Session: Presidential Session

CLINICAL UTILITY OF A MOLECULAR CANCER CLASSIFIER FOR PRIMARY SITE IDENTIFICATION IN NEUROENDOCRINE TUMORS

J. Philip Boudreaux, Brianne A. Voros, Cody Gulizo, Ramcharan Thiagarajan, Robert A. Ramirez, Eugene A. Woltering

Background
Neuroendocrine tumors (NETs) vary significantly in their clinical presentation and biological behavior based on primary site of origin. In patients with metastatic NETs, identification of the primary tumor site is essential for clinical management and to determine prognosis.

Objectives
We sought to determine the clinical utility of a 92-gene panel assay in the surgical management of patients with metastatic NET of unknown primary site.

Methods
In this study, we reviewed patients with a metastatic NET of unknown primary site who were evaluated with a 92-gene panel assay (CancerTYPE ID, Biotheranostics, Inc., San Diego, CA) as part of routine care. Demographics, pathology, and treatment data were collected. Based on the assay prediction, patients were further evaluated with surgical exploration, endoscopic procedures, and/or imaging. Predictions were classified as "correct" if confirmed on further evaluation or "incorrect" if the primary site was identified in a different location or could not be found where predicted.

Results
Results of the 92-gene panel assay were reported in 150 patients. The assay prediction of GI carcinoid was correct on further evaluation in 88% of patients. The assay was correct in less than half of patients when islet cell carcinoid (47%) and lung carcinoid (40%) were predicted. In 50 patients (33%) with incorrect assay predictions, the primary tumor was identified in a different location on surgical exploration (14%), endoscopic procedure (6%), or imaging (4%). The remaining 38 patients (76%) underwent extensive evaluation in attempts to identify their primary tumor (Table 1).

Conclusion
In this study, we determined that a 92-gene panel assay may be useful in patients with metastatic NETs of unknown primary site. A prediction of GI carcinoid may provide guidance for clinicians, especially surgeons, in identifying the primary tumor while predictions of islet cell and lung carcinoid require more extensive evaluation.

Session: Presidential Session

DEHYDRATED HUMAN AMNIOTIC-CHORIONIC MEMBRANE SHEETS PREVENT INCISIONAL HERNIA FORMATION

C Short, A Yoo, M Lopez, C Takawira, C Rogers, K Islam, P Greiffenstein, I Hodgdon, F Lau

Background
The incidence of post-laparotomy incisional hernias (IH) averages 12% and in high risk patients can be as high as 73%. Primary and secondary prevention strategies include mechanical repair with mesh; however, this is associated with serious post-operative complications. Previous studies have utilized growth factors to augment fascial healing and prevent IH in animal studies; however, difficulties underlying these methods include proper dosing and timing.

Objectives
To test a biologic method for primary prevention of incisional hernias (IH) in a double-blinded, prospective randomized controlled trial.

Methods
In this study we performed a double-blinded prospective randomized controlled trial in a validated and well-characterized rat incisional hernia model using two dHACM formulations. 400 gram male Sprague-Dawley rats were randomized to 1 of 4 experimental groups (N=10 per group): 1) micronized injectable dHACM, 2) saline injection, 3) dHACM sheets, or 4) no treatment. Midline laparotomy incisions were made and closed by a surgeon blinded to group assignment. A separate surgeon administered the intervention. The primary endpoint was IH formation and defect size. Secondary endpoints included abdominal wall tensile strength, systemic and local inflammatory markers, and collagen I / III ratios.

Results
Of the 4 groups, only the dHACM sheet group demonstrated a significantly lower rate of IH formation: 62.5% in the sheet group developed IH vs. 87.5% in the no treatment group ($p=0.039$). Additionally, dHACM sheet group hernia defects were on average 77% smaller. The dHACM injection group had an identical IH rate compared to the control saline injection group. Abdominal tensile strength, collagen I/III ratios, and early systemic inflammatory markers trended higher in the dHACM sheet group compared to the no treatment group.

Conclusion
dHACM sheets provided a prolonged release of growth factors at physiologic levels that reduced IH in this study. Randomized control trials in humans are necessary to further explore dHACM sheet hernia prevention.

Session: Presidential Session

REDUCING OPIOID OVERPRESCRIBING BY RECALIBRATING DEFAULT NARCOTICS DOSES WITH ELECTRONIC MEDICAL RECORDS

Ian Hodgdon, MD; Yulia Korshykava; Sara Karnes

Background

The increase in the availability of prescription opioids is a key contributing factor to the opioid epidemic in the United States. One specific area of interest is the prescription of opioids by the General Surgery and OR Departments, as recent evidence suggests that most postsurgical opioid prescriptions remain unused. Potentially, this contributes to opioid epidemic as it leads to an increased availability of narcotics in a community. Therefore, Identifying strategies to reduce overprescribing without affecting patient outcomes can limit misuse of narcotics.
In these settings at University Medical Center in New Orleans, residents and attending faculty have the ability to prescribe opioids in the electronic medical system according to a preset/default setting for the dose and number of pills a patient receives. Thereby, one possible method to modify the prescribing practices at this institution is to change the default opioid prescription settings.

Objectives

The objective of this study was to decrease the total amount of opioids prescribed in the post-operative setting without increasing the number of repeat visits.

Methods

The default setting in the current electronic medical record for the number of narcotics prescribed by the departments of General Surgery, OR Main, and OR Main SVCS was changed from 30 to 15 pills. For the following 6 months after this change was implemented, the number of Norco and Percocet pills prescribed by the General Surgery and OR departments were recorded. In addition, the number of patients serviced by the above mentioned departments was tracked using Medical Record Number (MRN) unique to each patient, as well as the total number of patient encounters. In order to determine if there was an increase in the follow up appointments after the decrease in prescription opioid medications was put in effect, the difference between the number of encounters and the number of MRNs was used to calculate percent of return visits.

Results

During the 6 month period following the decrease in the default setting to 15 pills per prescription, the average number of Norco and Percocet pills per prescription has decreased by 23.3%, from 31.2 (+/-1.81) to 23.9 (+/-1.66). Average number of prescriptions per month has increased by 10.7%, from 318.5 (+/-26.69) to 352.5 (+/-25.12). However, the average number of patients seen by the General Surgery and OR departments each month has also increased by 9.72% and the average percent of return visits was 2.86%, while the average percent of return visits before the implemented change was 3.64%. Projected yearly difference was calculated to be 30,680 pills or 90,000 dollars, based on the prices provided by in-hospital national retail pharmacy.

Conclusion

By reducing the default number of pills per prescription in the online medical system, we have demonstrated a decrease in the total number of prescribed opioids without increase in return patient visits. These findings are encouraging and suggest that with minimal investment of time and labor hospitals can significantly reduce the amount of prescription narcotics that they distribute to the communities.

Session: Presidential Session

RESEARCH PRODUCTIVITY AND NATIONAL INSTITUTES OF HEALTH FUNDING WITHIN ACADEMIC SURGERY: A GENDER PERSPECTIVE

Adib H, Ibraheem K, Hoof MA, Farag M, Haddad AB, Saparova L, Downing N, Kandil E, Killackey M

Background
Research output is integral to career advancement. Despite more women in academic surgery, advancement in academic rank is lagging.

Objectives
To examine gender representation, research productivity and National Institutes of Health (NIH) funding in academic surgery.

Methods
We included nine surgical specialties. Research productivity was measured by h-index, collected from Web of Science. Trends in NIH funding from 2007 until 2017 were collected from the online NIH research portfolio.

Results
3,988 faculty were included (79.3% men, 20.7% women). The highest and lowest distributions of women were observed in endocrine surgery and thoracic surgery, respectively. Of chairs, 90.1% were men, however, there was no difference between mean h-indices of men and women: 27.9±2.2 and 23.2±1.7 ($p = 0.37$), respectively. When stratified by academic rank, there were no significant gender differences in h-indices. The highest h-index of women was 13.9±0.9 in endocrine surgery and surgical oncology, and the lowest was 3.0±3.0 in thoracic surgery. Mean NIH funding of women is $2,630,361 compared to $8,101,405 for men. However, between 2007 and 2017, there was an increase in NIH funding by 63% for women compared to 27% for men.

Conclusion
Despite similar research productivity earlier in the academic ranks, advancement is less common for women. Furthermore, though men and women are equally productive in academic surgery, there remains a disproportionate gender representation in leadership positions.

Session: Presidential Session

THE THORACODORSAL FLAP: AN POWERFUL TOOL IN REVISION OF AUTOLOGOUS BREAST RECONSTRUCTION

Christopher Homsy, Taylor Theunissen, Alireza Sadeghi

Background

The use of perforator-based flaps in breast cancer reconstruction has evolved significantly and surgical techniques have undergone major refinements in the last thirty years, making them the flaps of choice in autologous breast reconstruction. However, flap complications may lead to significant breast shape deformity and significant patient dissatisfaction. Restoring breast contour may therefore require multiple revision procedures.

Objectives

to assess the role and evaluate the outcomes of the thoracodorsal artery perforator (TDAP) flap in partial and total breast reconstruction in patients with acquired contour deformities secondary to cancer reconstruction.

Methods

We conducted a retrospective chart review of all female patients undergoing a secondary breast reconstruction using the TDAP flap. All TDAP flaps were performed by the two senior co-authors (AS and TT). Patients demographics, risk factors, indications, operative details, complications, takebacks to the operating room, and follow-up length were all recorded. Inclusion criteria were patients who previously had undergone a mastectomy (unilateral or bilateral) with immediate or delayed implant-based, or autogenous reconstruction with one or more flaps. Patients that underwent breast reconstruction for non-malignant etiologies (e.g. hidradenitis) were excluded from the study. Complications were divided into major (partial or total flap necrosis, hematoma, and wound breakdown requiring operative management) and minor complications (infection, seroma, minor wound breakdown managed with local wound care)

Results

One-hundred and thirty-eight charts were reviewed between the years 2012 and 2018. One-hundred and thirty-three patients met the inclusion criteria. Mean age was 52.1. Mean body mass index (BMI) was 29.1. A total of 259 TDAP flaps were performed: 256 pedicled and 3 free flaps. The success rate was 98.8%. There were 3 flap losses (3 partial, and no total flap loss). Operable fat necrosis rate was 3%. Donor-site morbidity was low, accounting for a rate of only 1.2%

Conclusion

Our study is the largest series in the literature that highlights the utility of the TDAP flap in secondary breast reconstruction. The thoracodorsal artery perforator flap is a reproducible and reliable reconstructive tool that may be used to reconstruct breast deformities acquired from wound complications following both implant-based and autologous breast reconstructions. TDAP is a powerful flap, particularly in patients on whom other major reconstructive options were exhausted or unavailable.

Session: Presidential Session

FOUR-YEAR ANALYSIS OF A NOVEL MILESTONE-BASED ASSESSMENT OF FACULTY BY GENERAL SURGICAL RESIDENTS

A Hahn, J Schoen, A Birch, V Adolph, R Brown, A Rivere, George Fuhrman

Background
In response to our faculty's concerns about the quality and reliability of feedback from general surgery residents, we developed a novel faculty assessment tool.

Objectives
This study was designed as an interim analysis of the tool's effectiveness and discriminatory ability.

Methods
Our department's educational leadership developed milestones in 7 domains that were scored from 1 to 4, with each level representing an educational approach that ranged from ineffective (1) to ideal (4). Each postgraduate year (PGY) class meets annually to develop a consensus regarding each faculty member's effectiveness in each of the 7 domains: (1) operative supervision (2) operative teaching, (3) clinic/hospital supervision, (4) clinic/hospital teaching, (5) conference participation, (6) availability, and (7) overall contribution to the training program. We reviewed the results from the initial 4 years of this project. We also analyzed the annual national faculty survey administered by the Accreditation Council for Graduate Medical Education (ACGME) to evaluate faculty satisfaction regarding feedback during the same study period. Data were assessed using the Levene test for homogeneity, analysis of variance, and Wilcoxon-Mann-Whitney tests.

Results
Forty-two faculty members were annually evaluated by a range of 29-32 residents. Each resident PGY class assigned faculty milestone scores that varied across the 7 domains, demonstrating that faculty scores reflected variable opinions about each specific domain, while avoiding labeling an effective faculty member with all high scores and a less effective member with all poor scores. ($p<0.0001$). Milestone scores for a given faculty member differed across PGY classes, indicating that junior residents might evaluate a specific faculty member differently than senior residents. ($p<0.0001$).

Eleven faculty members received low scores of 1 or 2 on the overall contribution to training domain and 8/11 (73%) improved to 3 or 4 the following year.
Twenty core faculty members were included on the annual ACGME survey. The results from the study period on the ACGME anonymous faculty survey reflected enhanced satisfaction with resident feedback during the study period, improving from 68% to 88% compliance with ACGME standards and our mean program score improved from 4.1 to 4.4 compared to the national mean of 4.3 ($p=0.02$).

Conclusion
This milestone-based faculty assessment tool improves the quality of the feedback from surgical residents when evaluating faculty. When residents assign a negative statement to describe faculty educational effectiveness in a specific domain, performance improves. A milestone-based faculty assessment strategy should be explored on a national level.

Session: Surgical Potpourri I

BREAST REDUCTION IN OBESITY: WHAT IS THE RISK?

Christopher Homsy, Mychajlo Kosyk, Kristen Whalen, Allen Chen, Eric Wilde, Christopher Babycos

Background

Reduction mammaplasty to treat symptomatic macromastia is one of the most performed procedures in plastic surgery. Many patients with mammary hypertrophy have an elevated body mass index (BMI). Obesity, as measured by BMI has been associated with an increased risk of surgical complications, however results of studies have not been consistent.

Objectives

The aim of this study was to assess for any association between the degree of obesity and surgical outcomes following bilateral reduction mammaplasty.

Methods

A retrospective analysis of all bilateral breast reductions performed by a single board-certified plastic surgeon at Ochsner Medical Center in New Orleans, Louisiana for 2004 through 2018. Patient demographics (including age, ethnicity, comorbidities, and BMI) were collected from electronic medical records. Data pertaining to surgical complications including wound complications, nipple areolar complex (NAC) complications (partial or full necrosis), hematoma/seroma, infection, and keloid formation were all recorded. Excluded from the study were patients with unilateral reduction, history of breast cancer or radiation and patients undergoing a cosmetic reduction.

Results

A total of 1092 patients were included in the study. Patients were classified in 4 groups based on their BMI: BMI <30 (355 patients), BMI 30.0-34.9 (343 patients), BMI 35-39.9 (224 patients) and BMI >40 (170 patients). There was no statistically significant difference between different group with regards to NAC complications, major wound complications, hematoma/seroma, or infection. A higher rate of "any complication" was seen in the three obese groups compared to the non-obese (OR=1.75, 1.94 and 3.13 for groups 1, 2 and 3 respectively). When looked at complications individually, only minor wound complications were higher in all three classes of obesity compared to the non-obese ($p<0.0001$). These results did not change when analysis was adjusted for potential confounders (ethnicity, hypertension and diabetes). Finally, a finding of potential interest: White patients' odds of any complications were 2.3 times higher compared to African-Americans.

Conclusion

Reduction mammaplasty is associated with higher overall minor wound complications in all three classes of obesity compared to non-obese patients. However, the degree of obesity does not seem to increase the risk of major wound complications, bleeding or NAC complications. These results prove that obesity does not increase the risk of major complications, and obesity should not be looked at as a prohibitive risk for reduction mammaplasty. On the other hand, we hope that our study results help guide plastic surgeons to preoperatively counsel obese patients on their potential risk profile especially with regards to minor wound complications.

Session: Surgical Potpourri I

COST ANALYSIS OF A TISSUE ENGINEERING APPROACH TO LIMB SALVAGE

Charles Patterson, MD, Radbeh Torabi, MD, Ann McKendrick, Oren Tessler, MD, Charles Dupin, MD, Hugo St. Hilaire, MD, DDS, Frank Lau, MD, Yu-Wen Chiu, PhD

Background

Limb salvage (LS), often requiring combined orthopedic and plastic surgical reconstruction, is an expensive and risky undertaking. Fifteen years ago, estimates of healthcare costs associated with amputation or reconstruction of a limb-threatening injury averaged $500,000 and $160,000 respectively. Our group has developed a tissue-engineering approach (teLS) wherein dehydrated human amnion-chorion membrane (dHACM) is used to engineer stable soft tissue over critical structures; successful dHACM treatment is then followed by split-thickness skin grafting (STSG) to complete the reconstruction.

Objectives

Here we report preliminary cost analysis results from a 2-year, prospective, randomized clinical trial comparing our teLS against flap-based reconstruction (fLS).

Methods

In an Institutional Review Board-approved protocol, consecutive LS patients at 3 institutions were enrolled and randomized to either teLS or fLS. Line item charges were collected for these patients. Categories of charges and fees included professional fees, operating room, anesthesia, room & board, pharmacy, blood bank, and ancillary services. Statistical analysis was performed with one-tailed Student's t-tests.

Results

14 patients requiring LS were enrolled in the trial. Nine were randomized to the teLS while 5 were randomized to fLS. As this trial is ongoing, at the time of analysis, charges were available for 9 teLS subjects and 4 fLS subjects. Mean total charges for the teLS subjects was $79,385 vs. $442,195 for the fLS subjects (82.1% cost reduction, $p<0.0001$). The largest cost categories consisted of operating room and associated supplies: fLS group $230,754 vs. teLS group $29,425 (87.2% cost reduction, $p<0.0001$); room and board: fLS group $55,296.61 vs. teLS group $12,179.49 (78.0% cost reduction, $p<0.01$); anesthesia charges: fLS group $35,354 vs. teLS group $6,280.20 (82.2% cost reduction, $p<0.0001$) and intensive care unit charges: fLS group $27,916 vs. teLS group $2,502 (91.0% cost reduction, $p<0.0001$).

Conclusion

Our preliminary cost analysis suggests that teLS is exceptionally cost effective compared to conventional fLS. The cost savings are evident across every major cost category. Given that no flap-based clinical options are lost by attempting a tissue-engineering based approach, teLS should be evaluated as a first-line treatment option in healthcare systems where cost is a major consideration.

Session: Surgical Potpourri I

INVESTIGATING EXOSOMAL MIRNAS AND PROTEINS DERIVED FROM COLORECTAL TISSUE AND PLASMA IN THE PROGRESSION OF COLORECTAL CANCER

L Hellmers, J Sheng, D Guanzon, A Klinger, H Green, G Maresh, X Zhang, L Li, C Salomon, D Margolin

Background

Colorectal Cancer (CRC) is the third deadliest cancer worldwide with 135,000 new diagnoses annually, accounting for 8% of all new cancer cases. This can be attributed to late diagnosis as the 5-year survival rate for stage IV metastatic CRC is at approximately 14%. Fortunately, early diagnosis and treatment brings the survival rate to approximately 93%, so investigation on early-CRC diagnostic techniques is crucial. The past decade has seen many studies on extracellular vesicle (EV) and particularly exosome involvement in disease progression. There are various molecules transported by these nanovesicles, including micro RNAs (miRNAs), which are small non-coding RNAs that can alter gene expression in CRC by targeting mRNA. The miRNA profile of CRC has been shown to be dysregulated throughout the different CRC stages. However, current miRNAs associated with CRC suffer from high false-positive rates and thus cannot be used as a biomarker for tracking CRC progression. Therefore, this study aims to use a Next Generation Sequencing (NGS) approach which allows the sequencing of millions of small fragments of DNA in parallel to identify novel exosome miRNAs to track the progression of CRC.

Objectives

Our objective is to investigate colorectal tissue and plasma exosomal miRNAs and proteins throughout stages I-IV and identify potential biomarkers for early colorectal cancer diagnosis.

Methods

A total of 84 samples from 28 CRC patients from stage I to stage IV were studied (plasma, CRC tissue, and adjacent normal tissue, each n=28). Plasma exosomes were isolated via differential and ultracentrifugation and then quantified using the NanoSight NS500. Their morphology was determined by transmission electron microscopy. The presence of exosomal markers were assessed by Western Blot. We used the Illumina NextSeq 500 for NGS on the miRNA within exosomes. The protein profile of each patient sample set was determined using Mass Spectrometry (MS). We performed linear mixed modelling (LMM) to determine miRNA and protein profile changes across CRC stages for tissue and exosomes. Statistically significant differences in miRNA expression across CRC cancer stages, and between normal and CRC tissues was determined using likelihood ratio tests.

Results

A total of 425 significant miRNAs were found to be differentially expressed when comparing normal tissues to CRC tissues across stages I to IV. Also, analysis of circulating plasma exosomes revealed 42 significant miRNAs that changed across CRC stage progression. A total of 11 of these miRNAs were expressed in both tissue and exosomes. Gene target analysis showed that these 11 candidate miRNAs are involved in biological processes vital to the progression of cancer disease, such as metabolism, communication, angiogenesis, and apoptosis. Of this group, bioinformatics analysis identified hsa-miR-7975, and found that its expression was generally higher in cancer tissue versus adjacent normal tissue in early stages of CRC, and also potentially targets gene ACVR1.

Conclusion

We established that exosomes are smaller vesicles 30nm - 100nm in size with cup-like morphology that express exosomal markers TSG101 and CD9. We identified a specific set of miRNAs

dysregulated in cancer tissues as well as in the circulating exosomes. However, the miRNA expression levels differ between tissues and exosomes. Specifically, we identified miR-7975 which has been shown to target the ACVR1 gene and is a novel miRNA in CRC. Proteomic analysis was unable to detect the presence of ACVR1 protein in the samples, however, it identified 2 mutual proteins in exosome and tissue samples, one of which has not previously been reported to be involved with CRC. We suggest that screening for multiple exosome types and their content can potentially track the progression of CRC. The 11 identified miRNAs including novel miRNA miR-7975 could potentially be used as circulating biomarkers for CRC progression, and will be investigated in further validation studies.

Session: Surgical Potpourri I

TUMESCENT-BASED RADICAL EXCISION (TRE) OF HIDRADENITIS SUPPURATIVA: SAFE, FAST, AND EFFICACIOUS

Charles Patterson, MD, Radbeh Torabi, MD, Ann McKendrick, Jeffrey Barton, MD, Frank Lau, MD

Background
Radical excision is the only potentially curative treatment for hidradenitis suppurativa (HS), but barriers include bleeding, ill-defined surgical planes, and malodor.

Objectives
To simplify HS care, we developed a tumescent-based radical excision technique (TRE) wherein tumescent fluid infiltration allows safe, fast, and efficacious sharp excision of advanced HS lesions. We present a prospective cohort study using TRE of HS lesions.

Methods
An IRB-approved prospective cohort study of consecutive patients with stage III hidradenitis was performed. Patient demographics collected included age, gender, and BMI. Intraoperative variables collected included size/anatomic locations of the lesions, volume of tumescent, time for excision, and complications. Postoperative variables such as bleeding, readmission, and recurrence rates were recorded.

Results
Between April 2016 and November 2017, 37 patients underwent TRE of 117 anatomic sites with a mean follow up of 96 days. The average age was 35.5 years. 9 patients were male and 28 were female; average BMI was 30.3. Average area per wound was 94.5 cm2. Average amount of tumescent used per surgery was 2.07mL/cm2 disease. The average time to resect each area was 6.72 min with no significant relationship between lesion size and resection time. We observed no intraoperative complications and 2 postoperative complications (1.7%). There were no local recurrences.

Conclusion
TRE is safe, fast, and effective. Complication rates are low, average resection time was less than 7 minutes, with no disease recurrence at 3 months. The adoption of TRE for HS will benefit patients and surgeons alike.

Session: Mini-Talk I

DOES RIB PLATING IMPROVE PULMONARY COMPLICATIONS FOR PATIENTS WITH BLUNT CHEST TRAUMA?

C Anderson, A Smith, V Hendrix, C Guidry, R Schroll, C McGinness, J Duchesne, P McGrew

Background

Open reduction and internal fixation (ORIF), also known as rib plating, is being used to manage patients with multiple rib fractures with the goal of improving patient outcomes by decreasing ventilator days and pulmonary complications. Despite increasing use of this procedure in trauma centers, there is limited data on associated complications. Furthermore, there are no universally accepted protocols for rib plating, including the optimal time to perform this procedure.

Objectives

The purpose of this study was to determine if patients who underwent rib plating had decreased pulmonary complications.

Methods

A retrospective analysis of adults over the age of 18 with blunt chest trauma from 2012-2017 was performed. Patients with ORIF for multiple rib fractures were identified. Data recorded included: mechanism of injury (MOI), intensive care unit (ICU) length of stay (LOS), ventilator dependent days, hospital LOS, and injury severity score (ISS). Major pulmonary complications were defined as incidence of pneumonia and/or ARDS. Univariate analysis was performed to compare outcomes between the patients. A p value of <0.05 was considered to be significant.

Results

A total of 141 patient charts were reviewed and 92 patients (65.2%) underwent rib plating. The control and rib plating groups were similar in terms of baseline patient demographics and ISS. No difference in the incidence of pneumonia or ARDS was seen in patients who underwent rib plating ($p>0.05$). In addition, there was no difference in the average ICU LOS, hospital LOS, or ventilator dependent days between the groups ($p>0.05$). Average number of days from admission to rib plating in patients with ISS>15 was longer than for patients with ISS, may help improve patient outcomes is needed.

Conclusion

Rib plating is increasingly popular for management of patients with multiple rib fractures secondary to blunt chest trauma. This study found no improvement in major pulmonary complications in patients who had rib plating. Furthermore, patients who were admitted for a longer time period until intervention with rib plating had a higher incidence of major pulmonary complications. Based on these findings, further investigation into the optimal number of days to rib plating, including shorter time to intervene in patients with higher ISS, may help improve patient outcomes is needed.

Session: Mini-Talk I

EVALUATION OF THE INTEGRATED VASCULAR SURGERY CURRICULUM

Alykhan Lalani, MD

Background

Integrated residencies in vascular surgery began in the United States in 2007. Other than a minimum 18-month requirement for "core" surgery, there are few restrictions on the trainees' rotations.

Objectives

Our objective was to quantify and classify the training experiences of U.S. Integrated Vascular Surgery Residencies.

Methods

Of the programs participating in the 2019 match, complete rotation schedules and a follow-up survey were obtained from 50 of 54 (93%). Rotations were classified as vascular surgery (VS), core surgery (CS), or non-operative/critical care rotations (NO). CS included general surgery and surgical sub-specialties. NO included vascular lab, ICU, and other non-surgical specialties.

Results

The overall breakdown of rotation schedules was VS 60.8% (1751/2879 months), CS 30.1% (866/2879), and NO 9.1% (262/2879). The most common NO rotations were vascular lab 38% (19/50 programs), interventional radiology 20% (10/50), and cardiology 16% (8/50). Rotation schedule by post-graduate year is shown in figure 1. Total residency time broken down by rotation type is demonstrated in figure 2. In a follow-up survey, with regard to curriculum changes made to the original Program Information Form, cardiology was cited as the most frequently removed rotation and vascular lab was the most frequently added. Critical care and vascular lab were seen as the most important NO rotations and trauma surgery as the most important CS rotation. The most common barrier preventing program directors from expanding their resident complement was lack of funding. Even though integrated vascular trainees are eligible to spend 42 months of their residency in vascular surgery rotations, current schedules provide an average of only 30.17 (Range 25 – 44) months, including vascular lab.

Conclusion

Review of current curricula reveals that integrated vascular residents spend a significant amount of time on non-vascular and non-operative rotations. In light of the declining numbers of open vascular procedures, further studies are required to evaluate these practices and balance the appeal of offering a broad-based curriculum with the reality of training technical competent vascular surgeons.

Session: Mini-Talk I

FACILITATING OUTPATIENT (SAME DAY) MASTECTOMY UTILIZING MULTIMODAL PAIN CONTROL

Cameron T Coker, Radbeh Torabi, Channing S Hood, Adam Riker

Introduction

National data demonstrates an increasing trend towards outpatient mastectomy. Concerns of hospital costs, combined with the recent opioid epidemic, have resulted in methods to minimize inpatient admissions, while decreasing the use of oral narcotics. We present our retrospective study of outpatient mastectomy patients with the use of a novel regimen of multimodal pain management.

Methods

This is a retrospective review of consecutive mastectomies performed at a single, academic hospital between November,2015 and July, 2017. Our pain regimen was standardized to include 1 gram of IV acetaminophen intra-operatively, combined with a 4-level intercostal nerve block with liposomal bupivacaine and 30mg of IV ketorolac. All patients were discharged to home on the same day with acetaminophen with codeine. We recorded patient demographics, 30-day emergency department (ED) visit, re-admission rate and post-operative complications.

Results

72 patients underwent mastectomies, 11 (15.3%) bilateral and 61 (84.7%) unilateral, during the study period. Average follow up was 20.1 weeks, average age was 56.9 years and average BMI was 30.0. Five (6.9%) patients presented to the emergency room in the 30-day post-operative period, two (2.8%) patients required re-admission, one for a stroke and one for a wound infection. The other 3 patients presenting to the ED with pain, none requiring hospital admission.

Conclusion

A multimodal pain regimen allows for a safe and effective method for same day discharge mastectomy patients. Patient satisfaction and pain control is excellent, with limited post-operative need for stronger oral narcotic use.

Session: Mini-Talk II

EARLY OUTCOMES FOLLOWING USE OF AUTOLOGOUS FENESTRATED CUTIS GRAFTS IN HERNIA REPAIR

M Rajo, A Yoo, D Dooley, J Morrison, J Paige, M Cook, P Greiffenstein, I Hodgdon,

Background

Hernia repairs are among the most common operations performed worldwide. Mesh is a frequent adjunct, but carries significant risk, including seroma, infection, fistula formation, and need for subsequent reoperation. These contribute to worsening healthcare costs. The use of cutis autografts, previously a popular technique, has fallen to the wayside with the advent of mesh products, but does confer many theoretic and economic advantages over the use of biologic or synthetic mesh options.

Objectives

This single center retrospective review examines results following use of cutis autografts for various manners of abdominal wall and inguinal hernias.

Methods

Following institutional IRB approval, patients who underwent ventral or inguinal hernia repair with use of autologous tissue transfer between March 1 and August 31 2018 were identified. Demographic and outcome data was harvested for review. Primary endpoints were overall morbidity, incidence of surgical site infections, and hernia recurrence. 90 patients were included in the study. Mean follow up time was 2.6 months.

Results

Open and laparoscopic techniques were employed (88% vs 12%) to repair 90 hernias (90 ventral, 7 inguinal). Follow up data was available for 78 patients. There were 2 deaths during the study period. Overall morbidity rate was 26.7%. We noted 13 surgical site infections in 78 patients, 6 of which required only oral antibiotics. There were no instances of recurrence or need for graft excision.

Conclusion

Early outcomes following use of autologous cutis graft are similar to those reported in the literature regarding traditional mesh repair. To the best our knowledge, this is the largest retrospective review of patients who have undergone autologous cutis grafts to reinforce hernia repairs. Though further studies are needed, our early results suggest that fenestrated de-epithelialized cutis grafts may be a viable, cost effective mesh alternative in hernia repair surgery.

Session: Mini-Talk II

EVALUATION OF THE UTILITY OF THE THYROID IMAGING REPORTING AND DATA SYSTEM (TI-RADS) IN MALIGNANCY RISK STRATIFICATION FOR INDETERMINATE NODULES

Meghan E Garstka MD MS, Hosam Shalaby MD, Yasmine Rashad BS, Emad Kandil MD MBA

Background
The Thyroid Imaging Reporting and Data System (TI-RADS) was introduced to standardize the management of thyroid nodules based on ultrasound appearance.

Objectives
We seek to evaluate the utility of the TI-RADS system for malignancy risk stratification in indeterminate nodules.

Methods
This is a retrospective study of all patients with nodules presenting to the endocrine surgery clinic, October 2017 through March 2018. Inclusion criteria were fine-needle aspiration (FNA) results consistent with indeterminate nodules (Bethesda classification III, IV, V) who were assigned TI-RADS ultrasound scores. Demographics and available information on final surgical pathology results was analyzed.

Results
One-hundred fifty-six patients presented with nodules during the study period; of these, 46 met inclusion criteria with indeterminate FNA results (Bethesda III, IV, V) and had TI-RADS scores assigned. Mean patient age was 56.6 ± 12.9 years, and the majority were female (n=42, 91.3%) with a mean BMI of 35.0 ± 25.5 kg/m2 and mean nodule size of 3.3 ± 3.0 cm. One patient (2.2%) was assigned a TI-RADS score of TR3 (mildly suspicious), 22 patients (47.8%) were scored TR4 (moderately suspicious), and 23 patients (50.0%) were scored TR5 (highly suspicious). Only one patient (2.2%) in the TR4 category did not meet size criteria for follow up or FNA per TI-RADS. Twenty nine of the 45 patients (64.4%) meeting criteria for follow up or FNA per TI-RADS underwent surgery; of those patients, final pathology was benign in 19 patients (65.5% of surgeries, or 42.2% meeting criteria for FNA or follow-up per TI-RADS). Final pathology was malignant in 8 patients (27.6% of surgeries, or 17.8% meeting criteria for FNA or follow-up per TI-RADS).

Conclusion
Suspicious classification in the TI-RADS system (TR3, TR4, TR5) did not prove helpful in risk stratification of indeterminate thyroid nodules. Additional multi-institutional studies are needed to evaluate the utility of this system.

Session: Mini-Talk II

LIPOSARCOMA: THE EXPERIENCE OF A COMMUNITY CANCER CENTER

Mohamed Bakeer, MD; John Lyon, MD

Background

Liposarcoma (LS) remains the most common type of sarcomatous malignancy encountered with variable outcomes based on location, subtype, stage, and grade. Treatment is multimodal and often varies at different institutions.

Objectives

We reviewed our liposarcoma database in order to determine treatment patterns and outcomes within a single community cancer center.

Methods

This is a retrospective review of patients with LS who were managed at a single community cancer center from 1990-2016. Demographics, primary tumor characteristics, treatment, and outcomes were analyzed.

Results

A total of 51 patients were identified (median age 61 years and 56 % male). 27 patients had extremity lesions; 17 were intra-abdominal; 5 had truncal tumors, while 2 had lesions in the head and neck.

Median tumor size was 11.5cm for soft tissue lesions, 15.1cm for intra-abdominal. Median follow-up was 70 months. Among patients with soft tissue lesions, 35% were treated with surgery plus radiation. Additional treatment regimens included surgery alone (24%), surgery, radiation, plus chemotherapy (12%), surgery plus chemo (9%), radiation alone (9%), chemotherapy alone (2%). 9% received no therapy.

When comparing radiation versus no radiation for soft tissue sarcoma, the 5 year local recurrence for surgery with radiation was 33% compared to 14% without radiation. The 5 year recurrence free survival was 67% with radiation compared to 86% without radiation. The 5 year overall survival was 94% with radiation compared to 100% without radiation. The median overall survival was 8 years with radiation compared to 5.5 years without radiation.

When comparing radiation versus no radiation for intra-abdominal sarcoma, the 5 year local recurrence for surgery with radiation was 0% compared to 60% without radiation. The 5 year recurrence free survival was 100% with radiation compared to 40% without radiation. The 5 year overall survival was 67% with radiation compared to 56% without radiation. The median overall survival was 4.5 years with radiation compared to 4.5 years without radiation.

Conclusion

LS remains a heterogeneous disease with variable treatment strategies and outcomes. No single modality appears associated with superior outcomes. Optimal treatment strategies are difficult to assess at a single institutional center and warrants development of multi-institutional prospective databases.

Session: Trauma

AUTOLOGOUS SKIN CELL SUSPENSION REDUCES LENGTH OF STAY FOR BURN INJURIES

Blake Platt, MD, Columbe Castelucci, MD, Brian Herritt, MD, and Jeffrey E. Carter, MD, FACS

Background

Burn injuries remain a challenge in surgery with few innovations in recent decades advancing care, minimizing scar, or reducing length of stay (LOS). Autologous skin cell suspension (ASCS) is a recently FDA-approved regenerative medicine technology that significantly reduces donor skin requirements without compromise to healing outcomes or patient safety. At the point-of-care, the patient's own skin cells are isolated from a small skin sample and immediately re-applied without requirements for cell culture.

Objectives

We compared LOS and mortality of patients with severe burn injuries treated with ASCS to the American Burn Association National Burn Repository (NBR) which contains patient burn-injury data from over 90 burns centers from the last 10 years.

Methods

Eighteen patients were enrolled in 2 separate Investigational Device Exemption studies (IDE 15945 and IDE 13053) and treated with ASCS in combination with meshed autografts for full-thickness acute burn injuries. Age, percentage burn injury (TBSA), LOS, wound size, and mortality were reviewed and comparable data was extracted from the NBR. Predicted LOS was calculated after matching age and severity of injury. Descriptive statistics were calculated with unpaired t test to determine statistical significance.

Results

Mean age and burn injury was 41 and 22% TBSA, respectively. Over 20% of the patients in the population had concomitant trauma injuries which is double the national rate. Patients treated with ASCS had a mean LOS of 24 days compared to those in the NBR which had a mean LOS of 55 days. This resulted in 556 days of avoidable hospitalization with a 0% mortality.

Conclusion

Burn-injured patients at our burn center demonstrated a reduced LOS when compared to data from the NBR. ASCS is a novel autograft-sparing technology allowing for immediate point-of-care treatment and should be considered as an alternative to traditional autografting techniques for burn patients.

Session: Trauma

CHILD ABUSE IN PEDIATRIC TRAUMA: A 5-YEAR SINGLE-INSTITUTIONAL REVIEW

Chad Brady, Beatriz Briones, Piyush Kalakoti, Ashley Abrams, Navdeep S. Samra

Background

In the United States, child abuse is a major social and healthcare concern with 1 out of 4 children experiencing abuse during growing up. In 2015 alone, an estimated 683,000 children were victims of child abuse or neglect and 1670 incurred mortality secondary to abuse. Non-accidental trauma (NAT) is the leading cause of traumatic injury and death in these patients. The Centers for Disease Control and Prevention (CDC) 2012 report on child abuse noted infants, female gender, African Americans, and children belonging to lower economic strata families as having the highest rate of victimization. However, regional variation of pediatric trauma following abuse is common and therefore elucidating socio-demographics and injury profiling can aid in prompt diagnosis, prevent missed cases of abuse, and formulation of guidelines and implementing measures to prevent future abuse and promote child safety at a local-level.

Objectives

To investigate socio-demographic determinants and injury profile in traumatic child abuse.

Methods

In a retrospective, single-institutional series, eligible pediatric patients presenting to our center for management of trauma between 2012-2017 with an appropriate ICD-9 code corresponding to child abuse were included. Data on patient demographics (age, gender, race, location based on zip codes and the median household income based upon the zip code of residence), presenting injury and underlying comorbidities were extracted. A descriptive statistical analysis was performed.

Results

Overall, 72 pediatric patients presenting with a trauma concomitant with a previous history of child abuse were included. The mean age of the cohort was 21months (1.75 years) and 61% (n=44) were boys. Majority of the patients were African Americans (68%; n=49) while the remainder 29% (n=21) and 3% (n=2) were Caucasians and Hispanics, respectively. The average household income as determined by residential zip code was $35,661. Approximately, 24% patients (n=17) had an underlying comorbidity (18% boys; 6% girls). The most common presenting injury was long bone/pelvic fractures (35%) followed by intracranial injury (33.3%), facial and extremity bruising (20.8%), skull fracture (16.7%), cardiopulmonary arrest (8.3%), rib fractures (n=5; 6.9%), and intra-abdominal injury (5.6%). Approximately, 26% of patients presented with a combination of two or more of the aforementioned injury patterns. The most common zip code associated with traumatic child abuse was 71101 (recorded 7 times in our cohort), which is second to the lowest median household income associated with a zip code of residence ($21058).

Conclusion

The study finding suggests regional/local variation compared to the 2012 CDC report in terms of demographics and injury presentation. In our center, a high proportion of males (1.5 times more versus females) presented with trauma following abuse. Long bone/pelvic fractures and intracranial injury were the most common presenting injury and a third presented with a combination of multiple injury types. Understanding variation in the clinical presentation of injury types can aid local physicians in prompt identification of injuries related to abuse and implement measures for child safety. From a policymaking perspective, our data underscore the formulation of

local regulatory policies, assessment of non-sociodemographic determinants in areas prone to child abuse, and allocation of appropriate resources for child abuse detection and mitigation.

Session: Trauma

PHENYLEPHRINE PROTECTS THE ENDOTHELIAL GLYCOCALYX IN A CELLULAR MODEL FOR SHOCK

Jessica Friedman*, Olan Jackson-Weaver*, Chrissy Guidry, Alison Smith, Danielle Tatum, Patrick McGrew, Rebecca Schroll, Juan Duchesne

Background

Vascular endothelial cell (EC) damage is a hallmark of hemorrhagic shock and contributes to the coagulopathy seen in trauma patients. Endotheliopathy of trauma (EoT) is characterized by shedding of the endothelial glycocalyx (EG). The stimuli leading to EoT have not been fully elucidated; one proposed mechanism is that high circulating catecholamine levels may induce ECs to shed glycocalyx.

Objectives

Our objective was to examine the impact of catecholamine stimulation on ECs exposed to hypoxia, as a model for shock.

Methods

Human umbilical vein endothelial cells (HUVECs) were cultured to confluence and exposed to either 5% O2 for 1 hr or 5% O2 plus 100 uM phenylephrine (high-dose PE; HDPE). Following hypoxic exposure, cells underwent reoxygenation (ReOx) with 20% O2 for 1 hr. During ReOx, some cells were exposed to either 10 uM PE (low-dose PE; LDPE), HDPE, or HDPE and inhibitors of either alpha1A, alpha1B, and alpha1D receptor subtypes. EG was measured using fluorescently tagged wheat germ agglutinin and imaged with confocal microscopy.

Results

Hypoxia decreases EG thickness (Fig 1). This decrease was exacerbated by LDPE exposure (Fig 2A) and attenuated by HDPE exposure (Fig 1, Fig 2A). HDPE had the greatest protective effect if exposure occurred during hypoxia (Fig 2B). This protective effect was unchanged by inhibition of receptor subtypes alpha1B and alpha1D (data not shown), but was augmented by alpha1A inhibition (Fig 1).

Conclusion

Our results indicate that HDPE exposure (alpha activation) does not induce/exacerbate EG shedding, as has been previously shown with epinephrine (alpha and beta activation); on the contrary, it appears to be protective. Interestingly, LDPE exacerbated EG loss. The protective effect of HDPE was most pronounced if exposure occurs during hypoxia. Of the three receptor subtypes activated by PE, it appears that alpha1A may actually oppose observed protective effects, as its inhibition resulted in augmented protection of the EG.

Session: Mini-Talk III

DOES AGE HAVE AN IMPACT ON THE OUTCOMES OF INDIVIDUALS INVOLVED IN MOTORCYCLE ACCIDENTS? A RETROSPECTIVE FIVE-YEAR REVIEW OF PATIENTS TREATED AT A LEVEL 1 TRAUMA CENTER

GP Pennington II, T Wertin, N Samra

Background

According to the World Health Organization road traffic injuries accounted for 1.25 million deaths in 2014. In the US , motorcycle riders aged below 40 are 36 times more likely to be killed than other vehicle operators of the same age, and motorcycle riders aged 40 years and over are around 20 times more likely to be killed than other drivers of that same age. It has been well established that motorcyclists over the age of 40 are almost twice as likely to die from blunt trauma compared to their younger counterparts.

Few studies have been conducted to examine the length of hospital stay as well as the cost that can be attributed to motorcycle trauma in different age groups. With the aging population of the US along with the growing popularity of the sport among baby boomers, an increase in motorcycle accidents can be anticipated, but what measures can be taken to limit the burden on society?

Objectives

To evaluate if motorcycle collision trauma patients 55 years or older have higher rates of in-hospital death, greater length of stay, and discharge placement compared to younger patients.

Methods

IRB-approved retrospective analysis of a prospectively maintained database querying patients who were admitted for trauma related to motorcycle collisions at a level I trauma center from 2013 to June 2018. Patients were categorized as younger than 55 years (n=319, males=297, mean age=39.0 years, range 21-54 years) and those 55 years and older (n=100, males=93, mean age=61.6 years, range 55-87 years). Glasgow Coma Scale (GCS), injury severity score (ISS), hospital and intensive care unit (ICU) length of stay (LOS), and emergency room or in-hospital deaths, and discharge disposition were catalogued for each patient. Revised Trauma Score (RTS) were calculated from initial systolic blood pressure, respiratory rate, and GCS. Probability of survival was the trauma and injury severity score (TRISS) were calculated using ISS and the RTS. Surrogates of morbidity, rates of death, and discharge disposition were compared between patients 55 years.

Results

Seven patients, all <55 years, were dead on arrival and excluded. Analysis of the survival curve showed a linear decrease in survival from patient ages 44 years (probability of survival 98.6%) to 58 years (probability of survival 86.8%) but plateaued at younger and older ages. However, there was no significant difference in rates of death between younger (15/312 deaths; 4.8%) and older age groups (6/100 deaths; 6%); p=0.5. Although older patients had significantly higher RTS score (higher score are more favorable) (7.44 vs 5.23, $p<0.001$), there was no significantly difference in hospital or ICU LOS (9.9 days in older patients vs 9.4 days, p=0.69 and 6.9 ICU days in older patients vs. 6.2, p=0.53). There were no significant differences when comparing mean ISS in older vs younger patients (15.2 vs 15.8, p=0.61) or probability of survival with TRISS (0.84 vs 0.82, p=0.44). However, older patients were significantly more likely to be discharged to a long term acute care (7/100; 7%) or skilled nursing facility (11/100; 11%) compared to younger patients (10/312 [3%] and 15/312 [5%], respectively; $p<0.05$ in all comparisons) and older patients were

significantly less likely to be discharged to home compared to younger patients (57/100 [57%] vs 243/312 [78%], $p<0.05$).

Conclusion

In our retrospective cohort of patients with motorcycle collisions, advanced age (55 years or older) had no significant effect on rate of death or LOS . However, older patients had worse discharge dispositions compared to younger

Session: Mini-Talk III

OPERATIVE END TIDAL CO2 AS A PREDICTOR OF MORTALITY IN TRAUMA PATIENTS RECEIVING MASSIVE TRANSFUSION PROTOCOL

C Demaree, J Simpson, A Smith, C Guidry, P McGrew, R Schroll, C McGinness, J Duchesne

Background

Pre-hospital end tidal CO2 (ETCO2) has been previously described as a predictor of mortality in trauma patients. Given that many trauma patients with severe injuries receive massive transfusion protocol (MTP), and that this protocol represents a substantial commitment of scarce blood products to patients at high risk of operative mortality, it is important to analyze potential markers to predict mortality in these patients specifically, as such a marker could potentially predict an inflection point in mortality that would prevent further commitment of scarce resources to futile intervention.

Objectives

To evaluate the potential of intraoperative ETCO2 to predict mortality in trauma patients receiving MTP.

Methods

Records of all consecutive adult trauma patients presenting to a level I trauma center from 2013-2018 were reviewed retrospectively. Patients who received MTP were included in the study. Patients who died prior to initiation of surgery were excluded. Their charts and anesthesia records from their initial surgical procedures were reviewed, and the results were averaged as a group, and separately by mortality outcome during the hospital course. Univariate and multivariate statistical analyses were then performed.

Results

MTP was activated for 251 trauma patients with penetrating (73.7%) and blunt (26.3%) trauma. 247 patients were included in the final analysis with an operative mortality rate approaching (40%). The mean trough ETCO2 was 13.7 mmHg, 95% CI [11.6, 15.8] for fatal traumatic injuries and 24.5 mmHg, 95% CI [23.3, 25.6] for survivable traumatic injuries ($p < 0.001$). At the time of the trough ETCO2 value, fatal traumatic injuries had significantly lower mean systolic blood pressure (72.8 mmHg vs. 101.6 mmHg, $p < 0.001$) and SpO2 (82.9% vs. 97.2%, $p < 0.001$), as well as greater intraoperative estimated blood loss (4800 mL vs. 2772 mL, $p < 0.001$). Based on an area of 0.786 under the receiver operating curve, ETCO2 is predictive of fatal traumatic injury (Sensitivity 80.6%, Specificity 67.1%). Youden's index suggests ETCO2 of 23 mmHg is most predictive of fatal traumatic injury.

Conclusion

Among trauma patients receiving MTP and undergoing surgery, operative end tidal CO2 was significantly lower in patients with fatal traumatic injuries. Receiver operating characteristic curve analysis indicates fair predictive potential of trough intraoperative ETCO2 for mortality, suggesting that this metric is one important factor relating to mortality, but it does not fully account for all outcomes. Further research is needed to evaluate the predictive value of operative end tidal CO2, alone and in combination with other intraoperative metrics, as regards predicting the point of futility of MTP.

Session: Mini-Talk III

ADVANCED SURGICAL THERAPIES FOR PERIPARTUM CARDIOMYOPATHY: LARGEST SINGLE CENTER EXPERIENCE

H. Kooperkamp, P. Parrino, M. Bates, S. Mandras, A. Bansal

Background
Congestive heart failure from peripartum cardiomyopathy (PPCM) is a rare but life-threatening complication of pregnancy. There is a paucity of data regarding how PPCM patients respond to advanced cardiac therapies for heart failure.

Objectives
The aim of this study was to investigate outcomes following Left Ventricular Assist Device (LVAD) or heart transplant in patients with PPCM.

Methods
Retrospective review was performed for 18 patients who underwent LVAD implantation or heart transplantation for PPCM from 10/2007 to 04/2017. PPCM was diagnosed based upon diagnostic criteria established by the European Society of Cardiology Working Group on PPCM.

Results
Average age at time of presentation was 28 years (range 23-40) and the average age at which surgery was performed was 32.5 years (range 24-52). Half (9/18) of the patients were primiparous. 72% (13/18) of the patients were African American. 6 patients received an initial heart transplant while the remaining 12 underwent LVAD implantation. Of these 12 patients, 3 received heart transplantation at a later date. 1, 2 and 3-year survival rates between heart transplant and LVAD group was 75% (3/4) vs. 83% (10/12), 50% (2/4) vs. 75% (9/12) and 50% (2/4) vs. 64% (7/11) respectively. 3 patients who received a transplant after an LVAD have a 100% (3/3) survival at 1 year. Time from diagnosis to surgical therapy was significantly longer for African American patient versus Caucasian patient (5.5 vs. 1.4 years, respectively). 27.7% (5/18) of PPCM patients had significant medical compliance issues. Some of these compliance issues resulted in early deaths post heart transplant due to acute rejection.

Conclusion
Mid term survival following surgical therapy in PPCM suggest that an approach using LVAD prior to heart transplant may provide superior outcomes compared to those being transplanted primarily largely due to improved medical compliance. Racial disparity in timing of referral remains prevalent, with African American females being referred at a much later time for advanced therapies than their Caucasian counterparts.

Session: Cancer

EFFECTS OF PARATHYROIDECTOMY ON NORMO-CALCEMIC VS. CLASSIC PRIMARY HYPERPARATHYROIDISM AND THE ROLE OF IOPTH

H Shalaby, M Abdelgawad, S Al Awwad, E Alameer, Y Rashad, E Kandil

Background

Primary hyperparathyroidism (PHPT) is classically diagnosed with elevation of both parathyroid hormone (PTH) and serum calcium (Ca) levels. Normo-calcemic PHPT (NCPHPT) with upper normal Ca levels is a known variant of PHPT. Currently there is a scarce literature that study the cure rate in NCPHPT following parathyroidectomy, compared to the classic primary hyperparathyroidism (CPHPT). Additionally, we aim to asses intraoperative parathyroid hormone (IOPTH) dynamics during parathyroidectomy and its effects on surgical decisions.

Methods

A retrospective cohort study of patients with PHPT undergoing parathyroidectomy by a single surgeon at Tulane Medical Center within the last 4 years. Patients with secondary and tertiary HPT were excluded. Collected data included demographics, preoperative imaging, intraoperative parathyroid hormone (IOPTH) levels and perioperative outcomes for patients with NCPHPT compared to patients with CPHPT. All our patients were followed up for at least 6 months post operatively.

Results

Out of 277 patients who underwent parathyroid surgery during the study period, 171 patients met our study's inclusion criteria; 67 patients had NCPHPT, and 104 had CPHPT. The mean weight of the parathyroid glands in the normocalcemic group was less than the classic group (425.9 vs. 654.7 mg, p=0.001). NCHPT group had higher rates of gland hyperplasia compared to the CPHPT group (65.67% vs. 47.12%, p=0.0075). Of the 67 (NCPHPT) patients, 64(95.52%) achieved >50% drop in the (IOPTH) vs. 103 (99.04%) among the 104 (CPHPT) patients. However, cure rate in the normo-calcemic was lower compared to patients with classic hyperaparathyroidism group was (86.57% vs 96.15%, p<0.001).

Conclusion

Patients with NCPHPT are more likely to have multi gland hyperplasia and smaller parathyroid glands. IOPTH is a valuable tool to guide intraoperative decisions in this group of patients, who are more likely to need a four glands exploration Vs. minimal access parathyroidectomy. Operations in NCPHPT are feasible but challenging, and surgeons should be aware of the lower cure rate in patients with NCPHPT.

Session: Cancer

INHIBITION OF ENHANCER OF ZESTE HOMOLOG 2 DECREASES TUMORIGENESIS IN NEUROBLASTOMA PATIENT DERIVED XENOGRAFTS

Williams AP, Marayati R, Stafman LL, Aye JM, Stewart JE, Yoon K, Beierle EA

Background

Enhancer of Zeste Homolog 2 (EZH2) is known to play a key role in tumor cell proliferation, differentiation, and cell cycle regulation in several malignancies, and its knockdown has been shown to decrease tumorigenesis in neuroblastoma cells. The mechanism by which EZH2 promotes tumorigenesis is not well defined, but EZH2 is known to directly interact with protein kinases. Previous work from our laboratory has shown that focal adhesion kinase promotes neuroblastoma tumorigenesis. Based on these findings we hypothesized that the EZH2 inhibitor, GSK343, would affect cell proliferation and survival in neuroblastoma patient-derived xenograft (PDX) cells and that the interaction between FAK and EZH2 plays a role in promoting neuroblastoma tumor cell survival.

Methods

We utilized two PDXs and four long-term passage neuroblastoma cell lines. The EZH2 inhibitor, GSK343, was employed for EZH2 inhibition, and target knockdown was confirmed with immunoblotting. Cell survival and proliferation were evaluated using alamarBlue and CellTiter96 assays, respectively. Cell migration was measured using cell monolayer wounding assay in adherent cell lines and a modified Bowden chamber in non-adherent cell lines. An extreme limiting dilution assay was used to assess tumorsphere formation. Cell cycle analysis with FACS was used to measure cell cycle progression. FAK and EZH2 interaction was evaluated with co-immunoprecipitation and immunofluorescence.

Results

Treatment with GSK343 successfully inhibited EZH2 in all neuroblastoma PDXs and cell lines (Fig. 1) and resulted in significant decreases in cell survival and proliferation. Cell migration and tumorsphere formation (Fig. 1) were also significantly decreased following treatment. There was an increase in the subG1 population, representing apoptosis. Further, immunofluorescence and co-immunoprecipitation revealed an interaction between EZH2 and FAK *in vitro*, and EZH2 inhibition led to a decrease in FAK expression.

Conclusion

The anti-tumor effects of EZH2 inhibition seen in long-term passage cell lines were replicated in neuroblastoma PDX cells. Additionally, we found that EZH2 and FAK interact with EZH2 modulating FAK expression. These findings warrant further investigation into the mechanisms responsible for the anti-tumor effects seen with EZH2 inhibitors in neuroblastoma cells.

Session: Cancer

ROBOTIC AND LAPAROSCOPIC APPROACHES FOR ADRENAL SURGERY IN OBESE PATIENTS.

H Shalaby, M Abdelgawad, T Syed , D Bu Ali, E Kandil

Background

Laparoscopic adrenalectomy can be challenging in obese patients. The advantages of robotic-assisted adrenalectomy have not been well studied in obese patients. Recent studies have recommended against the use of robotic approaches in obese patients undergoing adrenal surgery.

Objectives

This study aims to examine the difference in perioperative outcomes utilizing robotic versus laparoscopic approaches in obese patients.

Methods

This is a retrospective study of all consecutive patients with benign adrenal tumors who underwent adrenal surgery, by a single surgeon using laparoscopic or robotic approaches. Adrenal surgeries for adrenal cancer were excluded. Demographics, operative time, length of hospital stay and intra-operative complications were evaluated. Patients were divided into two groups; obese and non-obese. A sub-analysis was performed comparing robotic and laparoscopic approaches in obese patients.

Results

Out of one hundred and twenty four patients, 58 (46.77%) were obese (BMI ≥ 30 kg/m2). About, 27.59 % of the obese patients underwent laparoscopic approach, and 72.41 % underwent robotic approach. There was no difference in obese and non-obese patients in terms of age, gender (female), and tumor laterality (right side). As well as operative time in obese patients compared to non-obese (175.90 ± 71.94 min and 154.50 ± 79.40 min, respectively with p-value =0.1261), estimated blood loss (107.50 ± 130.90 vs. 73.75 ± 140.40, respectively with p-value =0.1758), length of hospital stay (1.95 ± 1.49 vs. 2.29 ± 1.70, respectively with p-value=0.2564).

In obese patients, the robotic approach was associated with less intra-operative blood loss (49.76 ± 143.50 ml versus 145.70 ± 105.00 ml, p=0.0254) and shorter hospital stay (1.90 ± 1.65 days versus 3.43 ± 1.34 days, p=0.0029). However, in obese patients robotic approach was associated with longer operative time (188.50 ± 72.25 min versus 138.10 ± 58.15min, p=0.0218)

Conclusion

Robotic-assisted adrenal surgery is safe in obese patients and is associated with less intraoperative blood loss and shorter hospital stay in obese patients.

Session: Surgical Potpourri II

PRE-HOSPITAL TOURNIQUET USE IN PENETRATING EXTREMITY TRAUMA: DECREASED BLOOD TRANSFUSIONS AND LIMB COMPLICATIONS

Alison A. Smith, MD, PhD; Joana E. Ochoa, MD; Sunnie Wong, PhD; Sydney Beatty, BS; Jeffrey Elder, MD; Chrissy Guidry, DO; Patrick McGrew, MD; Clifton McGinness, MD; Juan Duchesne, MD; Rebecca Schroll, MD

Background
Despite increasing popularity of pre-hospital tourniquet use in civilians, few studies have evaluated the efficacy and safety of tourniquet use. Furthermore, previous studies in civilian populations have focused on blunt trauma patients.

Objectives
The objective of this study was to determine if pre-hospital tourniquet use in patients with major penetrating trauma is associated with differences in outcomes compared to a matched control group.

Methods
An eight-year retrospective analysis of adult patients with penetrating major extremity trauma amenable to tourniquet use (major vascular trauma, traumatic amputation and near-amputation) was performed at a level I trauma center. Patients with pre-hospital tourniquet placement (TQ) were identified and compared to a matched group of patients without tourniquets (N-TQ). Univariate analysis was used to compare outcomes in the groups.

Results
A total of 204 patients were matched with 127 (62.3%) in the pre-hospital TQ group. No differences in patient demographics or injury severity existed between the two groups. Average time from tourniquet application to arrival in the ED was 22.5+1.3 minutes. Patients in the TQ group had higher average SBP on arrival in the ED (120+2 vs. 112+2, $p=0.003$). TQ group required less total PRBCs (2.0+0.1 vs. 9.3+0.6, $p<0.001$) and FFP (1.4+0.08 vs. 6.2+0.4, $p<0.001$). Tourniquets were not associated with nerve palsy ($p=0.330$) or secondary infection ($p=0.43$). Fasciotomy was significantly higher in the N-TQ group (12.6% vs. 31.4%, $p<0.0001$) as was limb amputation (0.8% vs. 9.1%, $p=0.005$).

Conclusion
This study demonstrated that pre-hospital tourniquets could be safely used to control bleeding in major extremity penetrating trauma with no increased risk of major complications. Pre-hospital tourniquet use was also associated with increased SBP on arrival to the ED, decreased blood product utilization and decreased incidence of limb related complications, which may lead to improved long-term outcomes and increased survival in trauma patients.

Session: Surgical Potpourri II

ROLE OF PLASMA PANCREASTATIN IN PREDICTING PROGNOSIS FOLLOWING R0/R1 SURGICAL CYTOREDUCTION IN SMALL BOWEL NEUROENDOCRINE TUMORS

J. Philip Boudreaux, Brianne A. Voros, Ramcharan Thiagarajan, David T. Beyer, Robert A. Ramirez, Gregg Mamikunian, Eugene A. Woltering

Background

Small bowel neuroendocrine tumors (NETs) are rare and often indolent neoplasms. Pancreastatin (PST), a post-translational fragment of chromogranin A, has shown to be a reliable biomarker for small bowel neuroendocrine tumors (NETs). Elevated PST levels have been shown to be associated with worse survival in small bowel NETs.

Objectives

Based on our experience, we hypothesized that patients with elevated PST levels despite undergoing R0 (100%) or R1 (90–99%) resection have a poor prognosis.

Methods

Data were analyzed from patients who underwent surgical cytoreduction for NETs of the small bowel, ileum, or jejunum. All patients received standard of care following surgical cytoreduction. Only patients who had serial preoperative PST (PreopPST) and postoperative PST (PostopPST) levels were included in this study (Normal <135 pg/ml, InterScience Institute, Inglewood, Calif). Patients were sorted into groups to assess the response of their PST level to surgery. Overall survival (OS) was calculated from date of surgery to date of death or end of study (December 31, 2017).

Results

R0/R1 resection was performed in 211 patients with small bowel NETs. Group 1 included 65 patients (31%) who had normal PreopPST and PostopPST levels. Group 2 included 75 patients (36%) with an elevated PreopPST level but a normal PostopPST level. Group 3 included 71 patients (34%) with either a normal or elevated PreopPST level and an elevated PostopPST level. Comparable survival rates were observed in Groups 1 and 2 while significantly worse survival was observed in Group 3 despite R0/R1 resection ($P < 0.001$). Kaplan-Meier 5-year and 10-year OS rates were as follows: Group 1 – 96% and 93%; Group 2 – 92% and 70%; and Group 3 – 70% and 40% (Table 1).

Conclusion

Plasma PST levels and the extent of resection seem to be complimentary in predicting outcome following surgical cytoreduction in small bowel NETs. Serial monitoring of PST levels can identify patients who have a poor prognosis despite undergoing R0/R1 resection.

Session: Surgical Potpourri II

ARE THE CURRENT COLONOSCOPY RECOMMENDATIONS FOR INTERVAL SURVEILLANCE IN PATIENTS WITH POLYPS ENOUGH?

S Baker, N Wieghard, D Gunnells, D Fort, David Margolin

RATIONALE

Colonoscopy remains the gold standard for screening and surveillance of colorectal neoplasms, and has been associated with a lower risk of colorectal cancer (CRC)-related mortality. The current recommendations for interval of surveillance in patients with a history of adenomas are lacking sufficient evidence. The prevalence of adenomatous polyps, especially high risk polyps in these patients during surveillance is not well known.

BACKGROUND

Multiple studies have outlined the benefits of post-polypectomy surveillance in patients with history of adenomatous polyps, specifically those patients with high-risk adenoma (HRA) features, defined as ≥ 3 adenomas or advanced adenoma (≥10mm, villous histology or high-grade dysplasia).

Current recommendations for interval surveillance are based on the most recent colonoscopy and depend on polyp histology, size, and number. If a patient with previous polyps has a subsequent normal surveillance colonoscopy, and are without any other high-risk features including CRC/HRA in one first-degree relative (FDR) prior to age 60 or two FDRs at any age, it is recommended that they undergo their next screening colonoscopy in 10 years.

It is still unclear what the actual interval risk of polyp development and CRC is in these patients.

Objectives

The primary outcome of this study is to determine the prevalence of polyps upon surveillance colonoscopy in patients who have a prior history of adenomatous polyps on screening colonoscopy, but then have a normal initial surveillance (second) colonoscopy.

Methods

This was retrospective review of patients undergoing colonoscopies utilizing the Ochsner colonoscopy database, and included individuals over age 18 with initial average risk screening colonoscopy, followed by at least two additional colonoscopies from 2003 to 2017 having abnormal pathology. Our primary analysis was a comparison of the results of the final (third) surveillance colonoscopy between groups with normal vs abnormal second colonoscopies.

Results

2,849 patients underwent an average-risk screening colonoscopy with at least two subsequent colonoscopies. Pathology reports were missing for 551 patients and were excluded.

1,840 of these patients had confirmed adenomatous polyps or cancer based on pathology reports from the initial (first) screening colonoscopy.

For the above 1,840 patients, the subsequent findings on initial surveillance (second) colonoscopy included:

- 837 (45.5%) had pathologically confirmed adenomas
- 1,003 (54.5%) did NOT have polyps

Of the 837 patients WITH polyps on BOTH initial screening (first) and initial surveillance (second) colonoscopy:

- 423 (50.5%) had pathologically confirmed adenomas on the third colonoscopy

Of those 1003 patients WITHOUT polyps on the initial surveillance (second) colonoscopy:

- 406 / 1,003 (40.5%) had pathologically confirmed adenomas on the third colonoscopy.

Excluding any patients with previous cancers on their second colonoscopy and/or a time interval for this performed at

Discussion

We demonstrated the prevalence of adenomatous polyps for patients with previous adenomas and a second negative colonoscopy to be greater than 40% on their subsequent 3rd colonoscopy. This is higher than expected in the average-risk general population, suggesting that these patients may continue to remain at higher risk than the general population despite having follow-up normal surveillance colonoscopy.

This questions whether patients with history of adenoma should truly be deemed safe to immediately re-enter back into the general 10-year screening population upon their first normal surveillance colonoscopy.

Furthermore, the interval surveillance in between the 1st and 2nd (1066 days or 2.9 years), and the 2nd and 3rd colonoscopies (1662 days or 4.5 years), was consistent with prior surveillance intervals but below the current surveillance recommendations.

Conclusion

Our study at least underlines the continued need and importance for ongoing research efforts in this area to better elucidate the true risk associated with this group. Until more definitive research is available, at least significant consideration should be given when deciding the appropriate surveillance time interval for these patients, including considerable effort to effectively discern that no previous or high-risk features are present, including the potential high-risk FDR features.

Session: Surgical Potpourri II

UTILIZATION OF POST-MASTECTOMY RADIATION IN PATIENTS TREATED FOR INVASIVE BREAST CANCER WITH MASTECTOMY AND IMMEDIATE RECONSTRUCTION: A SINGLE CENTER EXPERIENCE

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Background
Recently, we have identified an increase in the use of mastectomy and reconstruction to reduce the risk of local recurrence and metachronous disease in breast cancer patients while achieving an acceptable aesthetic result. Post mastectomy radiotherapy (PMRT), an effective strategy to maximize local and regional control of breast cancer in high risk patients, can have a negative impact on aesthetic outcomes after breast reconstruction.

Objectives
To identify risk factors for women who will need post-mastectomy radiation in immediately reconstructed patients.

Methods
This is an IRB approved retrospective review of a prospective database of all women treated for invasive breast cancer at Ochsner Clinic Foundation from 2006 - 2017. We selected only patients who underwent mastectomy with immediate reconstruction either by autologous flap reconstruction or implant reconstruction. Appropriate statistical analysis was applied in order to analyze risk factors among this patient population for receiving post-mastectomy radiation.

Results
320 women were treated for invasive breast cancer and underwent surgery with immediate reconstruction either by flap or implant between 2006-2017. Patients were divided based on whether they had received PMRT. 88 of 320 received PMRT. There was no statistically significant difference between the groups based on cancer histology, hormone receptor status, T stage or demographics. 82 of the 320 patients underwent neoadjuvant chemotherapy as part of their treatment regimen. Of the patients who underwent neoadjuvant, 42 (55%) received PMRT versus 42 of 238 (17%) women who did not have neoadjuvant and received PMRT (p=.0001). Furthermore, of women who had undergone neoadjuvant chemotherapy and had

Conclusion
In our population, patients who underwent neoadjuvant chemotherapy as treatment for invasive breast carcinoma were far likelier to receive PMRT, even when they had <4 positive nodes on final pathology. The negative aesthetic impacts of PMRT on reconstruction as well as the less rigorous indications for PMRT after chemotherapy argue for increased research on the subject.