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PROCEEDINGS

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Podium Presentations

(In order by year)
CONVERTED APPENDECTOMIES SHOW THE HIGHEST RATES OF SURGICAL SITE INFECTION

Authors:
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Background:
Appendectomies are the most common emergency surgical procedures in the United States, with about 327,000 cases performed per year. Due to advances in surgical technology, an increasing percentage of operations are now performed laparoscopically, as opposed to open. A small number of laparoscopic appendectomies require conversion to open procedures due to intraoperative challenges. When compared to open appendectomies, laparoscopic appendectomies have been shown to have fewer complications and lower postoperative morbidity. However, some studies have also shown that laparoscopic appendectomies not only incur higher hospital costs, but also present a higher risk of intra-abdominal abscess. Not much is known however about the surgical site infection (SSI) rate for converted appendectomies.

Objective:
The purpose of this study is to compare the rate of superficial SSIs and deep SSIs in converted appendectomies with those of laparoscopic and open appendectomies at Metropolitan Hospital Center.

Design/Methods:
The medical records of all patients undergoing appendectomies at Metropolitan Hospital from January 2004 to December 2011 were reviewed. Cases were divided into laparoscopic, open and converted categories, and the infection rate for each operative method was calculated.

Results:
In total, 718 cases contained adequate information for retrospective analysis. There were 369 (51.4%) laparoscopic appendectomies, 337 (46.9%) open appendectomies, and 12 (1.7%) converted appendectomies. The trend toward laparoscopic appendectomy was steady going from 8% in 2004 to 79% in 2011. Laparoscopic appendectomies had a 0.81% rate of superficial SSI (3/369), and a 1.08% rate of deep SSI (4/369). Open appendectomies had a 0.89% rate of superficial SSIs (3/337), and a 0.59% rate of deep SSI (2/337). Converted appendectomies had a 25% rate of superficial SSI (3/12), and an 8.33% rate of deep SSI (1/12).

Conclusions:
Laparoscopic appendectomies were associated with comparable rates of superficial SSI but higher rates of deep SSI when compared with open appendectomies. The overall rates of superficial SSI (1.25%) and deep SSI (0.97%) in our series compare favorably with reports from similar sites (6.8% and 1.5% respectively). The low superficial SSI rate for open appendectomy may be due to many surgeons’ practice of leaving contaminated wounds open for packing and delayed primary closure. Converted appendectomies somewhat surprisingly had the highest infection rates overall when compared with laparoscopic and open appendectomies (p<0.05). This has not been previously highlighted in the literature, and can possibly be attributed to the presence of multiple incisions, a higher proportion of incisions with primary closures, more advanced disease, and longer duration of surgery. Larger and detailed studies are required to elucidate the causes.
DETERMINANTS OF DEFAULT FROM FOLLOW-UP CARE IN A PROSTATE CANCER SCREENING PROGRAM

Authors: (underline presenting first author must be a student, resident or fellow)
Mark Ferretti, Michael E. Goltzman, Akhil Saji, Neel Patel, Sean Fullerton, Denton Allman, Gerald Mathews, John Phillips

Background: The curability of high-risk prostate cancer (PCa) may depend on early diagnosis and compliance with management modalities. Delayed or incomplete treatment for PCa may result in inferior clinical outcomes and lower survival rates.

Objective: We sought to identify the proportion of and predictors of loss of follow-up care after positive prostate biopsy in a single-institution, retrospective cohort study.

Design/Methods: Patients who did not follow up for or so-called ‘defaulted’ treatment were defined as those who had failed to return for treatment or follow-up discussion after diagnosis of PCa. This did not include patients who elected to be treated at other hospitals. Demographic and clinical characteristics, were compared between defaulters and non-defaulters. A multiple linear regression was performed to predict those individuals likely to default.

Results: From October 2008 to April 2013, 6182 patients received 12,930 PSA tests at a single institution. Of these patients, 574 (9%) patients had at least one PSA test level greater than 4 ng/mL. A total of 210 patients had subsequent biopsy, of which 141 had a PSA test >4 ng/mL. PCa was detected in 85 (41%) patients, of which 17 (20%) patients failed to follow up. The majority (88%) of defaulters were made aware of their biopsy results prior to self-cessation of care. Defaulters were significantly younger (61.8 ± 2.0y) at time of biopsy compared to non-defaulters (65.8 ± 1.0y), t(83) = 1.8, p = 0.04. Those individuals with an unspecified primary care provider (65%) were more likely to default than those who had primary care doctor at our institution (p<.001). Defaulters were more likely to be uninsured (24%) as compared to those with continued care (4%) (p=.01). Defaulters were more likely to self-identify as Latino (41%) as compared to those with continued care (9%) (p=.01). A multiple regression predicted default from age, insurance status, race and PCP access, p < .0005, R2 = .430.

Conclusions: At our institution men at highest risk of being lost to follow-up after the diagnosis of prostate cancer were younger, uninsured, Latino, and without centralized care. In our cohort, defaulters had high-risk disease (81% of Gleason >=7), which is crucial to identify in a timely and aggressive fashion so as to prevent future treatment failure. Development of strategies to encourage prompt and continued attendance is needed in addition to qualitative research to better understand the reasons for default, underpinning risk factors and cultural influences on patient compliance.
TITLE:

COMPLEX ABDOMINAL WALL HERNIA REPAIR WITH BIOLOGIC MESH: OUTCOMES IN 176 PATIENTS

Authors: Ansab Haider, MD, Aditya Safaya, MD, Rifat Latifi, MD.

Background: Complex abdominal wall hernia (CAWH) remains a major surgical problem. The need for CAWR also seems to be increasing as the utilization of damage control surgery has expanded beyond the trauma patients to patients surviving emergency surgery for acute abdominal catastrophes. In the United States Acellular Dermal Matrix (ADM) mesh (human and porcine derived) has emerged as a popular choice for CAWH repairs, but long-term data are lacking.

Objective: The aim of this study was to report the outcomes in patients undergoing CAWH repair using biologic mesh at a Level I trauma center. We also compared the differences in outcomes between human and porcine derived acellular dermal matrix (ADM) mesh.

Design/Methods: A 6-year retrospective analysis of all patients with CAWH who underwent ADM repair was performed. Patient demographics, operative technique, type of mesh used, co-morbidities, and hernia recurrence were analyzed. In addition, we calculated the relative risk of development of any complications, serious complications, surgical site infections, and pneumonia using the American College of Surgeons (ACS) Surgical Risk Calculator and compared to actual complications rate.

Results: Of the 176 patients included in the study, 142 (80.7%) had porcine and 34 (19.3%) human derived ADM mesh placement. One hundred and four (59.6%) were male; the mean age of the population was 53.6±14.0 years. Mean BMI of the population was 31.1±7.9 kg/m². 48.3% of patients required urgent/emergent operation; 22.9% for obstruction, and 14.2% had associated fistulas. The most common technique of mesh placement was an underlay (68.2%). Overall follow-up rate was 75.0% (mean: 16 months; range: 6-mo to 5-years) giving a recurrence rate of 18.8%. The wound complication rate was 29.5% of which 38.5% required hospital admission and/or surgery. Overall 21.6% patients required a reoperation and 9.1% patients underwent mesh explantation. The overall recurrence rate was higher in patients with porcine mesh repair (22.5% vs. 2.0%; \( p=0.006 \)), however, there was no difference in rate of reoperation (24.8% vs. 8.8%; \( p=0.06 \)), wound complications (\( p=0.49 \)) or seroma (\( p=0.99 \)) between the two groups.

Conclusions: Despite the advances in the management of patients with CAWR, the long-term outcomes for these patients following biologic mesh repair remain suboptimal. Patients undergoing CAWH repair with human derived ADM mesh had lower recurrence rate but no differences in other complications rates. Future long-term studies are required to determine the most appropriate biologic mesh type for abdominal hernias.
**Title:**

**Mortality Rates of Severe Traumatic Brain Injury Patients: Impact vs. Non-Direct Transfers**

**Authors:** (underline presenting first author must be a student, resident or fellow)
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**Introduction:** Direct transport of patients with severe traumatic brain injury (STBI) to trauma centers (TCs) that can provide definitive care results in lower mortality rates. Secondary transfers are required when patients with STBI are originally transported to non-trauma centers (NTCs) lacking in neurosurgical expertise, and thus resulting in delay of care. This study investigated the impact of direct versus non-direct transfers on the mortality rates of patients with STBI.

**Design/Methods:** Data on patients with TBI admitted between 1/1/2012 to 12/31/2013 to our Level I TC were obtained from the trauma registry. Data included patient age, sex, mechanism and type of injury, co-morbidities, Glasgow Coma Scale (GCS), Injury Severity scores, pre-hospital time (PHT), time to request and to transfer, time to initiation of multimodality monitoring and goal-directed therapy protocol (MM&GDTP), dwell time in the emergency department (EDT), and mortality. Data, reported in means ± SD, were analyzed with the student t-test and chi-square. Statistical significance was accepted at a p value < 0.05.

**Results:**

**STBI Direct transfer to TC vs. transfer from NTC:** Of the 1,187 patients with TBI admitted to our TC, 768 (64.7%) were directly from the scene while 419 (35.3%) were after secondary transfer. 171 (22.2%) of the direct transfers had GCS < 8 (STBI) and 92 (21.9%) of the secondary transfers had STBI.

**Transfer time:** Time from scene to arrival to the ED was significantly shorter for TC vs NTCs 43 ±14 vs 77 ±26 minutes, respectively (p < 0.05). ED dwell time before transfer and time from injury to arrival to TC were 4.2 ±2.1 and 6.2±8.3 hr, respectively.

**MM&GDTP:** Time to initiation of MM&GDTP including craniotomy for patients with STBI was 3.1 ±1.2 vs 12.4 ±2.2 hr, for patients arriving from scene to TC as opposed to patients transferred form NTC (p < 0.05).

**Mortality:** There was a statistically significant lower mortality for patients with STBI transferred directly from the scene to TCs as opposed to patients transferred from NTCs, 33/171 (19.3%) vs. 28/92 (30.4%), respectively (p < 0.05).

**Conclusions:** To decrease TBI-related mortality, patients with suspected STBI should be taken directly to a Level I or II TC unless they require life-saving stabilization at NTCs.
Evaluation of Surgical Site Infections (SSI) and Operative Closure Techniques of Colon Procedures Performed under Emergent Settings at WMC

Authors: (underline presenting first author must be a student, resident or fellow)
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Background:
WMC serves as the Hudson Valley Region’s tertiary and quaternary care referral center, providing high-quality advanced health services and treating the region’s most complex clinical cases. Consequently, a large portion of patients at WMC require emergent operative procedures.

Objective:
Emergently performed colon procedures at WMC during first three quarters of 2016 were reviewed to evaluate case variety and the adherence of surgeons to the current NHSN reporting requirements and recommendations regarding appropriate wound closure technique based on wound classification, and specifically recognizing that a partially closed skin is considered a closed wound.

Methods:
A retrospective chart review of colon surgeries in patients ≥ 18 years of age in the first three quarters of 2016 was performed. Only the operative cases performed under emergent settings were considered. Case variety and demographics, operative closure techniques (primary closure, wound packing, negative suction device placement, etc.), and surgical site infection rate (superficial, deep, organ space infections) were reviewed.

Results:
During the first 3 quarters of 2016, 18 of 42 colon procedures were performed emergently by the Adult General Surgery and Gynecology services. The patients ranged between 18 and 91 years of age including 9 females and 9 males. There were 3 blunt and 2 penetrating trauma victims, and 13 non-trauma related cases. All 18 cases involved exploratory laparotomy and resection of large bowel for various reasons, as well as other procedures. Of the non-trauma emergent cases, 9 were related to perforated diverticulitis. Other non-trauma cases included perforated colon, perforated ileum, gangrenous sigmoid volvulus, and gangrenous duodenum. Using the NHSN adaptation of the American College of Surgeons wound classification, 10 were infected, 4 were contaminated, and 4 were clean-contaminated. 16 of the 18 were American Society of Anesthesiologists (ASA) class 3 or above, and in 16 of the 18 cases wounds were left open with 4 of the 16 subsequently closed in the post-operative period (delayed primary closure). Two were closed primarily, one of which was complicated with organ-space SSI. The only superficial SSI occurred in a contaminated procedure when the wound was closed.

Discussion & Conclusions:
Almost a third of all colon procedures performed at WMC during first three quarters of 2016 were performed under emergent settings. Half of these emergent colon procedures were performed due to perforated diverticulitis. High acuity and comorbidities of the patient population at WMC was evident as 16 of the 18 cases were of ASA classification 3 or above. There was substantial adherence to NHSN recommendations of operative wound closure techniques as most of the contaminated and infected cases were left open with 4 contaminated cases subsequently closed by delayed primary closure. Only one infected case was closed primarily which led to an organ-space SSI and eventual reoperation. After implementation of the WMC SSI Prevention Taskforce, the 2016 SSI in colon surgeries were reduced, especially in emergent colon procedures. Continued efforts by the surgeons to adhere to the NHSN wound closure recommendations in contaminated and infected procedures will optimize surgical outcomes and reduce SSIs.
Reduction in Surgical Site Infections (SSI) in Colon Procedures after Implementation of a SSI Prevention Task Force at WMC

Authors: (underline presenting first author must be a student, resident or fellow)
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Background:
Surveillance data at WMC regarding the evidence of SSI in colon surgery reported to the Center for Medicaid & Medicare Services (CMS) in 2015 has demonstrated a need for improvement. An SSI Prevention Taskforce was formed in order to familiarize WMC surgeons with the current CDC/National Healthcare Safety Network (NHSN) definitions and institutional reporting requirements to CMS.

Objective: To evaluate the effectiveness of the WMC SSI Taskforce in reducing the SSI in colon procedures by elucidating for the surgeons the current NHSN reporting requirements, definitions, and elements of the Colon Bundle.

Methods:
A retrospective chart review of SSI in colon surgeries in patients ≥ 18 years of age in the first three quarters of 2016 was performed to determine if there was consistent compliance with the elements of a Colon Care Bundle advocated by the New York State Partnership for Patients, and adherence to prevention of SSI by leaving wounds open in the NHSN wound classification of contaminated and infected cases. Partial closure of these wounds are considered primarily closed by NHSN definitions. The result was compared to the SSI in colon surgeries during the same period in 2015.

Results:
During the first 3 quarters of 2016, 42 colon procedures were performed by the Adult General Surgery and Gynecology services with 3 superficial site infections identified. Eighteen of the cases were emergent, and utilizing the NHSN adaptation of the American College of Surgeons wound classification there were 15 infected cases with only 1 primarily closed without an SSI. Of the 8 contaminated cases 5 were primarily closed with 2 SSI identified. An additional SSI was identified in a clean contaminated case which was primarily closed. All three SSI cases were American Society of Anesthesiologists (ASA) class 3 or above.

During the first 3 quarters of 2015, 84 colon procedures were performed with 15 SSI identified. Twelve of these cases were ASA 3 or above, with wounds classified as follows: 3 clean contaminated, 8 contaminated, and 3 infected. Four of the clean contaminated wounds were closed, as well as 2 of the 3 infected wounds, and in all 8 of the contaminated cases the wounds were partially closed. In 10 of the procedures concomitant intraabdominal procedures were performed including small bowel resections, lysis of adhesions, ileostomy, ventral hernia repairs, and anterior pelvic exenterations. Nine of the procedures were performed emergently including: 2 gunshot wounds, 1 stab wound, 2 small bowel obstructions, 2 anastomotic leaks, and 2 enterocutaneous fistula formations. Three procedures were performed on patients with metastatic cancers, 2 on dialysis, and 1 in the setting of non-malignant ascites.

Discussion & Conclusions:
After implementation of the WMC SSI Prevention Taskforce, and improved adherence to the elements of the Colon Care Bundle (normothermia, glucose control, antimicrobial prophylaxis, increased perioperative oxygenation, skin preparation, clean standardized facial closure wound management) and NHSN definitions, the 2016 SSI in colon surgeries were reduced. Inclusion in the operative dictation of the required elements that need to be reported to various agencies (CMS & DOH) will facilitate chart abstraction by the nursing personnel in the Infection Control Department (duration of operative procedures, diabetes status, emergency operative procedures, height and weight, use of wound protector, closure with non-contaminated instruments, change of gown, gloves prior to fascial closure, wound classification, and primary or non-primary closure). In contaminated and infected procedures wounds should not be primarily closed.
DELAYED ENDOVASCULAR REPAIR OF BLUNT THORACIC AORTIC INJURY

Authors:
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Department of Surgery, New York Medical College. Westchester Medical Center, Valhalla, New York.

Background: Estimated 8000 deaths/year are associated with blunt aortic injury in United States. Blunt thoracic aortic injury is the 2nd most common cause of death in blunt trauma patients. Majority of patients die at the scene from exsanguination, with only 10-15% of patients arriving at the hospital with signs of life. Most common mechanisms of injury being motor vehicle collision, followed by, pedestrians being struck by motor vehicles and fall. Traditional recommended approach to these injuries was open repair with mortality rates approaching upto 30%. Endovascular repair (TEVAR), the widely used approach now offers significantly lower risk of death and spinal cord ischemia in all age groups compared with open surgery. Traditionally early endovascular repair (<24 hours) has been advocated for such injuries. In our institution we adopted an approach of delayed repair of thoracic aortic injury in hemodynamically stable patients from TBAI. Here we present outcomes of our analysis

Objective: To analyze outcomes of delayed aortic repair in hemodynamically stable patients with TBAI. We hypothesized that the repair can be safely delayed (>24hrs)and would allow time to address other immediately life threatening injuries.

Design/Methods: 28 patients were treated with TEVAR for BTAI between 2006-2015. 14 patients (9 males and 6 females) between 2006-2011 were analyzed. Institutional IRB approval was obtained to perform a retrospective review of the cases. All patients with blunt traumatic aortic injury were classified into 2 broad groups. The hemodynamically unstable patients (N=1) underwent emergent repair (endovascular or open). The stable patients (N=13) were directed towards the delayed treatment arm. Delayed TEVAR was performed in these cases after all other injuries were stabilized. Angiographic computed tomography was performed in all patients for diagnosis. Patients with Aortic arch involvement were included in the treatment arm. Endovascular repair was performed in accordance with device IFU. Patients were observed for endpoints in the form of mortality and complications such as conversion to open repair, stroke, MI, paraplegia, bowel ischemia, Endoleaks, renal insufficiency and intra-thoracic complications such as hemothorax, empyema requiring intervention.

Results: Endpoints of mortality and complications such as conversion to open repair, stroke, MI, paraplegia, bowel ischemia, Endoleaks, renal insufficiency occurred in none of the 13 patients who underwent the delayed endovascular treatment. Type 1 endoleak was observed in 4/13 (30.7%) patients and was addressed during index procedure by balloon angioplasty (3/4) and additional stent graft (1/4). No Type 2,3 or 4 endoleaks were observed. Subclavian artery was covered by the stent graft in 7/14 (50%) of patients with 3 patient requiring pre-op carotid subclavian bypass (patients post CABG (1/3) and severe CAD (2/3) preserving IMA flow. 30-day follow-up showed 0% mortality and stent related morbidity. Type 2 endoleak was observed in 1/13 patients treated by left subclavian artery embolization.

Conclusions: We conclude that routine delayed repair of BTAI with TEVAR is safe in a hemodynamically stable trauma patient. This approach allows for treatment of other life-threatening injuries and may lead to improved patient survival.
Background: At Westchester Medical Center, vascular surgery patients are often among the sickest in the entire hospital. Accordingly, they are all carefully prescribed numerous medications to treat their peripheral vascular disease and common comorbidities such as hypertension, hyperlipidemia, kidney failure, or heart failure. These medications have all been carefully prescribed and dosages titrated to best effect. However, the clinical experience of the vascular surgery residents and attendings at Westchester Medical Center reflects a disconnect between the patients’ actual prescribed medications and what they may receive while inpatient. Some of these errors are simply due to pharmacy availability in-house; some of the errors are due to more serious oversights. Important medication changes and dose conversions may occur as a patient moves from the outpatient to inpatient setting and again once they are discharged.

Objective: Our objective in creating the medication reconciliation project is to break down the patient experience and identify junctions where hospital staff - residents, nurses, and attendings - review patients’ medications and either continue, discontinue, or modify patient’s prescriptions as they move through their hospital stay. Through this timeline analysis, we would like first to identify potential conflicts in medication reconciliation and second to create standardized routes of progression for medication reconciliation.

Design/Methods: This is a descriptive study that utilizes naturalistic observation obtained via multi-participant open-ended interviews to describe the Westchester experience in medication reconciliation as a case study. Methods included several multi-disciplinary group interviews conducted in a time period spanning from April of 2015 up to and including December 2016. Committee members for these interviews include Amy Galinko Annette Brown, Erwin Rusli, Igor Laskowski, Carol Hackett, Joanne Murphy, Peter Tesler, Carol Granston, John Sullivan, Roberta Smith, Donna Nikaj, Min Li Xu, Varghese Thankachen, Concepcion Canas, and Kristina Dzeba. Responses and experiences obtained from these interviews were used to identify points of breakdown in medication reconciliation and proposals for standardized solutions.

Results: Throughout the course of these multi-disciplinary analytical meetings, we were able to identify several points of breakdown in Westchester Medical Center for medication reconciliation using the vascular patient experience as a narrowed point of focus. These points of breakdown were: admission (either via elective admission on the date of operation or emergency room); transfer from recovery room to floor or ICU setting; and patients’ discharge from hospital to extended care facility or home. Some reasons contributing to this breakdown were identified as well, including multiple disparate forms of record-keeping (different EMRs as outpatient to inpatient and intraoperatively as well as paper records); confusion over whose role it was to collect an accurate list of patients’ home medications (nurse vs. resident vs. anesthesia team vs. attending); and difficulties in confirming an accurate medication list in patients who are poor historians. These results have led to the planning of a pilot program for medication reconciliation with the vascular surgery service.

Conclusions: Several areas of breakdown in accurate medication reconciliation are identified including: admission, postoperative recovery, and discharge. Reasons for breakdown were also identified including: medical records, accountability, and patient factors. These pieces of information are useful for planning of a standardized medication reconciliation program to be piloted in vascular surgery patients.
Title:

Human mesenchymal stem cells and the anti-inflammatory compound curcumin synergistically modulate immune response following spinal cord injury leading to enhanced recovery.

Authors: (underline presenting first author must be a student, resident or fellow)
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Background: Spinal cord injury (SCI) is biphasic in nature. After the initial insult, secondary damaged is caused by local inflammation, which hinders the recovery process. The activation of signaling pathways associated with pro-inflammatory cytokines, such as IL-1, IL-6 and IL-15, presents a major obstacle to spinal cord regeneration. Recent studies have suggested that stem cell transplantation may be a promising treatment option for SCI. Furthermore, we have recently shown that administration of the naturally-occurring compound, Curcumin longo, possesses potent anti-inflammatory properties which improves recovery from SCI.

Objective: Here we tested the hypothesis that co-treatment with stem cells and curcumin leads to improved and faster recovery from SCI.

Design/Methods: Rats underwent a T9-10 laminectomy and a balloon-induced spinal cord compression to mimic spinal cord injury. Rats were then randomized to receive mesenchymal stem cells (MSC) or saline intrathecally 7 days after SCI at the site of injury. Rats were also randomized to receive curcumin (0.5 mmol/kg or 60 mg/kg) or saline intraperitoneally daily. Multiple functional tests were done to establish recovery from SCI. Secretary inflammatory cytokines (MIP-α, IL-4, IL-1β, IL-2, IL-6, IL-12p70, TNF-α and RANTES) were evaluated at post-injury days 1, 3, 7, 10, 14, and 28.

Results: Recovery from SCI was noticeably greater in curcumin treated rats. Stem cell transplant combined with curcumin improved recovery beyond curcumin or stem cell therapy alone. All treated animals (curcumin, MSC, curcumin + MSC) showed significant improvement in locomotor behavior in comparison with saline treated group. Combined treatment of MSC with curcumin showed synergistic effect in improving locomotor function. Notably, thermal hyperalgesia diminished following treatment with curcumin alone, or in combination with MSC. Curcumin or MSC treatment preserved white matter and the combination of curcumin and MSC improved tissue sparing. The cytokine levels displayed a biphasic effect, where levels of IL-6 and IL-12p70 increased robustly at post injury day 28, while remained lower early stages of injury in comparison to control rats. In contrast, TNFa showed an increase at post injury day 7, but decreased noticeably at day 28 in curcumin and MSC treated groups, along with IL-4, IL-2 and MIP1a.

Conclusions: These results provide evidence that curcumin synergistically enhances recovery from SCI when given with stem cells by modulating the immune response in discrete ways in different phases of SCI.
TITLE:
THE INCIDENCE AND ASSOCIATED RISK FACTORS OF THORACO-LUMBAR EPIDURAL HEMATOMA FOLLOWING ADULT TRAUMA

Authors: (underline presenting first author must be a student, resident or fellow)

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3 Department of Orthopaedic Surgery, Montefiore Medical Center, Bronx, NY, USA

Background:
Very little literature exists examining thoracic and lumbar epidural hematomas caused by trauma. Scoring systems have been introduced to guide treatment recommendations in the setting of thoracic and lumbar spine trauma. The presence of an epidural hematoma as a factor was not included in these systems although oftentimes, it is a factor in treatment considerations. Some epidural hematomas are associated with spinal cord or dural sac compression and may necessitate surgical decompression.

Objective:
The objective of our study is to determine the incidence and associated risk factors for epidural hematoma in the setting of thoracic and lumbar spine trauma.

Design/Methods:
Institutional Review Board approval was obtained prior to conducting this study. We performed a retrospective review of all traumas at our institution between 2010 and 2014. Patients with ICD-9 codes specific for fractures from the T1 to L5 spinal levels were further investigated. Patients who were <18 years old, >90 years old, or were without MRI imaging were excluded from the sample.

Patients who had thoracic and/or lumbar epidural hematoma were classified into one group (TLEH) and those who had no epidural hematoma into another group (NEH). A subgroup analysis of the TLEH arm was performed, based on the presence of cord or dural sac compression (or stenosis associated with the epidural hematoma). Demographic information was collected and the following risk factors were compared between groups: admitting INR/PT, PTT, and injury severity score (ISS).

Results:
A total of 1185 patients with thoracic or lumbar spine injuries were identified between the ages of 18 and 90 years old, of which 578 subjects had a spinal MRI available for review. 66 patients (11.4%) were found to have a posttraumatic thoraco-lumbar epidural hematoma. Demographics were found to be similar in both analyses. Higher INR levels were found to be significant in the TLEH group (Table 1). In the subgroup analysis of patients in the TLEH group with spinal cord compression or stenosis (CC), higher ISS and INR were significant when compared to the no cord compression group (NCC) (Table 2).
Table 1. Post-traumatic Thoraco-Lumbar Epidural Hematoma comparison demographics

<table>
<thead>
<tr>
<th></th>
<th>TLEH</th>
<th>NEH</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>66 (11.4%)</td>
<td>512 (88.6%)</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td>NS</td>
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<tr>
<td>Male</td>
<td>51 (77.3%)</td>
<td>343 (67%)</td>
<td>NS</td>
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<tr>
<td>Female</td>
<td>15 (22.7%)</td>
<td>169 (33%)</td>
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<tr>
<td>Age</td>
<td>44.4 years</td>
<td>49.4 years</td>
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<tr>
<td>Race</td>
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<tr>
<td>White</td>
<td>45 (68.2%)</td>
<td>361 (70.5%)</td>
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</tr>
<tr>
<td>AA</td>
<td>3 (4.5%)</td>
<td>40 (7.8%)</td>
<td>NS</td>
</tr>
<tr>
<td>Asian</td>
<td>0 (0%)</td>
<td>13 (2.5%)</td>
<td>NS</td>
</tr>
<tr>
<td>Other</td>
<td>18 (27.3%)</td>
<td>97 (18.9%)</td>
<td>NS</td>
</tr>
<tr>
<td>Unk</td>
<td>0 (0%)</td>
<td>1 (0.2%)</td>
<td>NS</td>
</tr>
<tr>
<td>ISS</td>
<td>18.1</td>
<td>15.6</td>
<td>NS</td>
</tr>
<tr>
<td>INR</td>
<td>1.17</td>
<td>1.09</td>
<td>NS</td>
</tr>
<tr>
<td>PTT</td>
<td>25.9</td>
<td>25.8</td>
<td>NS</td>
</tr>
</tbody>
</table>

Table 2. Post-traumatic Thoraco-Lumbar Cord or Dural Sac Compression associated with Epidural Hematoma comparison demographics

<table>
<thead>
<tr>
<th></th>
<th>CC</th>
<th>NCC</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>N</td>
<td>28 (42.4%)</td>
<td>38 (57.6%)</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td>NS</td>
</tr>
<tr>
<td>Male</td>
<td>21 (75%)</td>
<td>30 (78.9%)</td>
<td>NS</td>
</tr>
<tr>
<td>Female</td>
<td>7 (25%)</td>
<td>8 (21.1%)</td>
<td>NS</td>
</tr>
<tr>
<td>Age</td>
<td>48.4 years</td>
<td>41.5 years</td>
<td>NS</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td>NS</td>
</tr>
<tr>
<td>White</td>
<td>45 (68.2%)</td>
<td>26 (68.4%)</td>
<td>NS</td>
</tr>
<tr>
<td>AA</td>
<td>3 (4.5%)</td>
<td>1 (2.6%)</td>
<td>NS</td>
</tr>
<tr>
<td>Asian</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>NS</td>
</tr>
<tr>
<td>Other</td>
<td>18 (27.3%)</td>
<td>11 (28.9%)</td>
<td>NS</td>
</tr>
<tr>
<td>Unk</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>NS</td>
</tr>
<tr>
<td>ISS</td>
<td>18.9</td>
<td>17.6</td>
<td>p&lt;0.05*</td>
</tr>
<tr>
<td>INR</td>
<td>1.3</td>
<td>1.07</td>
<td>p&lt;0.05*</td>
</tr>
<tr>
<td>PTT</td>
<td>28</td>
<td>24.4</td>
<td>NS</td>
</tr>
</tbody>
</table>

*statistically significant
AA: African American
Unk: Unknown
TLEH: Thoraco-lumbar epidural hematoma
NEH: No epidural hematoma
NS: no statistical significance
ISS: Injury severity score
INR: International normalized ratio
PTT: Partial thromboplastin time

Conclusions:
The incidence of thoracic and lumbar spinal epidural hematoma following trauma was found to be 11.4% in our study, of which 42.4% presented with spinal cord or dural sac compression or stenosis. We found that the greater the INR was in the setting of spine trauma, the higher the risk of spinal epidural hematoma. Additionally, patients with TLEH who had higher ISS and INR levels, had increased chances of having dural sac compression. Age, gender, race, admitting ISS or PTT had no effect on the incidence of epidural hematoma.
TITLE:

Compare the therapeutic and cost-effectiveness of percutaneous drainage in addition to antibiotics versus antibiotics alone for management of periappendiceal abscess among pediatric patients

Authors: (underline presenting first author must be a student, resident or fellow)

Yachao Zhang, Ian Bezahler, Shekher Maddineni, Gustavo Stringel

Background:
Perforated acute appendicitis is often managed conservatively until inflammation subsides and patients then undergo interval appendectomy. Some patients are managed with antibiotics alone and some are management with percutaneous drainage or surgical drainage in addition. In this study, we will compare the cost-effectiveness and therapeutic effectiveness of utilizing percutaneous drainage in addition to antibodies versus antibiotics alone to better understand how to select patients for conservative treatment options.

Objective:
Compare the therapeutic and cost-effectiveness of percutaneous drainage in addition to antibiotics versus antibiotics alone in the treatment of periappendiceal abscess among a pediatric population.

Design/Methods:
We conducted a 12 year retrospective chart review of pediatric patients under 18 years of age with acute perforated appendicitis complicated by periappendiceal abscess. Diagnosis was made by CT, US or MRI examination. Appropriate IRB approval was obtained. Group 1 consists of patients who received non-operative management with antibiotics only (n:25). Group 2 consists of patients who underwent percutaneous drainage by the interventional radiology (IR) service and received antibiotics (n:11) and group 2 F, which consists of 10 patients who were initially treated with antibiotics and later required IR drainage. Patients’ demographics, initial clinical presentation, abscess size and location, length of hospital stay, outcome and complication were compared between the two groups. The technical aspects of catheter placement (transgluteal versus anterior percutaneous approach) and the associated outcomes were also investigated.

Results:
There was no significant difference in mean hospital stay between the two groups (Group 1: 7±3 days; Group 2: 7±4 days). Prolonged hospital stay is associated with small bowel obstruction or ileus at initial presentation in both groups. There were no deaths and no significant long term complications in either group. 1 patient in group 1 returned to the ER for abdominal pain and was readmitted for observation. There were no failures of treatment in group 2. 4 patients in group 2F returned to ER shortly after discharge and required readmission. 1 of the 4 patient developed acute pancreatitis and underwent surgical drainage. Additionally, there were 3 patients, who failed antibiotics initially and underwent surgical drainage directly. All patients were eventually managed with interval appendectomy. 2 of the patients in group 2 were treated with transgluteal approach, there was no reported complication.

Conclusions:
Percutaneous drainage of periappendiceal abscess is safe and effective in the pediatric population. Management with antibiotics alone can be successful in a majority of patients, but is insufficient in 1 in 3 patients (36 % failure rate in our cohort). Both anterior and transgluteal approaches are safe and effective. Transgluteal approach provides accessibility to collections within the deep pelvis not amenable to anterior approach.
THE VALUE OF LINING RESECTION CAVITIES WITH OXIDIZED CELLULOSE AND HEMOSTATIC MATRIX FOLLOWING BRAIN TUMOR SURGERY WITH PARTICULAR REFERENCE TO POSTOPERATIVE IMAGING STUDIES

Authors: (underline presenting first author must be a student, resident or fellow)
Jennifer Ronecker, MD, Anubhav Amin, MD; Raj Murali, MD

Background:
It is essential to obtain perfect hemostasis after brain tumor surgery. We have used a method of doing this by lining the resection cavity with oxidized cellulose (OC) and hemostatic matrix (HM). The roughness of the OC prevents the HM from floating away. In addition to providing excellent hemostasis, we also found that HM acts as a negative contrast due to the air trapped within. In the postoperative Computed Tomography scan of the head (CTH), this provides valuable information regarding trajectory used during surgery and status of residual tumor.

Objective:
The purpose of this study is to evaluate the effectiveness of OC and HM as a means of outlining the tumor resection cavity and trajectory on a postoperative noncontrast CTH.

Design/Methods:
The study cohort includes 50 patients who had surgery for brain tumors from January 2015 to October 2016. All patients had the resection cavity lined by OC and HM. All patients had immediate postoperative CTH and 33 have also had postoperative MRI scans to assess residual tumor.

Results:
The pathology of the resected tumors were as follows: Meningioma-20, Gliomas-10, Benign Skull base tumors-11, Metastasis-6, hemangioblastoma-2 and inconclusive pathology-1.
None of the patients had a postoperative hematoma requiring reoperation. HM clearly showed the trajectory taken during surgery to resect the tumor in 43 patients. This was helpful in assessing neurological deficits and confirming whether the planned trajectory was actually utilized during surgery. In 24 patients, residual tumor was seen in the immediate noncontrast CTH, which was later confirmed on a MRI scan. The technique was not as useful in skull base tumors as much as in supratentorial tumors because skull base tumors were mostly bone work, which is already visualized in bone windows of the CT.

Conclusions:
The technique of lining brain tumor resection cavities with a combination of OC and HM was not only effective in achieving excellent hemostasis but also gave useful information regarding trajectory and status of residual tumor in immediate, routine, noncontrast, postoperative CTH.
Oral Poster Presentations

(In order by year)
The initiation of chronic opioids: a survey of chronic pain patients: Characterizing Chronic Opioid Use

Authors: Catherine E. Callinan, MSc1; Mark D. Neuman, MD, MSc2; Kim E. Lacy, RN1; Claudia Gabison; Michael A. Ashburn, MD, MPH1
(1) Penn Pain Medicine Center, Department of Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA; (2) Department of Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA

Background: While opioid medications are considered the mainstay of acute post-operative pain management1, the utility and safety of opioid medications for the treatment of chronic pain has recently been questioned2. Recent reports suggest that opioid prescribing decisions at the time of injury or surgery may impact the chances that patients remain on chronic opioids 6 months following injury or surgery3. Patient factors, including the pre-operative use of opioids and the presence of mental health disorders, also may be predictive of chronic opioid use following elective surgery4,5. Better understanding of how opioids are started is essential to determine if patients have been properly selected for this therapy, and if opportunities exist to avoid improper chronic opioid use. With greater understanding of how chronic opioids are started, we may be able to develop an improved process of care to ensure that proper patient selection is completed, and that patients experiencing ongoing pain are offered best evidence therapy.

Objective: The goal of this study was to determine why chronic opioids therapy was started through researcher-administered survey at a Pain Center. This study also assessed prescription patterns and patient attributes that may have impacted the use of chronic opioids to treat pain.

Design/Methods: IRB approval was obtained from the University of Pennsylvania IRB before the study began. Potential participants were identified from the electronic medical records of those who checked in for appointments between July 6, 2015 and July 30, 2015 at the pain center. Consecutive patients who received opioid therapy for >90 days and who had a non-cancer pain diagnosis, as obtained from the electronic medical record, were approached for interview. Written informed consent was obtained before each interview was conducted. After completion of the interview, demographic and current care information was obtained from the electronic medical record.

Results: Chronic opioids were started following surgery (27.0%; 95% CI:18.5-35.5) or for the treatment of acute injury-related pain (27.0%; 95% CI:18.5-35.5). Many who initiated opioid therapy after surgery reported post-operative complications (61.3%; 95% CI:50.8-71.8) and many with injury-related pain reported follow-up corrective surgery (58.1%; 95% CI:47.5-68.7), which led to the continuation of opioids. A large percentage had concurrent depression (43.5%; 95% CI:34.0-53.0) and anxiety (23.5%; 95% CI:15.3-31.7). Many had a medical history of aberrant drug-related behavior (32.5%; 95% CI:23.5-41.5) and self-reported history of addiction (21.7%; 95% CI:13.7-29.7). Almost one quarter reported taking opioids for a different indication than that for which opioids were started (95% CI:26.6-45.0).

Conclusions: To the best of our knowledge, no studies have examined the reasons for opioid initiation and connected them to the risk factors for chronic usage. Patients receiving long-term opioid therapy often transitioned to chronic use after starting opioids for the short-term treatment of post-operative or injury-related pain. It is not evident if a clear decision to continue opioids on a chronic basis was made. This survey provides insight as to how chronic opioid therapy is started, and may suggest opportunities for improved patient selection for opioid therapy.

References:
Title: Does Frailty Predict Surgical Site Infection After Large Colorectal Procedures Involving Bowel Resection?

Authors: Danny Lascano, Tariq Alfadda, Hanjoo Lee, Michael Jamgochian, Rifaq Latifi, Kartik Prabhakaran, Gary Lombardo, Anthony Policastro, Dmitriy Karev, and John Savino
Department of General Surgery, Westchester Medical Center, Valhalla, New York

Background: Frailty and surgical site infections have been linked in the literature but no one has taken into account wound classification and other variables to see if frailty independently is associated with surgical site infections.

Objective: Our objective was to compare the disease characteristics and surgical site infection rates for patients undergoing colorectal procedures involving bowel resection.

Design/Methods: A retrospective review of patient data was done as part of a quality analysis study looking at our institution’s performance with statewide and nationwide surgical site infections and closure type. American Society of Anesthesiologists Physical Status Classification (ASA), wound type classification (Clean, Clean contaminated, contaminated, infected), closure type (either primary or secondary), and demographic/clinical information was collected for 51 patients who underwent either elective or emergent colectomy procedures at our institution in any of our surgical departments. Frailty was calculated using a modified frailty index adapted from Rockwood’s Canadian Frailty Index and validated using the NSQIP database. A chi squared analysis was performed for categorical data, an independent sample T-test was performed for scale data, and a logistic regression was done by variable to assess for significance with the outcome of interest, SSI (surgical site infection). Bootstrapping was performed on logistic regression analysis. Receiver operator characteristic curves were done to assess the usefulness of the different predictors used clinically. Missing data was imputed using the group average and accounted for < 10% of the total data collected.

Results: 51 patients with a mean age of 49.8 and median age of 59 years old had a colorectal procedure involving bowel resection done at our institution thus far from January to October of 2016. The age ranged from 4 months to 91 years old; 8 pediatric patients and 2 gynecology patients were included. 35.2% (18/51) were ASA 1 or 2; 51% (26) were female. 13.7% (7/51) had a SSI. 45.1% (23/51) were clean contaminated, 23.5% (12/51) were contaminated, 31.4% (16/51) were dirty. On logistic regression, only weight (p= 0.076) and ASA classification (p=0.098) approached significance. Frailty (p= 0.159), emergent status ( p= 0.384), closure type (p=0.651), and wound classification (p=0.311) did not approach significance. ROC curves showed that ASA had the highest AUC (0.640), followed by wound classification (AUC = 0.602). Frailty had a AUC of 0.321 and closure type had a AUC of 0.464.

Conclusions: Only weight was predictive of surgical site infection on univariate logistic regression analysis. ASA and wound classification had the highest AUC but clinically did not meet the threshold of greater than 0.7 for a good clinical predictor for SSI. Frailty and closure type of the wound was not predictive of surgical site infections based on AUC of the ROC. This may indicate that more variables such as nutritional status or intraoperative findings not reported in the medical records may be missing when analyzing the causes of surgical site infections and specifically when analyzing frailty. In addition other models of frailty such as the Fried model may be more relevant in SSI as opposed to the Rockwood definition of frailty used in this study. Weaknesses of this study include the low number of patients included as well as missing data.
A TALE OF TWO WHEELS: A CONTEMPORARY REVIEW OF MOTORCYCLE TRAUMA

Authors: Dimitra Lotakis, MD PGY-2, Jay Yelon, DO FACS Southside Hospital Northwell Health, Michael Grossman, MD FACS Southside Hospital Northwell Health

Background: Motorcycle trauma (MCT) comprises approximately 4% of all vehicle related injuries and 14% of all traffic fatalities. Though classically associated with pelvic, femur and lower extremity trauma, limited data exists in support of these observations. Prior studies on injury patterns have shown significant associations between traumatic mechanism and injury patterns for falls from height, automobile crash vectors and auto-pedestrian collisions (Waddell’s triad).

Objective: Our objective was to understand the demographics and injury mechanisms associated with MCT in order to predict types of injury most likely to be encountered.

Design/Methods: Our study employed a retrospective data analysis utilizing the 2012 National Trauma Data Bank. Data was sampled via ICD-9 coding and sorted motorcycle collisions into two major categories: motorcycle vs vehicle collision (Group 1) and motorcycle loss of control (Group 2). Additional collision patterns could be identified but were present exceedingly small numbers. Injuries were then categorized into severe (SI), defined as AIS≥3, or minor (MI), defined as AIS ≤2 and analyzed based on their AIS body region. Demographics, alcohol and helmet use, injury specifics, mortality and aggregate complications were determined and compared between collision types. Statistical analysis was performed via Chi-squared test.

Results: MCT appears to be associated with a bimodal age distribution with peaks at twenty-five and fifty-five years of age. Chest injury is the predominant serious injury encountered. Collision mechanisms occurs in a patient population with younger average age and is more often associated with shock, high injury severity and mortality. Severe lower extremity injury is much more common in collisions than loss of control.

Conclusions: We propose the presence of a “geriatric” MCT trauma population with unique characteristics including more frequent loss of control as a mechanism of injury. Chest injury is the most common serious injury between both groups, which indicates need for increased level of suspicion for these injuries during trauma evaluations and lends support to the concept of torso protective devices for riders. Loss of control is more often associated with older age, ETOH use and lower incidence of helmet use. Collisions involve younger patients, are a more “serious” mechanism of injury and result in more severe injuries, shock, and higher mortality.

Figure 1. Bimodal Age Distribution  Figure 2. Distribution of MCC by Age
INITIAL EXPERIENCE AND EFFICACY OF INTRACAMERAL PHENYLEPHRINE 1%/KETOROLAC 0.3% IN CATARACT SURGERY

Authors: (underline presenting first author must be a student, resident or fellow)
Eric Rosenberg, DO, M.S.E.1, Alanna Nattis, DO2, Eric Donnenfeld, MD3
1 Ophthalmology Resident PGY-2, New York Medical College, Westchester Medical Center, Valhalla, NY
2 Cornea and Refractive Surgery Fellow, Ophthalmic Consultants of Long Island, Garden City, NY
3 Clinical Professor of Ophthalmology, New York University; Trustee Dartmouth Medical School

Background: With a steadily increasing incidence, cataract surgery remains one of the most frequently performed procedures worldwide. Age-related cataracts alone are expected to affect more than 30 million Americans by 2020 [1,2]. Not surprisingly, cataract surgery has undergone the desired progression of any surgical procedure with the aim of reducing risk and improving outcome. Visualization is a fundamental pillar to any surgery, and therefore, it comes to no surprise that intraoperative miosis increases the risk of complications. In the past year, the FDA trial on intracameral phenylephrine/ketorolac had showed significant improvement in maintenance of pupillary mydriasis, and reduction in postoperative pain, however no preoperative NSAIDs or BSS infused epinephrine in the control group was used. Additionally, patients with common risk factors for pupil constriction such as intraoperative floppy iris syndrome and pseudo-exfoliation were excluded from these studies.

Objective: To study real-world outcomes of intracameral phenylephrine 1%/ketorolac 0.3% during routine cataract surgery in an outpatient ambulatory surgery center setting.

Design/Methods: Patients who underwent cataract surgery between August and November 2015 at a single ambulatory surgery center. The outcomes of four surgeons who routinely used either intracameral phenylephrine 1%/ketorolac 0.3% or intracameral epinephrine during routine cataract surgery were examined, and each chart was reviewed at least two months following surgery for surgeon’s name, date of surgery, date of birth, age at time of surgery, sex, eye, use of the femtosecond laser, use of mydriatic-assist devices, IOL placement, use of phenylephrine/ketorolac, history or current use of alpha-1 antagonists, peri- and post-operative complications, and best correct and uncorrected visual acuities. Patients younger than 21, individuals with documented sensitivities to NSAIDs, and those undergoing combined cataract and posterior segment surgeries were excluded.

Results: 641 cataract extractions on 389 patients were included. 413 patients were women, 323 on the right eye, 53 with a positive history of a alpha1-antagonist use, 278 underwent pretreatment with femtosecond laser, 260 eyes were given phenylephrine 1%/ketorolac 0.3%, and 45 required a mydriatic assist device. Mean length of surgery (LOS) was 15.4 ± 0.6 minutes, with increased age having a positive correlation with length of surgery (p<0.001). When controlling for age groups, the use of phenylephrine 1%/ketorolac 0.3% was associated with significant reduction in operative times (two-way ANOVA, p = 0.049). A higher incidence of complications were noted when mydriatic-assist devices were used (11.1% vs 2.5%, p = 0.001), and a lower incidence of complications were appreciated when phenylephrine 1%/ketorolac 0.3% was used (4.5% vs 1.1%, p = 0.018). Following age matching, a significant improvement can be appreciated in POD1 best corrected visual acuity (BCVA) Omidria patients aged 69 to 75 (0.44±0.08 vs 0.38±0.10) and 76 to 92 (0.34±0.06 vs 0.23±0.08) (Two-way ANOVA, p = 0.003).

Conclusions: Intracameral phenylephrine 1%/ketorolac 0.3% administration when compared to intracameral epinephrine alone was associated with a decrease in intraoperative and post-operative complications, a reduction in pupillary dilating device dependence, improved POD-1 BCVA in select age groups, and a decreased procedural time.

Background:
Appendicitis is the leading cause of surgical emergencies in the pediatric population. In addition to obtaining a clinical history, imaging studies such as abdominal x-ray, ultrasound (US) or computed tomography (CT) are often used as adjuncts in making the diagnosis. More recently, Magnetic Resonance Imaging (MRI) has been used as it eliminates the technician associated variability seen in US and the ionizing radiation from x-rays and CT scans. Few large studies are available in the current literature on this topic.

Objective:
To perform a meta-analysis of the current available evidence on the accuracy of MRI for the diagnosis of acute appendicitis in the pediatric population.

Design/Methods: We sought all publications from January 1985 to April 2015 evaluating MRI as a diagnostic test for appendicitis in children through MEDLINE. Prospective and retrospective studies were screened and included if they used MRI as a diagnostic test for appendicitis and reported sensitivities and/or specificities, or stated sufficient data to derive these numbers, using surgical pathology as the gold standard. Reported sensitivities and specificities were pooled and summarized with 95% confidence intervals using RevMan version 5.1 software.

Results
A total of 10 articles met the inclusion criteria reporting on 1477 total patients. All studies reported sensitivities, while only 9 reported specificities. The pooled sensitivity was 96% (94%-97% at 95% confidence interval (CI)) and pooled specificity was 96% (95%-98% at 95% CI).

Conclusions
This meta-analysis found that MRI is an effective and highly accurate imaging modality for diagnosing as well as ruling out acute appendicitis in the pediatric population.
TITLE:

Safety and Tolerability of Laser Hair Depilation in Pilonidal Disease: A Pilot Study

Authors: (underline presenting first author must be a student, resident or fellow)

Joseph J. Lopez MD1,2, Jennifer N. Cooper MS PhD1, Dani O. Gonzalez MD1,2, Katherine J. Deans MD MHSc1,2, Peter C. Minneci MD MHSc1,2
1Center for Surgical Outcomes Research, Nationwide Children’s Hospital, Columbus, OH
2Department of Pediatric Surgery, Nationwide Children’s Hospital, Columbus, OH

Background:
Pilonidal disease is a common surgical problem characterized by acute and chronic wounds and sinuses that can cause both short-term and long-term morbidity, disability, and impaired quality of life. Definitive treatment with surgical excision and reconstruction is also associated with significant morbidity, with reported wound complication rates as high as 30% and recurrence rates after excision of 9-11%. Laser hair depilation of the natal cleft has been reported to be protective for pilonidal disease recurrence.

Objective:
The purpose of this study is to assess the safety and tolerability of laser hair depilation in adolescents and young adults with pilonidal disease.

Design/Methods:
We performed a prospective single arm pilot trial of laser hair depilation to the natal cleft in patients with pilonidal disease. Each patient received a scheduled outpatient laser depilation treatment every 4 weeks and a total of 5 treatments. An 810 nm wavelength laser (for Fitzpatrick skin types I-IV) and Nd:YAG laser (for Fitzpatrick skin types V-VI) were used. Initial follow up was performed to assess the tolerability of each laser treatment; pain scores were recorded immediately after treatment and every 6 hours for the first 24 hours after each treatment. The primary endpoint was the tolerability and safety of the laser depilation treatments, defined as pain scores consistently <4 and no occurrence of deep second degree burns during the 24-hour post-treatment period.

Results:
We have enrolled 12 patients. Eight patients have completed three laser depilation treatment sessions thus far with 100% tolerability and no second degree burns. No patients were unable to complete a treatment session due to discomfort. All 12 patients remain recurrence-free at 5 months after the initiation of treatment. This group of patients will complete 5 treatment sessions and will be followed for 1 year after the final treatment session to assess for disease recurrence. Significantly diminished hair growth is noted in these patients after 3 treatments.

Conclusions:
Laser hair depilation is both safe and well tolerated in in adolescents and young adults with pilonidal disease. A randomized controlled trial is planned to compare the efficacy of laser hair depilation accompanied by chemical/mechanical depilation of the natal cleft versus chemical/mechanical depilation alone in preventing pilonidal disease recurrence.
EFFECT OF THE BUNDLE ON COLON SURGICAL SITE INFECTION RATES IN THE POST-OPERATIVE UNIT 2013 - 2016

Authors: (underline presenting first author must be a student, resident or fellow)
MONTY LITTLEJOHN MD PGY 4, MINA SOLIMAN MD, SAMEH AMIN MS2, SAMRINA KAHLON MD

Background:
IN OUR INSTITUTION, COLON SURGICAL SITE INFECTION DATA IS COLLECTED EVERY MONTH. THERE WAS A NOTICEABLE INCREASE IN POST-OPERATIVE INFECTIONS IN THE POST-OPERATIVE UNIT. THE SURGICAL TEAM DEVELOPED A BUNDLE PROGRAM OF ANTIBIOTIC REGIMEN POST-OPERATIVELY FOR THE GOAL OF DECREASING SURGICAL SITE INFECTIONS THAT SPECIFICALLY OCCUR WHILE THE PATIENT IS IN RECOVERY.

Objective:
OUR CONCERN IS TO DO A RETROSPECTIVE ANALYSIS OF THE DATA OF SURGICAL SITE INFECTION RATES SINCE 2013 TO SEE IF THERE MAY BE A NOTICEABLE EFFECT OF THE BUNDLE AFTER IT WAS IMPLEMENTED LATE 2014.

Design/Methods:
MONTHLY AND QUARTERLY REPORTS FROM 2013 TO 2016 WERE COLLECTED FOR THE NUMBER OF COLON SURGERY PROCEDURES AND THE NUMBER OF SURGICAL SITE INFECTIONS THAT OCCURRED AFTER THOSE PROCEDURES IN THE POST-OPERATIVE UNIT. MICROSOFT EXCEL WAS USED TO RECORD THESE NUMBERS IN QUARTERLY FASHION. A THIRD COLUMN WAS CREATED TO CALCULATE THE RATE OF INFECTION EVERY REPORTING QUARTER. QUARTERS EACH YEAR WERE ADDED TOGETHER TO ALSO DETERMINE ANNUAL RATES. LINE AND BAR GRAPHS WERE CREATED TO VISUALIZE THE DATA.

Results:
RATE OF INFECTION WENT UP DRASTICALLY FROM 17.14% IN 2013 TO 32.14% IN 2014, AND THEN RATES DECREASED TO 19.44% IN 2015 AND 6.45% IN 2016 (THUS FAR). QUARTERLY DATA SHOWED THAT THE HIGHEST RATE OF INFECTION OCCURRED IN 2015 Q1 AT 66.67%. STARTING FROM 2015 Q3, THERE WERE NO REPORTS OF COLON SURGICAL SITE INFECTIONS WITH THE EXCEPTION OF 2016 Q1 AND 2016 Q2, EACH REPORTING ONE PATIENT WITH SURGICAL SITE INFECTION.

Conclusions:
SINCE THE INTRODUCTION OF THE COLON BUNDLE, THE RATE OF POSTOPERATIVE SURGICAL SITE INFECTIONS HAVE DECREASED. WE BELIEVE THIS TO BE MULTIFACTORIAL, AND NEED MORE DATA TO ELUCIDATE THE MOST SIGNIFICANT COMPONENT OF THE BUNDLE.
Case Report of Duodenal Adenocarcinoma with delayed metastasis to the liver

Authors: Seungwhan Pee, MD, Rifat Latifi, MD, Gregory Veillette, MD
Westchester Medical Center, Department of Surgery

Introduction/Background: Primary duodenal adenocarcinoma is a rare entity, compromising about 0.3% of all gastrointestinal malignancies, however up to 50% of small bowel tumors. The 5 year survival rate is generally about 50% after curative resection, and the prognosis is dependent upon age, weight loss, nodal metastasis, positive margins, depth of invasion, and advanced tumor stage. Tumor recurrence usually happens around 1.3 years, and afterwards the median survival is 10.4 months. We present a case of a 64 year old male who underwent surgical treatment with curative intent for duodenal adenocarcinoma, and developed delayed liver metastasis, 4 years after treatment.

Case Description: Our patient is a 64 year old man with a medical history of hypertension, coronary artery disease, hyperlipidemia, who was admitted initially for melena. Workup including EGD and biopsy showed adenocarcinoma of the second and third portion of the duodenum, and the patient subsequently underwent a pylorus preserving pancreaticoduodenectomy. The procedure was uneventful, and biopsy results were positive for a moderately differentiated adenocarcinoma of the duodenum with negative margins and seven benign lymph nodes. During followup, patient was also diagnosed with high grade urothelial carcinoma and was treated with a ureteroureterostomy and intravesical BCG. Subsequent follow up showed no evidence of recurrence.

4 years after the initial resection, patient was evaluated for a mass in the right upper quadrant, which seemed to be associated with the hepatic flexure of the colon, and patient underwent a colonoscopy and biopsy which showed a necrotic mass in the hepatic flexure with invasion into the liver. Subsequent exploratory laparotomy revealed a large mass in segment 4 and 5 of the liver with invasion into the hepatic flexure of the colon. En bloc resection was performed with pathology positive for metastatic adenocarcinoma.

Discussion: Our case report is significant in the sense that metastasis to the liver developed and was found in a delayed fashion, 4 years after surgical treatment. At the time of resection, there were no factors that would negatively impact the prognosis including nodal status, margins, or depth of invasion. During the 4 years the patient did not exhibit any clinical findings to suggest the development of this pathology. Also, during workup and treatment, the case was confounded by the fact that the patient developed urothelial carcinoma, and there was concern for this malignancy to be a metastatic urothelial cancer. Strict follow up and early diagnosis of duodenal malignancies to detect delayed metastasis should be considered.
Background:
Traumatic aortic rupture is most commonly associated with sudden deceleration injuries such as automobile accidents. However, acute aortic dissection (AAD) due to blunt chest trauma in this setting is extremely rare (Minoru, Penn, Gammie, Rogers, Mimasaka). Aortic dissection has a reported incidence 2.9 cases per 100,000 person-years in a report done in Hungary (Meszaros) and an incidence of 4400 per 1 million per year in the United States (Hagan). High early mortality rates have reported, including an estimate of 21.4% before admission and another estimate of 68.2% within 48 hours of admission or 1.4% per hour (Meszaros).

To diagnose AAD, clinical suspicion must be high as signs, symptoms and improved diagnostic techniques are not always definitive. Clinical manifestations of AAD are diverse with the most common symptoms being the sudden onset of severe, sharp chest pain (Hagan). A major cause of high mortality is failure to recognize dissection and treat appropriately. Additional factors may contribute to observed high early mortality, such as limited hospital resources and lack of a special cardiovascular service (Meszaros).

Case Report:
A 38 year old male presented to our hospital after a motorcycle accident, sustaining multiple orthopedic injuries, splenic injury, small bowel devascularization injury, colonic serosal tear, and a type b aortic dissection from the level of T2 to the bilateral iliac arteries. The mesenteric vessels were found to be supplied by the false lumen, with a severely narrowed true lumen. The patient was emergently taken to the OR and underwent a bowel resection and splenectomy, with the abdomen initially left open. Due to the extent of the aortic dissection and open abdomen, the decision was made to perform an axillary-bifemoral bypass to perfuse the lower extremities. The patient tolerated the procedure well, however during the hospital course he developed cardiac arrest and expired.

Conclusions:
Although traumatic aortic dissection is reported to have high morbidity and mortality rates, this depends on the extent of the dissection and the affected branches, as well as the associated traumatic injuries. Treatment modalities include endovascular repair, fenestration, or bypass, and these modalities should be tailored to the individual. Our case report shows the significance of evaluation and critical thinking in treatment of traumatic aortic injuries.
Title:
Handlebar injuries in children: 20 years experience at a Level I trauma center

Author: Min Li Xu MD, Niu Zhang MD, Joseph Lopez MD, Gustavo Stringel MD

Background
Handlebar injuries in the pediatric population have been shown to cause devastating intra-abdominal injuries. We analyzed the impact of handlebar injuries in our pediatric trauma patients over the past 20 years.

Methods
We reviewed all of the pediatric bicycle accidents ages 15 years old or younger, who required hospitalization for their injuries. Data was collected from 1995 to 2015. Each case was evaluated for mechanism and severity of injuries, physical and radiographic findings, treatment administered, length of hospitalization and patient outcomes.

Results
There were a total of 83 pediatric bicycle accidents over the past twenty years, which required hospital admission. 20 out of the 83 patients (24%) sustained direct handlebar injuries. There were 15 males and 5 females: ranging from age of 5 to 15 years old (mean 10.3 ± 2.55). Type of injuries included traumatic hernia, bony fractures, and multiple solid organ injuries: spleen (5), liver (3), kidney (2), pancreas (3), and adrenal (1). Most patients were successfully managed non-operatively with close ICU monitoring. Two patients required surgical intervention for traumatic spigelian hernia and duodenal perforation. Length of hospitalization for handlebar injuries ranged from 2 to 24 days (mean 6.3 ± 5.81). Outpatient follow-up (between 1 to 8 months) with repeat imaging showed resolving injuries and no complications.

Conclusion
Over the past 20 years, we have had successful management of severe intra-abdominal injuries related to bicycle handlebar with no mortalities. Since the implementation of state law to mandate helmets in younger riders, the morbidity of traumatic brain injuries has decreased. However, the incidence of handlebar injuries in children still continues to pose a problem.
Poster Exhibits

(In order by year)
MELANOMA OF UNKNOWN PRIMARY PRESENTING AS A SINGLE BACK MASS

Authors: (underline presenting first author must be a student, resident or fellow)
Siu-Yuan Huang, Anitha Srinivasan, MD, James Mariadason, MD, Marc Wallack, MD

Background:
Melanoma of unknown primary, also known as occult primary melanoma, is a term applied to a metastatic melanoma that is initially discovered in a secondary site (such as a lymph node, distant skin or subcutaneous tissue, or visceral site) rather than as a primary cutaneous, mucosal, or ocular tumor. As the name suggests, a patient with melanoma of unknown primary has no evidence of a primary lesion.

Objective/Design/Methods: N/A (case report)

Results:
A 43 year old male presented with a 5 cm x 5 cm soft, cyst-like mass on his mid-right back, attached to the skin with a soft apex and possible punctum. Though this mass had been present for 4-5 years, the patient reported that it had increased in size over the last year and had become painful. The patient denied any past medical history, past surgical history, or family history of cancer (skin or otherwise). The mass was excised completely and histopathological examination resulted in a diagnosis of malignant melanoma in the dermis and subcutaneous tissue, with no involvement of the epidermis. Though the mass was initially thought to be an epidermoid cyst, histological examination showed evidence of a capsule surrounding the tumor with patches of lymphoid tissue along the perimeter, suggesting the tumor may have grown within a lymph node. Per the pathologist’s recommendation, the decision was made to perform a wide re-excision of the site of melanoma to determine the depth of invasion of the specimen. Prior to this second surgery, the patient underwent a lymphoscintigram, which showed three discrete foci of activity in the right axillary region only. A repeat lymphoscintigram performed 1 week later confirmed the findings in the right axilla and no new areas of activity were identified. The back re-excision included the fascia of the back and a skin margin of > 2 cm, while the sentinel lymph node was localized by nuclear injection in the right axilla and excised. The back mass excision showed no evidence of residual melanoma, while the sentinel lymph node contained an intra-parenchymal microscopic focus of metastatic melanoma measuring 0.6 cm in diameter without extracapsular extension. The patient’s melanoma was classified as Stage IIIA (T3N1aM0) and the medical oncologist recommended a lymph node dissection of the right axilla based on the positive lymphoscintigram. Histopathological examination showed that the 13 lymph nodes removed were all negative for metastatic melanoma. The patient tolerated all procedures well and will continue to follow up with the surgery and medical oncology departments periodically.

Conclusions:
In summary, we have presented a case of melanoma of unknown primary presenting as a single mass on the mid-right back with the clinical appearance of an epidermoid cyst, but histopathological characteristics of a lymph node. Since the posterior trunk is not a region with established lymph node chains, this finding was unexpected. However, the posterior back is one of the most common locations of interval nodes, which can lie anywhere along the path of a lymphatic collecting vessel, leading us to believe this is an unusual case where a melanoma of unknown primary has infiltrated an interval lymph node in the back. Previous reports of melanoma of unknown primary with lymph node involvement have only listed the axilla, groin, neck, and parotid gland as observed locations, and we have been unable to find any prior reports of melanoma of unknown primary discovery in an interval node in the back. At this point, no further treatments are recommended since surgical resection of both detectable metastatic sites was successful. Had the patient’s solitary mass been non-resectable, the presence of a BRAF mutation would have made him eligible for a BRAF inhibitor treatment such as dabrafenib. Should the patient experience a recurrence in the future, BRAF inhibitor therapy may be considered.
LONG-TERM CARDIOTOXICITY OF DOXORUBICIN USED IN THE TREATMENT OF CHILDHOOD CANCER

Authors: (underline presenting first author must be a student, resident or fellow)
Keith B, Laurent D, Mitry MA, Edwards JG.

Background/Purpose: Survival rates of childhood cancers have reached greater than 70% and this is partially due to the use of anthracyclines, a popular cytotoxic class of drugs. Doxorubicin, a type of anthracycline, that binds to topoisomerase disrupting DNA replication, promotes oxidative stress and changes in myocardial dynamics mainly by altering the calcium dynamics of the myocardium.

Methods: A mouse model of doxorubicin-induced late-onset heart failure was developed by the laboratory to replicate heart failure in childhood cancer survivors. Heart cells were harvested from the animal model by collagenase digestion, followed by single-cell analysis with flow cytometry. Various cell specific antibodies were added to identify cell types and proteins of interest.

Results: The doxorubicin-treated test groups presented with altered ejection fraction and decreased fractional shortening. Blunted growth and glucose intolerance was also observed in these mice, however the exact mechanism is not entirely understood.

Conclusion: We hypothesized that doxorubicin accelerates cellular degradation at a rate that exceeds cellular replacement by cardiac progenitor cells. Independently, cell death may not be relevant, however dysregulation of cell death and cell replacement may be the source of long term cardiotoxicity.
GALLSTONE ILEUS: CASE REPORT AND REVIEW OF SURGICAL INTERVENTIONS

Authors: (underline presenting first author must be a student, resident or fellow)
Donna M. Bahroloomi (medical student), Olivia R. Buck (medical student), Anitha Srinivasan M.D., Marc Wallack M.D.

Background:
A 65-year-old female was admitted to our hospital with intermittent abdominal pain with associated nausea and vomiting. Her abdomen was diffusely tender, with exquisite pain on palpation of the right lower quadrant as well as appreciable rebound tenderness. Abdominal computed tomography (CT) scan Subsequent CT revealed air in the biliary tree and gallbladder with numerous gallstones, consistent with a fistula to the bowel, as well as evidence of a markedly dilated and fluid-filled small bowel consistent with partial or complete acute obstruction. Surgical intervention was indicated and patient underwent extraction of the impacted gallstone through an exploratory laparotomy and enterolithotomy. The patient made a full recovery and was eventually discharged home.

Objective:
While no consensus of the optimal treatment of gallstone ileus exists, this case discusses the pathophysiology of gallstone ileus along with a literature review of current interventions and outcomes that supports the therapeutic benefit of performing enterotomy without fistula repair in most cases of gallstone ileus.

Design/Methods: A case report with review of the current literature regarding surgical treatment of gallstone ileus.

Results:
Our literature review supports the view that enterolithotomy alone is the optimal intervention for treatment of gallstone ileus in most cases. Our patient’s case provided an excellent example of this consensus, as age and multiple comorbidities made laparotomy with enterolithotomy without fistula repair the optimal intervention.

Conclusions:
Gallstone ileus is an extraordinarily rare disease most often affecting elderly women. This condition presents with a wide range of signs and symptoms of the condition and the diagnosis can best be assessed through CT imaging or plain radiography. Intervention must be tailored to the individual patient, but enterotomy with stone extraction alone has been found to offer better results than other more complicated interventions.
TITLE: HEALTH RELATED QUALITY OF LIFE IN EARLY ONSET SCOLIOSIS PATIENTS TREATED SURGICALLY WITH TRADITIONAL GROWING RODS VS MAGNETICALLY CONTROLLED GROWING RODS

Authors: (underline presenting first author must be a student, resident or fellow)
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Background: Traditional growing rods, the current gold standard growth-preserving surgical treatment for early-onset scoliosis, causes repetitive stress on patients and requires a significant commitment of resources from their families and healthcare system. Growing rods require repeated surgical distraction under general anesthesia every six months, and repeated surgery during childhood is associated with high rates of complication as well as long term psychological effects. The novel magnetically controlled growing rod was developed in an attempt to decrease surgical sessions and achieve more natural growth by more frequent non-invasive lengthenings, which can be accomplished in the office at bedside. Although the clinical indications for these treatments have largely been agreed upon, there is a lack of understanding of their impact on patients’ and their families’ psychosocial status and health-related qualities of life.

Objective: This study aims to compare quality of life and caregiver burden in patients treated with Traditional Growing Rods and Magnetically Controlled Growing Rods, using the previously validated early onset scoliosis questionnaire.

Design/Methods: Consecutive patients being treated surgically for early onset scoliosis at a single academic hospital were recruited. Inclusion criteria are 10 years or younger at the time of index surgery, major curve 30° or greater at implantation, radiographic thoracic height T1-T12 less than 22 cm, no previous spine surgery, and minimum 2-year postoperative follow-up. Early Onset Scoliosis Questionnaires were administered to assess health related quality of life impact on patient and caretakers. The Early Onset Scoliosis Questionnaire is an internationally recognized and validated tool for evaluation of the impact of scoliosis on quality of life and family burden. Results from the magnetic rod and traditional rod groups were compared by univariate analysis utilizing paired t-tests.

Results: 44 children with a mean age of 7.2 ± 2.0 in magnetic controlled growing rods, 6.5 ± 2.3 in traditional growing rods were included. Children in magnetic controlled growing rods and traditional growing rods groups were similar in terms of gender, age at the time of operation, and complications. Mean number of lengthenings was 6.6 with mean follow up duration 24 months in the magnetic controlled rod group, and 9.2 lengthenings with 91.6 months follow up duration in the traditional rod group. Mean Early onset scoliosis questionnaire values and domain values of groups were significantly greater in the magnetic rod group in two domains; overall satisfaction (P=0.006) and financial impact (P=0.002). Analysis of covariance when controlled for length of follow up revealed superior physiological function scores (P=0.046) in addition to satisfaction and financial impact.

Conclusions: In the evaluation of early onset scoliosis treatment modalities, medical, surgical, social, psychological, and financial impact must be considered. Health related quality of life data in this study revealed superior scores in the novel magnetic controlled growing rods group in satisfaction, financial burden, and possibly physiological function when controlling for follow up duration. While previous studies have reported excellent safety and efficacy results based on radiographic curve correction and spinal growth, our study presents the first holistic analysis of the impact of this novel treatment modality as additional evidence for the use of MCRG over TGR. Limitations of this study include the small sample size and discrepancy of follow up duration between study groups. While these preliminary results are encouraging, a larger cohort of patients with a longer follow-up is required to determine long-term outcomes of this non-invasive distraction technique.
TITLE:

EFFECT OF PLUG PROUDNESS ON FEMORAL CONTACT FORCES WITH LARGE OSTEOCHONDRAL ALLOGRAFT TRANSPLANT GRAFTS: IMPLICATIONS FOR PATIENT REHABILITATION

Authors: Peter Du BS, NYMC; Keith L. Markolf PhD, UCLA; Christopher Lama BS, UCLA; David McAlister MD, UCLA; Kristopher Jones MD, UCLA.

Background: Cartilage defects have garnered significant interest the last few years due to an increased prevalence of isolated osteochondral injuries in young, active patients. Osteochondral allograft transplantation (OAT) is a procedure where a cylindrical plug of cartilage plus underlying bone is used to repair a large (>20mm diameter) cartilage defect in the femoral condyle. Prior biomechanical studies with small cylindrical grafts (up to 4.5 cm in diameter) have shown that a graft elevated (proud) relative to the adjacent cartilage surface produced localized increases in cartilage contact pressures. Excessive contact pressure could compromise initial healing. Conversely, some cartilage loading immediately postoperatively is thought to be beneficial to cartilage remodeling. We have found no biomechanical studies on contact forces (CF) or pressures related to a large OAT graft. The effects of plug proudness on graft contact forces (CF) and knee extension angle (KEA) during forced knee extension are of particular interest because it is a commonly used therapeutic maneuver to restore range of motion postoperatively.

Objective: The goal of this study was to simultaneously measure CFs acting on large medial and lateral OAT plugs during forced knee extension and to determine the effect of graft proudness on CF and KEA. We hypothesized that a proud graft would significantly increase CF and significantly decrease KEA.

Design/Methods: 11 knee specimens had a 20 mm diameter cylinder of native bone/cartilage cored out at a standardized clinically relevant location on the medial and lateral femoral condyles. Each graft plug was attached to a load cell that measured the resultant contact force acting on the graft. Four spacers, 0.5 mm in thickness, were inserted sequentially between each load cell and its mounting bracket to create proud graft conditions of 0.5 to 2mm. CF and KEA were recorded at extension moment levels of 0, 2, 4, 6, and 8 Nm.

Results: Mean CFs acting on flush plugs ranged from 29.7 N to 148.9 N (lateral) and from 20.5 N to 34.2 N (medial) at 0 and 8 Nm extension moments respectively. The average increases in lateral CF (compared to the flush condition) for 0.5 mm, 1 mm, 1.5 mm, and 2 mm proud conditions at 8 Nm extension moment (medial flush) were 54.5 N (+37%), 120.1 N (+81%), 161.8 N (+109%), and 209.9 N (+141%). Corresponding increases for medial proud plugs at 8 Nm extension moment were 31.3 N (+91%), 64.4 N (+188%), 111.2 N (+325%), and 154 N (+451%). For a given proudness condition, lateral CFs were significantly higher than medial CFs at extension moment levels 4 Nm or higher. CF increases for each proudness condition were significantly greater for lateral than medial grafts at 8Nm extension moment. Increasing medial plug proudness had no consistent effect on KEA. A 1 mm proud lateral plug significantly lowered the KEA at 0 and 2 Nm extension moment levels only, with mean decreases of 1.57° and 0.93° respectively.

Conclusions: CFs acting on large OAT grafts during forced knee hyperextension were highly sensitive to graft proudness, and significant CF increases on both condyles were recorded with a graft proudness of only 0.5mm. This finding emphasizes the surgical precision necessary to achieve normal CF levels acting on large OAT graft plugs. Forced knee extension is routinely used in the early postoperative period to regain normal knee extension. However, surgeons and therapists should be aware that this maneuver also generates substantial contact forces on a large OAT graft. CF increases from a proud graft were significantly greater for lateral grafts compared to medial grafts, a finding that might be taken into consideration by the therapist for a specific patient situation. This maneuver presents an apparent paradox in terms of post-operative patient care. Forced knee extension could be viewed as beneficial in terms of generating some CF level beneficial for cartilage healing. However, this maneuver could also be potentially harmful in terms of cartilage overload, especially with proud grafts. Although it is likely that there is a safe range of CF magnitudes suitable for normal cartilage health and function, these levels are unknown at present. The CF measurements presented in this study provide a baseline reference for future studies related to rehabilitation of patients with large OAT grafts.
EPIPLOIC APPENDAGITIS IN A 30 YEAR OLD MAN SUPERIMPOSED WITH RESOLVING APPENDICITIS: A CASE REPORT

Authors: (underline presenting first author must be a student, resident or fellow)
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Anitha Srinivasan, MD Department of Surgery, Metropolitan Hospital, New York, New York
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Marc K. Wallack, MD Department of Surgery, Metropolitan Hospital, New York, New York

Background:
Epiploic appendagitis or appendicitis epiploica refers to a pathology of the fatty appendages that predominantly cover the transverse and sigmoid colon but can occur anywhere from the cecum to the rectosigmoid junction. The epiploica are peritoneum-lined and contain subserosal fat. When these protrusions become ischemic due to torsion or spontaneous thrombosis of the central draining vein of the appendage, epiploic appendagitis occurs. The condition is fairly rare and has been reported in 0.3-1% of patients who were initially suspected of having acute appendicitis.

Objective:
Epiploic appendagitis can sometimes mimic classic cases of other abdominal pathologies like appendicitis. This case study therefore highlights the importance of being able to characterize the pathology of the disease, as treatments for this disease and its mimics are vastly different. It also sheds light on the course, presentation, and possible confounding variables that make this disease notoriously difficult to diagnose.

Design/Methods:
The case study was a retrospective analysis of a patient that was found to have epiploic appendagitis after pathological specimens were examined. The case study followed the hospital course of a patient that presented to the emergency department with right lower quadrant abdominal pain. The hospital course included presentation in the emergency room, presumptive diagnosis of acute appendicitis, and surgical intervention. The case analysis allowed us to look back and explore the pathological, and diagnostic factors that led us to the conclusion of acute appendicitis.

Results:
After the patient was taken into the operating room for a presumptive diagnosis of acute appendicitis, a 2x2 cm dark mass was visualized in the cecum. Histology later revealed that it was an infarcted epiploica. The patient’s epiploic appendagitis occurred in the cecum which is a less common location for this pathology. Additionally, the histology revealed a resolving appendicitis, and imaging revealed unspecified fat stranding around the area and an edematous appendix. These results made it difficult to differentiate whether the signs and symptoms were the result of an acute appendicitis or epiploic appendagitis. Furthermore, imaging did not reveal specific findings of epiploic appendagitis, which usually includes a fat density oval lesion with surrounding inflammation.

Conclusions:
Epiploic appendagitis is a self-limiting condition that usually does not require surgery. Patients are usually treated with anti-inflammatory medications for analgesia and without hospitalizations. It is imperative that physicians be familiar with the pathology of this disease to prevent unnecessary procedures, undue stress on the patient and reduce hospital costs. This is likely to happen if the clinician cannot discern this pathology from that of other emergent causes of acute abdomen, such as appendicitis. Although in this case an accurate diagnosis would likely not have been possible given the unusual circumstances, evaluation by CT and ultrasound by experienced clinicians, although not easy, can provide accurate diagnosis in most cases of acute appendagitis.
FOURNIER’S GANGRENE: AN INSTITUTIONAL REVIEW AND OUTCOME COMPARISON FROM 2009-2016

Authors: Saji, Akhil; Ferretti, Mark; Phillips, John

Background: Patient comorbidities, demographics and choice of management modalities in the treatment of Fournier’s gangrene might affect overall outcomes.

Objective: We sought to evaluate our institution’s current management protocol of Fournier’s gangrene measured by mortality and length of hospital stay in a retrospective cohort study.

Design/Methods: Data was collected by reviewing the electronic medical record of each patient diagnosed with Fournier’s Gangrene. A database was assembled containing key variables such as demographics, presenting comorbidities, environmental factors, time until surgery and the use of new treatment modalities. Additionally, a Fournier’s Gangrene Severity Index Score (FGSIS) was calculated for each patient. The data was analyzed for statistical significance using linear regression with Microsoft Excel and MedCalc statistical software.

Results: Over the course of the 2009 to 2016 study period, there were a total of 20 cases of Fournier’s gangrene at our institution. The average FGSIS score was 9 for all patients and 14 for the mortalities. Linear regression analysis showed that an increased FGSIS score was associated with an increased length of hospital stay (p=0.03) and increased mortality rate (p=0.01). Patients treated with hyperbaric oxygen therapy had an average length of hospital stay of 22 days. Patients treated with tangential hydrosurgery had an average length of stay of 40 days. Patients not treated with either new treatment modality had an average length of stay of 34 days. Fournier’s gangrene had an overall 15% mortality rate at our institution and patients had an average length of hospital stay of 32 days.

Conclusions: At our institution, the most common clinical presentation of Fournier’s gangrene was a male in his fifth decade of life with uncontrolled diabetes mellitus and a second significant medical risk factor such as recent surgery or active malignancy. Patient’s treated at our institution have outcomes comparable to those reported in the recent literature, a significant decline from historic mortality rates of over 50%. While patients treated with hyperbaric oxygen therapy did have shorter hospital stays, this association may be due to the fact that patients who had milder clinical pictures were better candidates to go for the wound therapy.
Title:

COMPLICATED INCISIONAL HERNIA REPAIR IN SITUS INVERSUS TOTALIS: A CASE REPORT

Authors: Kaitlin E. Swanson1; James G. Mariadason, MD2; M. Zakir Sabry, MD; Marc K. Wallack, MD2
1New York Medical College, School of Medicine; 2Metropolitan Hospital Center, Department of Surgery

Introduction:
Situs inversus totalis is a rare disorder of laterality in which the internal organs have complete reversal of their position. More interestingly, we had a patient with situs inversus totalis and morbid obesity, who had a recurrent incisional hernia that needed repair. Taking comorbidities into account and after weighing the risks and benefits with the patient, the decision for surgical intervention was made. In this case report, we hope to bring to light the various anomalies and complications that arose during this specific case, and address the challenges that a patient with situs inversus totalis might bring to further surgical cases.

Case Report:
The patient is a 41-year-old female who initially presented to the surgical clinic with a referral from the emergency department for severe umbilical abdominal pain. The patient had a past medical history of situs inversus totalis and morbid obesity. Additionally, she had a positive surgical history of a ventral hernia repair one year prior and a laparoscopic cholecystectomy five years prior. On exam, there was a 6cm palpable reducible periumbilical hernia, diffusely tender to palpation. A CT scan with contrast was performed showing a large ventral hernia in the lower abdomen in midline containing bowel loops. The hernia measured about 16.8cm in transverse diameter. There was no evidence of bowel obstruction [Figure 1]. Her labs were all within normal limits.

She was consented and booked for a large recurrent ventral hernia repair with mesh placement and component separation. Postoperatively, she had a complicated course. On post-operative day (POD) #3, there was one episode of vomiting and the patient was made NPO. On POD#4, she was advanced to a clear liquid diet, and again, had one episode of vomiting. On POD#10, there were significant areas of necrosis noted around the wound edge [Figure 2], for which she was treated with collagenase twice a day. Eventually on POD#14, she was taken to the OR for revision of wound edges and wound V.A.C. placement. In the second operation, the following findings were encountered. The underlying layer of Strattice was not present at bowel midline, small bowel and colon were appreciated, many omental and colonic adhesions to subcutaneous fat were present, the Strattice had detached from the right side of the abdominal wall muscle, and the Prolene sutures had ruptured.

The patient’s hospital course after the second operation consisted of two more trips to the operating room in order to debride necrotic and infected tissue. A wound culture sample was positive for Pseudomonas aeruginosa, so the patient was started on a course of ciprofloxacin. She remained in the surgical ICU under contact precautions, where she received antibiotics, wound care, and chest physiotherapy.

Discussion:
Although the complications and challenges introduced in this case report are incomplete, it provides the research community with some very interesting questions. Does a patient with situs inversus totalis need a different preoperative workup to ensure better outcomes after surgery? Intraoperatively, does extra mesh reinforcement with more or stronger sutures need to be placed in order to prevent dehiscence and evisceration? Should postoperative monitoring be increased to earlier identify wound infections or improperly healing incision sites? The exact role that genetics played in her clinical course are undetermined, but whenever a challenging case presents itself, it is our job as responsible physicians to look into a cause, in order to understand and prevent complications in the future. Situs inversus totalis is a rare condition in today’s population, however, understanding its impact is important in order to optimize each patient’s medical management.
SURGICAL RESECTION AS THE TREATMENT FOR NON-HODGKINS LYMPHOMA OF THE ILEOCECAL JUNCTION

Authors: (underline presenting first author must be a student, resident or fellow)
Caitlin Egan MS4
Caroline Mullis MS4
Marc Wallack MD, Metropolitan Hospital
James Mariadason MD, Metropolitan Hospital

Background:
Cancers of the gastrointestinal (GI) tract cause a great deal of morbidity and mortality in the United States and worldwide. While most primary cancers of the intestinal tract are adenocarcinomas, extra-nodal non-Hodgkin’s lymphomas (NHL) make up 1-4 percent. NHL of the GI tract can present with vague symptoms or as acute surgical emergencies. The rarity of this type of the intestinal tract tumor, as well as the wide variety of stages, grades and anatomic locations of the tumors has made the development of evidence based treatment plans difficult and the role of surgical intervention is controversial.

Objective:
To discuss a case of NHL of the GI tract treated with surgical resection and the literature on NHL treatment of the stomach, small intestine and large intestine treatment.

Design/Methods:
-A 70 year-old female presented to general surgery clinic after a hospitalization for presumed diverticulitis with distal ileal thickening, extensive inflammation of the cecum with a mass consistent with focal perforation or abscess formation. Presenting complaints included diffuse abdominal pain, anorexia and an 18-pound weight loss over 4 months. Her abdominal exam was unremarkable. She was presumed to have recovered from diverticulitis and scheduled for a follow up colonoscopy.
-The colonoscopy showed a large ileocecal mass with biopsies showing necrosis and inflamed granulation tissue that was negative for malignancy. Given the size of the lesion, the location and recent weight loss, the patient was recommended to have the mass resected. The patient’s cecum, proximal third of transverse colon and 10 cm of terminal ileum was resected with a 5.1 x 3.5 x 1.6 cm extension of the mass onto the lateral peritoneal wall and 11 lymph nodes.

Results:
-Pathology of cecal mass showed transmural involvement with negative margins with 0/11 lymph node involvement and lateral peritoneal wall specimen showed margins involved by lymphoma. The pathology report found the mass to be a high-grade diffuse large B cell lymphoma.
- The patient had a follow up PET scan less than 2 months after surgery, which was unable to distinguish between signs of post-surgical inflammation or residual malignancy. With no recommendations for chemotherapy or immunotherapy, the patient is currently being followed by oncology and surgery with a planned repeat PET scan for 5 months post-operatively. She was seen again in surgery clinic 3 months after the operation and doing well with no complaints.

Conclusions:
-Role of surgery is controversial for NHL of the gastrointestinal tract.
-This case of ileocecal lymphoma was surgically resected with no complications.
-On review of the literature, most cases of GI lymphoma involved the stomach and surgery is not recommended. The role of surgery for intestinal lymphoma is not well studied and data often includes gastric lymphomas. Up to one third of endoscopic biopsies of intestinal lymphoma are negative, as in this patient, highlighting role of surgical diagnosis and treatment. Up to 9 percent of intestinal lymphomas perforate, as is likely with this patient’s initial presentation, and may require emergent non-elective surgery.
TITLE: IN-OFFICE PREOPERATIVE SONOGRAPHIC AXILLARY STAGING STREAMLINES SELECTION OF PATIENTS FOR NEOADJUVANT THERAPY

Authors: Pathak A. (New York Medical College), Kincaid-Sharp E. (Lake Erie College of Osteopathic Medicine – Bradenton), Arcovedo R. (Sharp Healthcare)

Background: Determining nodal status is paramount in the medical management of breast cancer. Recent evidence has suggested preoperative sonographic axillary nodal staging with ultrasound-guided fine needle aspiration (US) for patients with invasive breast cancer [1]. As such, identification of axillary involvement derives the following benefits: improved prognostic information, earlier neoadjuvant therapy, increased opportunities for breast conservation [2], and a pathological complete response to chemo, in a subset of patients. Despite this, many studies provide contradictory evidence of the efficacy of the utilization of diagnostic techniques in the assessment of axillary involvement [3]. We assessed the clinical value of in-office preoperative sonographic axillary nodal staging using ultrasound (US) with/without nodal tissue sampling (NS) in patients with primary breast cancer to assist in selecting patients for neoadjuvant therapy.

Objective: The analysis of axillary lymph node status is considered a crucial aspect of the staging of carcinoma of the breast. Through the use of sonographic examinations of the axilla in the office setting, decisions regarding patient management can potentially become increasingly efficient. We retrospectively analyzed a group of single-practice breast cancer patients to assess the benefits of the utilization of such techniques in axillary node status determination.

Design/Methods: 165 single-practice patients with primary breast cancer that underwent an in-office axillary US+/−NS by the surgeon were retrospectively analyzed and reviewed. Sensitivity and specificity of US+/−NS diagnosis of nodal involvement in these patients were compared against final pathological results of intraoperative Sentinel Node Biopsy (SLNBx) and/or Axillary Dissection (AxD). Subgroups by histopathological features, age, tumor size, and BMI were created and analyzed in their potential impact on sensitivity, specificity, positive predictive value, and negative predictive value of axillary nodal involvement. Data was statistically analyzed using Student’s two-tailed t-test Graphpad software.

Results: By using US+/−NS preoperatively, the axillary nodal status of 27 patients (TP+FP) tested positive, and 138 patients (TN+FN) tested negative. The sensitivity (56.8%) and specificity (98.4%) of axillary nodal status using US+/−NS preoperatively (see Table) was compared to the gold standard (SLNBx/AxD) postoperative (>90% sensitive and specific). By utilizing US+/−NS, 39 patients were determined to have an increase in the cancer staging (larger tumor size or nodal status), and 19 patients (TP) avoided SLNBx (streamlined to AxD). Ten patients that avoided SLNBx were Her2+ or triple negative.

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<td>98.28</td>
<td>87.50</td>
<td>91.94</td>
</tr>
<tr>
<td>Age &gt;65</td>
<td>35.71</td>
<td>96.88</td>
<td>83.33</td>
<td>77.50</td>
</tr>
<tr>
<td>BMI &lt;25</td>
<td>35.71</td>
<td>96.77</td>
<td>83.33</td>
<td>76.92</td>
</tr>
<tr>
<td>BMI 25-30</td>
<td>66.67</td>
<td>100.0</td>
<td>100.0</td>
<td>94.44</td>
</tr>
<tr>
<td>BMI &gt;30</td>
<td>65.00</td>
<td>97.30</td>
<td>92.86</td>
<td>83.72</td>
</tr>
<tr>
<td>Invasive Lobular Carcinoma (ILCA)</td>
<td>75.00</td>
<td>100.0</td>
<td>100.0</td>
<td>87.50</td>
</tr>
<tr>
<td>Invasive Ductal Carcinoma (IDCA)</td>
<td>57.89</td>
<td>97.60</td>
<td>91.67</td>
<td>83.50</td>
</tr>
<tr>
<td>Carcinoma in situ (CIS)</td>
<td>100</td>
<td>100</td>
<td>NA</td>
<td>93.4</td>
</tr>
<tr>
<td>T1</td>
<td>18.18</td>
<td>98.51</td>
<td>66.67</td>
<td>88.00</td>
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<tr>
<td>T2 or greater</td>
<td>74.19</td>
<td>96.43</td>
<td>95.83</td>
<td>77.14</td>
</tr>
</tbody>
</table>

Conclusions: In staging breast cancer, a key element is assessing axillary nodal involvement. US+/−NS is a great tool to assist in staging. Our, albeit underpowered, study showed that the utilization of US+/−NS had the greatest sensitivity in younger patients with tumor sizes T2 or greater. The performance of this simple in-office ultrasound axillary staging allowed us to capture 11.5% more patients who were good candidates for neoadjuvant chemotherapy, and half of these patients had tumor characteristics that have been shown to have a pathologic complete response to chemotherapy. By finding the node positive patients preoperatively, one can direct those patients sooner to neoadjuvant chemotherapy, select those requiring axillary dissection, and plan delayed reconstruction should they need post-mastectomy radiation. Patients selected for axillary dissection avoided sentinel lymph node procedure. This reduced institutional financial and clerical burden, and patient apprehension. Thus, improving value for both patient and the healthcare system.

Title:
Shining a light on pressure injury prevention: The role of an ongoing cohesive program and the ‘Hawthorne effect’

Authors: Shekhar Gogna M.D; Edward Golembe MD FACS; Jacqueline Weber RN; Tom Rutan CNS; Prem Patel MD FACS,

Background:
Federal law requires that it is the responsibility of the health care institutions to ensure that patients that are admitted should be free of pressure injury and all necessary measures should be taken to prevent, detect and treat the pressure ulcers.

Objective:
Pressure injuries are a great source of morbidity to the patients and they prolong the hospital stay and cost of treatment. There is a great amount of money that hospitals pay for Lawsuits against them. We have undertaken a cohesive program for the past Four years to do the same and with this study we analyzed the trend of Pressure injuries and the cost involved.

Design/Methods:
This is a Retrospective study of all the stage III and IV Pressure injuries. We studied the incidence for past four years and the cost involved in the management. Our team consisted of a Physician, Head nurse/ Assistant nurse and Patients nurse of the day.

Results:
There has been a significant reduction in the Incidence of Stage III and IV Pressure injuries since 2011 from 53 stage III & Eight stage IV pressure injuries to seven stage III & Three stage IV pressure ulcers till September 2016. There has been a significant reduction in the cost involved.

Conclusion:
1. Our Program of active surveillance as a team on high risk cases is effective in reducing the number of Stage III and IV Pressure injuries as they are a class involved in most medical Lawsuits.
2. There is a significant reduction in the financial losses since the beginning of the program.
We plan to continue our cohesive program to further decrease the incidence and related morbidity.
Title: Evolution and Paradigm shift in the management of Hepatic Metastasis in colorectal cancer.

Authors: Shekhar Gogna M.D; Prem Patel MD FACS,

Background:
The liver is the most common site for metastasis from colorectal cancers (CRCs). One quarter of the patients with primary colorectal carcinoma present with synchronous hepatic metastasis, and nearly half of the patients resected of their colorectal primary will eventually develop metachronous liver metastasis. The survival for untreated colorectal hepatic metastasis (CHM) are dismal with medial survival estimated in only 6 to 9 months. This review summarizes the holistic therapeutic strategies towards CHM which have been instrumental over the past several years in decreasing the mortality and morbidity in these patients.

Objective:
The past few decades, catering of multimodal management of CHM has resulted in a paradigm shift in the way we manage CHM today. Overall survival, has dramatically increased from less than 6 months to nearly 2 years. Hepatic resection of metastases has become much safer, as mortality rates have decreased from 10% to approximately 1% in experienced centers. Significant improvements in systemic treatment options, including both cytotoxic agents and molecularly targeted agents, have led to increased survival of patients. In this review, we elucidate this shift and describe the evolving guidelines in the management of CHM, advancements in surgical technique, chemotherapeutic regimens and adjunct.

Design/Methods:
We did a thorough review of Cochrane databases, Pubmed, Google scholar, 2016 NCCN guidelines, ESMO guidelines and ASCO recommendations for metastatic colorectal cancer. We have outlined herein the major changes in management in terms of patient selection for surgery, preoperative imaging studies, type of surgical resection and chemotherapy with addition of molecular agents. Further, our synopsis was stratified according to level of evidence to reflect its role of implication in our daily clinical practice.

Results:
Selection criteria for surgery: Two important criteria for surgical consideration includes: 1. Ability to achieve R0 resection, 2. Adequate viable future liver remnant (FLR) with a vascular inflow and outflow and biliary drainage. The older criteria based on number, size and location of lesions are not significant factors for surgical planning.

Preoperative imaging:
1) Multidetector-row CT (MDCT) in portal venous phase is most commonly used imaging modality for detection and characterization of hepatic metastases. Liver volumetry is done with CT scan to assess FLR, healthy liver will tolerate reducing its volume to 20%, chemotherapy induced injury or cirrhosis will require a FLR of 30%.
2) MRI (magnetic resonance imaging), with liver specific contrast Gd-EOB-DTPA (gadolinium ethoxybenzyl diethylenetriamine pentaacetic acid) is utilized for detecting and characterizing liver lesions, particularly those < 1 cm in size. This is of paramount value in patients with preexisting steatosis, or chemotherapy induced changes.
3) Intraoperative ultrasound (IOUS): It identifies new sub-centimetric liver lesions intraoperatively that were missed during preoperative imaging, thus changing the live time surgical resectability. The development of contrast-enhanced ultrasound (CEUS) has dramatically increased the potential of sonography in the assessment of focal liver lesions. Contrast is non nephro/cardiotoxic. CEUS is utilized as a dynamic study in questionable hepatic lesions intraoperatively.
4) PET-CT: It is recommended for preoperative detection of unrecognized additional metastatic liver lesions and to detect extrahepatic disease. PET-CT should not be used in clearly unresectable disease.

Timing, Surgical Resectability and Interventional modalities for Safe Maximal Resection:
1) Segmental resections along hepatic veins, obtaining clear surgical margins of 1 mm and preservation of native liver parenchyma are associated with improved perioperative outcomes without jeopardizing oncological principles.
2) Portal-vein embolization is very effective strategy to increase FLR, it is Indicated if FLR as determined by Volumetric studies would be below threshold.
3) Resection of the synchronous colorectal cancer and liver metastases in one setting is either equal or superior to a staged resection in means of postoperative mortality, morbidity, hospital stay, overall and progression free survival. For metachronus oncological lesion, resection should be done within 4-6 weeks of neoadjuvant treatment (if given).

Role of Genetics:
KRAS/NRAS and BRAF (optional) mutation testing are recommended at the diagnosis of liver metastases in colorectal cancer. Its major implication are in the patients without KRAS mutations. These patients have shown better overall survival with cetuximab and panitumumab via the EGFR inhibition as compared to those patients with KRAS mutation.

Major chemotherapeutic and molecularly targeted agents:
Cytotoxic and biological agents may be used peri-operatively to decrease both the tumor volume and risk of relapse.
1. Bevacizumab as first-line combination chemotherapies with FOLFOX, FOLFIRI, and 5-FU/LV.
2. Aflibercept is a recombinant protein consisting of human VEGF receptors 1 when is combined with FOLFIRI has shown to be an effective second-line regimen following recurrence with the first-line chemotherapy.

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Surviallance post treatment:
1. CT chest, abdomen & pelvis is recommended every 3-6 months in first 2 years followed by every 12 months for next 5 years. Monitoring of serum CEA levels is suggested every 3-6 months in first 2 years followed by every 6 months for the next 5 years.

Conclusion: Multimodal treatment strategies have suggested improved outcomes in the patients with CRLM. Growing innovations and increased surgical anatomical understanding have resulted in safe maximal resection; establishing a standard of care for resectable lesion(s). Systemic therapies with the advent of novel cytotoxic systemic chemotherapeutic agent has boosted the surgical management strategies and improved the survivability in these patients. This approach needs careful selection of surgical candidates which could be subjected to multi-disciplinary treatments however further randomized trials are needed for robust selection criteria and surgical outcomes.
TITLE:
CYSTATIN C AND CREATININE BASED ESTIMATED GLOMERULAR FILTRATION RATES DIFFER BEFORE NEPHRECTOMY AND AFTER NEPHRECTOMY

Authors: Danny Lascano1, Solomon L Woldu2, Serge Cremers2, Thomas Nickolas2, G. Joel DeCastro2, and James M. McKiernan
1. Department of General Surgery, Westchester Medical Center, Valhalla, New York
2. New York Presbyterian Hospital/ Columbia University Medical Center and Columbia University College of Physicians and Surgeons.

Background: Serum creatinine (Cr) may not be the most accurate measure of estimating glomerular filtration rate (GFR) in certain patient populations. Cystatin C has been shown as an alternative to serum creatinine for estimating GFR.

Objective: We sought to compare GFR calculated using Cystatin C versus serum creatinine pre and post-nephrectomy setting.

Design/Methods: Between 2013-2014, 28 patients underwent radical or partial nephrectomy for renal masses were enrolled in an IRB approved institutional biomarker study. Cystatin C levels were obtained from patient serum obtained pre and post-nephrectomy. Using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation, GFR was estimated using serum creatinine and Cystatin C.

Results:
Using creatinine for calculating pre-operative GFR, 5 patients had GFR < 60 (mean = 51.26) while 23 patients had GFR > 60 (mean = 83.3). Using Cystatin C for calculating pre-operative GFR, 3 patients had a GFR of < 60 (mean = 55) and 25 patients had a GFR > 60 (GFR = 92.4). Using creatinine, in the post-operative setting for patients with a baseline GFR of > 60 (n=23), 11 patients had a decrease in their GFR to a mean GFR of 47.9 while the remaining 10 patients had a mean GFR of 81.9. Using Cystatin C, in post-operative patients with a baseline GFR of > 60 (n=23), 5 patients (17.9%) had a GFR < 60 (mean GFR = 53) while 18 patients (82.1%) had a GFR > 60 (mean = 84.6). The differences in the calculated GFR for every time point using Cystatin C and creatinine was statistically significant for the overall group (Figure 1a, p< 0.02). The differences when stratified by pre-op GFR of greater than or less than 60 for Cystatin C and creatinine were not significant (Figure 1b).

Conclusions:
In a pre- and post-nephrectomy patient population, GFR calculated using serum creatinine and Cystatin C resulted in significant differences in calculated GFR. Most remarkably, in the pre-nephrectomy setting, using creatinine 17.9% (5) patients had CKD stage 3 or higher, but when Cystatin C was used for the GFR calculations only 10.7% (3) had CKD stage 3 or higher. Our results confirm a difference between Cystatin C and creatinine based GFR measurements which warrant further exploration in the pre and post-nephrectomy settings as Cystatin C may help better assess renal function compared to creatinine.

Funding: The Ferdinand C. Valentine Medical Student Research Grant
ASSOCIATION BETWEEN DEMOGRAPHICS AND PATIENT ENROLLMENT IN CLINICAL TRIAL FOR NON-MUSCLE INVASIVE BLADDER CANCER

Authors: Danny Lascano¹, Mitchell C. Benson², G. Joel DeCastro², and James M. McKiernan²
1. Department of General Surgery, Westchester Medical Center, Valhalla, New York
2. New York-Presbyterian Hospital/ Columbia University Medical Center and Columbia University College of Physicians and Surgeons.

Background: Treatment options for Bacillus Calmette-Guérin (BCG) refractory, non-muscle invasive bladder cancer (NMIBC) is limited, and there are multiple studies underway to determine whether novel agents improve survival while allowing patients to avoid radical cystectomy. Demographic variables, such as socioeconomic status, educational level, and geography, may affect access to clinical trials. This study compares the demographic variables between patients diagnosed with NMIBC who elected to participate in clinical trials to those with similar disease who did not enroll. The differences between these populations may help us interpret outcomes of these trials.

Objective: To examine differences and similarities in age, sex, marital status, religion, race, ethnicity, insurance, driving distance, public transportation time, education, urban/rural neighborhood, income, and type of BCG failure between BCG-refractory NMIBC patients enrolled in clinical trials and those who are not.

Design/Methods: Using the IRB approved Columbia Oncology Database, 55 patients with BCG-refractory NMIBC (29 clinical trial patients, 26 non-clinical trial patients) were identified, treated between 2008 and 2012. Demographic information was obtained from the medical records. Chi-square (X²) and Student T-test were used for analysis.

Results: Increased education (X², p <.01), rural-suburban living (X², p <.02), and increased distance from our institution (82.9 miles vs 25.8 miles p < 0.001) were more likely to be seen in patients enrolled in a clinical trial in comparison to those who did not. No difference in mean yearly incomes, age of recurrence, sex, religion, marital status, number of children, transportation time, smoking history, or insurance status were observed between the groups.

Conclusions: High education level, living in a suburban or rural area, and increased driving distance were associated with increased clinical trial enrollment. This implies that patients who are recruited to enroll in clinical trials are an educated, motivated group that seeks inclusion into a clinical trial. This analysis also suggests a possible selection bias in the Phase I and II clinical trials for NMIBC. Increased emphasis on education, active enrollment within urban centers, and increasing outreach to segments of the population with less access to information on clinical trials may help overcome this potential bias.

Financial Funding: NIH-T35 Grant
TITLE:

PARTICIPATION IN A CLINICAL TRIAL IS ASSOCIATED WITH A SURVIVAL BENEFIT IN PATIENTS WITH BACILLUS CALMETTE GUERIN REFRACTORY NON-MUSCLE INVASIVE BLADDER CANCER

Authors: Danny Lascano1, Mitchell C. Benson2, G. Joel DeCastro2, and James M. McKiernan2
1. Department of General Surgery, Westchester Medical Center, Valhalla, New York
2. New York-Presbyterian Hospital/ Columbia University Medical Center and Columbia University College of Physicians and Surgeons.

Background: There are limited treatment options for BCG refractory, non-muscle invasive bladder cancer with no consensus of timing or extent. There are currently multiple clinical studies examining novel agents to improve survival prior to proceeding to radical cystectomy. Tumor characteristics including TNM staging, BCG history, and prior surgical treatment may affect the rate at which patients enroll in these clinical studies.

Objective: Our objective was to compare the disease characteristics and associated survival differences of patients with BCG-refractory NMIBC enrolled and not enrolled in clinical trials at a single institution.

Design/Methods: Using the IRB approved Columbia Oncology Database, 55 patients with BCG-refractory NMIBC (29 clinical trial patients, 26 non-clinical trial patients) were identified, treated between 2008 and 2012. Clinical characteristics and outcomes were obtained from the medical records including time to recurrence, Charlson Comorbidity index (CCI), pathological and histological characteristics, number of BCG instillations received, and radical/partial cystectomy (RC/PC). Chi-square (X²) and Student T-test were used for analysis. Kaplan Meier (KM) methods were used to compare overall survival (OS), cancer specific survival (CSS), and disease free survival (DFS).

Results: No differences were seen in CCI at diagnosis, pathology at recurrence, BCG failure type, or RC/PC rates. Non-clinical trial patients had fewer mean BCG instillations than their clinical trial counterparts (7.8 vs 11.5 doses, p<0.01) and had longer times from initial diagnosis to pathological recurrence (954 vs 421 days, p<0.01). KM curves for OS showed an increased survival benefit for patients enrolled in a clinical trial with a median of 6.68 vs 3.15 years (X² = 8.802, p<0.01) and CSS of 3.57 vs 1.22 years (X² = 10.205, p<0.01).

Conclusions: Non-clinical trial patients with BCG refractory disease were on average lower risk; received fewer BCG instillations; and had longer disease free intervals compared to their clinical trial counterparts. However, clinical trial patients had better OS and CSS outcomes suggesting a survival benefit for this high-risk patient group.

Financial Funding: NIH-T35 Grant
Title:
Pygogagus Conjoined Twins: Logistical Complexities Confronted in the Operating Room

Authors: (underline presenting first author must be a student, resident or fellow)
Christy Stoller MD², Ashley Kydes MD¹, John-Paul Sara MD¹, Michael Jacoby MD¹, Olena Pryjdun MD¹, Samuel Barst MD¹, Kaveh Alizadeh MD³, Samir Pandya MD² and Whitney McBride MD

Background: We present a case of female 9-month-old pygopagus conjoined twins, undergoing their first stage surgery, for their eventual separation. Our discussion highlights the challenges faced in the operating room.

Design/Methods: The patients were born in another country and were brought to our attention for possible separation via a family member. Multiple teleconference conversations took place as well as remote evaluation of existing imaging prior to transporting them to our facility for quaternary level medical care. Extensive imaging and diagnostic testing, most requiring some form of anesthesia, was performed to determine their gastrointestinal, genitourinary, spinal and vascular anatomy. Three-dimensional (3-d) image reconstruction as well as modeling was vital in surgical planning. Additionally, a multidisciplinary team of nursing, surgical and anesthesia technologists, anesthesiologists and surgeons was selected. Team rehearsals were performed prior to surgery to optimize eventual room set up, positioning and address equipment concerns. The children were scheduled for a simultaneous diagnostic laparoscopy, diverting colostomies with mucus fistulas formation by the Pediatric Surgery team and subsequent placement of tissue expanders by Plastics and Reconstructive Surgery. All equipment and supplies were labeled and color coordinated (pink for Twin A; and blue for twin B) by the two pediatric anesthesiologists assigned to the case. Two surgical teams worked simultaneously on the twins with each team being assigned the color of the corresponding twin.

The surgical approach required both supine and prone positioning which was complicated by the inflexibility of the children’s lumbar spines and pelvis. At the conclusion of the surgery an uneventful extubation was performed with both patient’s breathing spontaneously, after titration of morphine and dexmedetomidine.

Results/Conclusions: There were no medication errors, adverse events during the procedure. Preoperative rehearsal was effective in enhancing team dynamics and workflow during this complex procedure. Although conjoined twins come to the operating room more frequently now than in the past their operative management remains a demanding and intricate task. It requires a multidisciplinary team, involving multiple specialties and support staff, extensive medical work-up, numerous meetings and discussions, and thoughtful and meticulous planning and preparation.

References:
Surgical Site Infections After Stoma Closure

Authors: Alexandra Chudner, MD, PGY2; John Savino, MD, FACS

Introduction: Surgical site infections (SSI) complicate about 2.6% of 30 million operations per year and account for 38% of health-care associated infections in surgical patients. They are associated with increased length of stay, hospital costs, morbidity, mortality and readmission rates. Colorectal surgery SSI rates vary between 5 and 30%. Moreover, the rates after stoma closure are much higher than expected for a clean-contaminated operative classification and have been described as high as 40%. There have been multiple efforts aimed at reducing SSI rates, some of which include the use of bowel preparation and antibiotics. Another has been the introduction of the colorectal care bundle. And finally, the closure technique of the ostomy site has been shown to play a role.

Case: A 64-year-old female was admitted for an elective laparoscopic reversal of an end colostomy performed 12 weeks previously for perforated diverticulitis requiring a sigmoidectomy and Hartmann procedure (end colostomy with closure of the proximal rectum). She underwent a mechanical bowel preparation (Nulytely) and oral antibiotics (neomycin and erythromycin), as well as rectal fleets enemas to evacuate any previously retained stool. The patient was on a clear liquid diet for the 24 hours prior to surgery. She was administered 2gms IV cefoxitin within 1 hour of the procedure. The procedure was performed laparoscopically with a descending colon to rectal stapled anastomosis. All 4 port site’s fascia and skin were closed and the colostomy wound was lavaged with saline after the fascial closure, and the skin was completely approximated with staples. A sterile dressing was applied to all wounds and the patient was brought to the recovery room. All elements of the “colon bundle” were adhered to pre, intra, and perioperatively. The patient was tolerating an oral diet on day 5 when the colostomy site became erythematous with a purulent discharge from the wound. The wound staples were removed at the bedside and the subcutaneous wound was irrigated and packed with gauze. The patient was placed on cefazolin and metronidazole and was discharged on day 7.

Discussion: Despite adherence to the prevailing methods thought to reduce SSI, the patient develops one. Mechanical bowel prep (MBP) alone does not reduce SSIs in elective colorectal surgery. Evidence supports the use of MBP as an adjunct to the use of the oral antibiotic bowel preparation and systemic preoperative prophylactic antibiotics together for the prevention of SSI, which this patient received. The case also adhered to the colorectal care bundle, which was introduced to standardize care in colorectal surgery in an effort to reduce SSI. It includes the following principles: normothermia, glucose control, antimicrobial prophylaxis, increased perioperative oxygenation, skin preparation, clean standardized fascia closure and wound management. However, this patient also underwent conventional linear closure of her colostomy site. Several ostomy closure techniques have been described: mainly, the conventional linear closure technique and the purse string closure technique. The latter has been shown to reduce the rates of SSI and has a secondary benefit of better cosmetic appearance.

Conclusion: The prevention of SSI in colorectal surgery, specifically with ostomy reversal, is multi-factorial. The lowest rates are seen in patients who undergo mechanical and oral bowel preparation, in those who receive systemic antibiotic therapy, in cases where the colon bundle is adhered to and in stoma closure sites where the purse string technique is used.
Background:
The Injury Severity Scale (ISS) provides a standard anatomic trauma scoring system and provides an overall score for patients with multiple injuries. The ISS correlates with morbidity, mortality and other degrees of injury severity. The ISS remains the standard of anatomic trauma scoring to predict mortality based on age and physiologic variables to generate scoring.

Objective:
ISS can be derived by clinical consensus or from the trauma registry. This study compares trauma surgeon (TS) assigned ISS and predicted mortality (PM) with those derived from the trauma registry (TR) at discharge.

Design/Methods:
The ISS and PM of 305 patients admitted in an 8 month period were assigned during morning report by 5 trauma surgeons, first independently then by consensus, and compared to those derived from the trauma registry. Analysis stratified three ISS group ranges: 1-14, 15-25, 26-75. Statistical analysis included inter-rater agreement assessed by intraclass correlation coefficient between TS and TR assigned ISS and predicted mortality. Data are reported as means and standard deviation and median with IQR. Statistical significance was accepted to correspond to a p < 0.05.

Results:
Inter-rate agreement among the five TS was 98% for all the ISS and PM. Shown in the table are the results stratified by three ISS groups. There was no difference between TS and TR ISS and PM in any of the three groups.

<table>
<thead>
<tr>
<th>ISS</th>
<th>Number</th>
<th>TR ISS Mean ± SD</th>
<th>Median IQR</th>
<th>TS ISS Mean ± SD</th>
<th>Median IQR</th>
<th>R</th>
<th>Predicted Mortality TR &amp; TS</th>
<th>Actual Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-14 164</td>
<td>8±4</td>
<td>9 (5-10)</td>
<td>9±4</td>
<td>9 (8-13)</td>
<td>0.95</td>
<td>3±99</td>
<td>8 ± 86</td>
<td>2/164 (1.2%)</td>
</tr>
<tr>
<td>15-25 86</td>
<td>19±3</td>
<td>18 (17-21)</td>
<td>19±3</td>
<td>18 (17-21)</td>
<td>0.98</td>
<td>11±76</td>
<td>7 ± 88</td>
<td>4/86 (4.6%)</td>
</tr>
<tr>
<td>26-75 55</td>
<td>33±9</td>
<td>29 (36-38)</td>
<td>40±16</td>
<td>34 (29-45)</td>
<td>0.89</td>
<td>42±63</td>
<td>36±66</td>
<td>22/55 (40%)</td>
</tr>
<tr>
<td>Total 305</td>
<td>16±10</td>
<td>14 (9-21)</td>
<td>18±14</td>
<td>14 (9-21)</td>
<td>0.68</td>
<td>12±77</td>
<td>12±76</td>
<td>28/305 (9.1%)</td>
</tr>
</tbody>
</table>

Conclusions:
Inter-rater agreement among TS is excellent with regard to ISS and PM. TR-derived ISS and PM scores are as accurate as TS-consensus-derived scores.
TITLE:
CARDIAC TAMPOANDE FROM PNEUMOPERICARDIUM DUE TO GASTROPERICARDIAL FISTULA – A COMPLICATION OF PERFORATED GASTRIC ULCER WITHIN A HIATAL HERNIA

Authors: (underline presenting *first* author must be a student, resident or fellow)
Artem Dyatlov MD, Arpit Amin MD, Ramin Malekan MD, Ashutosh Kaul MD; New York Medical College – Westchester Medical Center, Valhalla, NY

Background:
Fistula between the pericardium and the stomach resulting in pneumopericardium is an extremely rare occurrence. If left untreated, the resulting pneumopericardium from a gastropericardial fistula can lead to cardiac tamponade.

Objective:
We report a case of an 83-year-old male, who developed cardiac tamponade from pneumopericardium due to gastropericardial fistula as a complication of perforated gastric ulcer within a hiatal hernia.

Design/Methods:
The patient initially presented with acute chest pain and shortness of breath and was transferred to our tertiary care center after a diagnosis of spontaneous pneumopericardium. Further diagnostic work-up with gastrografin esophagogram and computed tomography of the chest and abdomen revealed bilateral pleural effusions along with large amount of pneumopericardium with extravasation of contrast into the pericardium in the setting of a hiatal hernia raising suspicion of a gastropericardial fistula. Patient underwent a left anterior thoracotomy with creation of a pericardial window along with placement of bilateral tube thoracostomies. Once the cardiac tamponade from the pneumopericardium was resolved, the patient was taken to the operating room for treatment of his hiatal hernia. On laparoscopic exploration, the patient was found to have a 4 cm hiatal hernia. The gastropericardial fistula was divided and hiatal hernia was reduced back into the peritoneal cavity. Perforated gastric ulcer was found within the herniated portion of the stomach. A laparoscopic wedge resection of the ulcer was performed followed by placement of a gastrostomy tube for gastropexy and jejunostomy tube. An omental flap was placed to cover the pericardial opening. Pathology did not reveal any evidence of malignancy or H.pylori infection. The patient’s post-operative course was complicated by prolonged respiratory failure and sepsis from mediastinitis. Comfort measures were initiated after family discussion and the patient expired on post-operative day 23.

Results:
Fewer than 60 cases of gastropericardial fistula have been described. Our purpose in describing this case is to analyze aspects of clinical decisionmaking, with special emphasis on those points that may accelerate the diagnosis of the condition. One of the causes of pneumopericardium is a gastropericardial fistula resulting from perforated peptic ulcer within a hiatal hernia as described in our case report. Other causes of gastropericardial fistula described in the literature are esophagogastric malignancy, trauma, foreign body erosion, and ulceration within gastric conduit after esophagectomy, as a complication of fundoplication, or diaphragmatic hernia repair.

Conclusions:
In conclusion, cardiac tamponade from pneumopericardium due to gastropericardial fistula as a complication of a perforated gastric ulcer within a hiatal hernia is a rare occurrence with often fatal consequences due to risk of mediastinitis.
TITLE: Ancient Bloodletting: ancient myth or modern medicine?

Authors: Seungwhan Pee, MD, Arun Goyal, MD, Babu Sateesh, MD
Westchester Medical Center, Department of Surgery

Background: Reperfusion injury after surgical treatment for ischemic limb or complete aortic occlusion can be limited to local tissue injury with possible compartment syndrome, or can be as severe as to cause multisystem organ failure and death. Multiple modalities have been proposed to prevent the toxic and systemic effects of cytokines and inflammatory mediators released during revascularization, however there is no consensus at this time. We present a case of a 58 year old female who presented to our hospital after complete occlusion of the distal aorta and underwent thrombectomy with controlled reperfusion by phlebotomy.

Case Description:
A 58 year old female presented to our hospital after almost 24 hours of lower extremity pain. Patient underwent a CT scan, which showed complete occlusion of the distal aorta and bifurcation with trace reconstitution. Patient was immediately taken to the operating room and underwent bilateral femoral artery cutdown with thrombectomy with a fogarty catheter. Afterwards the patient exhibited good pulsating flow. At this time there was concern for significant reperfusion syndrome due to the long duration of ischemia and extent of occlusion. We made a 2mm stab wound to the femoral vein and bled 1.5L of venous blood from each leg, which was recirculated through the cell saver and retransfused. Prophylactic bilateral fascirotomies were performed as well. Postoperatively, the patient’s hospital course was uneventful, only complicated by renal failure which required dialysis.

Discussion:
Multiple modalities have been proposed to prevent reperfusion injury including most importantly timely reperfusion of the ischemic area, as well as controlled reperfusion, anti-oxidant therapy, complement or neutrophil therapy has been documented. However these concepts have yet to be fully integrated into clinical practice. Our case shows the potential of controlled reperfusion and dialysis through the cell saver to decrease the morbidity and mortality associated with reperfusion.
Title:
Endovascular repair of blunt aortic injury in pediatric patient

Author: Min Li Xu MD¹, Irony Sade MD¹, Markus Erb MD², Joseph Giamello MD², Carey Goltzman MD², Gustavo Stringel MD¹

Background
Endovascular repair of blunt aortic injury has been well studied in adult trauma patients. However, much less is known about its role in treatment of pediatric blunt aortic injuries. A few case reports and series have shown promising results with the use of endovascular techniques. We report a case of endovascular stenting in an eleven years old female with traumatic aortic pseudoaneurysm.

Methods
We reviewed the patient’s medical records, operative report and angiography.

Results
An eleven years old female presented as an unrestrained backseat passenger in a motor vehicle accident. She sustained bilateral femur fractures, pulmonary contusions, and Grade 3 blunt aortic injury 5mm distal to the left subclavian artery. The pseudoaneurysm measured 21x27mm with dissecting intimal flap. She was maintained on esmolol and nicardipine drips for strict blood pressure control. The patient underwent successful endovascular stenting with a covered 45mm Cheatham platinum stent (CCPS). Completion angiogram showed no residual filling of the pseudoaneurysm. Patient recovered well and was discharged home after 28 days in the hospital.

Conclusion
This case highlights a successful endovascular treatment of blunt aortic injury in young pediatric trauma patient. The endovascular approach is rapidly gaining acceptance as the preferred method of treatment for these severe aortic injuries. However, long-term outcomes of these endovascular repairs in young children still require further investigation.
TITLE: PEDAL INTERVENTION FOR LIMB SALVAGE

Authors: Min Li Xu MD, Igor Laskowski MD, PhD

Background: Critical limb ischemia remains a significant cause of morbidity and mortality with high incidence of major amputation (up to 40%) if not properly addressed. In certain patients with this problem, the atherosclerotic disease involves mainly the distal limb vessels (including arteries of the foot) and may spare the proximal arteries. Providing inline flow to the area of ischemia or gangrene is a classic premise for successful therapy in these patients. This is in contrast to indirect revascularization, which has also shown success in clinical practice. Here we show our experience of pedal revascularization in patients with critical limb ischemia involving tissue lost.

Material and Methods: We selected three representative cases illustrating strategies for successful treatment. Among large number of patient treated with pedal intervention from January 2013-December 2015, we reviewed pertinent past medical history, details of endovascular intervention, with special emphasize on technique, complications and failure.

Results: Out of the three selected cases, there were 2 males and 1 female patient. All of the patients were diabetic with non-healing wound with gangrene of digits. Diagnostic angiogram was performed, followed by pedal interventions in all patients. This included angioplasty of either distal anterior tibial, distal posterior tibial, dorsal pedal or plantar arch arteries. In all patients, antegrade access was obtained. Lesion crossing was performed with wires of increasing degrees of stiffness and taper. A total of 8 vessels were treated and angioplasty was successful in 7 vessels. Vessel perforation occurred in one patient, which was treated with balloon tamponade. Early failure of revascularization occurred in 1 patient. All patients underwent toe amputation, except for one case of failed revascularization. This patient required TMA and advance local wound care, which led to eventual wound healing.

Discussion: These three cases are highly representative of challenges encountered during direct revascularization of pedal vessels for treatment of critical limb ischemia. We identified the following strategies that can lead to successful interventions: (1) antegrade access, (2) appropriate selection of wires, low profile catheters and balloon, (3) detection of early PTA failure and low threshold for re-intervention, and (4) use of coronary stents in selected cases. Dedicated wound care is extremely important for successful outcomes in all cases. Unsuccessful therapy lead to diminished rates of healing and limb salvage. We found pedal interventions to be extremely valuable tool in this group of patient. Although further studies are needed, we favor direct revascularization in our approach.
Background: We present a case of renal collecting system to renal vein fistula in a neonate with history of gastroschisis and ileal atresia status post repair. The case presents a rare and extreme complication of neonatal thrombotic syndrome with long-term use of central venous catheter that has not been reported previously. In addition to the unusual clinical presentations, this case demonstrated the unique value of fluoroscopy in approaching the diagnosis.

Objective: An ex-36 week infant with history of gastroschisis and ileal atresia underwent staged repair of the abdominal wall defect along with ileostomy and mucous fistula. A PICC was placed via the right brachiocephalic vein to the level of the cavo-atrial junction for venous access and parenteral nutrition. The patient developed thrombosis of right subclavian vein extending to the superior vena cava best seen on TTE. The patient subsequently developed a chylothorax and chylous ascites, presumably from rupture of the thoracic ducts due to high intraluminal pressures in the thrombosed SVC. Thoracoscopic ligation of the thoracic duct was performed successfully and the PICC line removed. As an adjunct to duct ligation, the patient was placed on TPN for management of the chylous effusions. A 4.2 french single lumen cuffed central venous Broviac® catheter (Bard Peripheral Vascular, Inc. Tempe, Arizona) was placed via a left greater saphenous vein (GSV) approach with the tip terminating at the level of the second lumbar vertebral body. The infant remained critically ill with complex ventilator, fluid and hemodynamic requirements. During this period, patient sustained acute kidney injury which progressed to renal failure and oliguria. Transabdominal ultrasound demonstrated right kidney necrosis. The patient was not a candidate for renal replacement therapy due to her size and recent abdominal surgery. She remained oliguric for several days and then began producing urine and was thought to be in the polyuric phase of renal failure. The volume of “urine” however was fairly large and the odor and appearance was more consistent with TPN and lipids. The fluid was tested and found to be positive for glucose and lipids. Two hypotheses were then formed to explain the “chylouria”: 1) Simultanous erosion of the foley and the CVC into the peritoneal cavity with the former collecting the fluid from the latter and 2) erosion of the CVC into the renal collecting system leading to direct excretion of the TPN via the urinary collecting system. Diagnostic fluoroscopy was used to test the aforementioned hypotheses.

Results: Vesicourethraphy was first performed. Next, contrast was injected into the tunneled CVC and an inferior venogram obtained. The inferior venogram demonstrated communication between the vena cava, renal vein and renal collecting system with contrast being directly excreted via the right ureter. The study thus proved the second hypothesis that there was a fistula between the venous and renal collecting system. Due to the proximal thrombosis of the IVC above the renal vein, all intravenous contrast diverted into the left or right renal vein. From the right renal vein, contrast drain through the nest of fistulas between the right renal venous system and collecting system and flow down into the bladder. Ultrasound exam had previously confirmed an involuting ischemic right kidney.

Conclusions: Low-dose fluoroscopy was critical in diagnosing the fistulous connection between the renal venous and collecting system. In turn, it provided insights to the pathophysiology of patient’s renal infraction and identified the cause of the confusing clinical presentation of large volume “chylouria”. Occlusion of IVC results in backpressure that extends to the renal capillary bed, where the flow is diminished and renal ischemia ensues. In this case, the backpressure also resulted in diverting TPN directly into the patent renal vein. We hypothesize that the high osmolarity of the solution likely contributed to the break-down of vessel wall and collecting system, which lead to formation of multiple fistulous connections between the renal venous and collecting systems. Longterm venous access in complex neonates may be complicated by thrombotic complications. A multidisciplinary approach with careful discussions amongst teams can lead to successful diagnosis of complex and unusual conditions.
THORACOSCOPIC-ASSISTED VENTRICULOATRIAL SHUNT PLACEMENT

Authors: (underline presenting first author must be a student, resident or fellow)
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Background:
Establishing internal, long term drainage of cerebrospinal fluid (CSF) is essential in the successful management of children with significant hydrocephalus (HCP). Many of the children with HCP requiring CSF diversion have other comorbidities, including prematurity, history of necrotizing enterocolitis, previous abdominal surgeries, or other issues making the abdomen a hostile environment. In these children, drainage into the right atrium has been well established. Thoracoscopic access to the right atrium (RA) has been a valuable technique in patients with thrombosis of the superior vena cava (SVC). This approach has not been previously reported for the placement of a ventriculoatrial shunt (VAS).

Objective:
The purpose of this case study is to describe a novel technique in the insertion of a distal ventriculoatrial shunt catheter in a patient with difficult central venous access.

Design/Methods:
We present a case of thoracoscopic-assisted VAS placement. The patient is a 10-month-old ex-23 week premature female with shunt-dependent HCP. A history of multiple laparotomies had rendered the abdomen hostile and made a ventriculoatrial shunt necessary. The SVC was previously occluded by an intraluminal thrombus. The head was turned to the left on a horseshoe, neck and lateral chest prepped. A Veress needle was inserted at the 5th intercostal space at the anterior axillary line. A 4mm port was inserted and pneumothorax induced. A target pressure of 10mmHg was maintained. A needle was inserted under thorascopic guidance. The guide wire was advanced, and the tract was dilated with an 8-French peel away introducer sheath. The distal catheter was then fed through the introducer sheath using a modified Seldinger technique. The pneumothorax was evacuated and the port removed. Intraoperative chest x-ray confirmed good placement of the distal catheter, with the tip in the right atrium.

Results:
No chest tubes were required in the perioperative period and no injuries to the great vessels were incurred. The postoperative course was unremarkable. Unfortunately, the patient presented 6 months later with a distal shunt malfunction and required revision, this time to the peritoneal space. This failed as well, and the shunt was returned to the atrium.

Conclusions:
Thoracoscopic guidance during ventriculoatrial shunt placement is a useful technique in the complicated shunt patient.

Figure 1: Positioning
Figure 2: Needle visualized in the SVC (arrow)
Figure 3: Catheter tip in right atrium (arrow)
TITLE:

PERICARDIOCENTESIS FOLLOWED BY THORACOTOMY AND REPAIR OF PENETRATING CARDIAC INJURY CAUSED BY NAIL GUN INJURY TO THE HEART

Authors: (underline presenting first author must be a student, resident or fellow)
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INTRODUCTION

Work site injuries involving high projectile tools such as nail guns, albeit rare, can lead to catastrophic injuries, including penetrating cardiac injuries. Generally, penetrating cardiac injuries are associated with a high mortality rate. The management of penetrating cardiac injuries favors immediate thoracotomy, resulting in only infrequent use of pericardiocentesis.

PRESENTATION OF CASE

A 20 year old male working at a construction site was brought to the emergency room having sustained a nail gun injury to the chest. The patient was hypotensive and tachycardic with prominent jugular venous distention, and had a profound lactic acidosis. After endotracheal intubation and initiation of resuscitation with blood products, bedside ultrasound confirmed the presence of pericardial fluid. Pericardiocentesis was performed, resulting in improvement in the patient’s hemodynamics. Thereafter he was taken to the operating room and underwent left anterolateral thoracotomy and repair of a right atrial laceration from which he recovered uneventfully.

DISCUSSION

Penetrating cardiac injuries caused by nail guns are rare but have been previously described. However, pericardiocentesis, while retaining a role in the management of medical causes of cardiac tamponade, has been reported only sporadically in the setting of trauma. We report a rare case of penetrating nail gun injury to the heart where pericardiocentesis was used as a temporizing measure to stabilize the patient in preparation for definitive but timely operative intervention.

CONCLUSION

Despite limited use in the setting of trauma, we propose awareness that pericardiocentesis can serve as a temporary life saving measure in the appropriate setting, particularly as a bridge to definitive therapy.
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