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Infection and Complication Rate of Single vs Double Lumen Central Venous Ports in Pediatric Malignancies

Presenter: Rachel B. Sidebottom

Rachel B. Sidebottom, Joseph Giacalone, Tram Le, Noah Lucero, Anna Wermer, Lena Perger, Jason McKee

Purpose: Long-term central venous access in pediatric patients with malignancies can be achieved via implantable vascular devices. Advantages of long-term intravenous access include easier administration of chemotherapy, decreased infection risk, and improved quality of life. Complications of single vs double lumen port placement in pediatric patients have not been well characterized clinically. We assessed 5 years of pediatric patients who underwent port placement surgery to establish differences in safety between single and double lumen ports.

Methods: 121 pediatric patients who underwent either single or double lumen port placement surgery for chemotherapy for malignancy during a five-year period prior to December 2020 were identified. A retrospective chart review was conducted at a lower resource, academic hospital clinical setting with patient age, number of lumens, infection if present, port complications, removal due to those complications, and absolute neutrophil count collected for each patient. Incidence of infection and removal due to complications were calculated between single or double lumen port placement groups. Fisher's exact test was used to determine statistical significance ($p < 0.05$).

Results: Of the 121 cases analyzed, 50 patients had double lumen catheters placed (41.3%), while 71 patients had single lumen catheters placed (58.7%). The incidence of infections in patients with double lumen catheters was

higher (4.0%) than in single lumen catheters (2.5%) (P -value = 0.3160). The incidence of removal due to complications was also higher (4.8%) in patients with double lumen catheters compared to patients with single lumen catheters (2.2%) (P -value = 0.0826). Infections were primarily bacteremia. Complications resulting in removal of both types of ports included port malfunction and catheter associated thromboses. There was one case of a double lumen port physically pulled out by a patient.

Conclusion: Infection rates and removal due to port-related complications were used as a proxy for the safety profile of both port types in children with malignancies. Comparing single and double lumen ports, there was a trend toward higher rate of infection and higher rate of port removal due to complications in double lumen ports. This trend did not reach statistical significance likely due to the small

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Evaluating The Safety Of Abdominal MRI for Ruling Out Suspected Pediatric Appendicitis in a Low-Resource Setting

Presenter: Anna Willingham, BS

A. Willingham BS, N. Lucero BS, R. Sidebottom BA, L. Perger MD, J. McKee MD

Background: Abdominal ultrasound is the initial diagnostic modality for pediatric patients with suspected appendicitis. However, in low resource settings without dedicated ultrasonographers, the appendix is often not visualized, leading to a high rate of non-diagnostic results. This creates a challenge for providers in determining the need for further imaging, such as MRI or CT, and assessing its reliability in ruling out appendicitis. MRI is preferable to CT in order to avoid radiation and should be considered before CT in cases requiring further evaluation. To evaluate the validity of MRI in this setting,



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we reviewed a three-year cohort at the University of New Mexico Hospital who underwent abdominal MRI for suspected appendicitis. Our study aimed to determine whether patients with a negative MRI were safely discharged without complications, including delayed diagnosis of perforated appendicitis.

Methods: Pediatric patients who underwent abdominal MRI for clinically suspected appendicitis, but were ultimately discharged home with negative imaging findings, were identified. A total of 392 patients between 2019 and 2022 matched these criteria. A chart review was conducted to collect demographic, clinical and radiological data. Data analysis focused on determining whether patients with a negative MRI and other imaging studies were safely discharged without subsequent complications. A t-test compared WBC, CRP, and temperature between patients who underwent MRI with or without ultrasound (MRI±US group) and those who underwent US, MRI and CT (US/ MRI/CT group).

Results: Of the 392 patients, 287 (73.2%) underwent an initial abdominal ultrasound, and 35 (8.9%) had additional CT imaging. All imaging studies were negative or equivocal for appendicitis. Regarding lab findings, 151 (38.5%) had a white blood cell (WBC) count of ≥ 11 , 186 (47.4%) had a C-reactive protein (CRP) level of ≥ 0.5 . 77 (19.6%) had a recorded temperature of $\geq 38.0^{\circ}\text{C}$. Notably, no patients returned with a delayed diagnosis of perforated appendicitis, indicating no false negatives in the studied cohort. Comparing the two groups, the average WBC count in the MRI±US group was 10.6, while the US/MRI/CT group had an average of 11.4 ($p=0.36$). The average CRP level for the MRI±US group was 2.21, compared to 2.07 in the US/MRI/CT group ($p=0.82$). The average temperature in the MRI±US group was 37.14°C , while the US/MRI/CT group had an

average of 39.35°C ($p=0.24$).

Conclusion: This study demonstrated that pediatric patients with clinical suspicion of appendicitis and negative or equivocal imaging findings on ultrasound and MRI, can be safely discharged without missing any patients with appendicitis. MRI appears to be a reliable imaging modality for ruling out appendicitis in this setting. Based on our results, an additional CT scan in the few patients who received it did not contribute any significant new findings and could have been avoided.

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Elevated Intracranial Pressure in Craniosynostosis by Optical Coherence Tomography: Patterns Across Age and Affected Suture

Presenter: Carlos Barrero MD

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Background: Craniosynostosis head shape abnormalities vary by suture type and age, potentially affecting intracranial pressure (ICP) levels. However, the precise patterns remain poorly characterized. Understanding the risk and timing of ICP abnormalities may aid in surgical management decisions.

Methods: From 2014 to 2022, patients undergoing primary intracranial craniosynostosis correction were prospectively evaluated using optical coherence tomography (OCT) at a single pediatric tertiary care center. Validated OCT and direct ICP parameters were compared across synostosis diagnoses, syndromic status, and across age groups, (<6 months, 6-12 months, >12 months at the time of surgery). Multivariable linear regressions were



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used to assess the role of synostosis severity, age, and syndromic diagnosis on direct ICP measures in patients with metopic, sagittal, and multisuture synostosis

Results: 179 patients were included, with diagnoses of metopic (n=44), multisuture (n=38), sagittal (n=74), and unicoronal (n=23) synostosis. Incidence of OCT-detected elevated ICP varied significantly by suture type, with metopic synostosis showing the lowest incidence (15mmHg=13.6%, 20mmHg=9.1%) and multisuture synostosis the highest (15mmHg=55.3%, 20mmHg=50.0%; $p=0.002$). Only sagittal craniosynostosis demonstrated a positive correlation between age and elevated ICP, with 48.3% of patients older than 12mo. having ICP>15mmHg compared to 11.8% under 6mo. ($p=0.004$). Similarly, 41.4% of sagittal patients older than 12mo. had ICP>20mmHg compared to 8.8% under 6mo. ($p=0.005$). No metopic patients had elevated ICP at either threshold in either age range (15mmHg $p=0.3$; 20mmHg $p=0.5$).

Conclusions: The risk of elevated ICP varies by suture type and, for certain fusion patterns, by age in craniosynostosis. Multisuture craniosynostosis appears to have the highest risk, and metopic craniosynostosis the lowest risk. These findings suggest that ICP may be a component driving neurocognitive outcomes, and inform the timing of surgical intervention for some craniosynostosis types.

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Botulinum toxin type A therapy in infantile digital ischemia: A case series

Presenter: Samantha Huang MD

Samantha Huang, MD, Dominick Byrd, MD, Shawhin Shahriari, MD, Avra Laarakker, MD, Gregory Borah, MD, DMD, FACS

INTRODUCTION: Extracorporeal membrane oxygenation (ECMO) is commonly used in the

treatment of neonates in cardiopulmonary failure.¹⁻³ Digital ischemia following ECMO therapy is a known complication with potential devastating long term sequela.^{1,4} Botulinum toxin type A (onabotulinumtoxin A, Botox; Allergan, Inc., Dublin, Ireland) (BTX-A) as a method of chemical sympathectomy has been demonstrated to be effective in the treatment of digital ischemia in adults with Raynaud's phenomenon.^{5,6} Its use has yet to be described in pediatric patients. The objective of this case series is to describe the successful application of BTX-A in the treatment of infants and newborns with digital ischemia.

METHOD AND RESULTS: Three patients who developed digital ischemia following ECMO therapy and initiation of vasopressors were identified for this study. Patients ranged in age from three days to thirteen months at the time of consult. Two infants were admitted for respiratory syncytial virus bronchiolitis and one newborn presented with acute respiratory failure secondary to aspiration of maternal blood during emergent cesarian section. All patients underwent BTX-A injections to the affected limbs on the day of consult, which ranged from hospital day 3 to 23. Two infants were decannulated from VV-ECMO and weaned off pressors prior to consultation, while the newborn patient remained on both treatments during BTX-A injection. Two patients had prior treatment with nitroglycerin paste without clinical improvement.

A total of 50 units of BTX-A were injected to the affected extremity in two patients, while a total of 90 units (25 units to each upper extremity, 20 units to each lower extremity) were used in the newborn who presented with digital ischemia in all four limbs. On post procedure day one, all patients demonstrated clinical improvement in ischemic discoloration to the treated extremities. Complete resolution was noted by treatment day 3 in one infant and



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near complete resolution by treatment day 16 in the second infant. In the newborn patient, follow up was limited due to the patient succumbing to an intracranial bleed on hospital day four. No complications were observed relating to the BTX-A therapy.

CONCLUSION: The use of BTX-A as an off-label use for digital ischemia was demonstrated to be safe and effective in infant and newborn patients. Clinical improvement was noted in all three patients by post-procedure day one, with two out of three patients demonstrating near to complete resolution of digital ischemia within three weeks of treatment. No complications were observed as a result of BTX-A therapy. BTX-A should be considered in the treatment of pediatric patients for salvage of infantile digital ischemia.

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Burn Scar Contracture After Staged Excision and Split-Thickness Autografting in the Management of Acute Burn Injuries

Presenter: Tegan Clarke MD

Tegan Clarke, MD; Avra Laarakker, MD; Whitney Elks, MD; Addi Moya, MD; Ryan Keffer, MD; Victor Andujo, MD; Mattalynn Chavez, MD; Sydney Cooper, MD; Eugene Wu, MD, FACS

Introduction: Burn scar contracture is a significant contributor to physical and psychosocial morbidity in recovery from burn injury. Studies demonstrate that even one joint contracture is associated with poor physical functioning, physical role limitations, bodily pain, and vitality. Incidence of pathologic scarring in burn patients has remained persistent and little has changed in technology and methods for prevention and treatment in the last 40 years. The aim of this study is to investigate the prevalence and predictors of burn scar contracture after routine staged excision and split-thickness autografting with

the intent to mitigate risks of contracture development.

Methods: This was a retrospective review of 225 burn patients who presented to a single institution between October 2014 and November 2018. All patients underwent staged excision and split-thickness autografting. Primary outcome was occurrence of burn scar contracture, analyzed as a binary variable. Secondary outcomes were complications related to surgical procedure including graft loss (<100% take), donor site-related complications, surgical site infections, complications requiring regrafting, discharge disposition, length of hospital stay, and length of follow-up.

Results: Of the 225 patients reviewed, 21 (9.3%) experienced contracture at the autograft site and 204 (90.6%) did not. The most commonly affected areas were the axilla (25%), hand (25%), and antecubital fossa (21.4%). Only 2 patients (0.9%) underwent reconstructive surgery for their burn scar contractures. A total of 28 burn scar contractures were identified in the 21 patients of the contracture group. 19 patients were successfully treated with outpatient rehabilitation. Mean duration from hospital discharge to diagnosis of burn scar contracture was 4.98 ± 6.71 months. For the 2 patients who underwent reconstructive surgery, the mean duration from diagnosis of burn scar contracture to reconstructive surgery was 9 ± 4.59 months. The mean duration of follow-up for all burn scar contracture patients was 12.05 ± 11.41 months after discharge. After adjusting for clinically relevant confounding variables, two significant predictors of burn scar contracture after routine staged excision and split-thickness autografting were any graft loss and major burns (>20% TBSA). There were no statistically significant differences between the burn scar contracture group versus the non-burn scar contracture group in terms of



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patient demographics, patient comorbidities, burn etiology, burn management, disposition, LOS, and duration of follow-up.

Conclusions: This study evaluates the prevalence and predictors of burn scar contracture in 225 patients who underwent staged excision and split-thickness autografting for acute burn injuries. Statistical analysis identified major burns (TBSA >20%) and graft loss as significant predictors of contracture ($p < 0.05$). These findings suggest that staged excision with temporary allograft coverage followed by definitive autografting, particularly in combination with outpatient rehabilitative therapy, leads to a lower incidence of contracture compared to historical data, optimizing long-term functional and aesthetic outcomes for burn patients.

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Use of infrared imaging to assess tissue perfusion in nipple sparing mastectomies with immediate staged breast reconstruction using the Kent SnapshotNIR device: A case series

Presenter: Samantha Huang MD

Samantha Huang, MD, Adam Schwartz, MD, Anil Shetty, MD, Jennifer Chan, MD

INTRODUCTION: Breast conservation surgery in the form of nipple sparing mastectomy (NSM) with immediate staged reconstruction is a popular method of oncologic surgery and reconstruction in breast cancer and high risk BRCA mutation patients.¹ Important to surgical planning is assessing tissue perfusion following mastectomy to prevent devastating complications such as mastectomy skin flap necrosis, wound breakdown, and loss of the nipple areolar complex (NAC). Commonly used methods of assessing breast tissue following mastectomy include clinical assessment and indocyanine green angiography.^{2,3} These approaches are limited by subjectivity while indocyanine green angiography additionally

requires large machinery with coordinated injection of dye with anesthesia. More recently, near-infrared spectroscopy imaging has been used to assess tissue perfusion via measurement of tissue oxygen saturation in the form of handheld devices to facilitate this process and provide objective adjunct data.³ The purpose of this study is to describe the use of an infrared camera, the KENT SnapshotNIR (Kent Imaging, Calgary, AB, Canada) device, in assessing tissue perfusion in patients undergoing breast reconstruction following NSM with immediate staged reconstruction.

METHODS: Adult patients undergoing NSM with immediate staged reconstruction were included. Primary diagnoses included biopsy proven breast cancer, ductal carcinoma in situ (DCIS) and/or confirmed high risk BRCA mutation. A series of anterior and oblique photographs were taken of each affected breast on the day of surgery to assess mastectomy skin flap and nipple areolar complex perfusion as follows: prior to NSM, following placement of a deflated tissue expander (TE), and following inflation of the TE. Patient outcomes including incidence of skin necrosis, wound healing complications, NAC loss, and need for reoperation prior to final stage of reconstruction were collected.

RESULTS: A total of twelve consecutive patients and twelve breasts were included. Median age was 42.5 years. Diagnoses were BRCA mutation ($n=6$, 50%), followed by DCIS ($n=4$, 33.3%), invasive ductal carcinoma ($n=1$, 8.3%) and lobular carcinoma ($n=1$, 8.3%). KENT SnapshotNIR images indicated areas of decreased perfusion along mastectomy skin flaps and to the NAC following NSM that remained unchanged following insertion and inflation of tissue expanders. Two patients with bilateral reconstruction for a total of two breasts experienced mastectomy skin necrosis



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or TE exposure requiring explanation prior to second stage reconstruction. No patients experienced NAC loss.

CONCLUSION: Infrared imaging via the KENT SnapshotNIR device is a safe and non-invasive method for assessing tissue perfusion in breast reconstruction patients. In this study the KENT SnapshotNIR device was safely implemented as an adjunctive measure to inform surgeons of potential areas of decreased mastectomy skin and NAC perfusion. The utility of a handheld device allows ease of use both intraoperatively and in the post-operative monitoring period, providing additional data that may guide intra-operative surgical planning and post-operative management for patients undergoing NSM with reconstruction.³

Poster 47

Application of a tenodesis procedure for restoration of distal interphalangeal flexion in an isolated, chronic flexor digitorum profundus injury

Presenter: Maahum Mehdi MD

Maahum Mehdi, MD, Shawhin Shahriari, MD, Camille Aubin-Lemay, MD

Purpose: Management of chronic flexor digitorum profundus (FDP) tendon injury is challenging due to complex anatomy, presence of scar tissue and limited option to restore motion at the distal interphalangeal joint (DIP). Current techniques for treatment of chronic isolated FDP injury include arthrodesis, tenodesis or 2 stage flexor reconstruction. Thus far, only a 2-stage reconstructive surgery had been shown to allow restoration of motion, but requires a prolonged recovery and highly motivated patient. We performed a tenodesis procedure, previously done in cadaveric studies, for restoration of distal interphalangeal joint flexion in an isolated, chronic zone 2 flexor digitorum profundus injury (JHS Pritsch, T., Sammer, D.M 2014) demonstrating adequate

return of function in a single patient case study.

Methods: In this case study, we performed a tenodesis procedure in a patient suffering from chronic zone 2, ring finger flexor digitorum profundus (FDP) injury (JHS Pritsch, T., Sammer, D.M 2014). The steps of the procedure are the following: harvesting of palmaris longus tendon graft, Bruner incision over volar DIP joint to identify FDP stump, palmaris longus graft secured with bone anchor at base of distal phalanx volarly, incision over dorsal PIP to expose extensor apparatus, creation of tunnel between dorsal and volar incision of digit deep to neurovascular bundle and superficial to extensor tendon, passing of tendon graft through tunnel to dorsal incision, anchoring of tendon graft to bone with bone anchor to head of proximal phalanx dorsally.

Results: This patient was evaluated clinically at post-operative visits. At 6 months post-operative, our patient has an active DIP range of motion 0 to 40 degrees, can make a full fist, and has sensation intact along radial and ulnar aspects of his ring finger. Most importantly, he is improving in his ability to type and write, thus improving his hand function and reducing the burden of his prior injury.

Conclusions: We performed a case study demonstrating the application of a tenodesis procedure for restoration of distal interphalangeal flexion in an isolated, chronic zone 2 flexor digitorum profundus injury. We believe this procedure provides adequate function with a less invasive procedure than standard technique and shorter post-operative recovery in high functioning patients. Performing this technique in larger samples is necessary to demonstrate statistically significant benefit of this technique.

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Pulmonary Embolism Mortality in Female

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Genital Cancer Patients: Trends and Disparities from CDC WONDER Data

Presenter: Alejandro Bustamante MS

Alejandro Bustamante, MS, Muhammad Ahmad Nadeem, MD, Fatima Naveed, MD, Abdul Rafah Awan, MD, Ahsan Raza Raja, MD, Abdullah Ahmad, MD, Fatima Ashfaq, MD, Muhammad Usman Arshad, MD, Amir Humza Sohail, MD

Introduction: Pulmonary embolism (PE) is a potentially fatal complication in female patients suffering from genital cancers. These cancers, along with their associated treatments, significantly increase the risk of venous thromboembolism (VTE), including PE. Temporal and regional trends of PE-related mortality among female genital cancer patients remains poorly characterized.

Methods: This retrospective study analyzes CDC WONDER data from 1999-2020 to assess pulmonary embolism mortality trends in female U.S. patients with genital cancer. Age-adjusted mortality rates (AAMRs) per 100,000 were calculated and stratified by age, race, and region. Statistical analyses were carried out in RStudio.

Results: From 1999 to 2020, 13,692 deaths occurred in female genital cancer patients due to pulmonary embolism in the United States. The AAMR increased from 0.363 in 1999 to 0.590 in 2020 (τ :0.680, $p<0.001$). The Northeast had the highest AAMR, followed by the West, Midwest, and South. Black females had consistently higher AAMR than white females. Females over 65 had significantly higher AAMRs than those aged 15-65 ($p<0.001$). Black females older than 65 had the highest mortality overall ($p<0.001$).

Conclusion: The analysis of AAMRs for pulmonary embolism in female genital cancer patients shows a concerning rise in mortality, particularly after 2015. Disparities, especially

among Black women and those over 65, highlight gaps in healthcare access and intervention. Addressing these inequalities through early detection, timely intervention, and equitable healthcare is vital to improving outcomes and reducing mortality.

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Anaplastic Thyroid Carcinoma: Interplay of Predictive Factors, Treatment Challenges, and Survival Insights

Presenter: Abigale Aldrich BS

Asad Ullah, MD, Kavita Prasad, MD, MPH, Abigale Aldrich, BS, Kue Tylor Lee, BS, Abdul Qahar Khan Yasinza, MBBS, Bisma Tareen, MBBS, Asim Ahmed, BS, Nimra Jamil, MBBS, Dauod Arif, MD, FCAP, Hafeez Ullah, MBBS, FCPS, Agha Wali, MD, Muhammad Ayub Tareen, PhD, MBA, Abdul Samad Khan Tareen, PhD, Abdul Waheed, MD, Sana Jogeza, MBBS, Luis Brandi, MD, Nabin Raj Karki, MBBS, Marjan Khan, MD, Nagla Abdel Karim, MD, Amir Humza Sohail, MBBS.

Background: Anaplastic thyroid carcinoma (ATC) is a rare and aggressive thyroid neoplasm accounting for only 1-2% of all thyroid malignancies. This database study is the largest to date and provides the most up-to-date analysis of demographics, clinical, and pathologic factors, and survival of ATC.

Methods: Data for this study were extracted from the Surveillance, Epidemiology, and End Results (SEER) database that compiles cancer center data on patients diagnosed with ATC between 2000-2020.

Results: A total of 1,769 cases of ATC were included in our analysis. The incidence of ATC was higher in females (60.3%) and Caucasians (79.4%). The median age at diagnosis was 69.6 ± 11.8 and 71 years respectively. The tumor size when known, was <2 cm (77.3%). Lymph node status was known in 33.8% of patients and



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out of which, 74.4% were positive for nodal involvement. The most common site of metastasis was to the lung (40.7% in known cases). The majority of patients underwent combination therapy – surgery, chemotherapy, and radiation (19.3%), and chemotherapy alone (17.9%). The 5-year disease-specific survival was 11.8% (95% confidence interval (CI), 10.8-12.8). The highest 5-year survival was observed with combination therapy (surgery with chemoradiation) 20.9% (95% CI, 18.5-23.3). Multivariable analysis revealed that age >60 years, Asian/Pacific Islander, American Indian, or Alaska Native, >2 cm tumor size, positive nodal status, and metastatic were independent risk factors for mortality.

Conclusions: ATC is an uncommon tumor that mainly affects Caucasian females in their 60s and 70s. Older age, Asian/Pacific Islander, American Indian, or Alaska Native race were demographic factors associated with poorer prognosis. Tumor characteristics, size >2 cm, and metastasis were also associated with a worse prognosis. For better comprehension of pathogenesis and factors affecting survival, prospective clinical trials should include patients from all ethnicities, genders, and geographic locations with genomic analysis of ATC.

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Pancreatic cancer incidence, prevalence and mortality between the United States and high socio-demographic index countries from 1991-2021

Presenter: Abdullah W Mamdani

Abdullah W Mamdani, Acacia Shouse, Amir Sohail

Introduction: In the past thirty years, there has been a rise in the number of cases of pancreatic cancer seen in the Western part of the world, in comparison with other solid malignancies. Pancreatic cancer has a 10%

overall five-year survival rate due to incomplete effectiveness of treatment, comorbidities, and delayed detection. The aim of this study was to observe specific trends in the US and other high socio-demographic index (SDI) countries for geographic associations of pancreatic cancer.

Methods: Data for this study was collected from 2 Global Burden of Disease (GBD) databases. More specifically, the sources of data included autopsies, household surveys, admission records, outpatient records, and censuses to observe trends in pancreatic cancer over the study period. The Guidelines for Reporting Accurate and Transparent Health Estimates (GATHER) for the data were followed. Data was stratified by age, sex, and geographic location.

Results: To analyze the data for this study, the age-standardized incidence rate (ASIR), age-standardized prevalence rate (ASPR) and age-standardized mortality rate (ASMR) were the main metrics used. Also, sex specific trends were examined in this study. The ASIR and ASPR was increased throughout the study period for high SDI countries. The ASPR increased from 1991 to 2009 in the US. From 2010 to 2021, it did not have a significant increase or decrease. The ASMR for both high SDI countries and the US demonstrated significant increases, due to the poor prognosis and low survival rates. There is an upward trend noticed in all rates in both the high SDI countries and the US, but this trend was more significantly increased after 2001.

The ASIR and ASPR were divided even further to examine if there was a sex specific pattern between pancreatic cancer rates. Throughout the study period, males experienced higher rates of pancreatic cancer than females in both high SDI countries and the US. In 2012, when the incidence for males was 11.87, it was 8.94 for females (per 100,000). The ASIR and ASPR



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was the highest in 2016 for males and females of both high SDI countries and the US. After 2016, the ASPR and ASIR of all groups remained stable until the end of the study period. The ASPR for males from 2006 to 2021 was higher in high SDI countries than the US.

Conclusion: With poor prognosis and low survival rates, pancreatic cancer has been on the rise for the past thirty years. The US has had higher rates of pancreatic cancer in comparison to other high SDI countries. Throughout this study, a sex specific disparity was recognized as males in both the US and high SDI countries are experiencing higher rates than females. This study necessitates further investigation as demographics such as race and specific subpopulations were not included.

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Dissecting Squamous Cell Carcinoma of the Thyroid: A Population-Based Study of Trends and Outcomes

Presenter: Grace Ridgeway

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Introduction: Squamous Cell Carcinoma of the Thyroid (SCCOT) is a rare, aggressive thyroid cancer distinguished by the emergence of squamous cells due to chronic inflammation or metaplasia. It poses diagnostic and therapeutic challenges, often identified at an advanced stage with a poor prognosis. The rarity of SCCOT underscores the necessity for advanced research on effective treatments and diagnostic strategies. The current data utilized the Surveillance (SEER) database analysis to

determine the characteristics and outcomes of patients with primary SCCOT.

Methods: De-identified data from patients with primary squamous cell carcinoma of the thyroid from 2000 to 2020 were collected using the SEER database. Demographic data including age, sex, race, income, and housing, and clinical data including tumor size, tumor stage, nodal status, metastases, treatment modality, survival months, and the patient's status were extracted. Exclusion criteria were patients with unknown outcomes and missing death certificates. Detailed comparison of the two patient cohorts and univariate and multivariate Cox Proportional Hazard Regression survival analyses were conducted.

Results: Among the 159 primary SCCOT patients, the median age was 71±13.1 years, with 83 females (52.2%) and 76 males (47.8%). The median overall follow-up was 6.0 years (4.41 - 7.59). The majority were white (108, 67.9%), followed by Hispanic (19, 11.9%). The 5-year overall survival of the study group was 17.6% (95% C.I. 14.5-20.7). The 5-year disease-specific survival (DSS) was 37.6% (95% C.I. 32.7-42.5). There was no significant difference regarding if one underwent surgery, chemotherapy, or radiation ($p = 0.134$). Age, tumor stage, nodal status, and distant metastases were negative prognostic factors. Sex, race, income, and housing were not predictive of survival.

Conclusions: The current study on SCCOT highlights a low 5-year overall survival rate of 17.6% and a slightly better disease-specific survival rate of 37.6%, with no significant survival benefit from surgery, chemotherapy, or radiation. The negative prognostic factors included age, tumor stage, nodal status, and distant metastases, whereas sex, race, income, and housing did not significantly predict survival outcomes. These findings underscore the critical need for early detection and development of more effective treatment



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strategies to manage SCCOT.

Poster 12

Temporal trends in mortality location in patients with intrahepatic cholangiocarcinoma in the USA: an analysis of the National Center for Health Statistics mortality data

Presenter: Abdullah W Mamdani

Abdullah W Mamdani, Fouad Jaber, Marjan Khan, Asad Ullah, Abu Baker Sheikh, Amir Humza Sohail

Background: Intrahepatic cholangiocarcinoma (ICC) is an aggressive malignancy affecting the bile ducts of the liver. Out of all primary hepatic malignancies, it represents about 8% of total cases, making it the second most common type. Its incidence in the U.S. has been increasing and is expected to rise further. ICC often remains asymptomatic or presents with mild symptoms, leading to diagnoses at advanced stages. This study aims to compare the location of death for patients with a diagnosis of ICC and assess for disparities between clinical and demographic subgroups.

Methods: A retrospective cohort study was conducted by reviewing death certificates from the CDC WONDER (Centers for Disease Control and Prevention, Wide-Ranging Online Data for Epidemiologic Research) of patients with an underlying diagnosis or a contributing cause of death as cholangiocarcinoma. The time frame for this study was from the beginning of 2003 to the end of 2020. Mortality rates were stratified by age, sex, race, urbanization category, and year of death.

Results: From the beginning of 2003 to the end of 2020, there were a total of 101,631 deaths recorded in the CDC WONDER database. Of those, there were 45,322 deaths recorded in the descendant's home, 28,814 deaths in inpatient facilities, 11,266 deaths in hospice facilities, and 9,651 deaths in nursing

homes and long-term care facilities.

Over the study period, deaths in hospice facilities increased significantly, while the proportion of deaths in inpatient settings and nursing homes decreased significantly ($P < 0.001$ for all comparisons). Deaths at home also increased significantly ($P = 0.001$).

The study also revealed age-related trends, showing that younger patients had higher inpatient death rates ($P < 0.001$), while older patients experienced an increase in deaths within nursing homes. There were no significant age group differences observed with proportions of deaths at home ($P = 0.637$).

Disparities were observed based on race and gender. Black patients had a higher proportion of inpatient deaths compared to white patients, while male patients experienced more inpatient deaths than females ($P < 0.001$). In contrast, female patients had a higher proportion of deaths in nursing homes ($P < 0.001$). However, deaths at home and in hospice facilities showed similar proportions between males and females ($P = 1.0$). Additionally, deaths in hospice facilities, inpatient settings, nursing homes and at home were significantly higher in metropolitan areas compared to non-metropolitan areas ($P < 0.001$).

Conclusion: The trends observed in our study may reflect a changing preference for end-of-life care for patients facing terminal intrahepatic cholangiocarcinoma from inpatient and nursing facilities to at home and hospice care. However, the significant disparities in place of death for black patients may also reflect social and economic constraints limiting end of life care preferences for these vulnerable populations. This study necessitates further investigation into barriers to patient preference in end-of-life care.

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Emerging Trends and Demographic Disparities



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in Adrenal Cancer Mortality Across the United States Census Regions: An Analysis of National Center for Health Statistics Mortality Data

Presenter: Grace Ridgeway BS

Samuel L. Flesner B.S.*, Grace E. Ridgeway B.S.*, Mohommad A. Quazi PhD, Abdullah Mamdami B.S., Amir H. Sohail M.D.

Introduction: Adrenocortical carcinoma is a rare and aggressive malignancy with a poor prognosis. Fortunately, advancements in treatment modalities in the last twenty years have led to better clinical outcomes overall. The purpose of this study is to identify disparities in mortality trends across racial, sex, and regional demographic groups in the United States.

Methods: Data for this retrospective study was retrieved from the Center for Disease Control Wide-ranging Online Data for Epidemiological Research (CDC WONDER) for the years 1999 through 2020. Deaths attributed to malignant adrenal neoplasia were identified using the International Statistical Classification of Disease and Related Health Problems, 10th revision (ICD-10) codes. Data was collected as aggregate overall rates and also by race (White and African-American), sex (male and female), census region (Northeast, Midwest, South, and West), and year of death. Trends in age-adjusted mortality rates were assessed using Mann-Kendall trend tests. Comparisons between groups were conducted using two-sample, two-tailed t-tests. All statistical analyses for this study were conducted using the Python programming language.

Results: The mean age-adjusted mortality rate among the cohort over the study period was 0.186 deaths per 100,000 (95% CI 0.183-0.189). The overall trend in adrenal cancer-related mortality showed a significant decrease of 12.2% from 0.197 deaths per 100,000 in 1999 to 0.173 in 2020 ($\tau=-0.411$, $p=0.008$). Over the study period, mortality rates decreased

significantly in all four US census regions, the Northeast, Midwest, South, and West ($p<0.05$ for all comparisons).

Male mortality rates decreased 24.2% from 0.219 per 100,000 in 1999 to 0.166 in 2020. Female mortality rates decreased 8.1% from 0.197 in 1999 to 0.181 in 2020. Mean rates for the entire study period showed that females had a significantly higher mortality rate compared to males (0.188 vs. 0.174, $p<0.001$). Mortality trends for adrenal cancer significantly decreased in the white population between 1999 and 2020 ($\tau=-0.532$, $p=0.001$), but remained stable in the black population ($\tau=-0.117$, $p=0.463$).

Conclusions: Among patients younger than 64 years, females had a significantly higher mortality rate compared to age matched males. Additionally, the mortality rate in males decreased about three times more than that of females. Regarding racial differences, the mortality rate in white patients decreased significantly over the course of the study while the mortality rate in black patients remained stable. These results demonstrate significant racial and sex disparities in adrenal cancer mortality rates. Addressing these disparities calls for targeted efforts to improve healthcare access, ensure timely diagnosis, and promote equitable treatment options.

Poster 54

FLUCTUATIONS IN SKIN WOUND PERFUSION USING SOLID STATE ON-DEMAND H₂S GAS GENERATION

Presenter: Matthew Justus MS

M. Justus, MS, P. Massie, MD, D. Kulkarni, MD, C. Pace, BS, J. Marek, BS, B. Brooks, PhD, D. Friedrichsen, PhD, R. Shekariz, PhD, R.M. Clark, MD

INTRODUCTION: Diabetes mellitus is characterized by impairments in hydrogen



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sulfide (H₂S) physiology and is often fraught with chronic, non-healing foot wounds which can lead to limb loss. H₂S is a powerful vasodilator that has also been shown to promote angiogenesis and tissue repair in a variety of pre-clinical settings. Laser speckle contrast imaging (LSCI) provides real time noninvasive measurement of microcirculatory blood flow, but is limited to line-of-sight access to target tissue. While exogenous H₂S represents a promising new therapy which can be incorporated into novel wound dressings, concurrent imaging protocols must be advanced to inform the development of these dressings. Using a transparent adapter, this study aims to characterize the acute response of open wounds to exogenous H₂S gas generated from a prototype solid state generating device in order to establish tissue effects of H₂S delivered to the peri-wound milieu.

METHODS: Adult male and female Sprague Dawley (SD) rats were assigned to one of three treatment groups (25, 50, and 100 nmol dose) or a sham group (n=6). Under anesthesia, full thickness excisional wounds were created on the dorsal surface using an 8mm punch biopsy after depilation. A transparent adapter was sealed over the wound, connected to the generating device, and secured with adhesive tape. LSCI was conducted for 60 minutes at 25 frames per second utilizing a 785 nm laser to document real-time changes in tissue perfusion in response to H₂S gas administration.

RESULTS: Mean skin perfusion at baseline was 310.8±25.6, 192.6±61.2, 113.1±25.3, and 144.1±53.2 perfusion units (PU) for the sham, 25, 50, and 100 nmol groups, respectively. Maximum perfusion, as a percent increase from baseline was 38.2% ±5.9, 76.1% ±59.4, 208.3% ±30.9, and 217.4% ±78.7 for the sham, 25, 50, and 100 nmol groups, respectively. The time for an observed response in perfusion was assessed as a two

standard deviation increase from the baseline measurements and observed at 31.0±11.8, 14.9±10.2, 4.7±2.8, and 5.9±3.2 minutes. Comparative analysis was conducted using a two-way ANOVA with post hoc testing.

CONCLUSION: H₂S has been shown to be a relevant gasotransmitter involved in angiogenesis, control of inflammation, and wound healing. Utilizing the solid state H₂S generating prototype for quantifiable release of gaseous H₂S, a dose-dependent increase in real-time perfusion measurements were observed, presumed to be a result of known vasodilator effects. These data document the feasibility of tissue adsorption of H₂S gas in the setting of open wounds in mammalian systems.

Poster 55

Trends in Pancreatic Cancer Incidence, Prevalence, and Mortality in the United States and High SDI Countries (1991–2021): A Retrospective Population-Based Study

Presenter: Luke C. Sanchez

Muhammad Ahmad Nadeem, MD; Fatima Ashfaq, MD; Acacia Shouse, PhD; Fatima Naveed; Ahsan Raza Raja; Abdul Rafeh Awan, MBBS; Jibran Ikram, MD; Abu Baker Sheikh, MD; Asad Ullah, MD; Amir Humza Sohail, MD, MSc

Introduction: Pancreatic cancer is among the deadliest malignancies, with a five-year survival rate of approximately 10%. Its incidence is rising, particularly in high Socio-Demographic Index (SDI) countries, where it is projected to become the second leading cause of cancer-related mortality. This study examines trends in pancreatic cancer incidence, prevalence, and mortality in the U.S. and high SDI countries from 1991 to 2021, hypothesizing a significant increase over time with geographic and sex-based variations.

Methods: This retrospective, population-based observational study analyzed pancreatic cancer

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trends using the Global Burden of Disease (GBD) database. Primary outcome measures included age-standardized incidence (ASIR), prevalence (ASPR), and mortality (ASMR) rates, stratified by sex and region. Joinpoint regression analysis estimated annual percentage change (APC) with 95% confidence intervals (CIs) to identify significant trends.

Results: Pancreatic cancer rates increased significantly from 1991 to 2021, with an inflection point around 2001 and stabilization after 2016. Joinpoint analysis showed a statistically significant increase in ASIR. The U.S. exhibited slightly higher rates than high SDI countries, but differences were not statistically significant. Males consistently had higher pancreatic cancer rates than females.

Conclusions: The increasing burden of pancreatic cancer suggests factors beyond aging, including obesity, smoking, diabetes, and alcohol consumption. The recent stabilization may reflect improved detection and treatment. Continued efforts are needed to refine early diagnostic methods, identify modifiable risk factors, and develop effective interventions to reduce mortality.

Poster 56

Demographics, Prognostic Factors, and Survival Outcomes in Hepatic Angiosarcoma: A Retrospective Analysis

Presenter: Amir Sohail, MD, MSc

Amir H Sohail, MD, MSc; Agha Wali, MD; Jaylyn Robinson, MD; Asif Iqbal, MD; Abdul Qahar Khan Yasinzaï, MD; Hrithvik Jain, MD; Nooran Fadhil, MD; Marjan Khan, MD; Israr Khan, MD; Nabin R Karki, MD; Asad Ullah, MD

Introduction: Hepatic angiosarcoma (HA) is a rare malignant vascular neoplasm. Currently, there are no standardized protocols for treating HA. This study aims to understand clinicopathologic analysis, prognostic factors,

and treatment outcomes comprehensively.

Methods: The data retrieved from the SEER database was reviewed for hepatic angiosarcoma cases between 2000 and 2021.

Results: A total of 389 patients with hepatic angiosarcoma were identified with a mean age of 63.9 years (SD \pm 16). Most patients were male (64%), and per US census data, non-Hispanic Asians or Pacific Islanders were the most common race (17%). In known cases of tumor stage (61%), the most common tumor stage was distant (22%), and most were grade III (18%) tumors. Overall, the 3-year survival rate was 6.7% with a 95% confidence interval (95% CI 0.044-0.100), disease-specific survival at a 1-year survival rate was 4.43% (95% CI 0.023-0.083), and no patients survived by 3 years. The best overall survival rate was the 1-year rate for surgical resection, 18.20% (95% CI 0.075-0.441). Chemotherapy had a 1-year survival rate of 11% (95% CI 0.057-0.211), and radiation therapy had no survival significance ($p = 0.2$). Multivariate analysis shows age above 70 years (H.R. 1.67 (95% CI 1.181-2.381), $p < 0.05$), no surgical intervention (H.R. 2.29 (95% CI 1.585-3.336) $p < 0.001$), and distant stage (H.R. 2.54 (95% CI 1.696-3.805) $p < 0.001$) are negative prognostic factors, whereas female sex (H.R. 0.68 (95% CI 0.536-0.875) $p < 0.05$) is a positive prognostic factor.

Conclusion: Increasing age (> 70 years), male sex, and distant stage were found to be strong predictors of poor survival outcomes. Patients had better outcomes when surgical resection and chemotherapy were included in their treatment. These results can provide continued evidence in the future management of patients with hepatic angiosarcoma.

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Practice Setting Does Not Affect Survival in Patient Undergoing Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy for



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Appendiceal Adenocarcinoma

Presenter: Amir Sohail, MD, MSc

Amir Sohail MD MSc, Li Luo PhD, Yazmin Irazoqui-Ruiz, Lara McKean Baste MD, Vinay Rai MD FACS, Sarah Popek MD, Matthew Hernandez MD, Bridget Fahy MD FACS, Alissa Greenbaum MD

Introduction: The indications for and volume of cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS-HIPEC) procedures continue to expand in the United States. This study aimed to examine the differences in outcomes of patients undergoing CRS-HIPEC for appendiceal adenocarcinoma based on practice setting type.

Methods: Patients with appendiceal adenocarcinoma undergoing CRS-HIPEC were identified from the National Cancer Database (2006-2021). Patient demographics, tumor characteristics and postoperative outcomes were compared between academic vs. non-academic facilities. The primary outcome was overall survival (OS). Multivariable Cox regression was used to determine the risk of mortality. Kaplan Meier curves compared OS between groups.

Results: We identified 1,605 patients with appendiceal adenocarcinoma who underwent CRS-HIPEC (1,116 in academic setting and 489 in non-academic). The median age was 51 years, and the majority were female (53%), White (87%), and non-Hispanic (94%), with private insurance/managed care (62%). Academic centers had a higher proportion of patients travelling ≥ 50 miles (51% vs 21%; $p < 0.001$). Non-academic centers had a higher incidence of liver metastasis at diagnosis (14% vs 26%, $p < 0.001$). Ninety-day mortality was higher in academic settings (3.9% vs 1.4%; $p = 0.013$). There was no difference in 30-day mortality (0.5% vs 1.6%; $p = 0.075$), readmission rate (7.0% vs 9.0%, $p = 0.30$) or length of

hospital stay (median 9 days for both groups; $p = 0.50$). OS did not differ significantly ($p = 0.12$). Multivariate analysis demonstrated a higher risk of mortality among males (HR 1.51; 95% CI 1.21 – 1.88; $p < 0.001$). Mortality risk was significantly lower in the highest income quartile (HR 0.56, 95% CI 0.38 – 0.81; $p = 0.009$) vs lowest quartile, and mucinous histology had a better prognosis than non-mucinous (HR 0.31, 95% CI 0.23 – 0.40; $p < 0.001$). Race ($p = 0.48$), insurance status ($p = 0.39$), academic settings ($p = 0.45$), and urban-rural location ($p = 0.53$) were not significant predictors of mortality.

Conclusion: No differences in OS were found based on academic setting for patients undergoing CRS-HIPEC for appendiceal adenocarcinoma. Equivalent outcomes are likely related to surgeon experience and a comprehensive program in either type of institution, while mortality risk could be higher in the academic cohort due to higher complexity of cases.

Poster 58

European and American Guidelines for Urologic Practice Vary Significantly in Recommendation Strength

Presenter: Kyle Clouse, DO

Kyle Clouse, DO; Grace Powderly, MS 3; Satyan K. Shah, MD

Introduction: Clinical practice guidelines (CPGs) from separate organizations have been shown to be largely concordant. However, comparisons with respect to recommendation strength are lacking. We studied differences in how emphatic the major societies are in their CPG statements.

Methods and materials: AUA and EAU guidelines addressing trauma, testicular cancer, urolithiasis, urethral strictures, and chronic pain/interstitial cystitis were reviewed. These topics were selected because of the availability



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of matching CPGs and their broad representation of Urology. Evidence quality was considered high for EAU levels 1a, 1b, 2a, 2b and AUA ratings of A or B; other levels or no rating were considered low. Recommendations considered to be strong were: AUA “standard” or “strong” and EAU “strong”. Weaker recommendations were AUA “moderate”, “recommended”, “option”, “conditional”, “expert opinion”, “clinical principle” and EAU “weak”. The Chi-square and Fisher’s exact tests were used to assess the equality of proportions with $p < 0.05$ considered significant.

Results: Underpinning 621 total statements were 652 assessments of evidence strength. Among both sets of CPGs, strong recommendations were most common in urolithiasis (62%), and least in urethral strictures (36%), $p < 0.0001$. The quality of evidence was highest in testicular cancer (64%), and least in trauma (18%), $p < 0.0001$. The AUA deemed more evidence to be of lower quality (72%) compared to the EAU (44%), $p < 0.0001$.

Overall, the EAU was significantly more likely to issue strong recommendations (67%) compared to the AUA (24%), $p < 0.0001$. This difference was observed in all the individual topic areas, with $p < 0.0001$ for each.

Conclusions: The EAU is more emphatic in its guideline statements, issuing significantly more strong recommendations compared to the AUA. Joint American and European reconciliation in this area may improve the quality of CPGs.

Poster 59

Impact of Accreditation Council for Graduate Medical Education (ACGME) Policies and Resident Unions on Urology Educator Wellness: A Comprehensive Analysis

Presenter: Anusara Carolyn Ice, MD

Anusara Carolyn Ice, MD, MSc; MingAn Yang, PhD; Michael S. Davis, MD, MBA, MHA, FACS

Introduction: For the past decade, it has been regularly reported that urologists have one of the highest incidences of burnout among physicians in the United States. This issue is exacerbated for urologists in academic settings due to administrative demands, ACGME expectations, and resident unions. The objective of this study was to understand the perceptions of urology educators regarding these issues and their effect on educator wellness and burnout.

Methods: Data were collected via surveys sent to academic urology educators across multiple institutions. Responses were collected in a REDCap database. Data was then analyzed using a logistic regression model with stepwise selection to explore the relationship between burnout and the covariates being studied. Free-text responses were analyzed thematically.

Results: The survey reached an estimated 3,986 practicing academic urologists (2023 AUA Census) with 78 responses (2% response rate). Most respondents (73.3%) were male, in the North Central AUA Section, and held senior academic roles (79.5%). Nearly half had over 15 years of experience with program directors comprising the largest leadership group (12.31%). Fifty-five percent reported currently experiencing burnout while 72% reported that ACGME policies increased administrative burden, specifically through documentation. Concerns included lack of protected time for education, inadequate institutional support, and erosion of the educator-learner relationship. Respondents recommended reducing administrative tasks, providing equitable compensation for educational efforts, and implementing meaningful wellness initiatives for educators.

Conclusion: Burnout in academic urology



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faculty stems from institutional policies, workload expectations, and limited support. Given vital role of educators in graduate medical education, addressing these challenges is essential. Reducing administrative burdens, enhancing support, and implementing faculty-centered wellness policies are critical for retention and sustainability. While systemic reforms, including simplifying ACGME administrative tasks and institutional improvements are needed, further research is needed to better understand and mitigate burnout in academic urology.

Poster 60

Should SRTR recognize Americans Indians as a racial category vs. "other"?

Presenter: Alyssa V.S. Justus MD

Alyssa V.S. Justus, MD, Kelsea Carrier, FNP-C, Michael Davis, MD, MBA, MHA

Introduction: American Indians have been shown to be higher risk for developing end stage renal disease (ESRD) than their white counterparts; some studies suggest as high as ten times more likely. Overall, data regarding graft function and transplant equity in American Indians is lacking. However, it has been shown in individual studies that American Indians are less likely to receive kidney transplants, are more likely to continue hemodialysis, have higher risk factors for kidney graft rejection, and higher graft failure. Based on 2020 data, American Indians have an incidence of 596 per 1 million for developing ESRD. We can expect 3444 new American Indians to develop ESRD per year, with highest gross populations in California, Oklahoma, Arizona, Texas, and New Mexico, and highest percentage populations in Alaska, Oklahoma, New Mexico, South Dakota, and Montana. This is estimated to comprise approximately 7.4% of the amount of newly listed patients on the kidney transplant waiting list.

Methods: We queried the Scientific Registry of Transplant Recipients (SRTR) database regarding the kidney transplants conducted in the United States as well as the number of individuals on the kidney transplant waiting list. This data was separated by race and compared to United States population by race, as obtained from the United States Census data.

Results: Currently the Scientific Registry of Transplant Recipients (SRTR) reports the following races: Asian, African- American, Hispanic/Latino, White, Other, and Unknown. States with a larger population of American Indians have transplant programs with a larger number of patients listed for kidney transplant in the "Race Other" category. Likely, the "Race Other" category contains more than American Indians, however we are not able to extrapolate this data. There are 15 programs with over 10% "Race Other" on the kidney waiting list with substantial overlap with the US population of American Indians which leads us to suspect that American Indians make up a large portion of the "Race Other" category. Furthermore, dedicated children's hospitals have a higher percentage of "Race Other" listed for kidney transplant than their same-city adult counterparts.

Conclusions: While race may not be a direct biologic influencer of kidney graft outcome, it continues to be a marker of socioeconomic status. For this reason, we encourage transplant data collection to include American Indians within its own race category so that we can further investigate kidney transplant care for American Indians.

Poster 61

Hospitals and Fast-Food: Mixed Messages to Kidney Stone Patients

Presenter: Myranda Robinson

Myranda Robinson, Hoi Doan, Carolyn Ice MD,



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Satyan Shah MD

Introduction: Urologists recommend patients with kidney stones limit their consumption of fast-food due to high salt content. However, patients may feel confused about this recommendation when such food is served at hospitals. We determined the prevalence and type of fast-food outlets at large American hospitals.

Methods: Web searches were conducted to identify the primary academic hospital for every allopathic medical school in the United States. For each such hospital, we used several resources to determine whether any fast-food outlets were located on campus including 1) Google maps 2) hospital maps 3) hospital website 4) fast-food outlet websites and/or 5) directly calling the hospital. Fischer's exact tests were used to determine if the prevalence of these type of restaurants varied by census region of the country or type (public/private) of institution. We hypothesized that hospitals in regions with the highest prevalence of obesity (south and midwest) would have more fast-food options than the northeast and west.

Results: A total of 152 hospitals were identified, distributed among 45 states. Of these, 91 were public and 61 were private. Fast-food presence at hospitals did vary by region with at least one present in 85% (south), 49% (Midwest), 17% (west) and 17% northeast, with $p < 0.001$. Fast food was also more common among private hospitals (65%) compared to public institutions (40%), $p = 0.003$.

Conclusions: Fast-food is commonly available at teaching hospitals in the United States and its presence may confuse kidney stone patients about their dietary goals. The southern and midwest regions have more fast-food, consistent with these regions also having the highest obesity rates in the USA

Poster 62

Urology Program Mission Statements: Uniqueness or Uniformity?

Presenter: Sage Templeton

Sage Templeton, Satyan Shah MD

Introduction: High-quality mission statements improve the performance of organizations. However, it can be easy to simply reiterate the goals of thought-leading institutions. We determined how well Urology programs state unique aspects of their mission.

Methods: Academic programs that offer urology residency training in the United States were queried in Google by the keywords: urology, mission, and <institution name>. This search was conducted during the months of January and February 2025. Common themes and unique aspects discussed in the mission statements were tabulated, including any references to Diversity, Equity and Inclusion (DEI).

Results: Of 94 readily-found statements, 52 were from public and 42 from private institutions. The majority mentioned patient care (100 %), education (83%), and research (70%). Only 5 institutions were judged to have truly unique elements in their statements such as customer service, leadership, mentorship, community outreach, and/or teamwork. DEI was mentioned in 15 mission statements, but its presence did not vary by region ($p = 0.5$) nor institution type (public vs. private, $p = 0.39$).

Conclusions: Urology programs have largely uniform mission statements emphasizing patient care, research, and education. This may reflect emulation of thought-leading institutions over genuine consideration of a program's uniqueness. DEI was referenced in only 16% statements..

Poster 63

OBESITY IS A RISK FACTOR FOR INCREASED MORBIDITY IN PATIENTS WITH TRAUMATIC



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HEMOTHORAX

Presenter: Carlos Jacob Bonnafox

C.J. Bonnafox MSIII, C.P. Jose MD,MS, M. Quazi, M.R. Smallwood MSIII, J.M. Langsfeld MSIII, S.E. Templeton MSIII, M. Langsfeld MD

Introduction: The obesity epidemic in the United States and around the world has continued to escalate to a now estimated prevalence of 41.9% among adults in the U.S. and 12.5% worldwide. Importantly, obesity has been shown to be an independent risk factor for complications during surgery with increased risk of adverse hospital outcomes in both adults and pediatrics. Due to the increased prevalence of obesity in the U.S., it is now increasingly important for acute care surgeons to understand the effect of obesity on the morbidity and mortality of the trauma patient. Unfortunately, the literature on the relationship of outcomes in the traumatic patient with obesity is lacking and somewhat contradictory. Hemothorax itself is a common complication of thoracic trauma whose management may become complicated by patient obesity due to their increased risk of exsanguination, ventilator requirement, increased incidence of ARDS, among others. The aim of this study is to evaluate the relationship between obesity and outcomes in the patient with traumatic hemothorax.

Methods: The National Inpatient Sample (NIS) database was used to obtain data from 2018-2021. The study included adult patients with diagnosis of traumatic hemothorax or traumatic hemopneumothorax. This group was divided by presence of concomitant diagnosis of obesity or absence of obesity diagnosis. Data analyzed include patient characteristics, mortality, and major comorbidities. Propensity matched analysis was utilized for comparison groups to control for differences in sample size between both comparison groups.

Results: For patients with traumatic hemothorax or hemopneumothorax (N=176,285), patients with obesity had higher rates of significant morbidity including Acute Kidney Injury (AKI) (OR 1.6, CI 1.42-1.81, $p < 0.001$), and non-invasive mechanical ventilation (OR 2.72, CI 2.12-2.3.48, $p < 0.001$). Adjusted mean inflation-adjusted cost was \$21,509 higher for obesity group compared to group without obesity ($p < 0.001$). Results show no significant changes in groups for red blood cell transfusion, invasive mechanical ventilation, sudden cardiac arrest, or mortality after propensity matched analysis.

Conclusions: This study demonstrates an increased incidence of morbidity in patients who had a diagnosis of traumatic hemothorax or traumatic hemopneumothorax with the presence of concomitant diagnosis of obesity. Our finding also suggest that obesity is associated with increased hospital costs. Given the rising prevalence of obesity in the U.S., it is crucial for acute care surgeons to recognize the unique challenges obesity poses in the trauma setting. Further studies including prospective analyses are needed to further classify the correlations identified in this study.

Poster 64

Bibliometric Analysis for Global Research Trends in Diagnostic and Therapeutic Approaches for Peripheral Artery Disease

Presenter: Trevar Caldwell, MS

Fatima Naveed, M.D. Muhammad Ahmad Nadeem, M.D., Trevar Caldwell, M.S., & Amir H. Sohail, M.D.

Introduction: This bibliometric analysis aims to systematically summarize the existing literature on Peripheral Artery Disease (PAD) from 1999 to 2024. The primary questions addressed include: (i) What are the key countries, institutions, authors, and journals that have

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significantly influenced PAD research? and (ii) What are the emerging trends and hotspots in PAD research as revealed through keyword and co-citation analyses?

Methods: A comprehensive literature search was conducted on, using the Scopus database, focusing on documents related to "Peripheral Artery Disease" published in English from 1999 to 2024. The search yielded 54,560 results, which were analyzed using the bibliometrix R package and VOSviewer software for visualizing co-authorship networks and keyword co-occurrences. Data analysis was further supported by Microsoft Excel for creating relevant tables and charts.

Results: The analysis revealed a total of 19,632 documents published over the study period, with an annual growth rate of 5.16%. The Journal of Vascular Surgery emerged as the most frequently cited source, while the USA led in total citations. Notably, the University of California and Harvard Medical School were identified as the most prolific institutions. The most cited documents included influential studies that introduced critical risk algorithms and management guidelines for PAD. Despite an increase in publication volume, a decline in average citations per article was observed over time.

Conclusions: This bibliometric analysis highlights a significant increase in PAD research output over the past two decades, reflecting growing awareness and advancements in diagnostic and therapeutic approaches. The findings underscore the importance of specialized journals in disseminating high-impact research and suggest that future investigations should continue to explore emerging trends in PAD to address this pressing public health concern effectively.

Poster 65

Primary Cutaneous Leiomyosarcoma: A

Population Based Study with Insights into Future Therapeutic Perspectives

Presenter: Grace Ridgeway BS

Grace Ridgeway BS; Abdul Qahar Khan Yasinzaï, MD; Kue T Lee, MD; Israr Khan, MD; Bisma Tareen, MD; Amir H. Sohail, MD; Asif Iqbal, MD; Abdul Waheed, MD; Bhavishya Ramamoorthy, MD; Asad Ullah, MD; Andrew M Blakely, MD

Introduction: Leiomyosarcoma (LMS) of the skin is a rare malignant mesenchymal neoplasm that is commonly categorized as cutaneous or subcutaneous. This study aims to use the SEER database to identify demographic, clinical, and pathological factors affecting the prognosis, survival, and treatment of patients with leiomyosarcoma of the skin. It also integrates Propensity Score Matching (PSM) and prognostic nomograms to analyze survival rate predictions.

Methods: Demographic and clinical data of patients with skin LMS was extracted from 2000 – 2020 using the Surveillance, Epidemiology, and End Results database (SEER). The inclusion criteria for our study included cases that were positively confirmed for cutaneous leiomyosarcoma through the microscopic confirmation of positive histology, immunophenotyping, genetic studies, or another unspecified method. Cases included were collected from either an inpatient hospital, outpatient clinic, laboratory, physician's office, or nursing/hospice setting. R version 4.2.3 (Shortstop Beagle) was used for statistical analysis. Univariate analysis was conducted to identify significant factors for multivariate analysis. The Cox regression method was used to calculate hazard ratios and to identify independent factors on survival outcomes.

Results: 1,067 total cases of LMS of the skin were identified. Most patients were greater than 65 years of age (50.5%), male (78.8%),



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and white (88.5%). Of the reported cases, most tumors were <2 cm (72.6%). The grading in known cases was as follows: 34.4% well-differentiated, 43.7% moderately differentiated, and 22.0% poorly differentiated. The overall 5-year survival was 79.9% (95% confidence interval (95% CI) =77.4 - 82.6) and the 5-year cause-specific survival was 95.7% (95% CI =94.2 - 97.2). By treatment, the 5-year cause-specific survival was as follows: surgery only, 82.9% (95% CI = 80.3 - 85.6) both radiation and surgery, 60.2% (95% CI =47.7 - 76.0) and no treatment, 68.2% (95% CI = 58.9 - 78.9). Multivariable analysis depicted factors associated with increased mortality: age > 60 years, head and neck tumors, and tumors greater than 4.0 cm in size.

Conclusions: LMS of the skin constitutes 3% of all soft tissue sarcomas, commonly affecting white males aged greater than 65. Most patients received the gold-standard treatment of surgical resection. The results presented in this study provide valuable insights that could shape the development of future clinical protocols for skin LMS and highlight the potential for these findings to significantly impact patient care and treatment efficacy.

Poster 66

Advanced Age Increases Susceptibility to Ischemic Myopathy after Murine Hindlimb Ischemia

Presenter: Deepali Kulkarni, MD

D. Kulkarni, MD, P. Massie, MD, M. Justus, MS, M. MazloumiBakhshayesh, MPharm, B. Coffman, MD, C. Pace, MS, R.M. Clark, MD

Introduction: Peripheral artery disease (PAD) affects millions of Americans and can lead to limb loss in advanced states. Advanced age is a risk factor for PAD and is associated with structural changes in vessel walls as well as poor angiogenic capacity. Ischemic myopathy is a recognized effect of chronic tissue

malperfusion in the setting of chronic limb-threatening ischemia. Differences in the severity and manifestation of ischemic myopathy with advanced age have not been fully investigated.

Study aim: We hypothesized that aged animals would differ in their response to limb ischemia and revascularization efficiency.

Methods: Hindlimb ischemia was created in young (9-12 week, n=9) and aged (72 week, n=11) C57Bl/6 mice under anesthesia. Animals were followed for 21-days by laser speckle contrast imaging (LSCI) to compare perfusion between ischemic and non-ischemic (contralateral) limbs. After humane sacrifice, ischemic and contralateral non-ischemic gastrocnemius muscles were collected for histologic and molecular analysis. CD31 immunohistochemistry was performed to evaluate angiogenesis. Transmission Electron Microscopy (TEM) evaluated cellular ultrastructural differences between ischemic and control muscle.

Results: Mean limb perfusion in young and aged animals did not differ after initial arterial ligation (aged 46% baseline, young 36% baseline, P=0.19). After the 21-day revascularization period, aged animal limb perfusion trended poorer (mean 77% baseline) compared to young (mean 91% baseline, P=0.12). Histologic indices of ischemic myopathy differed between young and aged animals with mean aged myofiber diameter 8.4 μ m compared to 11.2 μ m in young animals (P<0.001). Control (non-ischemic) myofiber diameter also differed by age with mean 15.2 μ m in aged animals compared to 19.7 μ m in young (P<0.001). TEM documented centralization of nuclei with condensation of chromatin as well as significant distortions in sarcomere and myofibril structure in ischemic muscle as compared to control. Ischemic muscle cells contained significantly more



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mitochondria, glycogen and collagen.

Conclusions: Hindlimb ischemia secondary to arterial occlusion in both young and aged mice lead to reproducible perfusion deficits with subsequent tissue recovery. Aged animals demonstrated evidence of myopathy in non-ischemic limbs as well as more severe ischemic myopathic injury at the tissue and cellular ultrastructural levels compared to young.

Poster 67

Limitations in Achieving Optical Transparency in Live Mice

Presenter: Jenna Marek BS

J. Marek, BS, M. Justus, MS, P. Massie, MD, D. Kulkarni, MD, C. Pace, BS, R.M. Clark, MD

Introduction: With recent advances in angiogenesis research, laser speckle contrast imaging (LSCI) has emerged as a critical tool for studying vascular structure and blood flow dynamics [1]. Efforts to enhance imaging techniques, particularly through the use of dyes, have shown promise. A recent study demonstrated how certain dyes can render mouse skin transparent, possibly improving imaging capabilities [2]. However, this approach presents limitations, possibly due to factors such as inconsistent dye penetrations, skin irritation, or residual dye affecting image clarity. The purpose of this study was to evaluate the reproducibility of a recently described technique and address limitations to fully realize the potential of dye-assisted LSCI in physiology research.

Methods: A gel mixture was prepared for topical application by first combining tartrazine dye (18 to 30 w/w%) and agarose. The mixture was heated at 70°C for 10 min and refrigerated at 4°C for 10 min to solidify. B6-Vgat2-res-cre-ko mice (n=6) aged 18-21 weeks were weighed and anesthetized (1-3%

isoflurane inhaled) to ensure minimal stress during the procedure. The gel mixture was then gently massaged into the lateral aspect of the left hind limb for approximately 5 min, as described by Zihao Ou [2]. The mice were placed under the Moor Instruments LSCI to measure perfusion before and after dye application. After applying the gel and taking images, the gel solution was washed off with water. Images were obtained at orthogonal distance of 15 cm at 25 Hz using a 1 sec time constant and 4 ms exposure time.

Results: Applying the gel solution to the mice in this study did not render the skin transparent and, as a result did not improve imaging capabilities. Figure 1 shows that the dye solution resulted in a reduced average perfusion measurement, however this was not statistically significant. We observed a tendency for the dye to cause skin irritation. Although prior studies recommended washing off the gel solution with water, it was not completely effective, leaving residue that

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Ischemic Skeletal Myopathy Mirrors Tissue Perfusion in Young Mice

Presenter: Deepali Kulkarni MD

D. Kulkarni, MD, P. Massie, MD, B. Coffman, MD, C. Pace, MS, N. Kanagy, Ph.D, R.M. Clark, MD

Introduction: Peripheral arterial disease (PAD) affects millions of Americans and is responsible for significant detriments to mobility, with major limb loss possible at advanced stages. Ischemic myopathy associated with PAD is a recently recognized effect of chronic tissue malperfusion. Advanced age, characterized by defects in the sirtuin (SIRT1) histone deacetylase pathway, has been linked to impaired angiogenesis after ischemic insult. Hydrogen sulfide (H₂S) has also recently been described as a key mediator of ischemic tissue recovery and neovascularization. Here we



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describe the development of reproducible ischemic myopathy in young mice as a comparison for mechanistic studies of tissue recovery in advanced age.

Methods: Hindlimb ischemia was created in young (9-12 week) mice (C57Bl/6, n=9) under anesthesia. A 1 cm groin incision was created to ligate the femoral/external iliac artery. Animals were serially followed over a 21-day period by laser speckle contrast imaging (LSCI) and planimetric photography. After humane sacrifice, ischemic and contralateral non-ischemic gastrocnemius muscles were collected for histologic and molecular analysis. CD31 immunohistochemistry was performed to evaluate angiogenesis. RT-PCR investigated changes in H2S synthetic enzyme expression as well as age-related markers.

Results: Mean pre-operative limb perfusion was 86.1 perfusion units (PU). After arterial ligation, flux was reduced to mean 40.1 PU, a 46% decrease from pre-operative values and mean 35% contralateral control limb perfusion. During the post-operative period, reperfusion was observed to increase predictably by post-operative day 21, achieving mean 91% baseline compared to the contralateral control. Histologic studies of myofiber diameter show a mean of 11.2 μm for the ischemic hindlimb and a mean diameter of 19.7 μm for control muscle ($P < 0.01$). CD31 immunohistochemistry reveals evidence of neovascularization.

Conclusions: Hindlimb ischemia secondary to arterial occlusion in young mice leads to reproducible perfusion deficits with subsequent tissue recovery. Histological changes consistent with ischemic myopathy and impairment in myofiber diameter mirrors the degree of ischemic injury. These findings have provided a comparison group whereby we can evaluate the effects of arterial occlusion on aging mice as well as the role of H2S and its interplay with SIRT1.

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Evaluation of Sources of Polymer Embolization After Fenestrated Aortic Repair Mimicking Spinal Cord Ischemia

Presenter: Kristin Markle

Markle, K., Massie, P., Zimmerman, A., Elwood, H., Rana, MA. and Clark, RM.

Objective: Hydrophilic polymer embolization (HPE) is a rare and underrecognized complication of endovascular procedures such as fenestrated endovascular aortic repair (FEVAR). While candidate sources have been postulated in vitro, data implicating specific culprit devices from actual HPE cases have yet to be investigated. Following cases of biopsy-confirmed HPE that mimicked spinal cord ischemia after FEVAR, we attempted to further identify devices responsible for this phenomenon.

Methods: Formalin-fixed, paraffin-embedded tissue blocks from histopathological specimens of a skin biopsy from a case of HPE were obtained, and 5 μm sections were deparaffinized, OsO₄ impregnated and carbon coated. Embolized material was present within dermal capillaries on hematoxylin and eosin staining consistent with HPE. Scanning electron microscopy (SEM) with backscatter detection and elemental composition analysis using energy dispersive x-ray (EDX) were performed on embolized material to characterize the ultrastructure and elemental content. A total of 18 endovascular devices used as the standard set of instrumentation during all complex aortic repairs at our institution were amassed and representative samples from each were identically prepared for SEM-EDX analysis for comparison to the HPE case results.

Results: SEM of embolized material confirms a classic smooth serpiginous ultrastructure of 5.6 μm mean diameter. EDX of adjacent tissue revealed carbon to oxygen (C:O) ratio of 3.5



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while the embolized material was significantly different with a C:O ratio of 1.5. No other analyzed areas of the tissue were as profoundly carbon-poor. The C:O ratio of 1.5 with a standard deviation of ± 0.3 was applied to create a sensitive spectrum in filtering results of the device analysis. Using this method, 8 of the 18 devices were identified as potential sources of embolized material. Devices most closely approximating target C:O ratio were the Ansel Sheath (1.56), Lunderquist wire (1.62) and Glidewire (1.62). Cook stent graft components were also implicated with C:O ratio 1.29 for Zenith Fenestrated main body and 1.21 for ZSLE limbs.

Conclusion: Our results reveal a short list of devices implicated in hydrophilic polymer embolization during complex aortic repair. Future studies to evaluate the rate of polymer shedding of these devices in anin vitro setting may be warranted.

Poster 70

T-Cell and Macrophage Infiltration and Fibrosis in Chronic Limb-Threatening Ischemic Myopathy

Presenter: Pierce Leroux Massie MD

P.L. Massie, MD, D. Kulkarni, MD, B. Coffman, MD, A. Abrums, BS, J. Gallardo, BA, C. Pace, BS, N. Kanagy, PhD, R.M. Clark, MD, MBA

Introduction: Peripheral arterial disease (PAD) affects approximately 10 million Americans, with the vast majority being elderly. Late-stage PAD often leads to limb-threatening states and major limb loss, despite maximal revascularization. Ischemic skeletal myopathy of PAD has been linked to dysfunctional mitochondria resulting in increased reactive oxygen species. Histologically it is characterized by decreased myofiber cross-sectional area, endomysial fibrosis, and variable fiber morphology but the role of

immune cells in this process is not well-described. Here we characterize the contribution of immune cell infiltration in ischemic myopathy of chronic limb threatening ischemia (CLTI).

Methods: Lower extremity skeletal muscle samples were obtained during major limb amputation for end-stage PAD in the CLTI group and during elective knee ligament reconstruction in the young (18-39 years) and aged (40+ years) control groups. Histologic sections were stained with hematoxylin and eosin as well as reticulin and Masson's trichrome to quantify myofiber morphology and fibrosis. Immunohistochemistry directed at CD3 (T-cell), CD45 (pan-leukocyte), CD68 (macrophage) and CD20 (B-cell) was undertaken and quantified as cell count per high power field (HPF). Statistical analyses were performed with the Mann-Whitney U test.

Results: PAD subjects (n=5) were predominantly male with mean age 64 compared to young control subjects (n=5), mean age 28.5 and aged control (n=3), mean age 44. PAD subjects demonstrated histologic changes consistent with ischemic myopathy including significantly decreased mean myofiber area ($2698 \mu\text{m}^2$ vs. $2472 \mu\text{m}^2$, $P < 0.01$) and significantly greater collagen deposition compared to young controls ($1915 \mu\text{m}^2$ vs. $408.5 \mu\text{m}^2$, $p < 0.001$). T-cell infiltration was three-fold greater in PAD muscle compared to young (20 CD3+cells/HPF vs. 6 CD3+cells/HPF , $p < 0.01$). CD45+cell infiltration was also greater in PAD ($42 \text{ CD45+cells/HPF}$ vs. $12 \text{ CD45+cells/HPF}$, $p < 0.01$) and two-fold greater macrophage (CD68+) infiltration ($58 \text{ CD68+cells/HPF}$ vs. $25 \text{ CD68+cells/HPF}$, $p < 0.01$) was observed. B-cell (CD20+) presence was not different between groups.

Conclusion: This study is the first of its kind to characterize immune cell deposition in CLTI-associated ischemic myopathy compared



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to those without PAD. Future work will investigate the mechanistic role leukocyte proliferation plays in ischemic myopathy in both aging and disease.

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Racial And Gender Disparities in The Management and Outcomes of Patients with Acute Mesenteric Ischemia: A Nationwide Retrospective Cohort Analysis

Presenter: Sage Templeton

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Introduction: Acute mesenteric ischemia (AMI) is often associated with poor prognosis without immediate intervention. Despite the severity of AMI, little is known regarding gender- and race-specific disparities in outcomes of hospitalized patients. The aim of this study was to characterize gender- and race-specific disparities in patients hospitalized with AMI using the United States National Inpatient Sample (NIS).

Methods: We performed a retrospective cohort study on patients admitted with a primary diagnosis of AMI between January 1, 2016 to December 31, 2020, using the NIS database. Demographics, comorbidities, and in-hospital outcomes were compared between racial groups and genders. Categorical and continuous variables were analyzed with chi-squared and multivariate linear regression respectively. Odds ratios for the race and gender cohorts were obtained with logistic regression models.

Results: Of 99,225 patients, 55,420 (55.8%) were female. Compared to males, females had lower odds of in-hospital mortality (OR 0.93, p

= 0.04), acute kidney injury (OR 0.70, p <0.001), vasopressor use (OR 0.79, p <0.001), invasive (OR 0.77, p <0.001) and non-invasive mechanical ventilation (OR 0.70, p <0.001), hemodialysis (OR 0.92, p <0.001), venous thromboembolism (OR 0.78, p <0.001), myocardial infarction (OR 0.80, p = 0.003), sudden cardiac arrest (OR 0.89, p = 0.002), and small bowel resection (OR 0.92, p = 0.003).

Relative to White patients, Hispanic patients had significantly lower odds of inpatient mortality (OR 0.87, p = 0.04) and Native American patients had a higher risk of inpatient mortality (OR 1.64, p = 0.01). African American patients were significantly less likely to undergo percutaneous vascular intervention (OR 0.39, p <0.001), and more likely to undergo small bowel resection (OR 1.25, p <0.001).

Conclusions: AMI has worse outcomes in males. Disparities were also observed based upon the race of the patients, with a worse complication profile among certain minority groups including Native American and African American patients.

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Aberrations in Carotid Plaque Metal Content are Associated with Clinical Symptoms

Presenter: Pierce Leroux Massie MD

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Conclusion: **ntroduction:** Patients with atherosclerosis have demonstrated abnormally high levels of heavy metals in various compartments in the body, with one study examining their presence within atherosclerotic plaques (carotids) themselves. Linking these metals to known atherosclerotic pathways and



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their possible clinical associations has yet to be elucidated, however.

Hypothesis: We tested the hypothesis that carotid plaque metal content would be positively associated with symptomatic carotid stenoses.

Methods: We measured the levels of heavy metals within atherosclerotic plaques for patients undergoing carotid endarterectomy (CEA) for either symptomatic or asymptomatic carotid stenoses utilizing inductively coupled mass spectrometry (ICP-MS). Whole carotids were sampled, with triplicate samples for each patient to average metal content within a plaque. Control carotid tissue was obtained by gathering from non-atherosclerotic decedents with the assistance of the office of medical investigator (OMI) at our institution, also performed in triplicates. We obtained demographic data for both groups and symptom data for the CEA group.

Results: Specimens included 10 plaques from CEA group, 90% of whom were male who were on average 70 years of age and in whom 40% were symptomatic. The OMI group totaled 10 carotid specimens, with 70% being male who were on an average 47 years old. The CEA group as a whole demonstrated higher levels of Na, Mg, K, Ca, Co, Zn, Se, and Pb when compared to controls (means are reported in μg element/g of tissue, and are respectively 4909 vs. 3667, 22.22 vs. 644, 9.727 vs. 324.7, 921.2 vs. 40539, 0.00191 vs. 0.206, 11.67 vs. 57.64, 0.1584 vs. 0.4198, and 0.04658 vs. 0.1634, all P values <0.05 , Fig.1). The OMI group demonstrated higher levels of U, Sb, Mo, Th, Cd, Ni, and Cr. (means are 0.1304 vs. 0.009404, 0.2063 vs. 0.003614, 0.3208 vs. 0.1298, 0.4795 vs. 0.05855, 0.05305 vs. 0.0092, 0.6183, 0.0224, and 0.69 vs. 0.3838, $P<0.05$). When comparing symptomatic plaques to asymptomatic ones, higher levels of Cu and Se were seen (means are 3.718 vs. 0.6946 with 6

fold increase of Cu and 0.3320 vs. 0.5515 with 1.5 fold increase in Se, $P<0.05$, Fig.2 and 3). Elements detected only within the CEA group included As, Be, and Ti.

Conclusion: Further gene and protein expression will be performed on both groups of specimens with the goal of revealing the roles of these metals in atherosclerotic pathways. When comparing the CEA group's symptomatic versus asymptomatic patients, this may provide a biochemical basis for why elevations in plaque Cu and Se are associated symptoms and perhaps demonstrate a difference in plaque phenotype as a result. Exact, Spearman

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Operative Approach In Failed Endovascular Treatment Of Aorto-esophageal Fistula

Presenter: Ethan Petersen MD

Erin Risotto-Urbanowicz, MD; Ethan Petersen, MD; LeAnn Chavez, MD, FACS; Muhammad Ali Rana, MD, FACS

Introduction: This is a 70 year-old with history of alcohol induced cirrhosis who presented with penetrating atheromatous ulcers of the descending thoracic aorta. He initially underwent thoracic endovascular aortic repair (TEVAR) and was discharged on postoperative day (POD) 1 without complication. On POD 5, the patient returned with chest pain and hematemesis with endoscopic findings of aorto-esophageal fistula (AEF). On POD 6, the patient underwent a second endovascular repair of the AEF with esophageal stent placement by the gastroenterology team. A subsequent upper gastrointestinal study demonstrated ongoing leak from the esophagus. After palliative discussions, the patient elected to pursue definitive open repair of his AEF.

Methods: This is a video case study.



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Results: The patient was taken to the operating room for removal of esophageal stent, left open femoral vein and artery cannulation, left thoracotomy, lysis of adhesions between the lung and chest wall, ventilation of left ventricle, debridement of the AEF, descending thoracic aortic aneurysm repair with cryopreserved aorta, creation of pedicled omental flap buttress, and open gastrostomy tube placement. The creation of an omental buttress, use of cryopreserved aorta, and this multidisciplinary case are what make this case educational. Unfortunately, at the conclusion of the case, when the patient was being repositioned for esophageal stent placement, he became profoundly hypoxemic and cyanotic. This resulted in cardiac arrest without return of spontaneous circulation after 17 minutes of cardiac life support. This was thought to be because of lung ischemia or clot formation due to bypass.

Conclusions: The creation of an omental buttress is intended to reinforce the interposition repair of the aorta, especially in the setting of fistula and infection. This can be completed by raising a pedicled flap of omentum, tunneling it through a small hole made in the diaphragm via bovie electrocautery, and wrapping it around the cryopreserved interposition aortic graft with silk used to secure this buttress in place. In our case, a secondary tongue of omentum was placed over the posterior esophageal defect to further buttress the repair in anticipation of GI placing a stent at the end of the case. Though our patient experienced an arrest at the conclusion of the procedure, omental buttress should be considered in complex repair of aorto-esophageal fistulas to reinforce the interposition graft and potentially prevent damage to the new anastomoses.