substantial proportion of surgeons in Connecticut participate in global surgery activities abroad. Most surgeons value quality in surgical care provision in resource-poor settings, and yet outcomes are not routinely measured as part of these activities. This discordance may be addressed through the development of a standardized quality improvement program for global surgery. Future, larger scale surveys will help to identify national trends in global surgical practice and may highlight the need for a formalized global surgery quality collaborative.

Clinical Oncology Competition

Clinical Oncology Moderator:

Rekha Singh, MD, FACS, Surgery Chief, The Hospital of Central Connecticut, Clinical Instructor, University of Connecticut School of Medicine, New Britain, CT

Clinical Oncology Judge:

Randall Zuckerman, MD, FACS, Medical Director, Lebo-DeSantie Center for Liver and Pancreas Disease Director, Medical Informatics, Assistant Professor of Surgery, Frank H Netter School of Medicine, Quinnipiac University, St Vincents Medical Center, Bridgeport, CT

Specialty Surgery Competition

Specialty Moderator:

Jennifer Bishop, MD, Stamford Health Integrated Practices, Stamford, CT

Specialty Judge:

Brian D. Shames, MD, FACS, Assistant Professor of Surgery, Division Chief, General Surgery, University of Connecticut School of Medicine, Farmington, CT

Clinical Oncology

Laparoscopic Polyp Resection as an Alternative to Partial Colectomy for Large Benign Polyps

Schatz, TAP, Verdura, N.

Waterbury Hospital, Midstate Medical Center

Introduction: Large colon polyps that are unable to be fully resected at colonoscopy present a difficult diagnostic and therapeutic challenge in colon cancer. According to the current NCCN guidelines, these potentially benign large polyps necessitate partial colectomy with the resultant risks and morbidity. Laparoscopic assisted colonoscopic polyp resection has been reported in some small series, but this required on table colonoscopy, and was limited by the same endoscopic tools as colonoscopy itself. Here we describe an alternative laparoscopic approach taken for a large cecal polyp.

Method(s): The patient, 62 year old female, presented after a screening colonoscopy revealed a 20mm cecal polyp at 180 degrees from the ileocecal valve, which was unable to be fully resected endoscopically. The polyp was inked at the time of colonoscopy. At surgery, three 5mm ports were placed, as well as one 12mm port for specimen removal. The colon was opened using an ultrasonic scalpel at the tenia at the junction of the cecum and the ascending colon by the noted tattooed area. The polyp was identified and removed using a flexible laparoscopic stapling device. The colonic defect was sutured closed and a Graham patch was used to cover the sutured area.

Results: There were no complications of the procedure. Post-operatively, the patient did very well, able to tolerate and diet and discharged on post-operative day 1. Final pathology of the lesion showed tubulovillous adenoma, and no further work-up or treatment was necessary.

Conclusion(s): This minimally invasive approach to appropriately selected large polyps may reduce the need to subject patients to major colectomies and the associated risks and costs, while also definitively diagnosing the lesions in question. Some lesions may require some mobilization of the colon, but if not, as in this case, subsequent surgery would be as straightforward as at baseline. Further investigation should be done to confirm the safety and efficacy of laparoscopic polyp removal in order to add it to our armamentarium for the diagnosis and removal of large colon polyps.

Pedicle versus Free Flap Reconstruction in Patients Receiving Intraoperative Brachytherapy

Erik J Geiger, Bryce A Basques, Christopher C Chang, Yung Son, Andre Alcon, Clarence T Sasaki, Stephan Ariyan, Deepak Narayan

Yale University School of Medicine

Introduction: The treatment of head and neck cancer is a challenging problem requiring multimodal therapy. Intraoperative brachytherapy (IOBT) can improve locoregional control of disease, and pedicle or free flaps can be utilized to resurface the IOBT seeds. This study compared the rates of complications between pedicle flaps versus free flaps for IOBT resurfacing following head and neck tumor extirpation in order to clarify the ideal reconstructive procedure for this scenario.

Method(s): A retrospective review of reconstructions with IOBT at our institution between 2005 and 2013 was conducted. Patient and treatment details were recorded, as were the number and type of flap complications and instances of re-operation. Each flap was divided into pedicle or free flap groups and analyzed independently in order to assess complications after any given flap. Bivariate and multivariate logistic regressions compared complications between flap groups.

Results: A total of 105 flaps (50 free flaps and 55 pedicle flaps) were included. The average patient age was 64 ± 12 years (mean + standard deviation). On multivariate analysis, free flap reconstruction with IOBT was significantly associated with an increased risk of having any flap complication (OR = 2.9, $p = 0.037$) compared to pedicle flap reconstruction. Similarly, free flaps had a significantly increased risk for subsequent operative revision (OR = 3.5, $p = 0.048$).

Conclusion(s): In the setting of IOBT, free flaps are associated with a significantly increased risk of having complications and of needing operative revisions.

Synchronous Breast Cancers with Differential Responses to Neoadjuvant Chemotherapy

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Introduction: The use of neoadjuvant chemotherapy has become standard for the downstaging of locally advanced breast carcinomas. Mucinous carcinoma is estimated to comprise 2-4% of all invasive mammary carcinomas. Differential response rates have been described based on primary tumor characteristics. We report the findings from a patient with synchronous invasive ductal carcinoma (IDC-NOS) as well as an IDC with mucinous features treated with neoadjuvant chemotherapy with a marked difference in therapy response.

Method(s): Retrospective chart review and review of the literature.

Results: The patient is a 53-year-old perimenopausal female without a personal or family history of breast carcinoma. She presented with a >3 year history of a slowly growing right breast mass. Evaluation including ultrasound, mammogram, and MRI demonstrated a 4.4 cm, ill-defined, solid, enhancing mass with multiple satellite lesions. There were multiple suspicious lymph nodes. Core biopsy of the breast revealed a grade 2 IDC, ER 49%, PR 5%, HER-2/neu 1+. FNA of the right axillary lymph node was positive for malignant cells consistent with metastatic carcinoma. The satellite lesions were not biopsied. Metastatic workup was negative. She received neoadjuvant dose-dense doxorubicin, cyclophosphamide, and paclitaxel (ddACT). Postchemotherapy MRI showed evidence of a reduction in size of the biopsy-proven malignant mass with evidence of chemotherapeutic response. She underwent a right modified radical mastectomy with immediate reconstruction with tissue expander. Pathology revealed 2 distinct synchronous tumors. The index lesion (poorly differentiated IDC-NOS) demonstrated considerable neoadjuvant therapy effect (Figure 1). There was a residual 5 cm sclerotic mass and only 10% of the mass was felt to represent residual viable tumor. There was a second distinct mass morphologically consistent with moderately differentiated IDC with mucinous features which showed no apparent chemotherapy effect. Neoadjuvant chemotherapy effect was evident in the lymph nodes with extensive hilar fibrosis. Only two of the 25 resected lymph nodes had residual disease. One lymph node showed extensive sclerosis with a microscopic residual focus of IDC. The second positive lymph node had IDC with mucinous features without apparent chemotherapy effect (Figure 2).

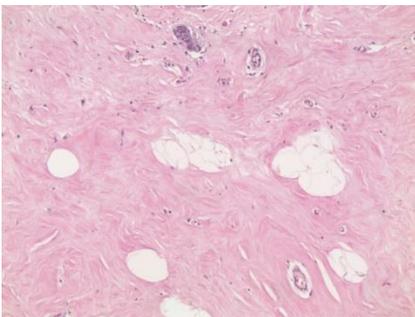


Figure 1: Sclerosis consistent with chemotherapy effect

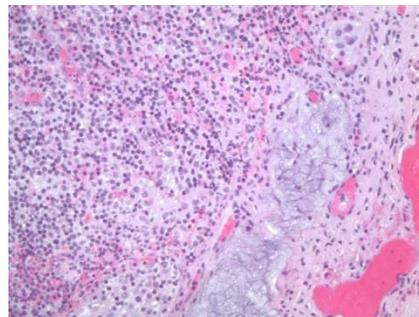


Figure 2: Lymph node with mucinous carcinoma, no chemotherapy effect

Conclusion(s): Invasive breast carcinoma with mucinous features remains a rare histology. Review of the literature reveals this phenotype to be more poorly responsive to chemotherapy. We report a case of a patient with synchronous IDC-NOS and IDC with mucinous features which demonstrate this differential response to chemotherapy. Despite the poorer response to chemotherapy, guidelines do not differentiate treatment recommendations based on pathologic subtype and until more robust data sets are available standard guidelines should be followed.

Specialty Surgery

Jugular Vein Hemorrhage as a Complication of Pharyngocutaneous Fistula post Total Laryngectomy

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Danbury Hospital

Introduction: The American Cancer Society states that laryngeal cancer is diagnosed in approximately 12000 new Americans every year. Patients who receive total laryngectomy after chemoradiation have a 3-65% wound complication rate, with the most common complication being pharyngocutaneous fistula. Reported complications of repair of pharyngocutaneous fistulas include carotid blowout, hematoma, and infection. Our patient experienced an acute hemorrhage of the internal jugular vein secondary to salivary erosion, a previously unreported complication in these patients.

Method(s): Review of an interesting case and brief literature review.

Results: We present a case of a patient with a T₃N₁M₀ squamous cell carcinoma of the right vocal cord who underwent a total laryngectomy and bilateral neck dissection. His postoperative course was complicated by a pharyngocutaneous fistula which was repaired with a right pectoralis major flaps and creation of a pharyngostoma. The patient then underwent three incision and drainages for recurrent abscesses. Three days after the last drainage, the patient presented with a an exsanguinating hemorrhage from the left neck incision. There was >300cc suctioned from the incision and 100cc from oral cavity. He was taken emergently to the operating room for neck exploration.

Suspecting an a blowout of the left common carotid artery, endovascular access was obtained via the femoral artery in order to provide balloon occlusion of the left carotid artery for proximal control if necessary. A carotid angiogram revealed no extravasation of contrast or other abnormalities of the left common carotid, innominate or right common carotid arteries. A full neck exploration was now performed with takedown of the right pectoralis major muscle flap. There was a large amount of venous bleeding from the right neck and the anterior wall of the right internal jugular vein (IJV) had apparently been dissolved from salivary fluids bathing over the vein. . Distal control of the right IJV was achieved by inserting a 8-french introducer sheath and two 16-Amplatzer plugs into the distal internal jugular vein. Proximal IJV bleeding was controlled by inserting Gelfoam with thrombin into the proximal lumen of the vein. Venous access was then obtained via the right common femoral vein and the origin of the right IJV was then covered by placement of an 18mm x 7.5cm stent graft extending from the right innominate vein into the right subclavian vein. Venous access was achieved through the right common femoral vein and a pigtail catheter was advanced into the right subclavian vein where a venogram showed patency of the right subclavian and innominate vein. A 18mm x 7.5cm and overlapping 18x22cm wall stents were deployed in the right innominate vein extending into the right subclavian vein. Successful control of bleeding was obtained. With the bleeding controlled, a left pectoralis major flap was used for the creation of a pharyngostoma. The patient's condition stabilized and he was discharged 13 days later. He continues to do well 6 months later.

Conclusion(s): Jugular venous erosion in patients with pharyngocutaneous fistula is a extremely rare complication, managed successfully in our patient with distal control using twin 16-Amplatzer plugs and proximal control established using an endovascular wall stent.

Thioredoxin Overexpression Enhances Neovascularization and Reduces Fibrosis in Mouse Hindlimb Ischemia Model

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Introduction: Peripheral artery disease affects 12-20% Americans over the age of 60. Thioredoxin-1 (Trx-1) is a class of small redox proteins. We have demonstrated earlier that Trx-1 reduces oxidative stress resulting in less inflammation and increased angiogenesis in cardiac muscle via hemeoxygenase-1 and VEGF after MI. In the current study we evaluate the effect of Trx-1 on post-ischemic hindlimb recovery.

Method(s): Peripheral artery disease was mimicked using a hindlimb ischemia model. 8-12 week old wild type (WT) and thioredoxin-1 transgenic (Trx-1Tg/+) mice were subjected to femoral artery ligation. Following surgery, mice were observed for 5-weeks. Serial laser doppler images were obtained and perfusion ratios between the ischemic and non-ischemic limbs were calculated at set time intervals. The ratios were compared between WT and Trx-1Tg/+ groups. Immunohistochemical analysis of the tissue was performed to quantify the extent of fibrosis, capillary and arteriolar density.

Results: The recovery of hind limb perfusion was significantly increased in Trx-1Tg/+ mice at day 7 [0.1709 ± 0.03 (n=10) vs. 0.3689 ± 0.07 (N=9); $p < 0.05$], day-21 [0.4339 ± 0.08 (N=8) vs. 0.6240 ± 0.03 (N=9); $p < 0.05$] and day 28 [0.4194 ± 0.05 (N=8) vs. 0.9128 ± 0.11 (N=9); $p < 0.01$]. Capillary density and arteriolar density staining showed significant increase in Trx-1Tg/+ mice (1265 ± 87 and 36 ± 2.4 ; counts/mm² (n=5); $p < 0.05$) as compared to WT (762 ± 86 and 22 ± 1.09 ; counts/mm² (n=5); $p < 0.05$) mice. Picrosirrus Red and immunofluorescence staining showed decreased fibrosis and increased HO-1 expression respectively in Trx-1Tg/+ mice group as compared to WT mice.

Conclusion(s): Our results suggest that TRX-1 has therapeutic potential for peripheral artery disease and perhaps a possible cure.

Adeno-Thioredoxin -1 delivery augments pro-angiogenic proteins, increases blood perfusion and improves neovascularization in a murine model of hind limb ischemia

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Introduction: Peripheral vascular disease is a significant ailment affecting millions of Americans. Unfortunately, the current medical and surgical interventions fail to provide a permanent long term relief. As a result, there is a strong interest in finding alternative "rescue molecules". Thioredoxin -1 (Trx-1) is a cytosolic 12-kDa redox protein which enhances neovascularization and reduces ventricular remodeling during chronic myocardial infarction. Here we plan to investigate the role of this protein in a murine hind limb ischemia (HLI) model

Method(s): Adult 8-12 week old C57Bl/6 mice were divided into two groups: (1) adeno-thioredoxin-1 gene treatment group (Ad-Trx-1) and (2) the control group (Ad-LacZ). Both groups underwent right femoral artery ligation to create a murine model of HLI. Immediately after surgery, mice in Ad-Trx-1 group received adeno-thioredoxin -1 in a concentration of 1×10^9 PFU in both semimembranosus and gastrocnemius muscles of the right leg whereas the left leg was used as an internal control. The mice in Ad-LacZ group received similar concentration of Ad-LacZ at the same muscle sites. Laser Doppler imaging (LDI) was performed on both groups pre-operatively and post-operatively for 28 days to assess hind limb perfusion. Immunohistochemistry and ELISA were performed on post-operative day 4 to determine the expression for various key angiogenic proteins

Results: Mice in the Ad-Trx-1 group showed a significantly increased perfusion ratio on postoperative day 21 [0.893 ± 0.067 (n=10) vs. 0.593 ± 0.065 (n=10); $p < 0.05$] and day 28 [0.908 ± 0.081 (n=8) vs. 0.660 ± 0.057 (n=10); $p < 0.05$] [Figure 1] and a higher motor function score on post-operative day 7 [3.1 ± 0.233 (n=10) vs. 2.1 ± 0.276 (n=10); $p < 0.05$], day 14 [3.9 ± 0.233 (n=10) vs. 2.8 ± 0.249 (n=10); $p < 0.05$], day 21 [4.9 ± 0.1 (n=10) vs. 3.7 ± 0.213 (n=10); $p < 0.05$] and day 28 [4.875 ± 0.125 (n=8) vs. 3.8 ± 0.249 (n=10); $p < 0.05$] as compared to mice in Ad-LacZ group. Four days after femoral artery ligation, Ad-Trx-1 group showed increased Vascular Endothelial Growth Factor (VEGF) expression by immunohistochemical analysis and ELISA [38.48 ± 7.165 (n=4) vs. 21.70 ± 2.560 (n=5); $p < 0.05$] as compared to Ad-LacZ group. Ad-Trx-1 group also showed increase expression of Flk-1, Flt-1 and Angiopoietin -1 proteins as compared to Ad-LacZ group by immunohistochemical analysis.

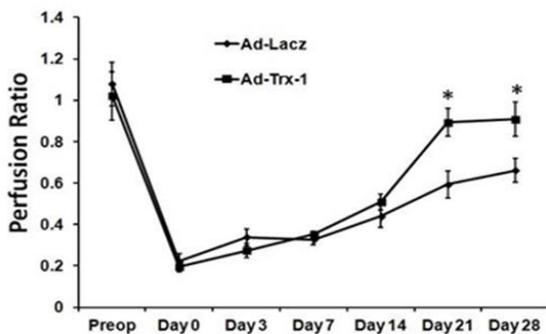


Figure 1: Comparison of perfusion ratio of Ad-Trx-1 group vs. Ad-LacZ group after right femoral artery ligation with Laser Doppler imaging. Mice in the Ad-Trx-1 group showed significantly increased perfusion ratio on postoperative day 21 and day 28 as compared to mice in Ad-LacZ group. *P< 0.05; Ad-Trx-1 vs. Ad-LacZ, n=8-10.

Conclusion(s): In conclusion, our study demonstrates that the adeno-thioredoxin-1 gene delivery enhances blood perfusion and increases angiogenic protein expression in a murine hind limb ischemia model. We hope that this molecule can be a future potential target for clinical trials and subsequently drug therapy in peripheral vascular disease management

Use of Electromagnetic Navigational Bronchoscopy to localize small pulmonary nodules prior to minimally invasive sublobar resection - A novel approach.

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Introduction: Sublobar resection of small pulmonary nodules by minimally invasive techniques can be a challenge, as the use of minimally invasive approaches greatly reduces the haptic feedback often required to reliably localize small lesions. Use of Electromagnetic Navigational Bronchoscopy (ENB) is a relatively new approach that has potential to assist in real time operative localization of such lesions, as ENB can deliver visual cues for their location in the form of either a dye marking or a radio-opaque clip, or both. There is limited data available on the feasibility of this approach. We want to describe our experience with this technique.

Method(s): A retrospective review of cases in which ENB was used to localize small pulmonary nodules was done from August 1, 2013 to September 1, 2014. In our initial experience, methylene blue was injected into the parenchyma around the mass, and dye migration to the pleural edge was used as a visual cue for location. We then amended our protocol to include placement of both methylene blue dye and a radio-opaque clip in the parenchyma immediately adjacent to the target lesion. Fluoroscopy was then used to triangulate the location of the clip, and by extension the mass, via markings on the chest wall with the lung deflated prior to incision. The visual cue of the dye marking as well as the fluoroscopic localization of the clip served to confirm each other.

Results: A total of 18 cases were identified. ENB was successful in navigating to the lesion in all cases. ENB dye localization alone was successful in 5 of 6 cases. After the first unsuccessful dye localization, our amended protocol of dye marking and clip placement led to successful localization in 12 consecutive cases

Conclusion(s): Use of electromagnetic navigational bronchoscopy to localize small pulmonary nodules is a feasible approach and is technically straightforward. As we see broader implementation of lung cancer screening protocols, thoracic surgeons can expect to encounter many more small pulmonary nodules requiring resection. There is accumulating data that subobar resection is equivalent to lobar resection for small, peripherally located lesions. Use of the described localization techniques will enable thoracic surgeons to more successfully perform sublobar resections of small pulmonary nodules by minimally invasive techniques.

Color Duplex Ultrasound is a Reliable Means for the Detection and Long Term Follow-Up of Post Evar Endoleaks

Emilia M. Krol, Stuart Blackwood, M. Salman Sheikh, Zachary Phillips, Richard Hsu, Dahlia Plummer, Alan M. Dietzek

Danbury Hospital

Introduction: Although contrast enhanced computer tomography (CT) remains a gold standard for follow up of patients after endovascular aortic aneurysm repair (EVAR), aortic duplex ultrasound (ADU) has received attention as an alternative surveillance method. Despite offering clear benefits such a lack of radiation or intravenous contrast, the sensitivity and long term safety of this modality for EVAR followup still remains in question.

Method(s): We performed a retrospective chart review on all patients who underwent an EVAR procedure in our institution between January 2004 January 2011 to allow for a minimum follow-up of 3 years. Patients' demographic data, as well as their pre-operative aneurysm size were gathered. We then also identified a subset of patients who at any point in their follow-up underwent both ADU and CT of the abdomen within the same month. The results of the two tests were then compared with respect to aneurysm sac size and endoleak (EL) detection.. The two different modalities were considered comparable for sac size if the difference was <5mm. Patients who had less than two ADU performed were excluded.

Results: One hundred and thirty five patients underwent an EVAR procedure in the review period. After applying exclusion criteria, we analyzed imaging data on 112 patients. EL was detected 122 times at different time points during this study period. In 71 cases (58%), EL was detected on ADU. In 63% of these (45/71) a concomitant CTA study was also performed. The diagnosis of EL was confirmed by CTA in 73% (33 / 45) of the cases. We identified 18 instances in which CT scan detected an EL that was not seen on ADU. In this group, three patients had an increase in aneurysm sack size detected on both ADU and CTA. No patient had increase of aneurysm sack size of more than 5 mm detected on CT scan, that was not detected on ultrasound. One patient died of a supposed aortic rupture while living out of state but this could not be confirmed. His last aortic duplex 6 months earlier showed a persistent Type II EL but a decreased aortic sac size.

Conclusion(s): Although aortic duplex ultrasound was not as accurate as CTA in detecting endoleaks in post EVAR patients it was able to detect an increase in sac enlargement in all cases. There were no documented instances of aneurysm rupture in our series. Aortic duplex ultrasound does not subject patients to negative effect of radiation and potential nephrotoxicity of intravenous contrast and is a safe method for the surveillance of patients after an EVAR procedure. ADU should be the primary modality for followup surveillance of EVAR patients with clear parameters for when to obtain a corollary CTA.

A Novel Hybrid Approach to the Management of Extensive Deep Venous Thrombosis

Stuart Blackwood MD, Biren Juthani DO, Richard Hsu, MD PhD

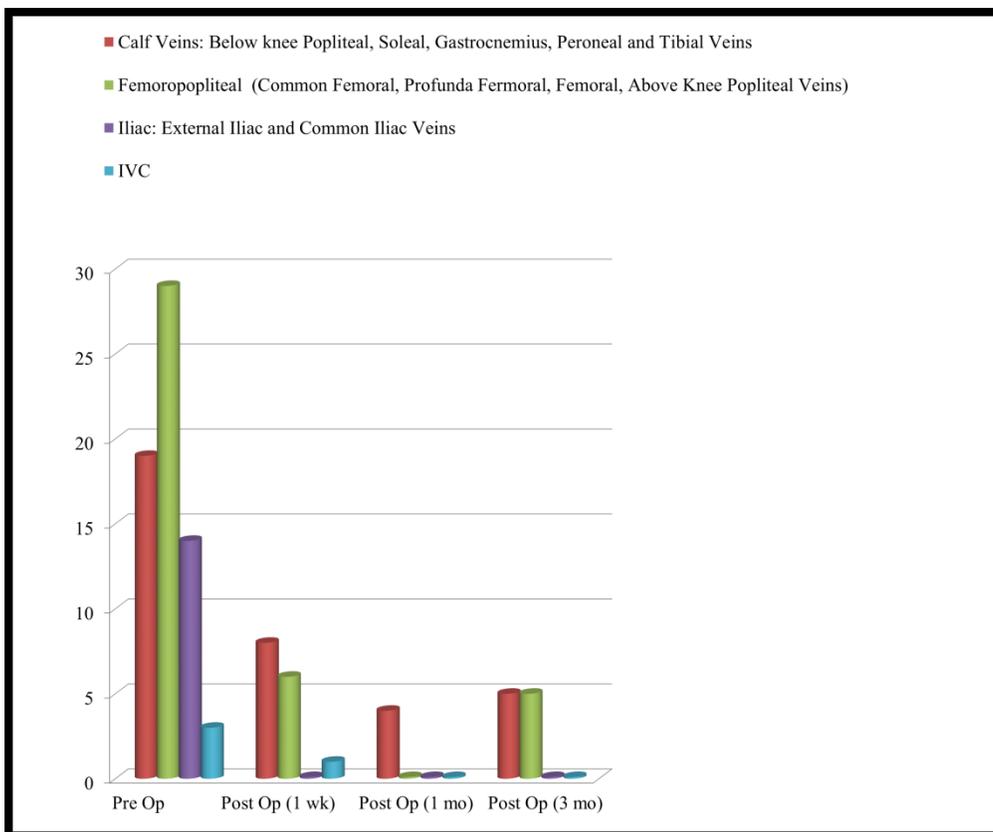
Danbury Hospital CT

Introduction: Strategies aiming to reduce clot burden and achieve early venous recanalization have been shown to reduce the incidence of post thrombotic syndrome. Use of the Esmarch bandage to extrude lower extremity DVT during open surgical thrombectomy has been previously described. We report our experience of 5 patients with extensive infrainguinal deep venous thrombosis treated with pharmacomechanical thrombectomy and adjunctive mechanical clot extrusion using Esmarch bandage

Method(s): We performed a retrospective review of five patients who presented with extensive lower extremity DVT. These patients underwent Esmarch extrusion combined with pharmacomechanical thrombectomy and thrombolysis of the lower extremity DVT

Results: Of the five patients studied using this novel hybrid approach, post-operative duplex at 1, and 3 months showed complete resolution in all iliofemoral and caval thrombi and near complete resolution of all infrainguinal DVT

Conclusion(s): Using the technique outlined it is possible to truly achieve near complete resolution of all lower extremity DVT. This may translate to decreased long term complications from DVT



NOTES