E-Posters
AM Break E-Poster Session

1st  Superior Mesenteric Compression Syndrome: A Novel Surgical Therapy  
    *Domingo T. Alvear, MD*

2nd  Acute Necrotizing Pancreatitis: A Unique Presentation of Early-Stage Gallbladder Adenocarcinoma  
    *Rachel Appelbaum, MD*  
    Lehigh Valley Health Network

3rd  Does resected stomach weight predict weight loss after laparoscopic sleeve gastrectomy?  
    *Sarang Kashyap, MD*  
    Easton Hospital

4th  Trends in United States Residency Match Rates for International Medical Graduates  
    *Bethany Clutts, DO*  
    Geisinger Medical Center

5th  Exhortation to lose weight prior to complex ventral hernia repair: nudge or noodge?  
    *Colin DeLong, MD*  
    Penn State Hershey Medical Center

6th  Use of Departmental Morbidity and Mortality Conference as a Real Time Barometer of Outcomes and Quality in Pediatric Appendectomy  
    *Julie DiSano, MD*  
    Penn State Hershey Medical Center

7th  Urgent Surgery for Gastric Adenocarcinoma Leads to Increased Mortality  
    *Benjamin Fisher, MD*  
    Geisinger Medical Center
8th  Let’s talk: An investigation into the elderly population’s understanding of code status  
*Margaret Galatioto*  
Guthrie Clinic Robert Packer Hospital  

**Lunch E-Poster Session**  

1st  The Addition of Nurse Practitioners to an Acute Care Surgery Service Supports Resident Education Leading to Improved Absite Scores  
*Amber Hussain, DO*  
Guthrie Clinic Robert Packer Hospital  

2nd  The Role of Trauma Team Activation In Improving Mortality Outcomes for Patients on Anticoagulant and Anti–platelet Therapy: A Retrospective Study  
*Peter Hwang, DO*  
Reading Hospital  

3rd  The other double bubble sign: Gastric containing parastomal hernia, a rare cause of gastric outlet obstruction  
*Kelly Johnson, DO*  
Geisinger Wyoming Valley  

4th  Hybrid Approach to Complex Vascular Injury Secondary to Blast Induced Scapulothoracic Dissociation  
*Rebecca Jordan, DO*  
Geisinger Northeast  

5th  Risk Factors for Length of Stay and Readmission in Rural Ghana  
*Laura Keeney, DO*  
Penn State Hershey Medical Center
6th Post-Operative Gum Chewing: A Simple Solution in Preventing Post-Operative Ileus
Kathryn Kelley, MD
St. Luke’s University Health Network

7th The exercise pressor response to lower extremity dynamic exercise is accompanied by an abnormal change in total peripheral resistance in peripheral arterial disease subjects
Marcos Kuroki, MD
Penn State College of Medicine

8th Driving Simulators – Can They Impact Distracted Driving?
Hannah Loebl, MD
Lehigh Valley Health Network

9th Colorectal Cancer in Patients under Age 50: Trends in Stage and Mortality
Jaclyn Malat, DO
Tower Health, Reading Hospital

10th Are Academic Half Days the Proper Didactic Method for General Surgery Residency Training?
Mahdi Malekpour, MD
Geisinger Medical Center

11th The Cost of Integration of Robotic Surgery Training in the Curriculum of General Surgery Residency; a Robotic–Assisted versus Laparoscopic Cholecystectomy Study
Mahdi Malekpour, MD
Geisinger Medical Center
12th  Association between Timing of Traumatic Thoracic Aortic Injury Repair and Outcome; a National Trauma Databank (NTDB) Study
Mahdi Malekpour, MD
Geisinger Medical Center

13th  Does “Trauma Alert” Protocol System Improve Timing of Traumatic Brain Injury Identification and Warfarin Anticoagulation Reversal
Manuel Martinez, MD
Geisinger Medical Center

14th  Pediatric Urologic and Perineal Trauma: A Single Institution Experience
Christopher McLaughlin, MD
Penn State Hershey Medical Center

15th  The dilemma of surgery in the setting of neurogenic bowel dysfunction
Jeffrey Moyer, DO
PCOM

16th  Predictors of Increased Observed to Expected Ratio of Positive Margins After Surgical Resection of Pancreatic Head Adenocarcinoma
Brandon Nuckles, MD
Geisinger Medical Center

17th  Abdominal Wall Reconstruction After Extirpation of a 140 Pound Primary Ovarian Mucinous Adenocarcinoma: A Case Report
Mamtha Raj, MD
Lehigh Valley Health Network
18th Adrenal Cortical Carcinoma Arising from an Adrenal Adenoma in a Young Adult Female
Monica Rebielak, DO
Geisinger Wyoming Valley

19th Wrist salvage in a trans-scaphoid, trans-capitate perilunate dislocation in the setting of previous scaphoid non-union and scaphoid nonunion advanced collapse wrist: a case report
Sean Wallace, MD
Lehigh Valley Health Network

PM Break E-Poster Session

1st Procedure-specific Standardized Operative Notes: Improving Patient Outcomes Through Comprehensive, Uniform Data Collection
Michael Winter, DO
Reading Hospital

2nd Validation of the AAST Grading Scale for Bleeding Peptic Ulcer Disease
Katelyn Young, BSc.
Geisinger Medical Center

3rd Rib Fixation vs No Fixation: Is it Still Worthwhile After 72 Hours? An Analysis of the National Trauma Data Bank
Katelyn Young, BSc.
Geisinger Medical Center
Acute Necrotizing Pancreatitis: A Unique Presentation of Early-Stage Gallbladder Adenocarcinoma

Rachel Appelbaum, MD, Francisco Alvarado, MD, Aaron Blackham, MD, Jeffrey Brodsky, MD
Lehigh Valley Health Network, Allentown, Pennsylvania

Introduction

• A variety of conditions are known to cause acute pancreatitis
• The proposed mechanisms by which these conditions induce pancreatitis include mechanical ampullary obstruction leading to the reflux of bile into the pancreatic duct, or edema resulting from a gallstone’s passage
• We describe a patient who presented with acute necrotizing pancreatitis and a fragmented friable polypoid gallbladder adenocarcinoma

Case

• A 55-year-old Hispanic female with prediabetes presented to the Emergency Department with severe epigastric abdominal pain
• Laboratory values: WBC of 18.1; Total bilirubin of 1.3; AST of 196; ALT of 152; Alk phos of 105; and Lipase of 16426
• RUQ ultrasound: Solid polypoid mass in the gallbladder, no choledolithiasis, no intra or extra hepatic duct dilation, and a diffuse fatty liver
• Initially treated non-operatively with bowel reset, antibiotics and fluid resuscitation
• However, due to concerns underlying malignancy taken to the OR for cholecystectomy
• Hospital Day 16: Exploratory laparotomy, cholecystectomy, pancreatic necrosectomy, jejunostomy tube placement
• Specimen: Friable polypoid lesion within the gallbladder, free floating pieces
• Pathology: T1a gallbladder intramucosal adenocarcinoma with high grade dysplasia

Discussion

• Our patient presented with an episode of acute pancreatitis in the absence of alcohol abuse, gallstones, biliary sludge, hypertriglyceridemia, hypercalcemia or hereditary predisposition
• The suspected diagnosis of acute pancreatitis was based on compatible clinical features and supported by elevations in serum amylase and/or lipase levels
• Patients with gallbladder cancer tend to present late in the course of their disease with complaints of vague abdominal pain and nonspecific symptoms such as anorexia and weight loss
• This case report presents a unique presentation of acute pancreatitis likely secondary to a friable gallbladder adenocarcinoma
• The patient’s clinical stage of T1aN0 suggests a good overall prognosis, with no further treatment needed after cholecystectomy

References


Figure 1. CT scan of abdomen and pelvis demonstrating an intramural polypoid lesion of the gallbladder and acute pancreatitis

Figure 2. CT scan abdomen and pelvis demonstrating progression of pancreatitis now with necrosis of the body/tail, a non-occlusive thrombus of SMV/portal vein, pleural effusions and moderate ascites
Does resected stomach weight predict weight loss after laparoscopic sleeve gastrectomy?
Avian Chang, MD; Sarang Kashyap, MD; Manthan Makadia, MD; Vinay Singhal, MD
Department of Surgery, Easton Hospital, Easton, PA

BACKGROUND

Laparoscopic sleeve gastrectomy (LSG) has gained popularity over the years as a stand-alone bariatric procedure.1 It is currently offered for patients with a BMI ≥40 kg/m² with or without comorbidities or a BMI ≥35 kg/m² with comorbid medical conditions as a result of obesity.2 Limited data exists on predictors of post-operative weight loss. Studies have looked at the outcomes following sleeve gastrectomy in relation to the resected stomach volume.6,7,8 This study aims at looking at the weight of the resected stomach and determining if it could predict post operative weight loss following a LSG.

METHODS

Following standard LSG in 107 patients, resected stomach was weighed to determine the amount of gastric resection performed.

Weights noted at post-op follow up and percent excess body weight loss(%EBWL) calculated for analysis.

Results were reported as mean and standard deviations for continuous variables. T-test, ANOVA and Pearson’s correlation were used for statistical analysis.

RESULTS

Average weight of stomach resected was 114.39±48.85gm. Significant weight loss at each follow up interval but no difference between mean %EBWL between the groups. Significant correlation between pre-operative weight and difference between mean %EBWL between the groups. Significant weight loss at each follow up interval but no correlation were used for statistical analysis.

Mean Weight (gm)

Change in mean percent weight loss and Change in mean weight over time

Table: ANOVA comparing stomach weight to percent excess weight loss following surgery

<table>
<thead>
<tr>
<th>Time after surgery</th>
<th>&lt;100gm</th>
<th>100-150gm</th>
<th>150-200gm</th>
<th>&gt;200gm</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 weeks</td>
<td>25.37±10.30</td>
<td>27.01±18.57</td>
<td>18.60±7.98</td>
<td>34.01±7.71</td>
<td>26.49±14.75</td>
</tr>
<tr>
<td>3 months</td>
<td>37.99±13.01</td>
<td>41.28±17.92</td>
<td>24.16±4.57</td>
<td>46.49±18.55</td>
<td>39.43±15.74</td>
</tr>
<tr>
<td>6 months</td>
<td>46.88±18.63</td>
<td>54.38±22.03</td>
<td>32.16±3.23</td>
<td>54.05±23.74</td>
<td>49.01±20.05</td>
</tr>
<tr>
<td>12 months</td>
<td>54.50±24.06</td>
<td>54.94±21.64</td>
<td>20.07±9.21</td>
<td>32.23±19.18</td>
<td>52.41±23.46</td>
</tr>
</tbody>
</table>

DISCUSSION

LSG allows for significant weight loss comparable to other studies.3,9 Prior studies have looked at sleeve shape, gastric volume – no relationship to weight loss.8,11 Our study looked at weight of stomach removed and found no correlation to weight loss – similar to study by Singh et al.6 Lower rate of resolution of comorbidities compared to other studies.

CONCLUSION

LSG allows for significant weight loss in obese individuals.

Weight loss shows no relationship to weight loss after laparoscopic sleeve gastrectomy. Males had larger stomachs compared to females.

REFERENCES

Trends in United States Residency Match Rates for International Medical Graduates
Bethany Clutts DO, Christie Buonpane MD, Sarah Hayek MD, Marcus Fluck BS, Halle Ellison MD, Mohsen Shabahang MD PhD
Geisinger Medical Center, Danville, PA

Introduction
- Main Residency Match couples medical school graduates with residency positions
- Historically more applicants than positions¹
- Increasing number of applicants are International Medical Graduates (IMGs)²
- This study seeks to examine the trends in match rates of IMGs into US allopathic residency positions over the past thirty years.

Methods
- Data obtained from the National Resident Matching Program from 1986-2016
- Linear trends applied over time and subspecialty
- Longitudinal 10-year projections were made

Results

Overall Match Rates for IMGs
- 1986
  - 4,965 of 21,357 total applicants
  - 27.8% match rate
- 2016
  - 6,638 of 35,476 total applicants
  - 52.0% match rate
- 87% Increase in match rate 1986-2016
  - 40% increase for US-citizenship
  - 110% increase for non-US-citizenship

Note: orthopedic surgery did not show a linear trend and thus no 2026 projection is made

Conclusion
The percentage of IMGs filling US allopathic residency positions has increased over the last thirty years and is projected to continue increasing over the next ten years.

References
Exhortation to lose weight prior to complex ventral hernia repair: nudge or noodge?

Colin DeLong MD, Paddy Ssentongo, Anna Ssentongo, Eric Pauli MD, David Soybel MD

Background

- Modern series of ventral hernia repairs (VHR) report the incidence of obesity to be in the range of 55-75%, with average BMIs of 33-35.
- Motivation of patients to lose weight is a principal concern in pre-operative preparation of patients for VHR.
- In this study, we tested the hypothesis that the prospect of a major operation such as cVHR does not alone motivate patients to sustainable weight loss.

Methods

- Retrospective review of 230 patients undergoing VHR from January 1, 2012 to July 30, 2017
  - Exclusion: BMI <30, Length of stay <48 hours
- Weight trajectory was plotted for each patient (BMI at 1 year prior to 1st surgeon encounter, time of 1st surgeon encounter, date of surgery, and 1 year follow-up)
- Preoperative risk factors (NSQIP database) and postoperative outcomes (hyperglycemia (POHG), surgical site occurrences (SSO), length of stay (LOS)) were compared between groups with different weight trajectories using univariate and multivariate analyses.

Results

Table 1. Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>%</th>
<th>BMI (Initial Visit)</th>
<th>SD</th>
<th>Median BMI (Initial Visit)</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaining Prior to Initial Visit</td>
<td>109</td>
<td>47%</td>
<td>36.9</td>
<td>6.3</td>
<td>35.3</td>
<td>7.2</td>
</tr>
<tr>
<td>Losing Prior to Initial Visit</td>
<td>121</td>
<td>53%</td>
<td>35.6</td>
<td>5.4</td>
<td>33.5</td>
<td>7.1</td>
</tr>
<tr>
<td>Gaining prior to visit, gaining when asked</td>
<td>40</td>
<td>37%</td>
<td>36.4</td>
<td>6.1</td>
<td>34.1</td>
<td>4.2</td>
</tr>
<tr>
<td>Gaining prior to visit, losing when asked</td>
<td>69</td>
<td>63%</td>
<td>37.3</td>
<td>6.4</td>
<td>36.3</td>
<td>7.4</td>
</tr>
<tr>
<td>Losing prior to Initial Visit, gaining after</td>
<td>65</td>
<td>54%</td>
<td>35.1</td>
<td>5.4</td>
<td>33.5</td>
<td>7.1</td>
</tr>
<tr>
<td>Losing prior to Initial Visit, lost after</td>
<td>56</td>
<td>46%</td>
<td>36.2</td>
<td>5.4</td>
<td>33.5</td>
<td>7.7</td>
</tr>
<tr>
<td>Patients with BMI&gt;30</td>
<td>105</td>
<td>46%</td>
<td>35.6</td>
<td>5.7</td>
<td>33.9</td>
<td>6.3</td>
</tr>
<tr>
<td>Losing Prior to Surgery</td>
<td>125</td>
<td>54%</td>
<td>36.8</td>
<td>6.0</td>
<td>35.5</td>
<td>7.7</td>
</tr>
<tr>
<td>Gaining prior to Surgery, gaining after surgery</td>
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<td>7.1</td>
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<td>52%</td>
<td>37.9</td>
<td>7.6</td>
<td>36.0</td>
<td>9.9</td>
</tr>
<tr>
<td>Losing Prior to surgery, lost after surgery</td>
<td>60</td>
<td>48%</td>
<td>33.6</td>
<td>4.7</td>
<td>33.6</td>
<td>4.4</td>
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</table>

Table 2. Weight Trajectories

<table>
<thead>
<tr>
<th>Category</th>
<th>%</th>
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<th>IQR</th>
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<td>33.9</td>
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<td>4.7</td>
<td>33.6</td>
</tr>
</tbody>
</table>

Conclusions

- With conventional exhortation, pre-operative weight loss occurred only in about half of our patients, and was not sustainable postoperatively
- BMI at time of surgery, but not preoperative weight trajectories, is a predictor of postoperative complications
- Individualized strategies are needed to promote long-term healthy behaviors and improved outcomes in obese patients undergoing VHR
Use of Departmental Morbidity and Mortality Conference as a Real Time Barometer of Outcomes and Quality in Pediatric Appendectomy

Julie A. DiSano, MD1; Mary C. Santos, MD1; Vamsi V. Alli, MD1; Robert E. Cilley, MD1

1Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Department of Surgery

Objective

Weekly morbidity and mortality conferences (M&M) are an educational staple, playing an important role in quality improvement (QI).

After noticing an increased frequency of listed complications during M&M, we sought to determine whether this finding accurately reflected an increased frequency of pediatric appendectomy complications.

Methods

M&M data was reviewed for all complications & surgical site infections (SSI) reported following appendectomy.

Data collected from July 2012 through December 2015 was analyzed in six month intervals. We compared July through December 2015 using July through December 2012 as a historical control. The total number of appendectomies performed during each interval was determined from billing data. Fisher’s exact test was used to determine significance.

We compared M&M data to corresponding institutional Pediatric NSQIP targeted appendectomy data.

Results

Table 1: Outcomes: all cases

<table>
<thead>
<tr>
<th></th>
<th>July - December 2012</th>
<th>July - December 2015</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any complication</td>
<td>n=60</td>
<td>n=80</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>57 (95.0%)</td>
<td>69 (86.25%)</td>
<td>0.153</td>
</tr>
<tr>
<td>Yes</td>
<td>3 (5.0%)</td>
<td>11 (13.75%)</td>
<td></td>
</tr>
<tr>
<td>SSI</td>
<td>n=58</td>
<td>n=70</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>58 (96.7%)</td>
<td>70 (87.5%)</td>
<td>0.070</td>
</tr>
<tr>
<td>Yes</td>
<td>2 (3.3%)</td>
<td>10 (12.5%)</td>
<td></td>
</tr>
<tr>
<td>Perforated appendicitis</td>
<td>n=41</td>
<td>n=52</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>41 (68.3%)</td>
<td>52 (65.0%)</td>
<td>0.72</td>
</tr>
<tr>
<td>Yes</td>
<td>19 (31.7%)</td>
<td>28 (35.0%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Outcomes: all perforated appendicitis

<table>
<thead>
<tr>
<th></th>
<th>July - December 2012</th>
<th>July - December 2015</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any complication</td>
<td>n=19</td>
<td>n=28</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>16 (84.2%)</td>
<td>17 (60.7%)</td>
<td>0.111</td>
</tr>
<tr>
<td>Yes</td>
<td>3 (15.8%)</td>
<td>11 (39.3%)</td>
<td></td>
</tr>
<tr>
<td>SSI</td>
<td>n=17</td>
<td>n=18</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>17 (89.5%)</td>
<td>18 (64.3%)</td>
<td>0.087</td>
</tr>
<tr>
<td>Yes</td>
<td>2 (10.5%)</td>
<td>10 (35.7%)</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions

Observed trends in institutional M&M data recognized an increase in surgical site infections in 2015, confirmed by pediatric NSQIP data. Using external national benchmarks we validated a cheap and reliable method of QI and outcomes measures based on regularly collected M&M data. Regular review of M&M data provides a cost effective and accurate means of assessing quality in addition to reinforcing the adoption of practice-based learning and systems-based practice. Additionally, this method is a useful barometer for QI at non-NSQIP participating institutions.
Unplanned Surgery for Gastric Adenocarcinoma Leads to Increased Mortality

Benjamin W Fisher MD, Marcus Fluck BS, Marie Hunsinger BSHS RN, Mohsen Shabahang MD PhD, Joseph Blansfield MD, Tania Arora MD

Geisinger Medical Center, Danville, PA

Background

Gastric adenocarcinoma is the 2nd leading cause of cancer death in the world, and 16th most common in the United States. Gastric cancer can present emergently as an upper GI bleed or perforation. To our knowledge, no large studies have examined how urgent surgery for gastric cancer effects patient outcomes. The aim of this study is to examine outcomes of urgent vs elective surgery for gastric cancer.

Methods

Patients from the National Cancer Database (NCDB) with gastric adenocarcinoma from 2004 to 2015 were examined retrospectively. Patients with metastatic disease or incomplete data were excluded. Of 26,116 total patients meeting inclusion criteria, 2648 had urgent surgery and 23,468 were treated at a low volume center. Urgent surgery was defined as definitive surgery within 4 days of diagnosis. Univariate and multivariate analysis of surgical and oncologic outcomes were performed, in addition to patient factors. All p-values <0.01 are significant.

Table 1. Patient Characteristics: Mortality

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Hazard Ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>0.567</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>30-39</td>
<td>0.593</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>40-49</td>
<td>0.635</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>50-59</td>
<td>0.712</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>60-69</td>
<td>0.785</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>70-79</td>
<td>ref</td>
<td></td>
</tr>
<tr>
<td>80+</td>
<td>1.556</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Table 2. Tumor Characteristics: Mortality

<table>
<thead>
<tr>
<th>TNM Pathologic T Stage</th>
<th>Hazard Ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/X</td>
<td>ref</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2.934</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>2</td>
<td>2.821</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>3</td>
<td>3.293</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>4</td>
<td>4.217</td>
<td>&lt;0.0001</td>
</tr>
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</table>

Table 3. Patient Characteristics: Urgent Surgery

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Odds Ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>1.557</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>30-39</td>
<td>1.05</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>40-49</td>
<td>0.808</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>50-59</td>
<td>0.939</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>60-69</td>
<td>0.867</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>70-79</td>
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<td></td>
</tr>
<tr>
<td>80+</td>
<td>1.188</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Conclusions

Urgent surgery for gastric cancer is associated with significantly worse surgical and oncologic outcomes. Stable patients requiring urgent surgical resection for gastric masses may benefit from referral to a high-volume center for resection by an experienced surgeon.

References

3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3507761/
7. Blackshaw et al, Gastric Cancer. 2004
The American Board of Surgery In Training Examination (ABSITE) is a proven marker for successful passing of both the qualifying and certifying general surgery board examinations. Resident work hour restrictions and board preparation directed didactic time limit the residents’ ability to perform clinical duties. Nurse practitioners (NPs) have previously been shown to positively impact patient outcomes and overall hospital costs when utilized on an Acute Care Surgery (ACS) service. We describe a model in which NPs improve resident education and ABSITE scores by providing support to an ACS service.

Methods

With declining board pass rates in our residency, a new educational model was created. Protected didactic time was increased four-fold and the residents had a protected hour at the end of the day to finish all work prior to handoffs ensuring compliance with work hour restrictions. The addition of 3 full time NPs allowed the ACS service to function nearly independent of residents. The NPs covered the ICU, trauma activations, emergency general surgery and floor work during resident protected time.

Results

Eleven residents’ scores were included and analyzed using a mixed model with time before and after intervention and their level-of-training as fixed effects and each resident as a random effect. When doing this, we showed that taking the test before and after the implementation of the new educational process had no significant impact on scores when comparing each individual level of training. This was true for all three areas the residents were scored for the ABSITE (standard score, percent correct and percentile). However, when looking at the residents as a group rather than breaking them into individual levels of training, we showed a significant increase in scores after the educational reformation.

• Standard score increased 77.3; p=0.001
• Percent correct increased 5.9%; p=0.0023
• Percentile increased 23.8; p=0.0229
• Prior to the reform, 45% of residents were below the 35th percentile putting them at risk of first attempt board exam failure.
• After the reform, no residents were below the 35th percentile.

Conclusions

• The ABSITE is a key component to the educational assessment of a surgical resident and is a predictor of board pass rate. We have developed an educational process that has demonstrated significant improvement in ABSITE scores and this educational modification would not have been possible without the addition of NPs to the trauma and acute care surgery service.
• Utilization of NPs on an ACS service is vital to our training program as they provide critical patient care coverage allowing the residents the time needed to learn and prepare for surgical board examinations.
Inclusion criteria:
Patients ≥ 65 years of age that present to the hospital as a trauma after a fall.

Exclusion criteria:
Patients transferred from another hospital, Concomitant penetrating trauma
Injury time ≥ 48 hours to presentation
Intubated patients upon arrival
Admission SBP ≤ 90 mmHg or pulse ≤ 120 bpm
Patients with a GCS ≤ 14
Patients with suspected cervical spinal cord injury

Primary outcome:
In hospital patient mortality

Data was collected retrospectively. Univariate analysis will be performed to evaluate the association of the primary outcome with pertinent variables (age, ISS, GCS ≤ 14, AIS-head, Rotterdam score, SBP, HR, history of loss of consciousness or amnesia, anticoagulant agents, presence of antithrombotic agents and trauma activation status. Multivariable analysis will be performed to determine independent predictors of the primary outcome incorporating significant variables from univariate analysis in addition to the following: trauma activation, anticoagulant agents, and antithrombotic agents. Sample size: assume proportion with the primary outcome is 10%, and there are 8 covariates to be included in the regression analysis: number of cases required = 10X8/0.1 = 800.

Pre-injury use of anticoagulant and antiplatelet drugs have been incorporated into our trauma triage criteria. It is however unclear if trauma team activation (TTA) impacts outcomes in the presence of ACAP drugs on initial presentation.

Aim: The aim of this study is to evaluate whether TTA impacts outcomes in geriatric patients on antithrombotic agents presenting with Glasgow Coma Scale (GCS) of ≥ 14 after falls.

Hypothesis: In geriatric patients on antithrombotic agents presenting with a Glasgow Coma Scale (GCS) of ≥ 14 after falls, trauma team activation is improved with associated outcomes.

Logistic regression on entire cohort – mortality as dependent variable

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Odds Ratio 95% Confidence Intervals</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTA (intercept)</td>
<td>-2.71</td>
<td>P = 0.0006</td>
</tr>
<tr>
<td>Age</td>
<td>1.07</td>
<td>(1.01 to 1.16)</td>
</tr>
<tr>
<td>Male</td>
<td>2.87</td>
<td>(2.63 to 3.12)</td>
</tr>
<tr>
<td>TTA</td>
<td>2.74</td>
<td>(1.64 to 4.60)</td>
</tr>
<tr>
<td>HR</td>
<td>1.02</td>
<td>(0.95 to 1.09)</td>
</tr>
<tr>
<td>GCS</td>
<td>1.11</td>
<td>(0.95 to 1.29)</td>
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<tr>
<td>Acute Coma</td>
<td>1.30</td>
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</tr>
<tr>
<td>Loss of Consciousness</td>
<td>0.74</td>
<td>(0.50 to 1.11)</td>
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<tr>
<td>ISS</td>
<td>0.78</td>
<td>(0.50 to 1.22)</td>
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<tr>
<td>AP</td>
<td>0.80</td>
<td>(0.50 to 1.30)</td>
</tr>
<tr>
<td>AC</td>
<td>1.04</td>
<td>(0.62 to 1.75)</td>
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</tbody>
</table>

Results

Logistic regression – Mortality as dependent variable for patients on ACAP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Odds Ratio 95% Confidence Intervals</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTA (intercept)</td>
<td>2.73</td>
<td>P = 0.0006</td>
</tr>
<tr>
<td>Age</td>
<td>(0.95 to 1.12)</td>
<td>P = 0.0001</td>
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<tr>
<td>ISS</td>
<td>1.08</td>
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<tr>
<td>AP</td>
<td>0.74</td>
<td>(0.50 to 1.09)</td>
</tr>
<tr>
<td>ISS</td>
<td>0.78</td>
<td>(0.50 to 1.22)</td>
</tr>
</tbody>
</table>

Conclusion

Pre-injury ACAP agents are not a risk factor for mortality in awake geriatric patients sustaining falls.

Patients appeared to be appropriately triaged with the TTA group being more severely injured and having a higher mortality rate.

As TTA was still an independent predictor of mortality after controlling for injury severity, age and vital signs, there are likely to be other confounding factors not elucidated in this retrospective review.

References

Case Report:
A 68-year-old female with a complex medical history of atrial fibrillation on Warfarin, Rheumatoid arthritis on steroids, TNF-alpha inhibitor and recent history of Hinchey III diverticulitis for which she underwent Hartmann’s procedure 4 months prior presented to ED with poor oral intake, multiple episodes of nausea, emesis with associated sharp LQ LL abdominal pain at the site of her colostomy. CT imaging revealed significant gastric outlet obstruction (GOO) and concern for incarceration secondary to herniation of the stomach through colostomy (Fig 1.). On physical exam she had tenderness to palpation around her colostomy with an extremely large, soft, tender parastomal hernia (PSH) with healthy appearing stoma. The patient was managed conservatively with IV fluids and nasogastric tube decompression. Her hernia remained reducible and she had return of bowel function. Due to the high likelihood of reoccurrence and risk of incarceration of the stomach, her post-operative course and was discharged to rehab on post-operative day 4.

Introduction:
A PSH is an abnormal herniation of an intra-abdominal organ or tissue through an intentionally created fascial defect around an ostomy site. PSH is a major complication after stoma creation. Unfortunately, such hernias are a common occurrence and the reported incidence rate is as high as 50 percent 1. Commonly PSHs involve reducible mobile segments of omentum, intra-abdominal fat, and bowel. However, there are rare reported cases involving more fixed intra-abdominal organs including the stomach and gallbladder 2-4, 6-9, 11-12. This case presentation describes a 68-year-old female with a GOO secondary to a large gastric containing PSH.

Discussion:
PSHs are a common complication after stoma creation. In this particular case our patient had an end colostomy which has reported incidence rate of 4-48 percent 5. The majority of PSHs contain intraabdominal fat, omentum or bowel and rarely contain organs such as the stomach. Only six cases of PSHs containing stomach have been reported in the literature. It is rare to have herniation of the stomach through a stoma defect since it is a relatively fixed organ with multiple attachment sites including hepatogastric, gastrohepatic and gastrospenic ligaments as well as being surrounded by multiple intra-abdominal structures such as diaphragm, liver, spleen and transverse colon 11. Over time, with increased stress on the fascial defect it is possible to have stretching and elongation of the attachments as well as enlargement of the previously created fascial defect to allow herniation of the stomach.

In this particular case, the hernia occurred only 4 months after the original surgery, which is atypical in comparison to other reports. In this particular case, the hernia occurred only 4 months after the original surgery, which is atypical in comparison to other reports. Factors including but not limited to obesity, malnutrition, malignancy, infection, emergency construction, immunosuppressive drugs, tobacco abuse and COPD place patients at increased risk of developing a PSH 1-8, 11, 12.

Conclusion:
The importance of this case is to recognize PSHs can on rare occasion contain organs such as the stomach. Patients may have asymptomatic, reducible hernias, but it is important to regularly examine these patients to ensure there is no change in the clinical exam. Fortunately, in this case, herniation of the stomach was recognized early using physical exam and CT imaging. The decision was made early on in patients clinical course to reverse the ostomy and surgically repair the hernia defect in order to prevent recurrence and its potential detrimental complications.

References:
Scapulothoracic dissociation is an uncommon but devastating injury complex associated with high-energy blunt trauma to the osseous, muscular, neurologic, and vascular structures of the shoulder. The injury complex is most often associated with high-speed collisions, with up to 79% of case reports involving motorcycle and motor vehicle accidents. Scapulothoracic dissociation was diagnosed based on clinical exam and imaging. His left upper extremity with no appreciable radial or ulnar doppler signals. After initial resuscitation and hemodynamic stabilization, a computed tomography angiogram (CTA) of the neck and left upper extremity showed a comminuted fracture of the left scapula, multiple displaced rib fractures, and partial transection of the left subclavian artery with apparent thrombosis. He was taken to the operating room by the trauma team and underwent emergent wound exploration via an infraclavicular approach to control initial hemorrhage followed by left thoracostomy tube placement. The left subclavian artery was repaired by vascular surgery via a left brachial artery cutdown and placement of two covered stents (Viabahn, W.L. Gore and Associates Inc., Flagstaff, AZ). He was further stabilized post-operatively and underwent left chest washout and closure on hospital day 3. Scapulothoracic dissociation presents with associated vascular injury in up to 88% of patients. Overwhelming subclavian and axillary artery hemorrhage is actually rare and angiography most often demonstrates arterial occlusion. Traumatic injury to the subclavian and axillary arteries is amongst the most challenging to manage due to difficult vascular exposure and close proximity of significant anatomy. Management has shifted over the last 10 years with the development of hybrid techniques. Recent literature reports that open repair remains the standard approach to penetrating and extremity vascular trauma. However, in the setting of overwhelming vascular injury and unknown neurologic dysfunction, a hybrid endovascular approach may offer a safer, more durable option.

We present an interesting case of combined penetrating and blunt vascular trauma in the setting of scapulothoracic dissociation successfully treated with combined open and endovascular techniques. As endovascular therapies become more readily available, hybrid approaches offer a safe avenue for combined revascularization and control of hemorrhage in traumatic limb injury.

References
12. Geisinger Wyoming Valley, Wilkes-Barre PA.
Risk Factors for Length of Stay and Readmission in Rural Ghana

Laura Keeney DO, MPH1, Brandon Hendrikson MD, MPH1, David J. Morrell MD1, Xavier Candela BS2, Paddy Ssentongo MD, MPH3, John S. Oh MD1, Christopher S. Hollenbeak PhD3 Forster Amponsah MD4

1Penn State Health Milton S. Hershey Medical Center 2Penn State University College of Medicine 3The Pennsylvania State University 4Eastern Regional Hospital

Introduction

Increased length of stay (LOS) and readmission represent significant economic burden on patients and families faced with surgical disease in low-middle income countries given limited surgical access, infrastructure, and variable insurance status. This study aims to identify risk factors of LOS and readmission in order to better direct future interventions in postoperative care in rural Ghana.

Methods

Data for exploratory laparotomy procedures were obtained from surgical case logs collected at a regional referral hospital in Eastern Region, Ghana from July 2017 to June 2018. This information was compared with the hospital electronic medical record to collect demographic data, laboratory values, and outcomes. Multivariate analyses were used to model LOS and readmission.

Results

The study included 346 exploratory laparotomy procedures (286 adult, 60 pediatric) for various surgical diseases. Average age at surgery was 40 and males accounted for 65% of all procedures. 40% of patients were uninsured. Hemoglobin levels were measured on admission for 71% of patients and 44% of those patients were anemic. The major indications for surgery were appendicitis (31%), obstruction (23%), perforated peptic ulcer disease (12%), and trauma (7%). The overall LOS for adult and pediatric patients were 7.2 and 6.9 days, respectively. Surgery for obstruction and major abdominal trauma resulted in increased LOS by 4.6 and 4.1 days, respectively (p<0.001, p=0.031). Anemia increased LOS by 3 days (p=0.002). Rate of readmission for adults was 9.4% and 8% for pediatric patients. Patients with national health insurance were 2.7 times more likely to be readmitted (OR=2.7, p=0.04) and those with anemia were 3.9 times more likely to be readmitted (OR=3.9, p=0.002).

### Logistic Regression of Readmission Rates

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### Linear Regression of Length of Stay

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<td>0.39</td>
<td>7.81 0.031</td>
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<tr>
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<td>0.63</td>
<td>-1.24</td>
<td>2.51 0.506</td>
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Conclusion

Anemia represents a risk factor for both increased length of stay and readmission. Major abdominal trauma is also a risk factor for increased LOS. Future interventions aimed at treating anemia and improving trauma care may decrease some of the post-operative burden placed on patients and their families.

This work was sponsored by the Penn State Global Surgery Program with financial support from Ann Barshinger and Peggy Neff.
Post-Operative Gum Chewing: A Simple Solution in Preventing Post-Operative Ileus
Kathryn C. Kelley, MD, Stanislaw P. Stawicki, MD, Brian A. Hoey, MD, Thomas Donkar, DO, Thomas Wojda, MD

Background
- Postoperative ileus (POI) consistently a major barrier to optimizing surgical outcomes.
- Morbidity, prolonged hospitalization due to POI is associated with significant human and economic costs.
- Aim of this meta-analysis was determining if postoperative gum chewing (PGC) has beneficial effects on return of bowel function or hospital LOS.

Methods
- 4,522 candidate studies were identified during comprehensive literature search using PubMed, Google Scholar, EBSCOHost, and BioLine.
- Search terms- “ileus,” “chewing gum,” “gum,” “postoperative ileus,” “surgery,” “bowel function”, “study”, “clinical trial”
- 96 studies suitable for inclusion in analysis.
- Data analyzed using Open MetaAnalyst Software using random effects model to calculate mean differences within each study parameter.

Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Chewing gum (CG)</th>
<th>No chewing gum</th>
<th>Mean difference (95% CI)</th>
<th>Heterogeneity (I²)</th>
<th>P-value</th>
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<tbody>
<tr>
<td>Hospital length of stay (days)</td>
<td>2840 pts</td>
<td>2892 pts</td>
<td>-0.703 (-0.858 to -0.547)</td>
<td>88%</td>
<td>&lt;0.001</td>
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<tr>
<td>Time to bowel movement (hrs)</td>
<td>3702 pts</td>
<td>3770 pts</td>
<td>-4.802 (-5.983 to -3.621)</td>
<td>97%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Time to flatus (hrs)</td>
<td>4511 pts</td>
<td>4571 pts</td>
<td>-12.206 (-14.005 to -10.407)</td>
<td>97%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Time to bowel sounds (hrs)</td>
<td>2149 pts</td>
<td>2184 pts</td>
<td>-10.394 (-11.811 to -8.977)</td>
<td>96%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Conclusion
- In a variety of surgical populations, chewing gum appears to hasten the return of bowel function.
- More importantly, average hospitalization in the CG groups is shortened by nearly 17 hours, adding economic argument for this simple, inexpensive intervention.
- This intervention has overarching global applicability, in both cost-conscious health systems and resource-poor healthcare settings.
The Exercise Pressor Response to Lower Extremity Dynamic Exercise is Accompanied by an Abnormal Change in Total Peripheral Resistance in Peripheral Arterial Disease Subjects

Marcos T. Kuroki 1, 2, MD-PhD, Danielle Jin-Kwang Kim 1, PhD, Jian Cui 1, PhD, Zhachui Gao 1, PhD, Cheryl Blaha 3, RN, Urs A. Leuenberger 1, MD, Lawrence J. Sionwai 1, MD

Department of Surgery 1 and Penn State Heart and Vascular Institute 5, Penn State College of Medicine, Hershey, PA

INTRODUCTION

Peripheral arterial disease (PAD) is an atherosclerotic disease process that leads to impaired blood flow to the lower extremity, especially during exercise 1, 2. Our laboratory 3 and others 4 have shown that the rise in blood pressure (BP) normally seen in response to dynamic exercise of the lower extremity, is exaggerated in PAD compared to control subjects. The hemodynamic mechanism underlying the exaggerated pressor response in PAD is not completely understood. It has been shown that the exaggerated BP response in PAD is accompanied by an exaggerated reactive vasoconstrictor response to exercise 5.

Hypothesis

The exaggerated pressor response in PAD is mediated by an increase in total peripheral resistance (TPR), a response specific to exercise of the muscle territory affected by PAD.

METHODS

• Ethical approval: All experiments were approved by the IRB of the Penn State Milton S. Hershey Medical Center. All subjects provided written and informed consent.
• Study design: Repeated-measures design with within-subjects (exercise workload or duration) and between-subjects (PAD vs healthy) components. Systemic hemodynamic measurements were repeated on 3 separate visits.
• Study subjects: 1) PAD subjects: (n=9; ABI ≤ 0.9); Fontaine stages I and II) recruited from the Penn State Heart and Vascular Institute Vascular Surgery Clinic. 2) Control subjects: (n=10; ABI > 0.9) recruited from the community. Gender matched, and similar in age and BMI to PAD subjects. 3) Exclusion criteria—pregnant or lactating female, subjects with symptomatic CAO, diabetes with skin ulcers or peripheral neuropathy, and creatinine > 2 were excluded.
• Physiological monitoring: Continuously monitored parameters: 1) Heart rate (HR) – derived from 3 lead ECG. 2) Blood pressure (SBP, DBP, MAP) – derived from palpable finger pressures (Finnometer). 3) Stroke volume (SV), cardiac output (CO), and total peripheral resistance (TPR) – derived from finger pulse waveform using Modelflow algorithm. Other measurements: 1) Echocardiography – performed at rest on the first study visit for calculating baseline SV, CO, and TPR values.

RESULTS

Table 1: Patient characteristics

<table>
<thead>
<tr>
<th>Group</th>
<th>PAD (n = 9)</th>
<th>Control (n = 10)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>65 ± 7</td>
<td>65 ± 6</td>
<td>0.6833</td>
</tr>
<tr>
<td>Gender</td>
<td>Male 6 (67%)</td>
<td>Male 10 (100%)</td>
<td></td>
</tr>
<tr>
<td>ABI</td>
<td>1.08 ± 0.27</td>
<td>0.93 ± 0.18</td>
<td>1.0000</td>
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<tr>
<td>MAP</td>
<td>95 ± 2</td>
<td>88 ± 3</td>
<td>0.0214</td>
</tr>
</tbody>
</table>

Table 2: Baseline blood pressure, heart rate and hemodynamics

<table>
<thead>
<tr>
<th>Group</th>
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<th>Control (n = 10)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR (bpm)</td>
<td>65 ± 5</td>
<td>66 ± 4</td>
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</tr>
<tr>
<td>SBP (mmHg)</td>
<td>120 ± 10</td>
<td>117 ± 13</td>
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<tr>
<td>DBP (mmHg)</td>
<td>86 ± 11</td>
<td>82 ± 8</td>
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<tr>
<td>MAP (mmHg)</td>
<td>97 ± 8</td>
<td>93 ± 10</td>
<td>0.0031</td>
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Figure 3: Hemodynamic responses to exercise

A. Dynamic Plantar Flexion

B. Isometric Handgrip

Study Protocol

CONCLUSION

• There were no group differences in baseline hemodynamic parameters including CO and TPR.
• As seen in prior studies, patients with PAD reached significantly lower workloads during plantar flexion compared to control (8.5 ± 2.4 kg vs 11.9 ± 3 kg; p<0.001). Perceived exertion at end of plantar flexion were the same in both groups.
• As seen in prior studies, the pressor response to plantar flexion was significantly higher in PAD compared to control.
• The exaggerated pressor response during plantar flexion was accompanied by a blunted systemic vasodilatory response in PAD. TPR at peak workload during plantar flexion was significantly higher in PAD compared to control.
• There were no differences in ischemic handgrip performance between PAD and control. The systemic hemodynamic response to ischemic handgrip including HR, MAP, and TPR were the same in PAD and control.

REFERENCES


Figure 1: Dynamic Plantar Flexion Protocol

Figure 2: Isometric Handgrip Protocol

ACKNOWLEDGEMENTS: We would like to thank Ranjit Patel, MD, and the Cardiac Lab for their technical assistance during the experiments. Experiments supported by the NIH grants R01 HL142229 and T32 HL007826.
Driving Simulators – Can They Impact Distracted Driving?

Hannah Loebl, MD, David Deisher, DO, Catherine Zatorksi, MD, Christian Pothering, MD, William D. McQuilken, BA, Judith M. Schultz, BA, John Hong, MD

Division of Trauma, Lehigh Valley Health Network, Allentown, Pennsylvania

Distracted driving, such as cellphone use, is concerning as it increases the risk of crashes. Studies have found that the risk of collision quadrupled amongst drivers making short phone calls. Text messages take drivers’ eyes off the road for an average of 4.6 seconds each, and teenagers spend 400% more time with their eyes off the road due to texting. This study aimed to assess awareness of distracted driving behaviors and to determine if simulation could improve awareness and lead to behavior modification.

Hypothesis: Driving simulators will increase knowledge about the dangers of distracted driving and increase seatbelt use.

METHODS

This was a prospective pre-post cohort study with convenience sampling. Multiple sites in Pennsylvania participated between September 2012 and May 2017. Study participants ages ranged 14-30. A pre-survey was administered to all participants who subsequently underwent a driving simulation that utilized consequence simulations, followed by administration of a post-survey. Variables on demographics, knowledge, and behaviors associated with distracted driving before and after simulation were collected. Variables are presented as percentages and compared with Wilcoxon signed rank test. Significance was estimated at p≤0.05. Analyses were done with SPSS (IBM Analytics).

RESULTS

28,884 pre-surveys and 24,397 post-surveys were completed. 16-18 year olds represented the largest group of participants (49%). 8% of participants reported occasionally driving distracted, 33% reported they had been passengers of distracted drivers. After the simulation, 66% reported the consequences of distracted driving to be worse or much worse than originally perceived (p<0.04). Reported seatbelt usage also increased (77% vs. 87%, p<0.03).

CONCLUSIONS

Driving simulators can raise awareness about the consequences of driving distracted and improve safe driving behaviors. More studies are needed to determine if this intervention promotes long term behavioral changes and translates into fewer motor vehicle collisions.
COLORECTAL CANCER IN PATIENTS UNDER AGE 50: STAGING AND MORTALITY AT A SINGLE INSTITUTION

Jaclyn Malat DO, Sarah Martin BS, Adrian Ong MD, Michael Brown MD, MBA, FACS
Department of General Surgery, Tower Health Reading Hospital, Reading PA

Introduction

Colorectal cancer (CRC) is the third most commonly diagnosed cancer in the United States with approximately 4.2% of the population diagnosed with CRC during their lifetime (1,2). Since the implementation of screening colonoscopies, the rate of CRC in patients over 50 has steadily declined over the past several years (3,4). Specifically, the incidence of CRC has decreased by 2.6% each year during the last 10 years with a 2.4% decline in the mortality rate each year (5). This likely corresponds to the early removal of benign polyps prior to malignant transformation. Despite this steady decline in incidence and mortality in patients over 50, estimates of new CRC diagnoses and mortality for 2018 remain staggering with upwards of 140,250 patients diagnosed and over 50,000 deaths (6).

Guidelines prior to 2018 recommended screening colonoscopies to begin at age 50 in patients without a family history of CRC (7). While there was decreased incidence and mortality as illustrated above, a new patient population was increasing in numbers, those under the age of 50. For this reason, the American Cancer Society recently changed their recommendation to begin screening colonoscopies at age 45 in patients without a family history.

The National Institute of Health Surveillance, Epidemiology and End Results Program has shown an increase in CRC in patients under age 50 by 1.7% annually from 1992 to 2013 and an increase of 5.1% per year from 2013 to 2015 (8). Meyers et al. showed 53% of patients under age 50 were diagnosed with stage 3 or 4 CRC compared to 41% of CRC patients over age 50 with stage 3 or 4 (9). Li et al. recently demonstrated no significant difference in 5-year survival rates between these two age groups. Patients under age 50 had a significantly higher 5-year survival rate when compared with older patients for stages 2 and 4 (p<0.05). 5-year survival rates were statistically similar for the other stages. No statistically significant differences were identified when evaluating gender or location of tumor between these two age groups.

Methods

From 1997 to 2017, 3188 patients were diagnosed with CRC of which 245 patients (7.7%) were below age 50. CRC patients under age 50 were diagnosed at a higher stage when compared to patients above age 50 (P = 0.0002). Specifically, 71% of patients under age 50 were diagnosed at stage 2 or higher, whereas the stage at diagnosis for patients above age 50 was more evenly distributed with only 57% being diagnosed at stage 2 or higher. Patients under age 50 had a significantly higher 5-year survival rate when compared with older patients for stages 2 and 4 (p<0.05). 5-year survival rates were statistically similar for the other stages. No statistically significant differences were identified when evaluating gender or location of tumor between these two age groups.

Results

Patients under age 50 were more likely to be diagnosed at a higher stage of CRC compared to those above age 50. Younger patients diagnosed specifically at stage 2 or 4 were found to have greater 5 year survival rates compared to patients above age 50 diagnosed at the same stage.

Discussion

Based on our data, initiating screening colonoscopies at age 45 may downgrade the stage at diagnosis however, its effect on survival has yet to be determined. Further studies evaluating risk factors for CRC at younger ages, effect of beginning screening colonoscopies at age 45 and differences in management between these groups are required.

References

Are Academic Half Days the Proper Didactic Method for General Surgery Residency Training?

Mahdi Malekpour, MD; James Dove, BA; Halle Ellison, MD; Mohsen Shabahang, MD PhD
Geisinger Medical Center, Danville, PA

Background

Dedicated didactic time is now an innate part of any residency training

Appropriate method is debated

Academic half days (AHD) have been adopted by many medical residencies

Aim: compare outcome of AHD versus daily morning didactics (MD) in an accredited General Surgery residency training program

Methods

2015-2016: 7-8 AM weekday MD
2016-2017: once-a-week AHD

We studied:
Changes in American Board of Surgery In-Training Exam (ABSITE)
Number of cases that were missed annually for each didactic method
Questionnaire to investigate the residents’ and attending physicians’ subjective assessment

Results

No person-to-person or class-to-class change in the ABSITE score was observed with the AHD (both p>0.5)

With MD, residents had missed 35 cases whereas 319 cases were missed by residents with AHD over a one year period

Although the majority of attending physicians (70.9%) assessed the academic activities to be more organized with AHD, the same number (70.9%) were under the impression that residents had missed more cases

The majority of residents (61.5%) found AHD to have made academic activities organized yet less than half (46.1%) of the residents were under the impression that more cases had been missed with AHD.

Conclusion

AHD was associated with more missed cases and was not associated with improved ABSITE scores.
Background

Robotic-assisted surgery (RAS) is a newly-introduced technology with some General Surgery Residency programs integrating it into their curriculum.

The cost-effectiveness of RAS training in general surgery residency is debated.

Methods

Outpatient cholecystectomy cases from 2013 to 2017 were included in this study.

Patients were divided into laparoscopic and robotic-assisted groups.

We focused on comparison of the cost and length-of-stay (LOS) for cases based on the presence of residents.

Results

1774 cases were included.

Residents were scrubbed in 70% of laparoscopic cases (1125 cases from a total of 1605 laparoscopic cholecystectomies) and 45% of robotic-assisted cases (75 cases from a total of 165 robotic-assisted cholecystectomies).

Presence of residents were associated with significantly reduced costs in both laparoscopic and robotic-assisted cases (both \( p < 0.0001 \)).

Presence of residents was associated with significantly longer LOSs in laparoscopic cases (12.6 vs 9.8 hours, \( p = 0.0003 \)).

No association between the presence of residence and LOS in robotic-assisted cases (11.8 vs 9.6 hours, \( p = 0.63 \)).

Conclusion

Presence of residence in outpatient robotic-assisted laparoscopic cholecystectomies was associated with less cost.
Association between Timing of Traumatic Thoracic Aortic Injury Repair and Outcome; a National Trauma Databank (NTDB) Study

Mahdi Malekpour, MD; James Dove, BA; Robert Garvin, MD; James Elmore, MD; Evan Ryer, MD; Jeffrey Wild, MD; Ksenia Orlova, MD PhD

Background

Blunt thoracic aortic injury (BTAI) has a low incidence in patients with blunt thoracic trauma but carries potentially devastating consequences.

Controversy surrounding the timing of repair for BTAI remains.

Is there an association between the timing of BTAI repair and outcomes?

Methods

Propensity score-matched analysis of National Trauma Databank from 2008 to 2015 on all patients with BTAI.

Aortic injuries were grouped into minimal (small intimal tear), moderate (large intimal tear or pseudo aneurysm) and severe (rupture).

Repair time was classified as early (before 24 hours) or delayed (after 24 hours).

The primary outcome measure was in-hospital mortality.

Secondary outcome measures were post-operative complications and length-of-stay (LOS).

Results

<table>
<thead>
<tr>
<th>Injury Severity</th>
<th>OR/HR</th>
<th>95% CI</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal Injury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>2.94</td>
<td>1.55-5.60</td>
<td>0.001</td>
</tr>
<tr>
<td>Any Complication</td>
<td>0.64</td>
<td>0.48-0.87</td>
<td>0.004</td>
</tr>
<tr>
<td>LOS</td>
<td>0.64</td>
<td>0.55-0.74</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Moderate Injury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>2.23</td>
<td>1.23-4.04</td>
<td>0.008</td>
</tr>
<tr>
<td>Any Complication</td>
<td>0.68</td>
<td>0.48-0.94</td>
<td>0.022</td>
</tr>
<tr>
<td>LOS</td>
<td>0.81</td>
<td>0.68-0.96</td>
<td>0.016</td>
</tr>
<tr>
<td>Severe Injury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>2.88</td>
<td>1.74-4.77</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Any Complication</td>
<td>0.46</td>
<td>0.34-0.62</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>LOS</td>
<td>0.81</td>
<td>0.70-0.94</td>
<td>0.006</td>
</tr>
</tbody>
</table>

Conclusion

Regardless of injury severity, early (<24 hours) repair for BTAI is associated with increased mortality, yet less post-operative complications and a shorter hospital length of stay.
Background

Traumatic brain injury (TBI) accounts for an estimated 50,000 fatalities and 235,000 inpatient hospitalizations per year. Mortality rates can be up to five times higher in anticoagulated patients compared to non-anticoagulated controls.

System inefficiencies and lack of understanding of the disease process among providers result in significant delays in treatment. History, physical exam, and laboratory tests do not reliably identify patients with intracranial hemorrhage (ICH). Rapid confirmation with expedited imaging and prompt reversal of anticoagulation decreases ICH progression and reduces mortality.

Before 2013, TBI was not included as a mandatory criteria for a “Trauma Alert” activation if seen in the emergency department. Trauma database reviews found a high proportion of under-triaged patients, specifically in low mechanism trauma. The American College of Surgeon’s goals of triage include a less than 5% under-triage rate and 25-50% over-triage rate. Recent studies have shown that creation of a protocol-driven response system improved care and ensured that this high-risk patient population is treated with the same urgency as any other major trauma.

Methods

All patients sustaining mild TBI in a level one trauma center between 1/1/2007 and 12/18/2016 were retrospectively reviewed. The patients were separated into a group before the implementation of the emergency department trauma activations for mild TBI and a post-implementation group.

All patients had to be on Warfarin and had an elevated INR on admission. Patients on other anticoagulants were excluded from the study.

Results

Initial Presentation

<table>
<thead>
<tr>
<th></th>
<th>Pre-Intervention (n=35)</th>
<th>Post-Intervention (n=28)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>77.6 ± 12.5</td>
<td>78.3 ± 9.9</td>
<td>0.812</td>
</tr>
<tr>
<td>Mechanism of Injury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td>34 (97.1%)</td>
<td>26 (92.9%)</td>
<td>0.581</td>
</tr>
<tr>
<td>MVA/MVC</td>
<td>1 (2.9%)</td>
<td>2 (7.1%)</td>
<td></td>
</tr>
<tr>
<td>GCS on Presentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 - 15</td>
<td>35 (100%)</td>
<td>26 (92.9%)</td>
<td>0.194</td>
</tr>
<tr>
<td>9 - 12</td>
<td>0 (0%)</td>
<td>2 (7.1%)</td>
<td></td>
</tr>
<tr>
<td>LOC</td>
<td>16 (45.7%)</td>
<td>3 (10.7%)</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Timing Interval

<table>
<thead>
<tr>
<th></th>
<th>Pre-Intervention (n=35)</th>
<th>Post-Intervention (n=28)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation to Imaging Interval, time in minutes</td>
<td>98 (68, 159)</td>
<td>94 (51, 127)</td>
<td>0.37</td>
</tr>
<tr>
<td>Presentation to Reversal Interval, time in minutes</td>
<td>238 (138.5, 289)</td>
<td>148 (114, 183.5)</td>
<td>0.026</td>
</tr>
<tr>
<td>Imaging to Reversal Interval, time in minutes</td>
<td>144.5 (70, 250)</td>
<td>52 (15, 87)</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Hospital Course Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Pre-Intervention (n=35)</th>
<th>Post-Intervention (n=28)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received Interval CT</td>
<td>30 (85.7%)</td>
<td>25 (89.3%)</td>
<td>0.723</td>
</tr>
<tr>
<td>Interval Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>21 (60%)</td>
<td>14 (50%)</td>
<td>0.594</td>
</tr>
<tr>
<td>Yes</td>
<td>12 (32%)</td>
<td>17 (58%)</td>
<td></td>
</tr>
<tr>
<td>Interventions Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval GCS Change</td>
<td>8 (22.9%)</td>
<td>4 (14.3%)</td>
<td>0.389</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>4 (4, 8)</td>
<td>4 (3.5)</td>
<td>0.423</td>
</tr>
<tr>
<td>Comfort/Hospice</td>
<td>7 (20%)</td>
<td>4 (14.3%)</td>
<td>0.741</td>
</tr>
<tr>
<td>Discharge Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alive</td>
<td>29 (82.9%)</td>
<td>24 (85.7%)</td>
<td>0.999</td>
</tr>
<tr>
<td>Dead</td>
<td>6 (17.1%)</td>
<td>4 (14.3%)</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions

Patients with mild traumatic brain injury still have a high susceptibility to decompensate and are at risk of high morbidity and mortality.

Most patients present neurologically intact without any signs of an obvious ICH.

The creation of a protocol-driven treatment algorithm has resulted in a more uniform care pattern and a heightened awareness of the consequences of an unidentified, thus untreated, TBI.

Although treatment is expedited with the use of trauma protocol activations, these protocols are not successful in eliminating delay in presentation to the hospital.

This study also confirms that although time to reversal was improved, it did not have a significant impact in the patients overall outcome.
Pediatric Urologic and Perineal Trauma: A Single Institution Experience

Christopher McLaughlin, M.D.1, Joseph Hess, Ph.D. 1, Brett Engbrecht M.D.1,2, Kathryn Martin, M.D.1,2
1: Penn State Health, Department of Surgery 2: Pennsylvania State University

Introduction

Urologic and perineal trauma remain an understudied pattern of injury in pediatric trauma. These injuries may involve a single system or present as part of multisystem trauma. Diagnosis and management varies based on mechanism and gender. The aim of this study was to analyze patterns in the presentation, management, and outcomes of pediatric urologic trauma in order to better inform clinical practice and create opportunities for further research.

Methods

A retrospective chart review from 2006-2017 was undertaken using the trauma database of an American level 1 pediatric trauma center. Patients were isolated based upon ICD-9 and ICD-10 injury codes for perineal trauma (867, 877, 878, 879). Demographic data, mechanism, presentation, diagnostic studies, and outcome were examined using descriptive statistics to identify relevant trends.

Results

44 patients were extracted from the pediatric trauma database, 40 met inclusion criteria.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male 28 (70%) Female 12 (30%)</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>10.5 years</td>
</tr>
<tr>
<td>Race</td>
<td>White 29, Black 7, Hispanic 2, Asian 1</td>
</tr>
<tr>
<td>Insurance Status</td>
<td>Insured 31 (77.5%), Uninsured 5 (12.5%), Unknown 4 (10%)</td>
</tr>
<tr>
<td>Trauma Activation</td>
<td>28 (70%)</td>
</tr>
<tr>
<td>Blunt / Penetrating</td>
<td>27 (68%) / 13 (32%)</td>
</tr>
<tr>
<td>Transfer</td>
<td>20 (50%)</td>
</tr>
<tr>
<td>Mean ISS</td>
<td>20.42 (Range: 1-57)</td>
</tr>
<tr>
<td>Suspected Abuse</td>
<td>4 (10%), 0 Confirmed</td>
</tr>
<tr>
<td>Mean Length of Stay</td>
<td>4.42 days</td>
</tr>
</tbody>
</table>

The most common injuries were external, open wounds to buttocks or genitalia (22, 55%), followed by bladder or rectal injuries (18, 45%). 65% of patients required operative intervention. Mean time to OR was 328 minutes. The most common operations involved diversion, such as colostomy, suprapubic catheterization, or Foley catheter. 80% of patients had concurrent injuries, most commonly pelvis fractures. Half of pelvic fractures had concurrent urologic injuries, with 14 urologic injuries total.

All captured urologic injuries were complex, requiring urologic diversion either by Foley or suprapubic catheterization. These patients required long term follow up with subsequent imaging to ensure healing. There was a delay in diagnosis in 3 of 14 urologic injuries.

Discussion

This cohort study supports previous literature reporting a link between perineal trauma and multisystem injury1. Given the complexity of these injuries and likely need for surgical intervention, it is appropriate they are admitted to pediatric surgery services. Our findings support a relationship between perineal and urologic trauma, especially in the context of pelvic fracture. Pelvic trauma requires system-specific diagnostics and interventions.

Pediatric surgeons play a critical role in the detection, diagnosis, and management of perineal and urologic trauma. Urologic injury should always be a consideration when evaluating perineal trauma especially if a pelvic fracture is also present. Further study is needed to elucidate best practices in order to optimize patient outcomes.

Future Directions

1.) Expand database to include patient encounters not captured in a trauma database to encompass the full spectrum of pediatric perineal and urologic trauma.
2.) Develop gender specific treatment algorithms to effectively diagnose and manage both simple and complex perineal injuries.

References

The dilemma of surgery in the setting of neurogenic bowel dysfunction
Jeffrey Moyer DO, Adrian Ong MD, Shannon Foster MD
Department of General Surgery
Reading Hospital, Reading, PA

Introduction

Bowel dysfunction is frequently present in the institutionalized neurologically impaired patient population, which has been demonstrated using manometry in multiple studies. The condition chronic intestinal pseudo-obstruction (CIPO) has also been documented in this patient population. These patients will rarely benefit from surgery, which should be considered only if there is localized involvement of the GI tract.

Purpose

Radiographic findings at the time of admission may prompt surgical consultation. The surgeon is not uncommonly faced with the decision of whether operative intervention can be beneficial in the setting of chronic bowel dysfunction. This case emphasizes the risks of operative intervention in this patient population.

Case Description

A 72 year old man with developmental delay and paraplegia and a history of Hartmann’s procedure for sigmoid volvulus, tracheostomy and gastrostomy presented with abdominal distention, coffee ground emesis, and decreased colostomy output. On exam he had a soft and partially reducible parastomal hernia, and CT scan of the abdomen and pelvis demonstrated incarcerated small bowel with transition point at the parastomal hernia. He was non-operatively managed for 6 days. He showed no significant improvement in distention or colostomy output, and a small bowel follow-through during that period demonstrated small bowel incarcerated within the parastomal hernia with contrast transit to the colon.

On the 7th day of admission he underwent laparotomy for parastomal hernia repair. Intraoperatively he had diffusely dilated bowel without a transition point. A parastomal hernia repair was performed with biologic mesh, and his fascia was closed with running suture. His postoperative course was complicated by ileus and two episodes of dehiscence with evisceration requiring additional laparotomies. His abdomen was eventually closed with an interposition biologic mesh then covered with split-thickness skin graft.

Conclusion

This case illustrates a surgical dilemma that is encountered in the institutionalized patient population. Radiographic and intraoperative findings did not reveal any true obstruction, and operative intervention resulted in postoperative complications with a protracted hospital course. The reviewed literature shows high complication and reoperation rates in the setting of chronic bowel dysmotility. Recognition and diagnosis of this entity in the institutionalized patient population may reduce unnecessary and repeated surgical interventions.

References

Quality Improvement for Surgical Resection of Pancreatic Head Adenocarcinoma: Hospital and Surgeon Predictors of Higher Than Expected R1 Resection Using the National Cancer Database

Brandon Nuckles MD, Kenneth Lam MBS, James Dove BA, Marie Hunsinger RN, BSHS, Mohsen Shabahang MD, PhD, Tania Arora MD, Joseph Blansfield MD

Geisinger Medical Center, Danville PA

**Background**

Pancreatic cancer is the 4th leading cause of cancer deaths in the United States

The mainstay of treatment for pancreatic cancer is surgical resection

Resection margin involvement has been confirmed to be an influential prognostic factor

R1 resections were performed in approximately 30% of pancreatic adenocarcinoma resections

**Objective**

To isolate factors that contribute to a higher observed to expected ratio of positive margins after surgical resection of pancreatic adenocarcinoma

**Methods**

Retrospective review of patients with head of the pancreas adenocarcinoma in the National Cancer Database (NCDB, 2004-2015)

A nomogram based on tumor and patient variables was used to calculate the observed to expected positive margin rates (O/E) for facilities in the database

The probability that a hospital had exactly the number of observed events (compared to expected) was calculated

If the O/E differed significantly (p<0.05) it was considered an outlier

**Results**

**Nomogram withCompiled Factors Associated with Positive Margins**

**Observed to Expected Ratio Plot**

**O/E Calibration Plot**

**Outcomes of High vs Low Margin Positive Outliers**

<table>
<thead>
<tr>
<th></th>
<th>0 - Low Margin Outlier</th>
<th>1 - High Margin Outlier</th>
<th>2 - Non Outlier</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients</td>
<td>5853</td>
<td>4050</td>
<td>10065</td>
<td></td>
</tr>
<tr>
<td>30 Day Unplanned Readmission</td>
<td>452 (7.8%)</td>
<td>321 (8%)</td>
<td>810 (6.2%)</td>
<td>0.74</td>
</tr>
<tr>
<td>30 Day Planned Readmission</td>
<td>158 (2.7%)</td>
<td>97 (2.4%)</td>
<td>256 (2.6%)</td>
<td>0.61</td>
</tr>
<tr>
<td>30 Day Mortality</td>
<td>125 (2.4%)</td>
<td>152 (4.2%)</td>
<td>428 (4.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>90 Day Mortality</td>
<td>262 (5%)</td>
<td>283 (7.3%)</td>
<td>790 (8.8%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>8 (7, 12)</td>
<td>10 (7, 15)</td>
<td>10 (7, 15)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

**Characteristics of High vs Low Margin Positive Outliers**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low Margin Positive Outlier</th>
<th>High Margin Positive Outlier</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>O/E Ratio</td>
<td>0.57 ± 0.23</td>
<td>2.11 ± 0.88</td>
<td></td>
</tr>
<tr>
<td>median (IQR)</td>
<td>0.59 (0.49, 0.75)</td>
<td>1.86 (1.53, 2.30)</td>
<td></td>
</tr>
<tr>
<td>range</td>
<td>[0, 0.96]</td>
<td>[1.01, 5.45]</td>
<td></td>
</tr>
<tr>
<td>Facility Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Cancer Program</td>
<td>0 (0%)</td>
<td>3 (3.6%)</td>
<td></td>
</tr>
<tr>
<td>Comprehensive Community Cancer Program</td>
<td>9 (17%)</td>
<td>39 (47%)</td>
<td></td>
</tr>
<tr>
<td>Academic/Research Program</td>
<td>39 (73.6%)</td>
<td>32 (38.6%)</td>
<td></td>
</tr>
<tr>
<td>Integrated Network Cancer Program</td>
<td>5 (9.4%)</td>
<td>9 (10.8%)</td>
<td></td>
</tr>
<tr>
<td>Hospital Volume (total cases from 2004 - 2015)</td>
<td>110.43 ± 90.44</td>
<td>48.80 ± 75.28</td>
<td></td>
</tr>
<tr>
<td>median (IQR)</td>
<td>97 (51, 121)</td>
<td>26 (11, 54)</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusions**

The nomogram has a very high accuracy, as indicated by the calibration plot, in its ability to correctly predict the probability of positive margins.

Facility type and hospital volume can predict improvement in the observed to expected ratio for margin positivity in pancreatic adenocarcinoma resection.

Surgeons should consider referral to academic or research facilities with higher case volumes for improved complete surgical resection.
Abdominal Wall Reconstruction After Extirpation of a 140 Pound Primary Ovarian Mucinous Adenocarcinoma: A Case Report

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ABSTRACT

- Ovarian cancer is a feared diagnosis for women and clinicians alike.
- In this report, we present a case of a 71 year-old woman with a massive and debilitating > 60 centimeter, 140 pound primary ovarian mucinous adenocarcinoma. After extirpation, she underwent extensive abdominal wall reconstruction utilizing a team approach.
- Finally, pathology revealed stage IA grade 2 mucinous adenocarcinoma of the ovary. No adjuvant therapies were indicated. She is in clinical remission and has since resumed her normal daily function.

INTRODUCTION

- Mucinous ovarian cancers constitute 15% of all ovarian neoplasms and exist on a spectrum from benign to malignant. They typically arise from the gastrointestinal tract, endometrium, and/or endocervix.1
- Distinction between primary and metastatic mucinous ovarian cancers is made on histologic examination and immunohistochemical (IHC) staining. Common IHC markers include CK7, CK20, CEA, CA129.9, CDX2, and CA-125. Of these, CEA and CA-125 are commonly used in monitoring for recurrence of disease.2
- Team approaches to massive tumor extirpations is essential, as patients often require the expertise of various subspecialists including, but not limited to gynecologic-oncologists, general surgeons, and plastic and reconstructive surgeons.

CASE REPORT

- A 71-year-old female presented with left leg and abdominal pain, refractory cellulitis, and worsening dyspnea.
- History of present illness revealed gradual and progressive weight gain over 15 years time and loss of ambulatory independence.
- Significant past medical history included deep venous thrombosis (DVT), chronic bilateral hydronephrosis (Figure 1).
- Examination revealed a morbidly obese female with: labored breathing; rotund, distended, tender, and cellulitic-appearing abdominal wall with lichenification of the overlying skin; and bilateral lower extremity edema worse on the left.
- Ultrasound of lower extremities showed left femoral and popliteal DVTs.
- Computed tomography revealed a massive > 60 cm intra-abdominal mass with bilateral hydronephrosis (Figure 1).

Operative exploration amongst Gynecologic-Oncology, General Surgery, and Plastic & Reconstructive Surgery Services (Figure 2):
- Large volume resection in both horizontal (90 x 20 cm) and vertical (60 x 20 cm) vectors
- Extirpation of massive > 60 cm, 140 pound ovarian mass (Figure 3)
- Completion hysterectomy, bilateral salpingo-oophorectomy, omentectomy, peritoneal stripping, bilateral inguinal lymphadenectomy, and appendectomy
- Excision of severely attenuated abdominal wall fascia and reconstruction of posterior rectus sheath with an inlay biologic uncoated mesh followed by an overlay of biologic coated mesh (Figure 4)
- Complex closure of vertical and horizontal skin components over drains (Figure 5)

FIGURE 1: CT of abdomen & pelvis revealing large mass
FIGURE 2: Pre-operative photograph prior to tumor removal
FIGURE 3: Intraoperative photograph of tumor removed
FIGURE 4: Redundancy and attenuation of abdominal wall fascia after tumor extirpation
FIGURE 5: Post-operative day 2 result

- Post-operatively, patient remained intubated and monitored in the intensive care unit due to hemodynamic lability. On post operative day 20, she was transferred to a rehabilitation facility.
- Pathology revealed a stage IA grade 2 mucinous adenocarcinoma of the ovary.
- No evidence of metastatic carcinoma
- Tumor weight and dimension: 140 pounds; 63 x 41 x 40 cm
- Left adnexal specimen positivity for immunohistochemical markers CK7 and CK20
- No dehiscence or wound healing problems arose
- She has returned to her daily activities
- No adjuvant therapies (chemotherapy or radiation) were required

RESULTS

- She was followed as an outpatient by all involved surgical services. Images have been included from her 3 month and 12 month visits.
- Post-operatively, patient remained intubated and monitored in the intensive care unit due to hemodynamic lability. On post operative day 20, she was transferred to a rehabilitation facility.
- Pathology revealed a stage IA grade 2 mucinous adenocarcinoma of the ovary.
- No evidence of metastatic carcinoma
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DISCUSSION

- A review of the literature demonstrates that primary ovarian mucinous adenocarcinomas have been described, but most reported range larger in size (> 10 cm). To our knowledge, this case represents one of the larger primary ovarian mucinous adenocarcinoma extirpations to date.
- The patient’s positivity for CK7 and CK20 confirm the diagnosis of primary ovarian mucinous adenocarcinoma, while her normal levels of CEA and CA-125 signify her clinical remission.
- As expected, recurrent or metastatic disease is associated with poorer prognoses and shorter 5-year survival expectations. As such, it is our hope that presenting this experience will raise awareness of this spectrum of diseases and allow for earlier diagnoses and treatments, as well as exemplify the virtues of a team-based approach in the successful reconstruction of the abdominal wall.

REFERENCES:


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Adrenal Cortical Carcinoma Arising from an Adrenal Adenoma in a Young Adult Female

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Abstract

Introduction: Adrenal incidentalomas are common findings on imaging. Although most adrenal lesions are benign, 15% of patients with adrenocortical carcinoma (ACC) are diagnosed after an incidental adrenal finding. Size and imaging characteristics are used as predictors of malignancy while endocrine testing evaluates functional status. The risk of a small, benign-appearing non-functional adrenal mass becoming malignant is low. Therefore, adrenal lesions typically undergo surveillance for no more than two years in patients with stable findings and no history of malignancy.

Methods: The following case presentation describes a young adult female with a benign left adrenal adenoma who was found to have ACC 7 years later.

Results: A 27 year-old female was found to have 2.7 x 2.1 cm adrenal incidentaloma deemed benign by size and computed tomography (CT) density characteristics. Follow up imaging was not performed until seven years later for symptoms of acute abdominal pain radiating to left flank. A non-contrast CT scan revealed a heterogeneously dense left adrenal lesion with density measurements 90% of malignant tumors are >4 cm. The non-contrast CT scan obtained in the Emergency Department revealed a heterogeneously dense left adrenal lesion measuring 6.2 cm in greatest dimension and she was referred to the Surgical Oncology Clinic. Subsequent CT of the abdomen and pelvis with IV contrast revealed a 5.0 x 6.2 cm left adrenal mass. Portal phase density was 67 HU with washout seen at 15 minutes with HU of 42. MRI of the abdomen with adrenal protocol showed a 4.7 x 5.9 cm enhancing left adrenal mass with a differential diagnosis of pheochromocytoma, ACC, and metastatic disease. Biochemical workup was unremarkable aside from elevated total/free testosterone of 124 ng/dl and 17.2pg/mL, respectively. Based on interval size increase with indeterminate density, surgical resection was recommended. The patient underwent a robotic assisted laparoscopic left adrenalectomy and had an uneventful post operative course. Surgical margins were uninvolved with distance to closest radial margin of 1 mm. Immunostain for Ki-67 showed 92%, important to determine malignant potential. Since surgical resection remains the definitive treatment, early detection is a critical factor.

This case challenges the recommendations for surveillance of benign lesions.

Discussion

• Surveillance of a nonfunctioning adrenal mass relies on the distinction between malignant vs benign characteristics
• A traditional predictor of malignancy includes size, where the risk of ACC is less than 2% in tumors under 4 cm vs. 25% if greater than 6 cm
• Imaging using adrenal protocols with IV contrast are also important to determine malignant potential
• Although this patient did not receive follow-up imaging after her adrenal adenoma diagnosis in 2011, this likely developed well after the recommended 2-year follow-up for benign lesions given the aggressive pathology found during surgical resection
• Since surgical resection remains the definitive treatment, early detection is critical.

References

An Investigation into the elderly population’s understanding of code status

Margaret Galatioso BS, Yuan Stevenson MD, Laura Mitchell, CRFNP, Stefani Tsirgottis AGACNP, Francoise Vermeylen MS, Andrew Trecartin MD, Robert Behm MD, FACS

Guthrie Clinic

Background
The average age of ICU patients in our rural level II trauma center has increased the last several years. Unfortunately, it seems the trauma surgeon is frequently the first person to discuss code status with these patients who often struggle in the ICU only to succumb weeks later but not before putting a family through a difficult series of decisions and utilizing precious ICU resources.

Hypothesis
Code status discussions are not occurring in our outpatient clinics due to a lack of time by the primary health care providers (HCP).

Methods

Patients over the age of 70 within our health network and who have seen a HCP within the last year were identified. Patients randomly received a questionnaire in the mail pertaining to their knowledge regarding code status. Patients were divided into groups based on age: 71-75, 76-80, 81-85, 86-90, 91-95 and >95. To adequately power the study, 264 returned questionnaires (44 per age category) were required.

In addition, the providers who care for the patients queried where surveyed using an electronic survey engine distributed through our institutional email. These providers were selected based on specialty which included surgery, family practice, internal medicine and any associated medical subspecialties. Both surveys were anonymous and voluntary.

Results
A total of 876 patient questionnaires were sent out (438 male and 438 female) with 297 responses. Eight surveys were incomplete and therefore excluded leaving 289 surveys to be evaluated. We found only 35% of patients over age 70 have discussed code status with a HCP. Comparing all age groups using a logistic regression model controlling for gender, age over 95 had both a significantly higher rate of having code status discussions (p<0.015) and establishing a code status (p<0.001). When controlling for age, females had a significantly higher rate of being familiar with code status (p=0.002) having discussions with HCP (p=0.039) and establishing code status (p=0.001).

Discussion
Despite the average age of mortality being 75 years old in our region and providers feeling code status discussions should occur with patients under age 60, we don’t see a significant increase in providers discussing code status over age 70 have discussed code status with a HCP. Over 70% of providers feel these discussions should be initiated in patients under age 60.

References

Let’s Talk:
An Investigation into the elderly population’s understanding of code status
RESULTS
Outpatient evaluation ultimately demonstrated improved sensation and wrist function. Radiographs at four months revealed consolidation of the mid-carpal fusion. Wrist extension and flexion were an 80 degree arc. He returned to work as a truck driver.

DISCUSSION
We present a patient that suffered a trans-scaphoid, trans-capitate perilunate dislocation in setting of a prior scaphoid nonunion and SNAC wrist. X-rays revealed a greater arc injury that transmitted through a scaphoid nonunion displacing screw from proximal pole of scaphoid causing a captiate fracture. Acute wrist salvage was performed by means of scaphoid and triquetrum excision combined with a capitolunate fusion. Ultimately, patient regained 80 degrees of wrist flexion/extension, full digital flexion, and returned to work performing all previous duties. We have demonstrated wrist salvage in a devastating injury that has historically poor outcomes. It is our hope that reporting our experience will raise awareness of primary fusion as a viable option of treating perilunate injuries with associated arthritis.

ABSTRACT
Perilunate dislocations can be devastating injuries with data showing mixed outcomes. When occurring with pre-existing post-traumatic circumstances, the treatment of perilunate injuries becomes even more complicated. In this report, we present a unique case of trans-scaphoid, trans-capitate perilunate dislocation in the setting of a prior scaphoid open reduction internal fixation. A primary partial wrist fusion was performed and the patient went on to achieve an exceptional functional recovery.

CASE REPORT
59-year-old male fell onto outstretched hand, subsequently developing wrist pain/deformity and acute median nerve symptoms. • History of previous scaphoid ORIF 20 years prior • Radiographs revealed trans-scaphoid, trans-capitate perilunate dislocation with SNAC wrist, where the greater arc of energy transmitted through un-united scaphoid and displaced the screw from proximal pole. At time of surgery, findings included a fractured capitate with mid-carpal arthrosis and non-union, sclerotic scaphoid with displacement of screw from proximal pole of scaphoid. • Wrist salvage procedure was planned to be performed primarily. • Secondary to the presence of a proximal capitate fracture and concomitant mid-carpal arthrosis, a mid-carpal arthrodesis was favored over proximal row carpectomy. A midcarpal length discrepancy existed between the triquetral-hamate column and the capito-lunate column. Therefore, the remaining shortened capitate created certain challenges in terms of considering a standard scaphoid excision and 4-corner arthrodesis. As such: • Scaphoid and triquetrum were excised. • Shortened capitate was fused to the lunate using headless screw fixation along with autogenous distal radius bone graft. • Median nerve was decompressed.

IMAGING

Figure 1. Pre-operative lateral view of trans-scaphoid, trans-capitate perilunate dislocation.

Figure 2. Pre-operative PA view of trans-scaphoid, trans-capitate perilunate dislocation.

Figure 3. Intraoperative fluoroscopic views after reduction and primary partial wrist fusion.

Figure 4. Post-operative films at 4 months revealing consolidation of the mid-carpal fusion.
Introduction
Standardized operative notes have been shown to produce more complete documentation of intraoperative events with higher rates of completion than general dictated or written operative notes. Currently there is no standardized operative note that captures intraoperative events in a manner that allows clinical questions to be answered through consistent and complete retrospective data analysis.

Methodology
Our institution implemented procedure-specific standardized operative notes to capture the intraoperative events of four different surgical procedures: laparoscopic appendectomy, laparoscopic cholecystectomy, laparoscopic inguinal hernia repair, and Port-a-Cath insertion. The standardized operative notes consisted of 10-15 closed-ended and binary, yes or no questions that could easily be filled out by circulating nursing staff at the end of the procedure. Our electronic medical record system required that the standardized operative note be completed as the patient exited the operating room.

Results
From August 1, 2017 until the present, our institution completed 412 laparoscopic appendectomies, 662 laparoscopic cholecystectomies, 140 laparoscopic hernias, and 64 Port-a-Cath insertions. We were able to capture 100% of these cases using the procedure-specific standardized operative reports.

Conclusion
The standardized operative note provides a method of collecting intraoperative data that is readily available and can be utilized to answer clinical questions that ultimately will improve patient outcomes.
Validation of AAST Grading Scale for Bleeding Peptic Ulcer Disease: Minor Modification Improves Utility

Katelyn Young BS, Shayna Brindle MD, James Dove BA, Kenneth Widom MD, Denise Torres MD, Jeffrey Wild MD
Geisinger Medical Center, Danville, PA

Significance
• First study to assess AAST scale

Objectives
• Objective I: Assess applicability
• Objective II: Assess predictive capability
  • 30-Day Mortality
  • 30-Day Unplanned Re-Intervention
  • 30-Day Embolization or Surgery

Inclusion Criteria
• Age ≥ 18
• Admitted 2012-2017 to a single health system
• Bleeding gastric or duodenal ulcer

Exclusion Criteria
• Gastrojejunal ulcers

AAST Scale

Grade 1
No active bleeding and the following
• Clean ulcer base WITH heme + gastric aspirate

Grade 2
• Ulcer with heme staining of the base AND heme + stool

Grade 3
Any one of the following
• Ulcer > 2 cm
• Ulcer with visible clot AND melena

Grade 4
• Ulcer with exposed vessel WITH indolent hemorrhage AND melena or hematemesis

Grade 5
• Ulcer with exposed active pulsatile hemorrhage

Objective I: Applicability
N=117 patients

Original Scale
Unable to Grade 39%
Grade 1 13%
Grade 2 13%
Grade 3 14%
Grade 4 16%
Grade 5 5%

Modified Scale
Unable to Grade 0%
Grade 1 35%
Grade 2 13%
Grade 3 31%
Grade 4 16%
Grade 5 5%

Objective II: Predictive Capability

Multivariate Analysis
N=117 patients

30-Day Mortality

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<th>Original Scale, per increasing grade</th>
<th>Modified Scale, per increasing grade</th>
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<tr>
<td>Odds Ratio</td>
<td>1.60</td>
<td>10.98</td>
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30-Day Unplanned Re-Interventions

<table>
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<th>Original Scale, per increasing grade</th>
<th>Modified Scale, per increasing grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odds Ratio</td>
<td>1.47 [95% CI: 1.01 - 2.14]</td>
<td>1.55 [95% CI: 1.13 - 2.14]</td>
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</tbody>
</table>

30-Day Embolization or Surgery

<table>
<thead>
<tr>
<th></th>
<th>Original Scale, per increasing grade</th>
<th>Modified Scale, per increasing grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odds Ratio</td>
<td>0.98</td>
<td>1.47 [95% CI: 1.09 - 2.58]</td>
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</table>

Conclusion
• Modified Scale offers
  • Superior applicability
  • Superior prediction of number of unplanned re-interventions
  • Prediction of need for embolization or surgery

Tominaga et al, J Trauma 2018
Rib Fixation vs No Fixation: Is it Still Worthwhile After 72 Hours?
Katelyn Young BS, Mboutidem Etokakpan MD, James Dove BA, Kenneth Widom MD, Denise Torres MD, Jeffrey Wild MD
Geisinger Medical Center, Danville, PA

**Inclusion Criteria**
- National Trauma Data Bank
- Admitted 2008-2015
- Age ≥ 15 years
- 4 or more rib fractures

**Exclusion Criteria**
- Transfers
- Severe brain injury

**Question**
- Does late fixation still improve outcomes compared to non-operative management?

**Significance**
- Fixation shown to improve outcomes
- Late fixation portends higher morbidity than early fixation
- Some candidates are unable to undergo early fixation
- Utility of late fixation versus non-operative management unknown

**Univariate Analysis**

- **Demographics**
  - Age
  - Sex
  - Charlson Comorbidity Index
  - Tobacco Use
  - Insurance Status

- **Injury Complex**
  - Mechanism
  - Injury Severity Score
  - Glasgow Coma Score

- **Chest Wall Trauma**
  - Number of Rib Fractures
  - Flail Chest
  - Pulmonary Contusion
  - Hemothorax
  - Pneumothorax
  - Hemopneumothorax

- **Any Complication**
- **Pulmonary Complication**
- **Need for Tracheostomy**

- **Multivariate Analysis**

- **Mortality**
- **Morbidity**
  - LOS
  - ICU LOS
  - Vent Days

- **Conclusions**
- Fixation (late or early) reduced mortality risk
- Early fixation preferable to late
- Late fixation: increased morbidity risk

**National Trauma Data Bank**
- ≥ 4 Rib Fractures
- 140,926 Patients

**Inclusion Criteria**
- Early Fixation < 72 hours
- Late Fixation ≥ 72 hours

**Exclusion Criteria**
- No Fixation

**Results**
- Early Fixation: 2,780 (55.0%)
- Late Fixation: 2,270 (45.0%)
- No Fixation: 135,876 (96.4%)
- Rib Fixation: 5,050 (3.6%)

**Conclusions**
- Fixation (late or early) reduced mortality risk
- Early fixation preferable to late
- Late fixation: increased morbidity risk

**All intergroup comparisons: p<0.001**

**Odds Ratio [95% CI]**
- Mortality
  - No Fixation (ref)
  - Early Fixation: 1.99 [1.80 – 2.20]
  - Late Fixation: 1.90 [1.70 – 2.14]
  - No Fixation (ref): 0.80 [0.77 – 0.83]
  - Early Fixation: 0.87 [0.83 – 0.91]
  - Late Fixation: 0.74 [0.71 – 0.77]

- Morbidity
  - Pulmonary Complication
  - Need for Tracheostomy

**All variables controlled for in multivariate analysis**