Abstract #1

Surgical Potpourri I
Friday, April 7, 2017
1:10pm-1:20pm

Title

PROTHROMBIN COMPLEX CONCENTRATE REVERSAL OF COAGULOPATHY IN EMERGENCY GENERAL
SURGERY PATIENTS

Authors

Moustafa Younis; Mohamed Ray-Zack; Nadeem Haddad; Matthew Hernandez; Asad Choudhry; Martin Zielinski

Institution

Mayo Clinic

Background: Coagulopathy can delay or complicate surgical diseases that require emergent surgical treatment. Prothrombin
complex concentrates (PCC) provide concentrated coagulation factors which may reverse coagulopathy quicker than plasma
(FFP).We aimed to determine the time to operative intervention in coagulopathic emergency general surgery patients who received either PCC and/or FFP. We hypothesize that PCC utilization more rapidly normalizes coagulopathy compared to FFP.

Methods: Single institution retrospective analysis was performed on coagulopathic EGS patients during 2/1/2008 to 8/1/2016. Patients were divided into three groups 1) PCC alone 2) FFP alone and 3) PCC and FFP. The primary outcome was the duration from clinical decision to operate to the time of incision. Summary and univariate analyses were performed.

Results: Coagulopathic EGS patients (n=183) received the following blood products: PCC (n=20, 11%), FFP alone (n=119, 65%) and PCC/FFP (n=44, 24%). The mean (±SD) patient age was 71±13 years; 60 % were male. The median (IQR) Charlson comorbidity
index was similar in all three groups (PCC=5(4-6), FFP=5(4-7), PCC/FFP= 5(4-6), p=0.33). The mean (±SD) dose of PCC
administered was similar in the PCC/FFP group and the PCC alone group (2539±1454 units vs 3232±1684, p=.09). The mean (±SD) FFP units administered was greater in the FFP group compared to the PCC+FFP group (3.5±1.9 vs 3.0±2.5 units, p=0.03). The mean (±SD) time to incision in the PCC alone group was significantly lower than the FFP alone group (6.0±3.6 vs 8.8±5.0 hours, p=0.01).The mean time to incision in the PCC+FFP group was also significantly lower than the FFP alone group (7.1±3.6 vs 8.8±5.0, p=0.03). The incidence of thromboembolic complications was similar in all three groups, (p>0.05).

Conclusion: PCC, alone or in combination with FFP, reduced INR and time to surgery effectively and safely in coagulopathic EGS patients without an apparent increased risk of thromboembolic events, when compared to FFP use alone.

Abstract #2

Surgical Potpourri I
Friday, April 7, 2017
1:20pm-1:30pm

Title

THE AMERICAN ASSOCIATION FOR SURGERY OF TRAUMA (AAST) SEVERITY GRADING PREDICTS CLINICAL OUTCOMES FOR SKIN AND SOFT TISSUE INFECTIONS

Authors

Mohamed D. Ray-Zack MBBS, Matthew C. Hernandez MD, Moustafa Younis MBBS, Nadeem N. Haddad MD, Wyatt B. Hoch, Dylan S. Soukup, Martin D. Zielinski MD

Institution

Mayo Clinic (Rochester, MN)

Background: Skin and soft tissue infections (SSTI) are included in the AAST Emergency General Surgery grading system, ranging from simple cellulitis to necrotizing fasciitis and myonecrosis. The grading system for SSTI has not yet been validated. This study aims to assess whether the AAST grade corresponds with SSTI severity and important clinical outcomes.

Methods: Single center review of patients ≥ 18 years admitted with a diagnosis of SSTI during 2012-2016 was performed. Patients with surgical site infections were excluded. Patient demographics, Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score, AAST grade, and outcomes including operation type, duration of inpatient antibiotic therapy, hospital stay, and complications were recorded. Two independent reviewers evaluated each case using AAST grade definitions for cross-sectional imaging and operative criteria. Summary, univariate, and inter-rater agreement using the kappa statistic were calculated.

Results: There were 197 patients identified (mean ±SD age of 55±16 years, 56% male), of whom 41.8% underwent preoperative cross-sectional imaging (CT or MRI), and 79.2% underwent incision and drainage/debridement (I&D). Kappa coefficient comparing imaging and operative criteria for AAST grades was 0.70. SSTI culture for pathogenic bacteria included: negative culture (48, 24.4%), positive for single microbe (74, 37.6%), and polymicrobial (75, 38.1%). The readmission rate was 24.9% and 90-day mortality rate was 6.6%. Increased AAST grade was associated with higher LRINEC score, increased operative interventions, and greater need for critical care interventions (table 1). Increased AAST grade was also associated with higher Clavien-Dindo complication grades, prolonged duration of hospital stay and inpatient antibiotic therapy (fig1).

Conclusion: The AAST grade corresponds to important clinical outcomes and may allow the equitable comparison of outcomes between operators, hospitals and systems. Further study to assess the external validity of this AAST grading scale is necessary.

Abstract #3

Surgical Potpourri I
Friday, April 7, 2017
1:30pm-1:40pm

Title

DOES EXTRAPERITONEAL STOMA FORMATION REDUCE THE INCIDENCE OF PARASTOMAL HERNIA?

Authors

Skube SJ, Aziken N, Madoff RD, Gaertner WB, Melton GB, Kwaan MR

Institution

University of Minnesota

Background: Parastomal hernia is a common problem with multiple previously identified risk factors. The aim of this study was to assess potential risk factors in the development of parastomal hernia in patients who underwent transperitoneal or extraperitoneal stoma formation.

Methods: A retrospective review of all patients who underwent end ostomy at a single institution from 2008 to 2015 was performed. Each new ostomy creation was classified as a separate unit of analysis. Parastomal hernia was defined by either its presence on review of computed tomography (CT) imaging or by clinical documentation at a post-operative physical exam. All post-operative CT scans were reviewed by the study investigators. All clinic encounters with the operative surgeon as well as the patient's last encounter with any physician were reviewed for clinical documentation.

Results: The records of 236 end ostomies in 204 unique procedures were reviewed. Over half of the patients were female (59%). The average age was 56.7 (SD 15.2) years and the average body mass index (BMI) was 26.6 (SD 6.9). Post-operative CT scans at a median of 10.6 months (interquartile range 1.6-27.4) from surgery were available in 178 (74%) of cases. Overall, 50 parastomal hernias (21.2%) were found at a median follow up of 11.4 months (interquartile range 4.1-28.0). Fourteen (28%) of the hernias were identified by physical examination and 22 (44%) on the original CT report. No parastomal hernias were identified in 17 patients with an extraperitoneal stoma (0% vs. 22.8%; p=0.03) at a median follow up of 11.9 (interquartile range 2.4-27.3) months. Female sex, BMI 25-35, and transperitoneal stoma were significantly associated with an increased risk of parastomal hernia.

Conclusion: A significant proportion of parastomal hernias were not clinically detected by physical exam documentation in this study. In our experience, extraperitoneal stomas are associated with a negligible parastomal hernia rate at short-term follow up.

Abstract #4

Surgical Potpourri I
Friday, April 7, 2017
1:40pm-1:50pm

Title

THERAPEUTIC STRATEGIES FOR SEVERE AND SEVERE-COMPLICATED CLOSTRIDIUM DIFFICILE INFECTION.

Authors

Victor Vakayil M.B.,B.S; Reema Mallick M.D; Amanda Lord B.S; Patrick McGonagill M.D; Malavika Chandrashekar B.S; Osama Alsaied M.D; Wolfgang Gaertner M.D. FACS; Alexander Khoruts M.D; James V. Harmon MD, Ph.D, FACS

Institution

University Of Minnesota

Background: The management of severe and severe-complicated Clostridium difficile infection (CDI) is associated with high mortality rates up to 50% at 30 days. Total abdominal colectomy(TAC) remains the standard of care. However, novel therapeutic interventions including loop ileostomy with antegrade irrigation and fecal microbiota transplantation (FMT) appear to be promising alternatives.

Methods: Single center, retrospective review was performed to identify all patients with severe and severe-complicated CDI (from 2008 -2016) that underwent TAC or FMT. This yielded three cohorts: 1. Total abdominal colectomy alone (CO), 2. FMT alone (FMT), and 3. Initial FMT followed by total abdominal colectomy for refractory disease (FMTS). Patient demographics, history, comorbidities, clinical and laboratory variables, ATLAS CDI severity scores, and 30-day and 60-day mortality outcomes were analyzed.

Results: 5,150 patients were identified to have a CDI from 2008-2016 and 19 of these patients (CO-6, FMT-9, FMTS-4) were included in this study. Patient demographics and ATLAS CDI severity scores were comparable but co-morbidity profiles differed. The 30-day mortality rates for the CO, FMT, and FMTS groups were 33.3%, 22.2% and 25%, respectively, while the 60-day mortality rates for the CO and FMT groups increased to 50% and 33.3% ($p=0.097$, 0.312), respectively. The observed mortality rate (OMR) from the ATLAS score compared to the predicted mortality rate (PMR) was statistically significant for the CO group only (PMR 11% vs. OMR 50%, $p=0.002$). For the FMT and FMTS groups, there were no significant differences between OMR and PMR ($p>0.05$).

Conclusion: Patients who underwent surgery for severe and severe-complicated CDI had high mortality. Selective patients who underwent FMT had decreased 30- and 60-day mortality compared to surgery alone. Although these outcomes likely represent differences in disease-severity, FMT may impact outcomes if given before surgery. Despite our small sample size, these results merit further inquiry into the effect of early FMT in these patients.

Abstract #5

Surgical Potpourri I
Friday, April 7, 2017
1:50pm-2:00pm

Title

TRENDS OF INGUINAL HERNIA REPAIRS PERFORMED FOR RECURRENCE IN THE UNITED STATES

Authors

Brittany L Murphy MD, Daniel S Ubl MPH, Jianying Zhang MD, Elizabeth B Habermann PhD, David R Farley MD, Keith Paley MD

Institution

Mayo Clinic

Background: While recurrence following inguinal hernia repair (IHR) is an important clinical outcome, its rate has not been reliably established in the United States. We sought to determine the proportion of IHRs performed for recurrence in the United States as a trend over time.

Methods: We identified all patients age ≥ 18 who underwent IHR from three sources: the ACS National Surgical Quality Improvement Program (NSQIP) database from 1/2005-12/2014, the Premier database from 1/2010-09/2015, and an academic institution from 1/2005-12/2014. In all patient populations, we identified the incidence of primary and recurrent IHRs stratified by gender. Trends were analyzed for a decrease over time using a one-tailed Cochran-Armitage test.

Results: In the Premier database, 317,636 patients (91.2% male) underwent an IHR. The proportion of IHRs for recurrence decreased in males from 11.4% in 2010 to 10.5% in 2015 ($p<0.0001$); however, it remained constant in females (6.5% in 2010 to 6.7% in 2015, $p=0.46$). In the NSQIP database, 180,512 patients (90.2% male) underwent an IHR. There was no change in the proportion of IHRs for recurrence for either gender: 10.5% in 2005 and 11.2% in 2014 ($p=0.12$) in males and 6.2% in 2005 and 7.1% in 2014 ($p=0.11$) in females. Within our institution, 9,216 patients (90.7% male) were identified. In males, there was no change in the proportion of IHRs for recurrence: 13.3% in 2005 and 11.5% in 2014, $p=0.25$. In females the proportion increased from 1.3% to 12.0% over the study period, $p=0.006$.

Conclusion: The proportion of IHRs performed for recurrence in the United States between 2010 and 2015 in males decreased by 1% in one large national database. There was neither a clinical nor statistical difference observed for females. There was no change in the other large national database studied.

Abstract #6

Mini-Talks Session
Friday, April 7, 2017
3:15pm-3:20pm

Title

PERIOPERATIVE USE OF NONSTEROIDAL ANTI-INFLAMMATORY DRUGS AND THE RISK OF ANASTOMOTIC FAILURE IN EMERGENCY GENERAL SURGERY

Authors

Nadeem N. Haddad, MD, Brandon R. Bruns, MD, Toby M. Enniss, MD, David Turay, MD, Joseph V. Sakran, MD, MPH, MPA, Alisan Fathalizadeh, MD, Kristen Arnold, MD, Jason S. Murry, MD, Matthew M. Carrick, MD, Matthew Hernandez, MD, Margaret H. Lauerman, MD, and Martin D. Zielinski, MD

Institution

Mayo Clinic

Background: Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used analgesic and anti-inflammatory adjuncts. NSAID administration may potentially increase the risk of postoperative gastrointestinal anastomotic failure (AF). We aim to determine if perioperative NSAID utilization influences gastrointestinal anastomotic failure in emergency general surgery (EGS) patients undergoing gastrointestinal resection and anastomosis.

Methods: Post hoc analysis of a multi-institutional prospectively collected database was performed. Anastomotic failure was defined as the occurrence of a dehiscence/leak, fistula or abscess. Patients utilizing NSAIDS were compared to those without. Summary, univariate and multivariable analyses were performed.

Results: 533 patients met inclusion criteria with a mean (±SD) age of 60 ±17.5years, 53% male. There were 46% (n=244) patients utilizing perioperative NSAIDs. Gastrointestinal anastomotic failure (AF) rate between NSAID and no NSAID was (13.9% vs 10.7%, p=0.26). No differences existed between groups with respect to perioperative steroid use (16.8% vs 13.8%, p=0.34), or mortality (7.39 vs 6.92%, p=0.84). Multivariable analysis demonstrated that perioperative corticosteroid (OR 2.28, CI 1.04-4.81) use and the presence of a colocolonic or colorectal anastomoses were independently associated with anastomotic failure. A subset analysis of the NSAIDs cohort demonstrated an increased AF rate in colocolonic/colorectal anastomosis compared to enteroenteric/enterocolonic anastomoses (30.0% vs 13.0%, p=0.03).

Conclusion: Perioperative NSAID utilization appears to be safe in emergency general surgery patients undergoing small bowel resection and anastomosis. NSAIDs administration should be used cautiously in EGS patients with colon or rectal anastomoses. Future randomized trials should validate the effects of perioperative NSAIDs use on AF.

Abstract #7

Mini-Talks Session
Friday, April 7, 2017
3:20pm-3:25pm

Title

WIDE VARIATION AND OVER-PRESCRIPTION OF OPIOIDS FOLLOWING ELECTIVE SURGERY

Authors

Cornelius A. Thiels DO, MBA; Stephanie S. Anderson; Daniel S. Ubl MPH; Kristine T. Hanson, MPH; Whitney J. Bergquist, PharmD; Richard J. Gray MD; Helana M. Gazelka, MD; Robert R. Cima, MD; Elizabeth B. Habermann, MPH, PhD.

Institution

Mayo Clinic

Background: In an effort to minimize the contribution of prescription narcotics to the nationwide opioid epidemic, postoperative opioid prescribing guidelines have been developed. Minnesota recommends a maximum of 200mg oral morphine equivalents (OME) for postoperative pain in opioid naïve patients. We aimed to identify opioid prescribing practices across specialties and institutions.

Methods: Adults undergoing 25 common elective procedures 2013-2015 were identified from National Surgical Quality Improvement Program data from three academic centers in Minnesota, Arizona, and Florida. Opioids prescribed at discharge were abstracted from pharmacy data and converted into OME. Wilcoxon Rank-Sum and Kruskal-Wallis tests assessed variations.

Results: Of 7651 patients, 94.3% received opioid prescriptions at discharge. Of 7217 patients who received opioid prescriptions, a median of 450 OME (IQR 225-850) were prescribed. Median OME varied by sex (420 male vs 450 female, p=0.005) and increased with age (395 age 18-39 to 525 age 80+, p200 OME (81.5%), which varied across procedures.

Conclusion: The majority of patients were over-prescribed opioids. Significant prescribing variation exists that was not explained by patient factors. These data will guide practices to optimize opioid prescribing after surgery.

Abstract #8

Mini-Talks Session
Friday, April 7, 2017
3:25pm-3:30pm

Title

IMPACT OF NURSING STRIKE ON COLORECTAL SURGICAL OUTCOMES

Authors

Debbie Li MD MSc, Zachary Torgersen MD, Pamela L Burgess MD, Benjamin M Martin MD, Michael P Spencer MD, Christine C Jensen MD MPH

Institution

University of Minnesota

Background: During labor disputes resulting in a nursing strike, temporary staff are employed by the hospital. During a strike, patients may hesitate to undergo surgery due to fear of worse outcomes and surgeons may expect increased inefficiency in the operating room. We compared colorectal surgical outcomes performed before and during a nursing strike.

Methods: Patients undergoing abdominal surgery within a colorectal practice during a 6-week nursing strike at three metropolitan hospitals were identified. A prospectively maintained database was retrospectively reviewed to extract demographic, operative and outcomes data. Outcomes during the strike (group 2, 2016) were compared to a 6-week period one year earlier (group 1, 2015).

Results: A total of 128 patients were identified: 65 in group 1 and 63 in group 2. Mean age was 60 years (SD 16). The majority (85%) were ASA 2-3. There was no difference between groups in age, sex, or ASA class. Case mix was similar with no difference in volume of complex pelvic operations performed (22% vs. 16%, p=ns) or percentage of surgeries resulting in bowel anastomoses (74% vs. 71%, p=ns). There was no difference in operative outcomes including mean blood loss (66 ml vs. 81 ml, p=ns) or conversion to open operation (11% vs. 13%, p=ns). Mean operative time (154 min vs 158 min, p=ns) and mean non-surgical time in operating room (45 min vs 47 min, p=ns) were unchanged. Mean length of stay (LOS) was 5.8 days (group 1) vs 5.7 days (group 2) (p=ns). Postoperative 30-day outcomes were also similar, with no differences in readmission, reintubation, reoperation, leak, surgical site infection, urinary tract infection, pneumonia or death.

Conclusion: During a 6-week nursing strike, colorectal surgical volumes and case mix remained similar. Operating times, LOS, and 30-day outcomes were unaffected. These results may reassure patients and surgeons that surgery during a strike is safe.

Abstract #9

Mini-Talks Session
Friday, April 7, 2017
3:30pm-3:35pm

Title

USAGE OF AN EDUCATIONAL WEBSITE AS AN ADJUNCT TO A SURGICAL CURRICULUM: A DESCRIPTIVE ANALYSIS

Authors

Apram Jyot*, MBBS; Mohamed S. Baloul*, MBBS; Eric J. Finnesgard; Samuel J. Allen; Miguel A. Gomez Ibarra, MD; Eduardo F. Abbott, MD; Nimesh D. Naik, MD; Francisco J. Cardenas-Lara, MD; Becca Gas; Muhammad H. Zeb, MD; Rachel Cadeliña, MD; David R. Farley, MD

Institution

Mayo Clinic

Background: Successfully teaching duty-hour restricted trainees demands innovative learning opportunities. We developed an educational website as an adjunct to our current surgical curriculum and sought to describe how our learners utilized this newer “self-help" resource.

Methods: Website usage data (April 2015 - October 2016) was analyzed retrospectively using Piwik, an open source analytics platform. Descriptive statistics were calculated for content and user related variables.

Results: Our website houses 295 videos (80%), 51 interactive modules (14%), 14 educational documents (4%) and 7 flashcard tutorials (2%). The most popular content was videos, with an average of 104.6 views per video. The website had 48,794 views from 6,313 visits by 180 users - spending an average of 14±11 minutes. The most popular hour of the day was 8p.m. (7.4%), and Thursday being the most popular day (21%). Eighty-eight percent of users accessed the content beyond the homepage. Average visits peaked in relation to two components of our curriculum: a 340% increase one day before our biannual intern simulation assessments and a 160% increase one day before our weekly conducted Friday simulation sessions. Interns who rotated on the service of the staff surgeon who actively endorses the website had 193% higher average actions per visit. The highest clicks was on the home banner with weekly simulation session pre-emptive videos.

Conclusion: Self-directed usability of the website supplemented the educational needs of the trainees. The usage was found to be very specific to the learners' needs in terms of both content type and timing of use. It served as a heavily used adjunct to two of our curriculum components: the biannual assessments and weekly simulation sessions. One staff surgeon’s endorsement led to more robust usage. This effort encourages us to become more efficient educators by making concerted efforts to understand our learners and to develop content specifically targeting their needs.

Abstract #10

Mini-Talks Session
Friday, April 7, 2017
3:35pm-3:40pm

Title

URINARY TRACT INFECTION SENSITIVITIES IN AN INTENSIVE CARE SETTING: A POTENTIAL FOR NOVEL ANTIBIOTIC TREATMENT

Authors

Victor Vakayil MBBS;Samantha Saunders MPH, ;Jeana Houseman MHSA; Dawn England; Melissa Quinn PharmD; Kristine Mulier MS;Tracy T. Davido MD.

Institution

University Of Minnesota

Background: In ICU's, nearly all patients have urinary catheters and are at risk for catheter associated urinary tract infections (CAUTI's). Traditionally, prescribed IV antibiotics are demonstrating high rates of resistance and are ineffective choices of treatment. Since 2008, the Centers for Medicare and Medicaid Services no longer reimburse hospitals for the additional costs for patients who develop CAUTI. IV forms of antibiotics are more expensive than oral forms. In our institution, IV Ciprofloxacin is 12 times the cost of a tablet despite the oral from having 96% bioavailability. Other antibiotics evaluated demonstrate similar disparities between IV and PO dosing costs.We hypothesize in many cases of CAUTI, a less expensive oral antibiotic may be an appropriate initial treatment of choice. As most ICU patients have gastrointestinal (GI) access within 48 hours of admission.

Methods: A retrospective review of electronic patient charts data in a tertiary academic medical center's Medical and Surgical ICU patients was performed from January 2014 through March 2016. The data points included 1. Presence of CAUTI, 2. Causative Organism, 3. Presence of GI access and type (ie: Nasogastric (NG), post-pyloric (PPFT), jejunostomy (JT) or gastrostomy (GT) feeding tube, 3. Sensitivities of microorganism, particularly to oral agents.

Results: A total of 43 CAUTIs were diagnosed between January 2014 and March 31, 2016, in our Medical and Surgical ICUs. The most common causative organism was E.Coli with 16 events, but a wide variety of organisms were isolated. This is shown in the graph attached. Antibiotic sensitivity and resistance are shown in the attached bar graph. Sensitivities and resistance rates of various oral antibiotics(Levofloxacin, Trimethoprim/Sulfamethoxazole) are comparable to commonly used I.V antibiotics.

Conclusion: CAUTI's are a major source of patient morbidity and increased hospitalization cost. Use of oral antibiotics in patients with GI access may be an effective strategy to reduce cost.

Abstract #11

Mini-Talks Session
Friday, April 7, 2017
3:40pm-3:45pm

Title

MINI-LAPAROTOMY VS. PERCUTANEOUS TRANSHEPATIC INTRAPORTAL INFUSION: SAFETY AND COMPLICATION RATES DURING CLINICAL ISLET ALLOGRAFT TRANSPLANTATION

Authors

Victor Vakayil MBBS; Malavika Chandrashekar B.S.; Casey Yang MD; Joshua J. Wilhelm MS; Melena D. Bellin MD; Raja Kandaswamy MD; David E. Sutherland MD PhD; David Hunter MD; Bernhard J. Hering MD; James V. Harmon Jr. MD, PhD.

Institution

University Of Minnesota

Background: Assessment of the safety and complication rates of different surgical techniques helps to reduce the surgical risks involved in clinical islet-allotransplantation. Percutaneous transhepatic (PT) portal vein infusion and mini-laparotomy (MLap) mesenteric vein infusion are two techniques used at our institution. We reviewed the safety, complications, and technical aspects of the two techniques, with particular attention to the PT technique for tract closure that involves a "sandwich technique" of alternating coils and gelfoam.

Methods: We performed a retrospective chart review of 49 adult patients who underwent pancreatic islet-allotransplantation at our center. We analyzed and compared the demographics, clinical variables, peri-operative measures, and serious adverse event (SAE) associated with the PT and MLap groups.

Results: A total of 70 islet allotransplants (19 PT and 51 MLap) were performed in 49 recipients. Demographic, clinical, and perioperative variables did not differ between the two groups ($p>0.1$).No significant differences between duration of anesthesia or surgery for both procedures. The monitored anesthesia care (MAC) to general anesthesia (GA) conversion rates for the PT and MLap groups were 5.6% and 15.2%, respectively.Three SAE's occurred in the PT group: one case of symptomatic bleeding and two cases of cholecystitis. One SAE occurred in the MLap group: a non-incarcerated incisional hernia. A partial left portal vein thrombus was noted in the MLap;not considered a SAE. All SAE were successfully managed. The symptomatic bleeding in the PT group resulted from multiple punctures to the liver by the needle tip.

Conclusion: Both PT and MLap approaches are safe methods for clinical allogeneic islet cell transplantation. Although complications for both procedures were minimal, the MLap group had a significantly lower SAE rate ($p=0.02$) compared to the PT group at our institution. Though PT is considered less invasive, the MLap technique may reduce injury to the liver and permit direct surgical control of bleeding.

Abstract #12

Education Session
Friday, April 7, 2017
3:45pm-3:55pm

Title

SURGICAL TRAINEES' LAPAROSCOPIC SKILLS PERFORMANCE ON STANDARD AND ADVANCED VERSIONS OF A SURGICAL SIMULATION TASK: A CROSSOVER RANDOMIZED CONTROLLED TRIAL

Authors

Amro M Abdelrahman, MBBS; Bethany R Lowndes, PhD; EeeLN H Buckarma, MD; Becca L Gas, BS; Hunter J Hawthorne, BS; Melissa M Morrow, PhD; Mohamed S Baloul, MBBS; Denny Yu, PhD; David R Farley, MD; Susan Hallbeck PhD.

Institution

Mayo Clinic

Background: Current laparoscopic training may not provide the required complexity to differentiate who will succeed or struggle to perform laparoscopic surgery safely. This study aimed to differentiate residency training responsiveness of surgical interns using standard and advanced laparoscopic simulation tasks.

Methods: Surgical interns participated in the study during a biannual surgical assessment. At the beginning of their residency (baseline), participants were randomly assigned to start on regular peg transfer (rPT) or advanced peg transfer (aPT); six-minutes was the maximum time allotted for each task. Interns were reassessed for the same tasks 6-months later using a similar randomized crossover design. During residency, interns were allowed to train on rPT not with aPT. Participants self-reported their training on rPT after the second assessment. Performance scores using completion time, number of dropped and transferred triangles were normalized (0 – 100) for each participant. Paired t-tests were performed with $\alpha=0.05$.

Results: Twenty-five surgical interns completed the study (28% female; 60% general surgery residents; 84% right-handed). Participants completed rPT in 52% shorter time with 75% fewer errors and aPT in 30% shorter time with 167% more transferred triangles after 6-months of surgical training (Table1). Using the rPT, participants performed significantly better (p

Conclusion: Both standard and advanced laparoscopic tasks differentiated training responsiveness of surgical interns in multiple objective performance measures. The advanced task may add valuable complexity to laparoscopic assessment and training for surgical trainees during residency.

Abstract #13

Education Session
Friday, April 7, 2017
3:55pm-4:05pm

Title

RISK FREE SIMULATED ENVIRONMENT FOR ASSESSING THE PROGRESSION OF COLORECTAL FELLOWS TECHNICAL SKILLS

Authors

Yazan AlJamal, MBBS; Kellie Mathis, MD; Eric Dozois, MD

Institution

Mayo Clinic

Background: Evaluation of residents' surgical skill is generally performed by subjective assessment which has been shown poor reliability and validity. Because of the uncertainty of baseline technical competence of graduating residents, we designed a protocol to evaluate baseline and ongoing year-long technical competence using an objective structured assessment of technical skills tool.

Methods: At Mayo Clinic MN, we designed a CRS competence evaluation using an objective structured skills assessment using fresh frozen cadavers to assess baseline, mid-point and the end of the fellowship open and laparoscopic surgical skills in CRS fellows. Each operation was performed with the assistance of volunteer staff and surgical residents. No coaching was allowed or performed. Fellows were evaluated at the end of each procedure using an objective structured skills assessment form. Additionally, the fellows were evaluated throughout the year on the same five operations in the clinical setting.

Results: All fellows performed five operative procedures on fresh frozen cadavers. At the completion of each procedure, the evaluators filled the assessment form for each fellow. The fellows' mean scores in the five different operations at the three separate time frames were 72,94,100 for laparoscopic-right-hemicolectomy, 64,89,100 for laparoscopic-left-hemicolectomy, 71,99,100 for open-right-hemicolectomy, 71,98,98 for open-left-hemicolectomy, and 68,95,100 for LAR compared to their clinical assessments 87,97,100_68,92,99_78,99,100_86,98,98 and 80,95,100 subsequently.

Conclusion: All fellows had a significant technical skills improvement in both lab and clinical environments in the first half of the year. Our technical competency curriculum using fresh-frozen cadavers in a risk-free simulated environment provides our fellows the opportunity to perform complex surgical operations with no coaching. Additionally, this curriculum is an essential tool for self-evaluation and also helps to expose each individual's technical deficiencies to allow tailoring of their education in the clinical setting.

Abstract #14

Education Session
Friday, April 7, 2017
4:05pm-4:15pm

Title

3-D ANATOMY MODELS FACILITATES CROSS-SECTIONAL RADIOLOGICAL LEARNING FOR SURGERY RESIDENTS: A RANDOMIZED CONTROLLED CROSSOVER TRIAL

Authors

Francisco J Cardenas, MD; Nimesh D. Naik, MD; Eduardo F. Abbott, MD; David R. Farley, MD

Institution

MAYO CLINIC

Background: General Surgery trainees are expected to interpret cross-sectional imaging studies. Education often occurs without formal training on the subject. The benefit of 3-Dimensional (3D) anatomical models on radiology education has not been completely clarified. The aim of this study is to evaluate the impact of radiological anatomy lectures and the benefit of incorporating 3D models.

Methods: A randomized controlled crossover trial of 28 surgical interns was conducted. The participants were given an image-based radiological anatomy baseline test and later randomized into two groups (A and B). Both groups were exposed to a series of six 40-minute teaching sessions on focused radiological anatomy. Each session consisted of pre and post-session quizzes (immediate tests), a 20-minute lecture, and 10-minute exposure to either 3D anatomical models or surgical-skills tasks. During the first three sessions, Group A (n=14) and Group B (n=14) were exposed to 3D models and surgical-skills tasks, respectively; the groups crossed-over for the last three sessions. A post-test was administered 1 week after the last session.

Results: Baseline radiological anatomy knowledge was similar between Group A and B (Mean A=24.4±9.1; Mean B=26.0±10.6, p=0.71), both groups improved their Post-test scores (Mean=32.5±6.9, p<0.001 and 33.15±8.8, p=0.007, respectively). Participants exposed to 3D models and participants performing surgical-skills tasks obtained similar scores in their pre (Mean=2.6±1.6 and 2.7±1.5, p=0.736, respectively) and post-session quizzes (Mean=4.0±1.1 and 4.1±1.1, p=0.894, respectively). These two groups had a positive overall immediate improvement (Mean=1.4±1.4, p<0.001 and 1.3±1.6, p<0.001, respectively); however, this improvement was not different between the two groups (p=0.672).

Conclusion: The implementation of focused and interactive 20 minute lectures is an effective method to enhance PGY-1 residents' overall radiological scoring with immediate tests. While integrating 3D anatomical models to assist with comprehension of cross-sectional images had no additional benefit, long term retention must be assessed in 6 months for more complete analysis.

Abstract #15

Education Session
Friday, April 7, 2017
4:15pm-4:25pm

Title

IMPROVING RESIDENT COMMUNICATION IN DISCLOSING COMPLICATIONS: A QUALITATIVE ANALYSIS OF SIMULATED PHYSICIAN AND PATIENT SURROGATE CONVERSATIONS

Authors

Carolina F Branson, PhD; Jeffrey G Chipman, MD

Institution

University of Minnesota

Background: Discussing errors and complications with patients and their surrogates is an important skill for surgeons. We hypothesized that we could identify barriers to effective communication during simulated conversations between surgical residents and patients' families using discourse analysis (DA). DA is a qualitative methodology that uses observation and interviewing of recorded and transcribed interactions to interpret conversation.

Methods: In this IRB approved study, we viewed and transcribed videos from a Family Conference OSCE at a large teaching and research medical school that required the residents to disclose a medical complication to simulated family surrogate (SP). We used DA to identify communication patterns between the residents and the SPs that could be improved.

Results: We found that two of the methods the residents used to deliver the news (bluntness and evasiveness) could be improved, 43.7% of the residents used bluntness at some point, while 75% used evasiveness. In addition, 75% of the residents used neutral language when empathetic language was warranted. Finally, 62.5% of residents tried to direct the response of the SPs, which resulted in the SPs' defensiveness. These negative verbal behaviors led to a defensive communication environment.

Conclusion: Based on our findings, we recommend a communication-training program for residents that teaches better forecasting, conflict-management training, and communication skills in order to teach residents how to establish a supportive communication environment and to communicate empathy and improve patient care.

Abstract #16

Education Session
Friday, April 7, 2017
4:25pm-4:35pm

Title

A COMPARISON OF OBJECTIVE ASSESSMENT DATA FOR UNITED STATES AND INTERNATIONAL MEDICAL GRADUATES IN A GENERAL SURGERY TRAINING PROGRAM.

Authors

Becca Gas; Francisco Cardenas Lara, MD; Rachel Cadelina, MD; Suzanne Strubel; David Farley, MD

Institution

MAYO CLINIC

Background: Both United States (USMGs) and International medical graduates (IMGs) compete for and work together in categorical General Surgery residency positions. We sought to compare objective assessment data for both IMGs and USMGs in our program, as well as those who completed a preliminary year at our institution versus those who did not.

Methods: PGY 1-5 residents participate in biannual OSCE-style assessment events as part of our surgery training program. Assessment data were retrospectively reviewed and analyzed from 2008-2016 for PGY-1 (Olympics) and 2013-2016 for PGY 2-5 (X-Games) categorical residents.

Results: 89 categorical residents (59 USMGs and 30 IMGs) were included. The number of residents who completed biannual assessments was 77, 26, 27, 25, and 20 for the PGYs 1-5, respectively. 20 IMGs and 1 USG had a preliminary year of residency at our institution. IMGs scored higher than USMGs on summer and winter Olympics (53 vs. 35, $p<.001$; 68 vs. 60, $p=.032$), PGY-2 summer and winter X-Games (70 vs. 63, $p=.006$; 80 vs. 71, $p=.008$), and the PGY-4 winter event (86 vs. 76, $p=.001$). Categorical residents with a preliminary year scored higher during the first (59 vs. 37 for summer, $p<0.001$; 69 vs. 61 for winter Olympics, $p=0.05$) and second years of residency (74 vs. 64 for summer, $p=0.003$; 85 vs. 71 for winter X-Games, $p<0.001$). Junior residents (PGY-1 and 2) had greater improvement between assessments than their senior colleagues (PGY 3-5) (18 vs. 3, $p<.001$). There were no differences in performance for PGY-5s.

Conclusion: Residents with a preliminary year and/or were IMGs scored higher on initial assessments compared to trainees with no preliminary year and/or USMGs at our institution. While this advantage dwindled as residents progressed through five years of training, extra experience prior to starting categorical GS training is beneficial and measurable on OSCE-type assessments.

Abstract #17

CoC Paper Competition
Saturday, April 8, 2017
8:00am-8:10am

Title

TRENDS IN THE INCIDENCE OF INVASIVE LOBULAR AND DUCTAL CARCINOMA BETWEEN 2005 AND 2013: THE IMPORTANCE OF STRATIFICATION BY HISTOLOGY AND RACE.

Authors

Abigail R. Madans, DO
Richard T. Zera, MD, PhD
Rachel M. Nygaard, PhD

Institution

Hennepin County medical Center

Background: The significantly increased incidence rate of ILC compared to IDC in epidemiological studies prior to 1999 was linked to use of hormone replacement therapy. Since the use of HRT has decreased by more than half in the United States between 2001 and 2009, we would expect to see a sustained decrease in the incidence of ILC. The purpose of this study is to examine trends in the incidence rates of ILC, as compared to IDC, between 2005 and 2013.

Methods: SEER*Stat8.3.2 was used to calculate age-adjusted rates. STATA 14.2 was used for all statistical analysis of numbers and percentages of responses in each category.

Results: Age-adjusted incidence rate of ILC was 9.8 in 2005 and rose to 11.6 in 2013. The age-adjusted incidence rate of IDC in 2005 was 84.4 and rose to 92 in 2013. The annual percentage change increased significantly for both diagnoses, however, ILC rose at a higher percentage than IDC (18.4% versus 9.4%). African American women and Asian/Pacific Islander women saw the largest increases in the incidence of ILC, at 37.3% and 36.6% respectively. These populations of women also saw the highest rate of increase in IDC. Incidence trend data also varies significantly depending on the grouping of histological codes for ILC cancers within the SEER database. The incidence of mixed type cancers, for example, which consist of both ILC and IDC, decreased significantly over this time period, in contrast to the increased incidence of pure lobular carcinomas.

Conclusion: This data speaks against a primary role of hormone replacement therapy in the increasing incidence of ILC, but exposure to estrogen in other preparations or forms, such as birth control pills or environmental exposure, may still play a role. It also highlights how trends in breast cancer incidence will vary significantly when disaggregated into histological and racial categories.

Abstract #18

CoC Paper Competition
Saturday, April 8, 2017
8:10am-8:20am

Title

A NOVEL FRAILTY INDEX IS ASSOCIATED WITH SARCOPENIA AND INDEPENDENTLY PREDICTS SURVIVAL IN ADVANCED OVARIAN CANCER

Authors

Amanika Kumar, MD, Stephanie R. DeJong, MD, Michaela E. McGree, BS, Amy L. Weaver, MS, William A. Cliby, MD, Carrie L. Langstraat, MD

Institution

Mayo Clinic

Background: Frailty is a clinical state in which an individual has an accumulation of deficits predisposing them to poor healthcare outcomes. We aim to evaluate a frailty index (FI) for its association with outcomes in advanced ovarian cancer (OC) patients undergoing primary debulking surgery (PDS).

Methods: Patients undergoing PDS for stage IIIC/IV OC between 2003-2011 were included. Thirty items were extracted from routine pre-visit questionnaires and medical history into the FI for each patient . FI ranged from 0 to 1 and was calculated by summing these items and dividing by the total possible score based on non-missing items. Frailty was defined as FI ≥0.15. Associations were assessed using logistic and Cox proportional hazards regression.

Results: Of 535 patients studied, 78% had stage IIIC disease with mean age 64.3 (SD=11.3). Median FI was 0.08, and 131 patients (24%) were considered frail. In patients with computerized tomography available, FI was correlated with sarcopenia, ($r= -0.50$, $p<0.001$) .
Overall survival for the cohort was 39.6 months (m) with significantly shorter survival in frail patients (median OS 26.5 vs 44.9 m, $p<0.001$). Frailty was independently associated with death (adjusted hazard ratio: 1.43, 95% CI: 1.14-1.81) after adjusted for known risk factors: age, ASA score, stage, histology, and residual disease.
Frail patients were more likely to have Accordion 3+ complications (28.2 vs. 18.8%; odds ratio (OR): 1.70, 95% CI: 1.08-2.68), die within 90 days postoperatively (16.0 vs. 5.2%; OR: 3.48, 95% CI: 1.83-6.61) and experienced longer times to chemotherapy initiation (62.6d vs. 77.1%; OR: 0.50, 95% CI: 0.31-0.81). Each association was attenuated in separate multivariable analyses: adjusted OR: 1.57, 95% CI: 0.95-2.59; aOR: 1.89, 95% CI 0.89-4.00; and aOR: 0.64, 95% CI 0.37-1.10, respectively.

Conclusion: Frailty as measured by a deficit index is associated with poorer OS and surgical outcomes.

Abstract #19

CoC Paper Competition
Saturday, April 8, 2017
8:20am-8:30am

Title

CHEMORESISTANT ANAL SQUAMOUS CELL CARCINOMA: FIRST REPORTED SUCCESSFUL PDX MODEL WITH EX-VIVO AND IN-VITRO CHEMOSENSITIVITY TESTING SUGGESTING RESPONSE TO OXALIPLATIN AND IRINOTECAN

Authors

Matthew C Hernandez, MD; Lin Yang, PhD; Mark J Truty, MD, MSc

Institution

Mayo Clinic

Background: Anal squamous cell carcinoma (ASCC) is a malignancy without substantial treatment advances. Preclinical models are limited to transgenic mice and cancer cell lines. Patient derived xenograft models (PDX) allow amplification of precious primary patient tumor, accurately recapitulates patient tumor histology/phenotype, and highly correlates with outcomes. We aimed to generate the first reported preclinical PDX model of metastatic ASCC resistant to traditional chemotherapeutics and determine sensitivities for in-vivo testing.

Methods: PDX were generated from ASCC hepatic metastases obtained at surgery and successfully grown in NODSCID mice. All derived PDX tumors were histologically (H&E and IHC) compared to primary patient tumor by GI pathologists. Live tumor tissue slices were treated with variable combinations and increasing concentrations of cytotoxic agents. Live Tumor Slice Assay (LTSA) was performed using Prestoblue dye and 96-well plate reader. Tissue viability was measured using fluorescence intensity and normalized against viability of control (untreated) slices. Confirmation of LTSA was performed using 3D spheroid cell culture (organoids) and treatment with cytotoxic agents and cell viability was measured.

Results: Successful PDX were created in 5 mice with 100% engraftment. Histologic examination revealed highly accurate recapitulation of PDX to primary patient tumor. Single and combinatorial therapies displayed different LTSA sensitivities for ASCC PDX compared to reference untreated controls. LTSA viability (mean ±SD) single agent sensitivity was demonstrated for 5FU (0.59±0.1), paclitaxel (0.54±0.12), oxaliplatin (0.50±0.07), and irinotecan (0.55±0.18). Combinatorial therapies revealed increased tumor sensitivity, 5FU/oxaliplatin (0.47±.11) and 5FU/irinotecan (0.45±0.8). The LTSA experiments were confirmed using 3D spheroid cell cultures.

Conclusion: We have generated the first reported ASCC PDX that accurately recapitulates original patient tumor. Chemotherapy assessment using LTSA and cell spheroids demonstrate strong sensitivity to combinatorial therapies typically used for colorectal cancers. These data are being utilized for formal in-vivo preclinical PDX tumor testing and then tailored treatment for this specific patient with individualized oncologic therapy.

Abstract #20

CoC Paper Competition
Saturday, April 8, 2017
8:30am-8:40am

Title

TRENDS IN INCIDENCE, PATIENT CHARACTERISTICS, AND MANAGEMENT OF LOBULAR CARCINOMA IN SITU

Authors

Arthur T Johnson MD; Rachel M Nygaard PhD; Xu Guo MS; Richard T Zera MD, PhD

Institution

HCMC

Background: While the incidence of LCIS continues to increase, its role as an obligate precursor to invasive disease remains in dispute. As such, wide variations in treatment exist. Factors associated with aggressive treatment (mastectomy) or under-treatment (no surgery) following LCIS diagnosis were characterized.

Methods: Women with LCIS within SEER and NCDB databases were identified. Incidence data were gathered from SEER while other data were obtained from the NCDB. A logistic regression model was used to examine factors associated with treatment.

Results: The incidence of LCIS increased from 1.4 to 3.8 / 100,000 women from 1980 - 2012. 63,000 female patients with LCIS were identified within the NCDB. The majority with LCIS were between the ages of 40 and 59 years (66.8%, N=41,965) and white (87.5%, N=54,911). Most underwent surgical excision (71.0%, N=44,731), with 20.7% undergoing mastectomy (N=13,039) or no surgery (8.3%, N=5,230). Mastectomy increased 10%, and bilateral mastectomies increased 58%. Factors independently associated with higher odds of undergoing no surgery: age >40 yrs, black race, living in urban areas, and ≥1 prior malignancy. Factors independently associated with higher odds of undergoing mastectomy: private insurance, living >5 miles from the treatment facility, and ≥1 prior malignancy.

Conclusion: The incidence of LCIS continues to rise. Race, education, location of the treating facility, and presence of a prior malignancy contribute to decisions regarding treatment. Despite guidelines to the contrary, a significant portion of women diagnosed with LCIS underwent no surgery or mastectomy, including bilateral mastectomy.

Abstract #21

CoC Paper Competition
Saturday, April 8, 2017
8:40am-8:50am

Title

A VALIDATED NOMOGRAM TO PREDICT UPSTAGING OF DUCTAL CARCINOMA IN SITU TO INVASIVE DISEASE

Authors

Brittany L Murphy MD, Alexandra B Gonzalez Juarrero, Amy L Conners MD, Tara L Henrichsen MD, Santo Maimone IV MD, Michael G Keeney MD, Beiyun Chen MD PhD, Tashinga Musonza MD, William S Harmsen, Amy C Degnim MD, Judy C Boughey MD,Tina J Hieken MD, Elizabeth B Habermann PhD, Harsh N Shah, Sarah A McLaughlin MD, Barbara A Pockaj MD, James W Jakub MD

Institution

Mayo Clinic

Background: Approximately 20% of patients with a core needle biopsy (CNB) diagnosis of DCIS may be upstaged to invasive disease. Patients with invasive disease are recommended to undergo axillary nodal staging, most often requiring a second operation. We developed and validated a nomogram to preoperatively predict percent risk for upstaging to invasive cancer.

Methods: We reviewed 834 cases of pure DCIS on CNB who underwent surgery between 1/2004-10/2014. We evaluated imaging and tumor characteristics on CNB and used a multivariable model to create a nomogram to predict the risk of upstage from DCIS to invasive cancer. This nomogram was validated with an external dataset of 466 patients with DCIS on CNB between 11/1998-9/2016. An area under the ROC (AUC) curve was constructed to evaluate nomogram discrimination.

Results: The rate of upstaging to invasive disease was 118/834(14%). On multivariable analysis, grade on CNB, mass lesion on imaging, multifocal/centric disease, and linear dimension were associated with upstage to invasive disease, c-statistic 0.71(95% CI 0.66-0.77). For every 1cm increase in largest linear dimension on preoperative imaging, the rate of pathologic upstage increased by 20%(p=0.0001). A nomogram was constructed to calculate the preoperative predicted probability of upstaging. In the external validation dataset, 46/466(9.9%) patients were upstaged to invasive disease. Application of our nomogram in this dataset had nearly identical discrimination with a c-statistic of 0.71(95% CI 0.63-0.79). When estimates from the development model were applied to the validation dataset, 56 upstages were predicted and 46 were observed.

Conclusion: For patients with a CNB diagnosis of DCIS, a high-grade lesion on biopsy, mass lesion on imaging, multifocal/centric disease, and large linear dimension are risk factors for upstage to invasive disease. This validated nomogram may be used for preoperative assessment of risk of upstage to invasive disease and counseling patients regarding axillary staging at the time of definitive surgery.

Abstract #22

Video Session
Saturday, April 8, 2017
8:50am-8:57am

Title

ONE-STAGE TRANSANAL SOAVE PULLTHROUGH PROCEDURE FOR HIRSCHSPRUNG DISEASE

Authors

Elliot G Arsoniadis, MD; Steven J Skube, MD; Genevieve B Melton, MD, PhD; Mary R Kwaan, MD, MPH; Robert D Acton, MD

Institution

University of Minnesota

Background: Hirschsprung disease is a common pediatric colorectal problem. It results from the failure of ganglion cells of the myenteric plexus to migrate distally in the developing gastrointestinal tract. The result is debilitating constipation in the neonatal period. The Soave procedure is unique among other procedures developed to address Hirschsprung disease in that in addition to anastomosing functional proximal rectum or colon to the anus, a distal muscular cuff of aganglionic rectum is preserved. This allows for less pelvic dissection and decreased post-operative complications with urinary and sexual function.

Methods: Informed consent was obtained from the patient's parents. A one-stage transanal Soave pullthrough procedure was performed and recorded via video capture.

Results: This video outlines the preoperative workup of Hirschsprung disease and major surgical steps of the one-stage transanal Soave procedure.

Conclusion: The one-stage transanal Soave procedure is one of several standard ways to address Hirschsprung disease. Although this disease is most frequently seen in pediatric surgical practice, patients who have previously undergone Soave procedure, or other procedures meant to address Hirschsprung disease, may also present to colorectal surgeons in adulthood. Therefore, familiarity with the Soave pullhrough and other colonic pullthrough procedures to address Hirschsprung disease is advantageous for surgeons caring for these patients in adulthood.

Abstract #23

Video Session
Saturday, April 8, 2017
8:57am-9:04am

Title

RETROPERITONEOSCOPIC ADRENALECTOMY: NOVEL AND EXCELLENT OPTION FOR SELECT PATIENTS

Authors

Apram Jyot MD, Travis J McKenzie MD

Institution

Mayo Clinic

Background: Laparoscopic adrenalectomy is now accepted as the gold standard approach for a majority of adrenal neoplasms. Transperitoneal approach, although well established, has notable limitations, mostly related to substantial organ mobilization. Alternatively, the comparatively novel approach of retroperitoneoscopic adrenalectomy (RPA) which provides direct access to the retroperitoneum has not been very well defined in literature. Additionally, there remains much ambiguity regarding patient selection for RPA, which is the cornerstone to safely and successfully performing this procedure. By this video presentation, we attempted to provide: 1) a well-defined CT scan based criteria for patient selection to achieve best outcomes, 2) a detailed step by step procedural description from the unique patient positioning and trocar placement to the operative steps.
Delivering education with a combination of white board illustrations and subsequent retroperitoneoscopic video clips, we aimed to maximize understanding of this rarely performed operation.

Methods: Left retropeitoneoscopic adrenalectomy procedure was recorded including both the external and laparoscopic views. This recording was then edited in Final Cut Pro software to illustrate procedural steps. Voice-over and white board videos were then recorded with the staff surgeon who performed the procedure and were incorporated to the video. The final product was then uploaded our surgical educational website.
Video link:
https://www.dropbox.com/s/962fa9vj3slfcj2/Left%20Retroperitoneoscopic%20Adrenalectomy.mp4?dl=0

Results: This procedural video has been viewed 302 times since it was uploaded in May 2016.

Conclusion: Viewed by junior as well as senior residents in our program, this video was observed to bridge the knowledge gap and ambiguity surrounding RPA.

Abstract #24

Video Session
Saturday, April 8, 2017
9:04am-9:11am

Title

ANTEGRADE COLONIC ENEMA IN A CHILD WITH CHRONIC CONSTIPATION

Authors

Skube SJ, Arsoniadis EG, Melton GB, Kwaan MR, Hess DJ

Institution

University of Minnesota

Background: Results of the antegrade colonic (continence) enema (ACE) were first published in 1990. The procedure has been used in pediatric patients with congenital anomalies or a history of chronic constipation and fecal incontinence refractory to medical management as well as some adults with similar defecatory issues. The procedure allows for colonic washout and avoids the creation of a colostomy.

Methods: Informed consent was obtained from the patient's parents. A laparoscopic ACE operation was performed and recorded through a combination of laparoscopic video recording and additional video capture for the open portions of the procedure.

Results: This video submission outlines the major surgical steps of the ACE operation.

Conclusion: The ACE is used as an alternative to colostomy creation in patients with chronic constipation or fecal incontinence.

Abstract #25

Video Session
Saturday, April 8, 2017
9:11am--9:18am

Title

SURGICAL INSIGHT: AVOIDING TWO COMMON MISTAKES IN LAPAROSCOPIC CHOLECYSTECTOMY

Authors

Apram Jyot MBBS; Farley David MD

Institution

Mayo Clinic

Background: With less time in the operative theater and the doubling of medical knowledge every decade, duty hour restricted surgical trainees need innovative training opportunities. Aiming to educate the "Generation Y" trainees, we have developed a multi-faceted approach to education by coupling a hands-on simulation curriculum with a variety of audio-visual (AV) tools. These tools including procedural playlists, operative quizzes, surgical games, etc. are available 24/7 to the trainees via our surgical education website. One such tool is called Surgical Insight, which we aim to showcase on this platform.

Methods: Pre-recorded laparoscopic cholecystectomy video clips were evaluated for two errors: gall bladder perforation and cystic artery bleed. Two high resolution clips were edited using the Final Cut Pro software. An educational voice-over recorded by a staff surgeon was then incorporated. The final educational clip was placed on our surgical educational website.

Results: These clips have had 205 views since they were posted on our surgical educational website in January 2016.

Conclusion: This audiovisual presentation is offered in a unique format to help enable surgical trainees to critically look at and understand errors as they are committed. Seen through the eyes of a staff surgeon and voiced over with repetitive looks at the mistakes, we have found this sort of error based education is effective for our surgical residents. It puts forth a strong case for surgical videos being a uniquely malleable teaching tool.

Abstract #26

Surgical Potpourri II
Saturday, April 8, 2017
10:45am-10:55am

Title

OBSTACLES THAT IMPACT TREATMENT OF FECAL INCONTINENCE

Authors

Pamela L Burgess, MD; Ann Lowry, MD; Amy J Thorsen, MD; Christine C Jensen, MD, MPH; Sarah A Vogler, MD, MBA

Institution

University of Minnesota

Background: Fecal incontinence (FI) is a common problem significantly affecting quality of life. Advanced treatment options, including biofeedback (BF) and sacral nerve stimulation (SNS), are now available. Our objective was to determine what proportion of patients received advanced treatments and identify barriers to patient access to treatment.

Methods: A retrospective review was performed of patients seen by a large colorectal practice in a metropolitan area for FI from June 2012 to October 2015. Patient demographics, pelvic floor testing, treatment, follow up and survey data were collected. The Six Sigma process was used to analyze the data, identify barriers and develop a plan to improve the number of patients receiving advanced treatment.

Results: 2239 patients were seen for FI by 21 providers (mean 73 patients/month, 76.6% women). Only 259 (11.6%) received BF and 79 (3.5%) received SNS.
Patient attrition was significant, with only 52% seen for a second visit, 28% for a third and 16% for a fourth. Time from diagnosis to treatment averaged 117.8 days for SNS (57-332 days), and 126.1 days for BF (29-727 days). Three of the surgeons have an interest in pelvic floor disorders and perform SNS. Patients seen initially by these surgeons had fewer visits prior to receiving either SNS (1.50 vs. 7.79 visits for specialized vs. nonspecialized) or BF (1.73 vs. 6.77 visits), and were more likely to receive BF or SNS (>10% and >3% of patients seen, respectively).
Geographic proximity affected whether patients underwent treatment. No show and cancellation rates for BF were higher for patients who lived further away. Patients who lived closer to locations offering SNS were more likely to receive SNS.

Conclusion: Even when FI patients are seen by colorectal surgeons, very few receive advanced treatment options. Prolonged wait times, distance travelled and specialization of provider are obstacles to successful and timely treatment.

Abstract #27

Surgical Potpourri II
Saturday, April 8, 2017
10:55am-11:05am

Title

SARCOPENIA AND BODY COMPOSITION: CORRELATION OF PREOPERATIVE CT SCANS MEASURES AND PREOPERATIVE PATIENTS REPORTED OUTCOMES

Authors

Mohamed O. Mohamed, M.B.B.S., Naoki Takahashi, M.D., Christopher Welle, M.D., Michael Moynagh, M.D., Juliane Bingener, M.D.

Institution

Mayo Clinic

Background: Preoperative patients-reported outcomes (PRO) have shown to be a reliable tool to predict postoperative outcomes. Sarcopenia is another tool that is suggested to be a prognostic risk indicator of postoperative outcomes. We wanted to see if patient's body composition assessed using CT scan would correlate with preoperative-PRO and quality of life (QOL).

Methods: A retrospective review of our research database from REDcap was initiated and we identified patients with preoperative-PRO and a preoperative CT scan within 1 year from the date of the operation. We abstracted demographics, anthropometric measures, preoperative QOL, pain and fatigue scores, and preoperative CT scans. CT scans were analyzed using MatLab software to evaluate body composition. Skeletal muscle index (SMI) was calculated using total muscle area/height2. Linear correlation and ANOVA were used for analysis with $\alpha=0.05$.

Results: We identified 189 patients with preoperative PRO and CT imaging, 95 men and 94 women, with a mean age of 58±14 years, BMI 28.9±6 kg/m2 and height 170±9 cm. Mean muscle area was 137±35 cm2 for total abdominal muscles (TAM) and 73±19 cm2 for paraspinal muscles, and their mean attenuation were 35.4 and 39.1 Hounsfield units (HU), respectively. Mean SMI was 46.84cm2/m2. For all patients, preoperative pain scores strongly correlated with subcutaneous fat area (p-value 0.0096). Baseline QOL score significantly correlated with the mean-HU of TAM (p-values 0.0083), this correlation was also significant in obese patients (p-value <0.01).SMI did not correlate with any of the PRO measures overall; however it showed a clinically significant correlation with pain scores in obese patients. Patients with BMI<25, showed that preoperative fatigue and pain scores correlate with intramuscular fat content and mean-HU of TAM, respectively.

Conclusion: Preoperative-PRO showed a relationship with some of the body composition measures using CT scan. How strong the correlation is and if it predicts outcomes will have to be investigated further.

Abstract #28

Surgical Potpourri II
Saturday, April 8, 2017
11:05am-11:15am

Title

DOES THE QUANTITY OF PERI-ADRENAL FAT PREDICT A DIFFICULT LAPAROSCOPIC ADRENALECTOMY?

Authors

Muhammad H. Zeb, M.B.B.S. , Danae A Delivanis, M.D, Humza Y. Saleem, Michael R. Moynagh, M.B., B.Ch., Naoki Takahashi, M.D.3, Irina Bancos, M.D.2 William F. Young, Jr., M.D., Melanie L. Richards, M.D., Geoffrey B. Thompson, M.D., David R. Farley, M.D.,
Travis J. McKenzie, M.D.

Institution

Mayo Clinic

Background: It is anecdotally accepted that a greater quantity of peri-adrenal fat (PAF) may predict a difficult laparoscopic adrenalectomy. Furthermore, while fat redistribution can occur with Cushing syndrome (CS), it is unclear whether the quantity of PAF is greater in CS compared to patients without evidence of autonomous glucocorticoid production.

Methods: All patients who underwent laparoscopic unilateral adrenalectomy between the years 1994-2016 for benign neoplasms including: CS, subclinical CS (SCS), aldosteronoma (Aldo), and non-functioning (NF) adenoma. Patients who underwent adrenalectomy for adrenocortical carcinoma, pheochromocytoma, and those with bilateral adrenalectomy, and those without CT imaging to quantify PAF were excluded. PAF was quantified by CT modeling and groups were subdivided according to quantity of PAF as low vs high quantity (30 cm2/CT slice). Primary end-points included operative time (OT), estimated blood loss (EBL),need for conversion to open, morbidity utilizing Clavien Dindo scores, and length of hospital stay (LOS).

Results: We identified 228 patients(124 females, Mean age=51 years, range 22-75). PAF was >30cm2 in 135 patients, and 30cm2 had longer OT (103 vs 74 min, P=0.007); EBL, conversion to open, morbidity, and LOS were similar between groups. On subgroup analysis based on biochemical functionality (Aldo=140, CS/SCS=60, nonfunctioning=28), there were no differences between groups with regard to age, sex, BMI, and side of operation. PAF was similar between groups (Aldo=35cm2, CS/SCS=38cm2, NF=40cm2) (P=0.1). Patients who underwent adrenalectomy for CS/SCS had greater 30 day morbidity based on Clavien Dindo Score (Aldo=2, CS/SCS=6, NF=2) (P=0.001).

Conclusion: Quantity of PAF correlates positively with OR time but does not predict EBL, risk of conversion to open operation, morbidity, or LOS in patients undergoing laparoscopic adrenalectomy for benign adrenal neoplasms. Furthermore, quantity of PAF does not correlate with biochemical functionality among neoplasms producing aldosterone or cortisol. However, patients undergoing laparoscopic adrenalectomy for CS/SCS may have greater morbidity for alternative reasons.

Abstract #29

Surgical Potpourri II
Saturday, April 8, 2017
11:15am-11:25am

Title

TORADOL FOR PAIN CONTROL FOLLOWING BREAST SURGERY: IS THERE AN INCREASED RISK OF HEMATOMA?

Authors

Brittany N Nguyen, BS; Ruth J Barta, MD; Cherrie A Heinrich, MD

Institution

University of Minnesota Medical School

Background: Toradol is a nonsteroidal anti-inflammatory used with increased frequency due to its success in post-operative pain control and subsequent decreased need for narcotics. Its use has been limited in plastic surgery for fear of post-operative bleeding and hematoma formation. The purpose of our study is to investigate whether Toradol has an increased risk of hematoma formation in patients following breast surgery.

Methods: We performed a retrospective review of patients undergoing breast reduction or breast reconstruction between January 2012 and December 2014. We excluded patients who had the first stage of their breast reconstruction before January 2012. We compared the incidence of post-operative hematoma in patients who received toradol postoperatively to those who did not. Other risk factors such as chronic anticoagulation, aspirin, or coagulopathies were documented as well.

Results: Our preliminary results show a hematoma rate of 4.6% for all breast surgery. Of the patients who received Toradol, 7.7% developed a hematoma compared to 4.6% in patients who did not receive Toradol.

Conclusion: High rates of narcotic prescription to patients postoperatively has received increased attention in recent years. Aside from the risk of increased narcotic availability in the community, the side effect of nausea, puritis, and constipation delay patient recovery. Toradol is a controversial drug in post-operative pain control due to the potential risk of bleeding. The preliminary results from our study do not show a significant increase in hematoma formation in patients who received Toradol. Upon completion, our study will be the largest one to date investigating Toradol as a non-narcotic alternative for pain control in patients undergoing breast surgery. Our final data will shed light on its risk profile in hematoma formation.

Abstract #30

Surgical Potpourri II
Saturday, April 8, 2017
11:25am-11:35am

Title

PATIENT-REPORTED EXPERIENCE AFTER CARDIAC SURGERY: IDENTIFYING AREAS FOR IMPROVEMENT

Authors

Meghana R.K. Helder, Hartzell V. Schaff, Kristine T. Hanson, Cornelius A. Thiels, Joseph A. Dearani, Simon Maltais, Richard C. Daly, Elizabeth B. Habermann

Institution

Mayo Clinic

Background: Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a publicly-reported survey of patient experience with in-hospital care. HCAHPS directly influences Medicare reimbursement and can be used to guide practice improvement efforts. However, little information exists in cardiac surgery on how patients perceive their care and how patient experience might be improved.

Methods: Institutional HCAHPS surveys from patients who underwent coronary artery bypass grafting (CABG), open aortic valve replacement (AVR), transcatheter aortic valve replacement (TAVR), robotic mitral valve (MV) repair, open MV repair and replacement, double valves, and aortic repair and were discharged between 10/01/2012-09/30/2015 were reviewed. The primary outcome was the HCAHPS composite measure for global hospital rating, which was calculated using published top-box methodologies and dichotomized into high versus low. Multivariable logistic regression analysis evaluated the independent associations of variables with low global score. Key driver analysis was used to identified quality improvement targets.

Results: Among 1,315 patients, low global hospital scores were independently associated with low perceived overall health (fair or poor vs excellent, Odds Ratio [OR] 5.4, p=0.001), age 18-59 (versus ≥ 70, OR, 1.6, p=0.048), PLOS (OR 1.6, p=0.02), and robotic MV repair (versus open MV repair, OR 2.4, p=0.045). TAVR patients reported global scores similar to open aortic valve operations (OR 0.9, p=0.64). Overall key drivers of patient experience were care transitions and communication regarding medications. These measures are targets for quality improvement.

Conclusion: Overall key drivers of patient experience were similar for different surgical procedures, but the less invasive procedures, robotic MV repair and TAVR, were not independently associated with higher patient experience scores. Analysis of our institutional HCAHPS data for patients undergoing cardiac surgical procedures suggests that care transitions and communications regarding medications should be the primary targets of improvement efforts.