TRIOLOGICAL SOCIETY COMBINED SECTIONS MEETING
HOTEL DEL CORONADO, CORONADO, CALIFORNIA
JANUARY 20-22, 2022

TRIOLOGICAL COUNCIL MEETING AND DINNER WILL BE HELD ON WEDNESDAY

THURSDAY, JANUARY 20, 2022

7:30 ***Breakfast with Exhibitors*** **- Ocean Ballroom & Garden Patio**

GENERAL SESSION - CROWN ROOM

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

Accreditation

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Surgeons and the Triological Society. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

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7:50 **Welcome on Behalf of the Section Vice Presidents**
Dana M. Thompson, MD FACS, Chicago, IL, Middle Section Vice President

7:55 **Eastern Section Guest Introductions by David E. Eibling, MD FACS, Pittsburgh, PA, Eastern Section Vice President**
Citation Awardees:
Eiji Yanagisawa, MD FACS, Woodbridge, CT
Karen M. Kost, MD, Westmount, QC, Canada
Augie Turano, PhD, Pittsburgh, PA
Guest of Honor:
Opportunities Missed: It's Not Too Late
Jonas T. Johnson, MD FACS, Pittsburgh, PA

8:10 **Southern Section Guest Introductions by Donald T. Donovan, MD FACS, Houston, TX, Southern Section Vice President**
Citation Awardees:
Robert B. Parke, MD MBA, Houston, TX
Willard C. Harrill, MD FACS, Hickory, NC
Andrew H. Murr, MD FACS, San Francisco, CA
Guest of Honor:
Role Models
Michael G. Stewart, MD MPH FACS, New York, NY

8:25 **Western Section Guest Introductions by Marilene B. Wang, MD FACS, Los Angeles, CA, Western Section Vice President**
Citation Awardees:
Cherie-Ann Nathan, MD FACS, Shreveport, LA
Maisie L. Shindo, MD FACS, Portland, OR
P. Ashley Wackym, MD FACS, New Brunswick, NJ
Guest of Honor:
A Plea for Foxes in Otolaryngology
Elliot Abemayor, MD PhD FACS, Los Angeles, CA

8:40 **Middle Section Guest Introductions by Dana M. Thompson, MD FACS, Chicago, IL, Middle Section Vice President**
Citation Awardees:
Michael L. Hinni, MD FACS, Phoenix, AZ
Sujana S. Chandrasekhar, MD FACS, New York, NY
Myles L. Pensak, MD FACS, Cincinnati, OH
Guest of Honor:
Role of Mentorship in Creating Diversity in Otolaryngology
Earl H. Harley, MD FACS, Washington, DC
John H. Gladney, MD (posthumous)

Presentation of Middle Section George Adams, MD Young Faculty Award
Ahmad R. Sedaghat, MD PhD FACS, Cincinnati, OH
Introduction by Dana M. Thompson, MD FACS, Middle Section Vice President

9:00 **Presidential Address - Michael S. Benninger, MD FACS, Cleveland, OH**
Otolaryngology Publishing in 2022 and Beyond
Introduction by Dana M. Thompson, MD FACS, Middle Section Vice President

9:15 **Presentation of Ninth Annual Patrick E. Brookhouser, MD Award of Excellence to Robert H. Ossoff, DMD MD FACS, Nashville, TN**
Introduction by Michael S. Benninger, MD FACS, President

9:20 - 9:45 ***Break with Exhibitors/View Posters*** **- Ocean Ballroom & Garden Patio**

9:45 - 10:55 **PANEL**
Deans, Chairs and Presidents: Leadership with the Skin I'm in
Moderator:
Valerie A. Flanary, MD FACS, Milwaukee, WI
Panelists:
Carol R. Bradford, MD FACS, Columbus, OH
Joseph E. Kerschner, MD FACS, Milwaukee, WI
Dana M. Thompson, MD FACS, Chicago, IL
Troy D. Woodard, MD FACS, Cleveland, OH

10:55 **Q&A**

11:00 - 11:55 **THIS IS HOW I DO IT: TRIOLOGICAL VIDEO SESSION**

Moderator:

Vikash K. Modi, MD, New York, NY

Panelists:

Sublabial Approach for Repair of Congenital Nasal Pyriform Aperture Stenosis: How I Do It
Margo K. McKenna Benoit, MD FACS, Rochester, NY

Suture Knot Externalization Modification of the Fasanella-Servat Technique for Involutional Ptosis
J. Madison Clark II, MD FACS, Chapel Hill, NC

Endoscopic Wedge Excisions with CO2 Laser for Subglottic Stenosis
Semirra L. Bayan, MD, Rochester, MN

Reconstruction of Anterior Table Frontal Sinus Defects with Pericranial Flap and Titanium Mesh
John R. Craig, MD, Detroit, MI

Pediatric Tongue Base Suspension with Fluoroscopic Guidance
Taher S. Valika, MD FACS, Chicago, IL

Dual-Vector Gracilis Muscle Transfer for Smile Reanimation with Lower Lip Depression
Nate Jowett, MD PhD, Boston, MA

11:55 **Q&A**

12:00 - 1:00 ***Lunch/Visit Exhibits/View Posters* - Ocean Ballroom & Garden Patio**

12:30 - 1:00 **Meet the Authors Poster Viewing (Odd Numbered Posters Only)**

12:00 - 1:00 ***LARYNGOSCOPE AE/SE meeting - Garden***

1:10 - 3:05 Concurrent Session 1A

Head and Neck - Crown Room

Moderator: Niels C.T. Kokot, MD FACS, Los Angeles, CA

1:10 **2021 - TRIOLOGICAL SOCIETY THESIS HONORABLE MENTION FOR BASIC SCIENCE AWARD**

A Tissue Engineered Construct for Hemilarynx Reconstruction: An in Vitro and Pilot in Vivo Canine Study
David G. Lott, MD, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss early techniques for tissue engineered reconstruction of hemilaryngeal defects.

Objectives: Develop a patient specific tissue engineered construct for laryngeal reconstruction following a partial laryngectomy. Methods: Experiment 1 assessed whether cell seeding density affects efficiency of in vitro adipose derived stem cell (ASC) differentiation toward an epithelial phenotype on a composite fibrin glue porous polyethylene scaffold. Experiment 2 evaluated the potential in vivo paracrine signaling from neighboring native laryngeal respiratory epithelial cells on implanted ASC by co-culturing ASC with bronchial epithelial cells (BEAS). Lastly, a construct made from a porous polyethylene scaffold shaped in a canine-specific configuration and seeded with ASC in fibrin glue was implanted in a canine following a partial laryngectomy. After one year, the construct was first evaluated in vivo with high-speed imaging and acoustic/aerodynamic measures and then explanted and evaluated histologically. Results: Experiment 1 demonstrated the expression of seven targeted genes significantly ($p < 0.0026$) upregulated with increasing cell density. Experiment 2 showed ASC co-cultured with BEAS had higher ($p < 0.005$) gene expression of the mucous secreting cell marker (MUC5B) and the ciliated cell marker (TUBA3). The canine study at one year revealed the construct provided voicing (barking) with acoustic/aerodynamic measures within normal ranges. The trach tube was removed at 11 weeks and the gastrostomy tube was removed 12 weeks after surgery. The construct was integrated with epithelialization of all areas except the medial

portion of the vocal fold structure. No anti-infective agents were needed after the standard perioperative medications were completed. Conclusions: This study provided a successful first step toward developing a patient-specific composite construct for patients undergoing partial laryngectomies.

1:17 **Effect of Hospital Safety Net Burden Status on Salivary Gland Cancer Survival: A National Analysis**

Kirolos M. Georges, BA, Newark, NJ; Mohammad A. Hossain, BS, Newark, NJ; Rushi Patel, BA, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard Chan Woo Park, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to analyze the effect of hospital safety net burden on survival outcomes for salivary gland cancer patients.

Objectives: To analyze the effect of hospital safety net burden on survival outcomes for salivary gland cancer (SGC) patients. Study Design: Retrospective database study. Methods: The National Cancer Database (NCDB) was used to extract cases of SGC between 2004-2015. Safety net burden status was defined by the percentile of uninsured/Medicaid insured patients treated: <25th for low safety net burden hospitals (LBH), 25th-75th for medium (MBH), and ≥ 75th for high (HBH). Social and clinicopathologic characteristics were evaluated using univariate and multivariate analyses. Results: A total of 18,974 SGC cases were identified. Being <65 years old (OR 1.37, 95% CI 1.26-1.49, p<0.001) and in the lowest income quartile (OR 1.42, 95% CI 1.22-1.64, p<0.001) and lowest education quartile (OR 2.01, 95% CI 1.73-2.34, p<0.001) were associated with increased likelihood of treatment at HBH versus non-HBH, whereas being White (OR 0.66, 95% CI 0.54-0.79, p<0.001), having stage I tumor (OR 0.812, 95% CI 0.72-0.92, p=0.001), and time to treatment ≤ 7 days (OR 0.87, 95% CI 0.80-0.95, p=0.002) decreased likelihood. 5 year overall survival was lowest at HBH (59.7%), followed by MBH (62.0%) and LBH (62.3%) (p=0.039). Upon controlling for other clinicopathologic variables, receiving treatment at HBH (HR 1.10, 95% CI 0.61-0.88, p=0.033) was associated with poorer survival compared to non-HBH. Conclusions: Salivary gland cancer patients treated at HBH were less likely to be White, present with stage I tumor, and have shorter time to treatment, and experienced worse overall survival than non-HBH. Additional study is required to examine barriers to healthcare and increased disease burden which may contribute to worse outcomes at HBH.

1:24 **CANCELLED - Free Tissue Reconstruction in the "Vessel Scarce" Neck: A Multi-Institutional Case Series**

Katherine Chang, MD, St. Louis, MO; Kenneth E. Akakpo, MD, Milwaukee, WI; Evan M. Graboyes, MD MPH, Charleston, SC; Joseph Zenga, MD, Milwaukee, WI; Sidharth V. Puram, MD PhD, St. Louis, MO; Patrik Pipkorn, MD, St. Louis, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to describe vessel selection, free flap selection, and outcomes in free tissue head and neck transfer in a patient with prior neck dissection and irradiation.

Objectives: To describe a patient cohort with prior radiation and neck dissection who received free tissue head and neck reconstruction. Study Design: Case series. Methods: Patients who received head and neck free tissue transfer following prior radiation and neck dissection to the ipsilateral side of vessel anastomosis were identified. Vessel and free flap selection, prior treatment, and outcomes were recorded. Results: This study included 72 free flap cases in 67 patients from 3 tertiary care centers. The most common indications for reconstruction were malignancy (61%) and radionecrosis (32%). Most cases had prior surgical resection with adjuvant treatment: radiation (61%), chemoradiation (24%), radiation/chemoradiation with neoadjuvant immunotherapy (7%). Most cases had a prior level 1 neck dissection to the ipsilateral side of vessel anastomosis (71%) and/or a prior free flap (63%). The majority of defects involved mucosa (81%) with the most common site being the oral cavity (64%). The anterolateral thigh free flap was most used followed by scapular and radial forearm. Most used donor arteries included the facial, external carotid, and superior thyroid. Most used donor veins were the external jugular and facial. Seven cases returned to the OR (9.7%, 7/72). One free flap failed (1.4%, 1/72) and 3 free flaps had partial survival (4.2%, 3/72). Conclusions: Free tissue transfer with prior radiation and neck dissection can be safely done with comparable outcomes to surgically naïve, non-irradiated necks. The term "vessel depleted" neck has been popularized to describe these cases. However, our data shows vessel identification is achievable with careful dissection and should be referred to as "vessel scarce".

1:31 **CANCELLED -- The Modified Occlusion Driven Technique**

Justin M. Pyne, MD, Edmonton, AB Canada; Brendan Kelly, BSc, Edmonton, AB Canada; Heather Logan, MSc, Edmonton, AB Canada; Martin Osswald, MDent, Edmonton, AB Canada; Suresh Nayar, MDS, Edmonton, AB Canada; Hadi Seikaly, MD, Edmonton, AB Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) apply the concept of surgical design and simulation for use in jaw reconstruction; 2) describe the importance of nonmobile tissue surrounding dental implants placed during surgery; and 3) understand the risks of postoperative complications specifically as they apply to jaw reconstruction and dental implant success.

Objectives: Free tissue transfer containing vascularized bone for segmental jaw resection reconstruction has significantly improved patients' outcomes, enhancing the overall quality of life in survivorship. We developed an occlusion driven jaw reconstruction technique (ART) with digitally planned immediate osseointegrated implant installation. The main disadvantage was the mobility of the soft tissue component around the implants which may result in peri-implantitis and implant loss. This technique was modified to allow for the provision of attached nonmobile tissue around the implants that simulate gingiva in function through skin grafting of the periosteum and was termed the modified occlusion driven technique (MART). The objective of this study was to evaluate the MARTΓÇÖs safety, effectiveness, and suitability of the soft tissue component and compare them to ART and conventional jaw reconstructions. Study Design: Prospective cohort study. Methods: This study was carried out in two parts: 1) clinical analysis measures: a) Safety - free flap survival and complication rates; b) effectiveness - procedures complexity, total implant installation and implant loss; and 2) soft tissue assessment and suitability for oral reconstruction was measured by a survey of oral rehabilitation experts. Results: 46 patients (conventional: 15, ART: 15, MART: 16) with 172 implants were included in the study. There was no statistically significant difference between groups in terms of complications (p=0.144) or implant loss (p=0.997). All oral rehabilitation experts rated the soft tissue component as best in the MART group. Conclusions: The MART is a safe and effective version of the ART for jaw reconstruction that provides a superior soft tissue component for complete oral and dental reconstruction.

1:38 **Retrospective Analysis of Pain and Opioid Usage in Patients Receiving Head and Neck Free Flap Surgery**

Parhom Towfighi, BA, Washington, DC; Alison L. Hill, BS, Washington, DC; Jason R. Crossley, MD, Washington, DC; Jonathan P. Giurintano, MD, Washington, DC; Michael J. Reilly, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, participants should be able to describe the relationship between postoperative inpatient pain and opioid usage in patients following head and neck free flap surgery.

Objectives: To investigate the relationship between postoperative pain severity and opioid administration patterns in patients undergoing head and neck free flap surgery. Study Design: Retrospective cohort study. Methods: A retrospective chart review of 100 patients who underwent head and neck free flap reconstruction surgery between July 2018 and January 2021 was performed. Data collected include postoperative pain scores, MEDs (morphine equivalent doses) administration, demographics, smoking history, outpatient visit pain scores, daily MEDs provided at discharge, comorbidities, and post-surgical complications. Data was analyzed using Student's t-tests, chi-squared tests, and regression models. Results: There was low correlation between average daily inpatient pain scores and average daily MEDs administered in the first three, five, and seven postoperative days (R2= .13, .17, and .22, respectively). Opioid prescription at discharge (p = .001) and ongoing opioid use at first and second postoperative visits (p = .0002; p= .0001, respectively) were associated with higher inpatient daily pain scores. Patients who suffered postoperative complications were more likely to be taking opioid analgesia at the time of the first postoperative visit than those who did not (p = .011). Daily pain scores (p = .318) and daily MEDs administered (p = .708) were not significantly different between patients receiving skin grafts or not. Conclusions: Our study indicates that the severity of inpatient postoperative pain is associated with ongoing opioid usage after discharge. Inpatient opioid use did not correlate with MEDs administered. Further work aimed at improving pain control while minimizing opioid use in the population is warranted.

1:45 **Sentinel Lymph Node Biopsy versus Elective Node Dissection in Stage cT1-2N0 Oral Cavity Cancer**

Matthew I. Saleem, BS, Hempstead, NY; Travis Peng, BE, Hempstead, NY; Daniel Zhu, BS, Hempstead, NY; Amanda Wong, BS, Hempstead, NY; Lucio Pereira, MD, Hempstead, NY; Tristan Tham, MD, Hempstead, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the differences in survival outcomes between sentinel node biopsy and elective neck dissection in the management of early stage, clinically node negative oral cavity cancer.

Objectives: To compare overall survival (OS) and disease free survival (DFS) between sentinel lymph node biopsy (SNB) and elective neck dissection (END) in the surgical management of cT1-2N0 oral cavity squamous cell carcinoma (OCSCC). Study Design: Meta-analysis. Methods: English full text articles were searched in PubMed and Embase on May 9, 2021. Articles had to compare SNB with END in cT1-T2N0 OCSCC patients; report hazard ratios (HR), Kaplan-Meier curves, or

p values with total number of events for survival outcomes; be from a clinical trial, cohort, or case control study. Two reviewers reviewed articles and a third settled disagreements. Preferred Reporting Items for Systematic Reviews and Meta-Analyses and Meta-Analysis of Observational Studies in Epidemiology Checklist guidelines and the Quality in Prognosis Studies tool were used. The generic inverse variance method with a random effects model was used for meta-analysis. Results: Ten studies, five retrospective, three prospective, and two randomized controlled trials, were included (total number of patients (n) = 10,498, END n = 9102, SNB n = 1396). No significant differences were found in OS (HR = 0.92; 95% CI: 0.65-1.31; P = 0.66) or DFS (HR = 0.70; 95% CI: 0.41-1.20; P = 0.19). Heterogeneity was not detected in pooled OS analysis (P = 0.18; I2 = 30%), but was in pooled DFS analysis (P = 0.003; I2 = 66%). Conclusions: No statistically significant differences in OS or DFS were observed between SNB and END in cT1-2N0 OCSCC, suggesting SNB might be an alternative to END in the management of early stage, clinically node-negative OCSCC.

1:52 **Margin Detection for Oral and Oropharyngeal Squamous Cell Carcinoma Using Dynamic Optical Contrast Imaging**
Kenric Tam, MD, Los Angeles, CA; Shan Huang, MS, Los Angeles, CA; Jeffrey F. Krane, MD PhD, Los Angeles, CA; Ramesh Shori, PhD, Los Angeles, CA; Oscar Stafsudd, PhD, Los Angeles, CA; Maie St. John, MD PhD, Los Angeles, CA

Educational Objective: Dynamic optical contrast imaging is a novel and noninvasive imaging system that can accurately identify margins in oral and oropharyngeal squamous cell carcinoma.

Objectives: Surgical resection of oral and oropharyngeal squamous cell carcinoma (OSCC, OPSCC) requires establishing appropriate margins that balance oncologic outcomes and preservation of function. While positive margins increase rate of recurrence, excessive excision of healthy tissue can result in significant patient morbidity. Intraoperative margins are currently determined through palpation, surgeon experience, and frozen section. In this study, we utilize dynamic optical contrast imaging (DOCI), a novel and noninvasive imaging system, to accurately identify margins in OSCC and OPSCC. Study Design: Prospective study. Methods: After surgical excision, 12 ex vivo OSCC and 8 OPSCC specimens were first imaged using the DOCI system followed by frozen histologic sectioning. A pathologist annotated the histopathology slides for mucosa, tonsillar crypts, salivary glands, muscle, fat, connective tissue, and cancer. Annotations were transferred to DOCI images, and signature emission was compared between malignant and adjacent healthy tissue across 9 different spectral channels. Results: In all 20 specimens, DOCI images of gross specimens clearly demarcate margins between healthy tissue and OSCC. DOCI real time images are acquired in less than 2 seconds per channel with a clinically relevant wide field of view (6.5 cm2) and 70 micron resolution. There was a statistically significant difference in DOCI values between different healthy tissue types and SCC ($p<0.05$). Conclusions: DOCI allows for visualization and accurate delineation of OSCC, OPSCC, and adjacent healthy tissue in real time. This proof of concept study demonstrates that DOCI has the potential to revolutionize cancer care by allowing the surgeon to precisely determine margins intraoperatively and improve patient oncologic and functional outcomes.

1:59 **Q&A**

2:10 - 3:00 **HEAD AND NECK PANEL**
HPV Positive Oropharyngeal Cancer: Patient and Tumor Factors that Impact Optimal Treatment
Moderator:
Chad A. Zender, MD FACS, Cincinnati, OH
Panelists:
Role of HPV Vaccine in Head and Neck Cancer
David M. Cognetti, MD FACS, Philadelphia, PA
Operative HPV + Oropharyngeal Cancer
Samir S. Khariwala, MD, Minneapolis, MN
Nonoperative HPV+ Oropharyngeal Cancer
Chad A. Zender, MD FACS, Cincinnati, OH

3:00 **Q&A**

3:05 - 3:30 ***Break with Exhibitors/View Posters*** **- Ocean Ballroom & Garden Patio**

1:10 - 3:10 Concurrent Session 1B
Otology/Neurotology - Cabana Ballroom

1:10 - 2:10 **OTOLOGY/NEUROTOLOGY PANEL**

Hearing Amplification: Hearing Aids and Implantable Devices

Moderator:

Mia E. Miller, MD, Los Angeles, CA

Panelists:

Implantable Hearing Devices

Quyen T. Nguyen, MD PhD, San Diego, CA

Electroacoustic Stimulation in Cochlear Implantation

Yu-Tung Wong, MD, Los Angeles, CA

Bonebridge/Osia and Earlens

Michael Hoa, MD, Washington, DC

Q&A

Point/Counterpoint on OTC Hearing Aids

Michael Hoa, MD, Washington, DC

Sujana S. Chandrasekhar, MD FACS, New York, NY

Hearing Aids and OTC Products

Nicholas S. Reed, AuD, Baltimore, MD (Dr. Reed unable to attend in person, but his prepared slides are to be presented)

Q&A

Moderator: Sam J. Marzo, MD FACS, Maywood, IL

2:10 **CANCELLED - Treatment Preference in Vestibular Schwannoma Management**

Briana Katherine Ortega, MD, La Jolla, CA; Eric Du, BS, San Diego, CA; Amin Mahmoodi, BS, San Diego, CA; Jeffrey Bernstein, MD, San Diego, CA; Marc S. Schwartz, MD, San Diego, CA; Rick A. Friedman, MD PhD, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should understand how demographic, geographic, and tumor specific factors impact patient treatment preference in vestibular schwannoma management.

Objectives: We sought to understand how demographic, geographic, and tumor specific factors impact patient treatment preference in vestibular schwannoma management. Study Design: A retrospective, patient reported survey. Methods: A survey consisting of a single online form querying various tenets of patient demographics and history was created. Patients were asked their desired treatment option prior to intervention. The treatments were ranked based on invasiveness, ranging from observation only to surgical intervention. The survey was distributed with advertisement through the Acoustic Neuroma Association of America, a geographically diverse and nationwide population of vestibular schwannoma patients. Results: A total of 210 patients completed the survey. The mean age of study participants was 61.4 (± 12.4). Vestibular schwannoma patients' preference for more invasive treatment was correlated with larger tumor size ($\rho = 0.141$, $p = 0.046$), higher level of education ($\rho = 0.239$, $p < 0.001$), or higher income ($\rho = 0.210$, $p = 0.003$). Additionally, preference for more invasive treatment was also correlated with increased likelihood of obtaining care at an academic center ($\rho = 0.239$, $p < 0.001$). We observed no correlation between treatment preference and insurance type, monthly insurance payments, rurality. When analyzing the patients who underwent surgery, regardless of their treatment preference, there were no postoperative facial nerve outcome differences. Conclusions: Multiple factors shape a vestibular schwannoma patient's preference for eventual management. We observed in a nationwide survey that patients with advanced educational degrees, higher incomes, or larger tumors tend to pursue aggressive management, likely at an academic center.

2:17 **Comparing Osteotome and Drill Techniques in External Auditory Canal Exostoses: A Systematic Review**

Austin R. Swisher, BS, Riverside, CA; Priyanka Singh, BS, Newark, NJ; Peter Debbaneh, MD, Oakland, CA; Alexander Rivero, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discern the risks associated with the use of drill versus osteotome techniques in the treatment of external auditory exostoses (EAE).

Objectives: To assess and compare outcomes and complication rates of symptomatic external auditory canal exostoses (EAE) treated with drill versus osteotome canalplasty. Study Design: Systematic review. Methods: A systematic review in accordance with Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines and

standardized bias assessment using the Joanna Briggs Institute Critical Appraisal Checklist was performed. Studies containing original outcome data on drill and osteotome canalplasty were included. Results: Fifteen studies were included, encompassing 1399 total patients (1788 ears) with 530 and 1258 ears in the osteotome and drill groups respectively. Ten studies used a drill, 2 used an osteotome, and 3 used both. The most frequently reported complication rates were tympanic membrane perforation (osteotome: 9.2%; drill: 5.1%; range: 0-13.6%), sensorineural hearing loss (SNHL) (0.7%; 3.5%; 0-9.1%), cicatricial stenosis (0.0%; 3.0%; 0-16.0%), temporomandibular joint prolapse (2.6%; 0.5%; 0-25.9%), and infection (2.5%; 2.9%; 0-19.1%). Use of the osteotome technique was associated with a statistically significantly lower rate of SNHL ($p=0.005$) and higher rate of tympanic membrane perforation ($p<0.00001$). Level of evidence in the included studies ranged from 2b to 4 and all studies had an overall low risk of bias. Conclusions: Drill canalplasty appears to confer an increased risk of SNHL when compared with osteotome for patients with EAE. Conversely, the osteotome may increase the risk of tympanic membrane perforation. Additional research with participant randomization is needed to assess clinical efficacy.

2:24 **Racial Disparities in Tympanoplasty Surgery - A National Cohort Study**

Priyanka Singh, BS, Newark, NJ; Peter M. Debbaneh, MD, Oakland, CA; Alexander Rivero, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to better understand the role of racial disparities in tympanoplasty surgery.

Objectives: To assess the impact of race and ethnicity on 30 day complications following tympanoplasty surgery. Study Design: Cross-sectional cohort study. Methods: All cases of tympanoplasties from 2015-2018 were queried from the National Surgical Quality Improvement Program (NSQIP) database. Demographics, comorbidities, and postoperative complications between race/ethnicity cohorts were compared using univariate and binary logistic regression analyses. Results: A total of 5,946 patients were included, consisting of 81.2% White, 3.3% Black, 8.1 Asian, 5.4% Hispanic, and 1.9% Native American. Black and Hispanic patients had higher estimated probability of morbidity, while Asian and Native American patients had a lower estimated probability of mortality. Black patients were more likely to have 2 or more comorbidities than White patients ($P = .002$). Following surgery, Native American patients had increased rates of urinary tract infection, reoperation, superficial surgical site infection, medical and surgical complications, and overall complications compared to White patients ($P < .05$). Black patients had increased rates of reoperation compared to White patients ($P = .029$). After adjusting for sex, age, and comorbidities, logistic regression indicated that Native American patients had increased rates of reoperation ($P = .045$, [OR] = 15.99) and Hispanic patients had an increased rate of inpatient status ($P = .038$, [OR] = 8.17). Conclusions: Native American race appears to be an independent predictor of increased reoperation rates in elective tympanoplasty surgery. Black race does not independently increase the risk of 30 day complications. Further research is needed to understand the role of racial disparities in elective tympanoplasty procedures.

2:31 **Ossicular Chain Reconstruction with Titanium Prostheses: A Systematic Review and Meta-Analysis**

Sarah Kortebein, MD, Durham, NC; Dominik Greda, MD, Durham, NC; Matthew Cooper, MD, Durham, NC; Alessandra Cataldo, MD, Jerusalem, Israel; David Kaylie, MD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to reasonably counsel patients on expectations for hearing improvement titanium ossicular replacement prostheses.

Objectives: Ossicular chain reconstruction (OCR) has been done since the early 1900's and many different methods and materials have been used over the years. There have been many studies comparing results of different types of alloplastic prostheses but none detailing the grouped results of titanium prostheses. This review sought to establish reasonable expectations for hearing improvement with these prostheses. Study Design: Systematic review and meta-analysis. Methods: We performed a systematic review of the literature per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Three databases (Medline, Embase, Web of Science) were searched using relevant key search terms to identify studies evaluating audiometric and stability outcomes of titanium prostheses. A title/abstract and full article review was then done, and the results from the remaining studies were analyzed with Review Manager 5.4 Software. Results: Forty-one articles found with our search terms were analyzed after full article review based on our inclusion and exclusion criteria. These studies had an average of 23 participants with an average followup of 35.4 months. For partial ossicular replacement prostheses (PORP) the average change in air bone gap (ABG) and pure tone average (PTA) were 12 and 13.53 dB respectively. For total ossicular replacement prostheses (TORPs) the average change in ABG and PTA were 16.7 and 17.04 dB respectively. Preoperatively the average ABG was 7.13 dB better for PORP than TORP patients, and postoperatively the ABG improved an average of 4.9 dB more for the PORP cohort. 70% of PORPs and 57% of TORPs subjects had a postoperative ABG <20 dB. Conclusions: Overall, reconstruction of the ossicular chain with titanium prostheses reliably improves patients' hearing outcomes and this study gives relevant information for counseling patients preoperatively.

2:38 **Audiometric Validation of the Apple Watch Noise Application**

Ethan G. Muhonen, MD, Irvine, CA; Elaine C. Martin, MD, Irvine, CA; Mehdi Abouzari, MD PhD, Irvine, CA; Ye Yang, BS, Irvine, CA; Fan-Gang Zeng, PhD, Irvine, CA; Hamid R. Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand the emerging role of wearable technology in the assessment of sound exposure levels; 2) evaluate the audiometric accuracy of a commercially available decibel meter application relative to a commercial class 1 sound level meter; and 3) describe future applications of these findings for assessing the burden of noise exposure in the population utilizing this technology.

Objectives: To assess the performance of the Noise app in the Apple Watch compared to a class 1 sound level meter (Brüel and Kjær Type 2250 G-4). Study Design: Testing was performed in a double anechoic chamber. Both the Apple watch and the decibel meter were placed equidistant to a speaker and pure tones were played in half octaves from 125Hz to 8000Hz in an amplitude range from 0.0001-1. A total of 21 amplitude measurements were performed within each half octave frequency. The BZ-5503 Measurement Partner Suite software was utilized with a Crown D-75A amplifier to produce the pure tones. The measurement data was compared utilizing paired sample t-tests in SPSS. Methods: A total of 21 amplitude measurements were performed within each half octave frequency. The BZ-5503 Measurement Partner Suite software was utilized with a Crown D-75A amplifier to produce the pure tones. The measurement data was compared utilizing paired sample t-tests in SPSS. Results: Audiometric testing yielded a range of sound from a minimum of 22.8dB SPL (A weighted) to a maximum of 118.6dB SPL. Statistically significant differences between the two devices were at 125Hz (mean Δ2.3dB, $p=0.044$), 4kHz (mean Δ5.8dB, $p=0.000$)), and 8kHz (mean Δ4.5dB, $p=0.002$). The correlations between dB measurements between the two methods at all frequencies were all 0.961 or greater ($p<0.001$). Conclusions: In our analysis the Apple Watch produced accurate measurements for 8 of the 11 tested half octave tones with minor differences at the other three frequencies. These results support that the Apple Watch Noise application is a viable means of quantifying environmental noise exposure with small adjustments at a few frequencies.

2:45 **Prevalence of Polypharmacy in Patients with Vestibular and Balance Complaints: A Single Center Retrospective Review**

Seth S. Jeong, BA, Philadelphia, PA; Tiffany Chen, BA, Charleston, SC; Tatianna A. Timor, PharmD, Charleston, SC; Adrienne L. Busch, PharmD, Charleston, SC; Shaun A. Nguyen, MD, Charleston, SC; Habib G. Rizk, MD, Charleston, SC

Educational Objective: To elucidate the prevalence of polypharmacy, understand polypharmacy's impact on the patient population, and offer considerations for management.

Objectives: To analyze the prevalence of polypharmacy in patients presenting with dizziness complaints, identify patterns associated with certain diagnoses, and investigate the impact of polypharmacy on otologic and audiometric symptoms and findings. Study Design: Retrospective chart review. Methods: Demographics, symptoms, diagnoses, medications, audiometry, and dizziness handicap index (DHI) scores were extracted from charts of patients seen as new patients at a tertiary multidisciplinary vestibular clinic from September 2019 to March 2020 with a primary complaint of dizziness. Results: A total of 382 patients were included. Majority of patients (69.4%) met criteria for polypharmacy (greater than 4 medications) with many (77%) being prescribed a potentially ototoxic drug. Primary diagnoses of vestibular migraine (N=77), unilateral Meniere's disease (N=42), and vestibular neuronitis (N=23) were associated with significantly lower mean total number of medications (7.0, 5.9, and 6.7, respectively) and ototoxic medications (1.9, 1.5, and 1.5, respectively) compared to hemodynamic diagnosis (13.8 and 3.7, respectively). The presence of lightheadedness (N=105), as a dizziness descriptor, was associated with significantly higher total number of medications (8.8) and ototoxic medications (2.7) regardless of final diagnosis. DHI correlation to number of ototoxic medications was strongest for patients with vestibular migraine ($r=0.37$). The presence of cochleotoxic medications was significantly associated with unilateral vestibular hypofunction and hemodynamic diagnoses ($p=0.004$). No significant differences were seen between number of vestibular diagnosis and number of medications. Conclusions: There is a high prevalence of polypharmacy in patients presenting with vestibular symptoms. Polypharmacy should be addressed in the dizzy patient population as it may be contributing to their symptoms or interfering with therapeutic strategies.

2:52 **The Rates of Anxiety and Depression and Correlation to Symptom Severity among Patients with Pulsatile and Nonpulsatile Tinnitus**

Allison P. Williams, BS, Baltimore, MD; Saikrishna C. Gourishetti, MD, Baltimore, MD; Marissa A. Flaherty, MD, Baltimore, MD; David J. Eisenman, MD, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the differences in tinnitus severity, anxiety, and depression among patients with pulsatile and nonpulsatile tinnitus.

Objectives: To compare rates of anxiety and depression between patients with pulsatile (PT) and nonpulsatile tinnitus (NPT), and their correlation with tinnitus severity. Study Design: Prospective cross-sectional study. Methods: All patients presenting either to the otolaryngology clinic or tinnitus habituation program (THP) with a chief complaint of tinnitus were administered tinnitus handicap inventory (THI), general anxiety disorder-7 (GAD-7), and patient health questionnaire-9 (PHQ-9). Kruskal-Wallis test compared survey scores, while Spearman correlation assessed correlation among survey measures. Results: Complete data were collected on 81 patients, including 26 cases of PT and 55 cases of NPT. Among patients with NPT, 35 were first seen in the THP. All three groups had similar demographics though THP patients were older (median age 58 years vs. 42 years for PT, p = 0.03). Median THI scores were highest for THP patients (54), followed by PT (44) and NPT patients (20) (p = <0.001). Median GAD-7 scores were also higher in THP patients (8) compared to PT (2.5) and NPT patients (2) (p = <0.001). PHQ-9 scores showed no significant difference. A positive correlation was seen between survey measures, strongest for THP patients: THI and GAD-7 (0.79), THI and PHQ-9 (0.83), and GAD-7 and PHQ-9 (0.73). Conclusions: THP patients report more severe symptoms than other NPT patients and PT patients. Anxiety and depression rates are also higher in THP patients, but only GAD-7 scores were statistically significant. Tinnitus severity correlates more strongly with GAD-7 and PHQ-9 scores in THP patients compared to other patient groups.

2:59 **Q&A**

3:05 - 3:30 ***Break with Exhibitors/View Posters* - Ocean Ballroom & Garden Patio**

3:30 - 5:15 Concurrent Session 2A
Rhinology/Allergy - Crown Room

Moderator: Thomas A. Tami, MD FACS, Cincinnati, OH

3:30 **Impact of Esthesioneuroblastoma Treatment delays on Overall Patient Survival**
Kotaro Tsutsumi, BA, Irvine, CA; Khodayar Goshtasbi, MD MS, Irvine, CA; Sina J. Torabi, MD, Irvine, CA; Ahmed Mohyeldin, MD PhD, Irvine, CA; Frank P.K. Hsu, MD PhD, Irvine, CA; Edward C. Kuan, MD MBA, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand what clinical factors are associated with esthesioneuroblastoma treatment delays and how these delays impact patient survival.

Objectives: To characterize clinical factors associated with esthesioneuroblastoma treatment delays and determine the impact of these delays on overall survival. Study Design: Retrospective database analysis. Methods: The 2004-2016 National Cancer Database was queried for patients with esthesioneuroblastoma managed by surgery and radiation. Durations of diagnosis to treatment initiation (DTI), radiotherapy treatment (RTD), Surgery to RT initiation (SRT), diagnosis to treatment end (DTE), and total treatment package (TTP) were analyzed. The cohort was split into two groups per each delay interval using the median time as the threshold. Results: A total of 814 patients (39.6% female, 88.5% white) with a mean age of 52.6±15.1 years who underwent both esthesioneuroblastoma surgery and subsequent radiotherapy were queried. Median DTI, RTD, SRT, DTE, and TTP were 34, 45, 55, 140, and 101 days, respectively. A significant association was identified between regional radiation dose and DTI (OR=0.57, p=0.009) and RTD (OR=4.35, p<0.001) durations. Chemotherapy administration was linked with TTP (OR=0.63, p=0.003) and RTD (OR=1.50, p=0.01) durations. Cox proportional hazards analysis showed worse survival with longer RTD duration after adjusting for age, sex, race, regional radiation dose, facility volume, facility type, insurance status, modified Kadish stage, chemotherapy status, Charlson-Deyo comorbidity index, and surgical margins (HR=1.80, 95% CI 1.26-2.57, p<0.005). Conclusions: Delays during and prolongation of radiotherapy for esthesioneuroblastoma appears to be associated with increased mortality.

3:37 **Unanticipated Admission after Outpatient Septoplasty Surgery**
Benjamin F. Bitner, MD, Irvine, CA; Sina J. Torabi, MD, Irvine, CA; Khodayar Goshtasbi, MD, Irvine, CA; Edward C. Kuan, MD MBA, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize factors that may contribute to hospital admission following elective outpatient septoplasty surgery.

Objectives: Complications associated with outpatient septoplasty are uncommon and typically do not require hospital admission. The aim of this study is to identify factors that may increase the risk of unanticipated admission following elective

outpatient septoplasty. Study Design: Retrospective database analysis. Methods: Patient data was acquired for all septoplasty cases recorded in the 2005 to 2017 National Surgical Quality Improvement Program (NSQIP) database using the Current Procedural Terminology code 30520. Criteria for unanticipated admission included a length of hospital stay of at least one day. Variables predictive of unanticipated admission were then determined by univariate and multivariate analysis. Results: 1936 patients met inclusion criteria with a total of 691 (35.7%) cases admitted postoperatively. On univariate analysis, patients who were admitted were more likely to be male ($p < 0.001$), 50 years old or older ($p = 0.001$), have a higher BMI ($p < 0.001$), have a more severe American Society of Anesthesiologists (ASA) classification ($p = 0.005$), and have diabetes ($p < 0.001$) and/or hypertension ($p < 0.001$). Multivariate analysis revealed multiple independent risk factors associated with unanticipated admission including male gender (OR: 1.489; 95% CI: 1.202-1.844; $p < 0.001$), ASA classification III/IV (OR: 2.906; 95% CI: 2.104-4.012; $p < 0.001$), and both obese and extremely obese BMI's (OR: 1.611; 95% CI: 1.172-2.213; $p = 0.003$), (OR: 1.710; 95% CI 1.199-2.439, $p = 0.003$), respectively. Conclusions: Patient risk factors associated with unanticipated admission following outpatient septoplasty include male gender, ASA classification, and BMI. Recognizing patient risk factors may help guide surgeons in selecting more appropriate surgical candidates.

3:44 Dupilumab for Treatment of Nasal Polyposis: Analysis of Adverse Reactions and Outcomes Using the FDA Adverse Event Report System

Austin R. Swisher, BS, Riverside, CA; Rijul S. Kshirsagar, MD, Philadelphia, PA; Nithin D. Adappa, MD, Philadelphia, PA; Jonathan Liang, MD MPH FACS, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the risk of dupilumab associated adverse reactions for CRSwNP treatment.

Objectives: Dupilumab was the first biologic approved to treat chronic rhinosinusitis with nasal polyps (CRSwNP). While risk of adverse events in phase III clinical trials was low, dupilumab associated adverse reactions (DAR) with real world use is unknown. We aimed to evaluate DAR for CRSwNP treatment (CRSwNP-tx) using the FDA Adverse Event Report System (FAERS). Study Design: Retrospective database - cohort. Methods: FAERS was queried for DAR from 2019Q1-2021Q2. Individual DAR (iDAR) were categorized and quantitatively compared between treatment groups (CRSwNP, asthma, atopic dermatitis). Zero truncated poisson regression was modeled to predict the number of iDAR, and logistic regression was modeled to predict serious DARs. Results: There were 15,411 DAR observations; 911 for CRSwNP-tx, of which 121 (13.3%) had serious reactions and 3 died. Common CRSwNP-tx iDAR were dermatologic (13.9%), injection site (10.8%), and generalized symptoms (10.8%). The number of CRSwNP-tx iDAR was 2.99 [2.81, 3.17], compared to 3.44 [3.32, 3.56] for asthma and 3.18 [3.13, 3.24] for atopic dermatitis (Kruskal-Wallis test, $p<0.001$). For CRSwNP-tx, iDAR reported risk ratio was 0.84 [0.82, 0.86] among men and 1.11 [1.09, 1.13] among older adults (greater than 50). Serious DAR reported odds ratio was 1.65 [1.00, 2.73] among men and 1.20 [0.73, 2.00] among older adults. Conclusions: While there are limitations with FAERS, our analysis suggests CRSwNP-tx is associated with fewer iDAR compared with other treatment indications. More iDAR are experienced among women and older adults, but men tend to have more serious DAR.

3:51 Association between Pulmonary Circulation Disorders and Adverse Outcomes following Inpatient Epistaxis Treatment

Avneet Randhawa, BS, Newark, NJ; Karandeep Singh Randhawa, BS, Newark, NJ; Christina H. Fang, MD FACS, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the impact of pulmonary circulation disorders on inpatient epistaxis treatment.

Objectives: To analyze the association between pulmonary circulation disorders (PCD) and adverse outcomes in hospitalized patients undergoing epistaxis treatment. Study Design: Retrospective database review. Methods: This retrospective cohort analysis utilized the 2003-2014 National Inpatient Sample. ICD-9 codes were used to identify inpatient cases with a primary diagnosis of epistaxis and an associated procedure for its control. Higher total charges and prolonged length of stay were indicated by values greater than the 75th percentile. Demographics, hospital characteristics, and complications were compared amongst cases with PCD and without PCD (non-PCD) using chi square analysis and one way ANOVA. The independent effect of PCD on adverse outcomes was analyzed using logistic regression while adjusting for the aforementioned variables. Results: Patients experienced increased odds of prolonged hospital stay (OR 1.350, 95% CI 1.153-1.580, $p<0.001$) and higher total charges (OR 1.652, 95%CI 1.389-1.966, $p<0.001$). PCD patients had increased odds of cardiac complications (OR 2.793, 95% CI 1.849-4.219, $p<0.001$), such as acute venous embolism (OR 3.798, 95% CI 1.811-7.967, $p<0.001$). PCD patients had increased odds of pulmonary complications (OR 2.215, 95% CI 1.518-3.233, $p=0.001$) such as acute respiratory distress syndrome (OR 2.128, 95% CI 1.359-3.332, $p=0.001$) and mechanical ventilation (OR 2.130, 95% CI 1.283-3.535, $p=0.003$). PCD patients experienced greater odds of acute kidney failure (OR 1.365, 95% CI 1.013-1.840, $p=0.041$) and mortality (OR 2.410, 95% CI 1.340-4.336, $p=0.003$). Conclusions: Pulmonary circulation disorders are associated with increased incidence of complications in hospitalized patients treated for epistaxis.

3:58 **Identification of Intranasal Spray Characteristics for Optimal Drug Delivery to the Ostiomeatal Complex and Maxillary Sinus in Patients with Chronic Rhinosinusitis**

Carson Worden Popper, BS, Lillington, NC; Hannah Martin, MD, Durham, NC; Reanna Shah, Durham, NC; Dennis Frank-Ito, PhD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand optimal drug particle characteristics to maximize deposition of drug particles to the ostiomeatal complex (OMC) and maxillary sinus (MS).

Objectives: To determine parameter combinations for effective drug delivery of intranasal spray steroids to the OMC and MS in patients with chronic rhinosinusitis (CRS). Study Design: Computational study using extensive parametrical optimization modeling in five subjects with CRS. Methods: Each patient's sinonasal cavity was reconstructed from computed tomography scans. Intranasal airflow and drug particle transport were simulated using computational fluid dynamics modeling. Airflow simulations were performed at 15 Pascal inhalation pressure. Intranasal spray particles from 1-100 microns were simulated for release speeds of 1, 5, and 10 m/s from 6 release locations (bottom, center, top, lateral, lateral-bottom, and lateral-top) at 15 mm nozzle insertion depth. Drug delivery simulations were performed in the head tilted forward position. Results: Maximum OMC and MS drug deposition ranged from 0.781% to 12.44% and from 0.016 % to 1.033%, respectively, across all patients. In general, 6-10 microns particles had the best OMC (at 1m/s particle velocity) and MS (at 10m/s particle velocity) deposition; 21-30 microns also had superior OMC deposition. The lateral and lateral-top spray release locations produced maximum OMC deposition, while spray release location maximizing MS deposition varied across five different release locations. Conclusions: This preliminary study suggests that it is challenging to determine a common set of intranasal spray parameter combination for effective drug delivery to the ostiomeatal complex and maxillary sinuses, which could be attributed to varied disease severity of CRS. While drug particle size range and spray particle velocity seem to have distinguishable trends for each subject, spray release location is more varied due to anatomical differences, especially for targeting the MS.

4:05 **Comparing Short Term Outcomes of Chronic Rhinosinusitis Patients with Polyps between Hispanic and Non-Hispanic Patient Populations: A Pilot Study**

Laila Siddique, MD, Miami, FL; Corinna Levine, MD, Miami, FL; Christine Dinh, MD MPH, Miami, FL; Irma Fuego, BA, Miami, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to begin to predict clinical outcomes in patients with chronic rhinosinusitis (CRS) with polyps, by comparing preoperative and postoperative clinical outcomes and inflammatory mediators between Hispanic and non-Hispanic cohorts.

Objectives: 1) Evaluate preoperative quality of life (QOL), smell, and disease severity between Hispanic and non-Hispanic patients; 2) evaluate short term postoperative change in QOL, smell, and disease severity between Hispanic and non-Hispanic patients; and 3) exploratory: determine difference in cytokine expression profile between Hispanic and non-Hispanic patients. Study Design: Prospective cohort study. Exploratory analysis. Methods: A prospective cohort study was performed on 10 Hispanic and 10 non-Hispanic, age and sex matched CRS patients with nasal polyps, undergoing primary sinus surgery. Pre and postoperative Sinonasal Outcome Test-22 (SNOT-22), smell, disease severity, demographics, and covariates were collected. Descriptive statistics were performed using Mann-Whitney-U test. A subset of 6 patients had sinonasal tissue collected during surgery and processed for cytokine analysis. Results: Each cohort is 30% female with similar baseline radiographic and endoscopic disease severity. The preoperative SNOT-22 was significantly worse in the Hispanic cohort (mean 54; standard deviation=39-74) compared to non-Hispanic (48; sd=30-52), objective smell function was worse in the Hispanic cohort but did not reach statistical significance. Three months postoperatively, both cohorts had similar smell and endoscopic disease outcomes. The SNOT-22 improved in both cohorts with a trend toward a greater improvement in non-Hispanics. In the exploratory cytokine analysis, the non-Hispanic patients exhibit greater expression of selected cytokines than the Hispanic group. Conclusions: CRS affects 31 million in US and results in debilitating QOL deficits. Current CRS classifications do not predict treatment response. Challenges include understanding the role of sociodemographics, disease severity measures, and inflammatory mediators. Hispanic patients have worse pre and postoperative SNOT-22 scores despite similar disease severity and smell function measures. However, in our exploratory analysis Hispanics express relatively less cytokine than their non-Hispanic counterparts. This pilot study takes a step toward predicting clinical outcomes by comparing preoperative and postoperative clinical outcomes and inflammatory mediators between ethnic cohorts. This trend has significant clinical implications and deserves further investigation.

4:12 **Anticholinergic Nasal Sprays Reduce Rhinorrhea Severity and Duration in Rhinitis Patients - A Systematic Review and Meta-Analysis**

Jonathan C. Pang, BA, Irvine, CA; Milind Vasudev, BS, Irvine, CA; Amy T. Du, BS, Boca Raton, FL; Madeline M. Nottoli, BA, Omaha, NE; Katherine E. Dang, Santa Barbara, CA; Edward C. Kuan, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to summarize the current literature on the safety and efficacy of anticholinergic nasal sprays in chronic rhinitis.

Objectives: Topical intranasal anticholinergics are commonly prescribed for the relief of chronic rhinitis and associated symptoms, warranting thorough assessment of their safety and efficacy. The present study assesses the existing literature on the application of anticholinergic nasal sprays in allergic and non-allergic rhinitis. Study Design: Systematic review and meta-analysis. Methods: A search encompassing the Cochrane Library, PubMed/Medline, and Scopus databases was conducted. Primary studies describing rhinorrhea, nasal congestion, and/or postnasal drip outcomes in rhinitis patients treated with an anticholinergic spray were included for review. Results: The search yielded 1,029 unique abstracts, of which 16 studies (n = 2,596) met inclusion criteria for qualitative synthesis and 9 (n = 1,920) for meta-analysis. Median followup was 4 weeks and ipratropium bromide was the most extensively trialed anticholinergic. Compared to placebo, anticholinergic treatment was demonstrated to significantly reduce rhinorrhea severity scores (SMD = -0.78, p = 0.0004; SMD = -0.43, p = 0.005) and symptom duration (SMD = -0.62, p = 0.0002; SMD = -0.29, p = 0.002) in allergic and non-allergic rhinitis patients, respectively. Benefit was less consistent for nasal congestion, postnasal drip, and sneezing symptoms. Reported adverse effects included nasal mucosa dryness or irritation, epistaxis, headaches, and pharyngitis, though comparison to placebo found significantly greater risk for epistaxis only (RR = 2.19, p = 0.008). Conclusions: Albeit treating other symptoms with less benefit, anticholinergic nasal sprays appear to be safe and efficacious in reducing rhinorrhea severity and duration in both rhinitis etiologies. This evidence supports their continued use in the treatment of rhinitis associated rhinorrhea.

4:19 **Q&A**

4:25 - 5:10 **RHINOLOGY/ALLERGY PANEL**
Updates on Chronic Rhinosinusitis: Rinses; Antibiotics; Biologics; Office Procedures
Moderator:
Marilene B. Wang, MD FACS, Los Angeles, CA
Panelists:
Antibiotics, Antifungals
Marilene B. Wang, MD FACS, Los Angeles, CA
Topical Treatments, Rinses
Stacey T. Gray, MD FACS, Boston, MA
Biologics, Immunotherapy
Jean Kim, MD PhD FACS, Baltimore, MD
Office Procedures
Michael G. Stewart, MD MPH FACS, New York, NY
Surgery and Navigation
Troy D. Woodard, MD FACS, Cleveland, OH

5:10 **Q&A**

5:15 ***ADJOURN SESSION***

5:30 - 7:00 ***VICE PRESIDENT'S WELCOME RECEPTION (for all attendees) - Sun Deck***

3:30 - 5:20 Concurrent Session 2B

Laryngology/Bronchoesophagology - Cabana Ballroom

3:30 - 4:15 **LARYNGOLOGY/BRONCHOESOPHAGOLOGY PANEL**
I Can't Breathe: Challenging Airway Cases
Moderator:
VyVy N. Young, MD FACS, San Francisco, CA
Panelists:
Joel H. Blumin, MD FACS, Milwaukee, WI
Nausheen Jamal, MD, Edinburg, TX
Karen M. Kost, MD, Montreal, QC Canada
VyVy N. Young, MD FACS, San Francisco, CA

4:15 **Q&A**

Moderator: Lindsay S. Reder, MD, Baldwin Park, CA

4:20 **Comparison of Orally Inhaled Drug Delivery in Patients with Single and Two Level Laryngotracheal Stenosis**

Raluca Elena Gosman, BS, Durham, NC; Seth Morris Cohen, MD MPH, Durham, NC; Dennis Onyeka Frank-Ito, PhD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of laryngotracheal stenosis on upper airway airflow profile and drug delivery to the site of stenosis.

Objectives: Laryngotracheal stenosis (LTS) remains a difficult and functionally devastating condition for affected patients. This preliminary study evaluates airflow dynamics and stenotic drug delivery between patients with single level and two level LTS. Study Design: Computed tomography (CT) scans from six LTS patients, four with single level (two subglottic and two tracheal), and two with two level (glottis + trachea and glottis + subglottis) were used to reconstruct patient specific three dimensional upper airway models. Airflow resistance and stenotic drug deposition in the patients' airway models were compared. Methods: Airflow and orally inhaled drug particle transport in the airway were simulated at 25Pa inhalation pressure using computational fluid dynamics modeling. Drug particle transport was simulated for 100-950 nanoparticles and 1-50 micron particles, with particles released into the mouth at velocities of 1m/s, 5m/s, and 10m/s. Results: In general, subjects with single level stenosis had greater airflow volume (4.9-14.5l/min versus 3.9-6.0l/min) and lower airflow resistance (0.056-0.268Pa.s/ml versus 0.252-0.383Pa.s/ml) than two level stenosis subjects. Maximum stenotic drug depositions among single level stenosis subjects were 2.49% (at 10m/s particle velocity) and 1.11% (at 1m/s particle velocity) for nanoparticles and micron particles, respectively. Among two level stenosis subjects, maximum stenotic depositions were 3.44% (at 5m/s particle velocity) and 4.52% (at 1m/s particle velocity) for nanoparticles and micron particles, respectively. Conclusions: Our preliminary analysis suggests that patients with two level LTS may experience a more constricted laryngotracheal airflow profile compared to patients with single level LTS. Nonetheless, this constriction may enhance drug deposition in the stenosis compared to stenotic drug deposition in patients with single level LTS.

4:27 **Testosterone Injection of the Vocal Cords for Voice Masculinization**

Andrew M. Vahabzadeh-Hagh, MD, La Jolla, CA; Erin Walsh, MA, La Jolla, CA; Vala Hamidi, MD, La Jolla, CA; Karen McCowen, MD, La Jolla, CA

Educational Objective: At the end of this presentation, participants will gain a better understanding of hormonal therapy in transgender care. They will also demonstrate an understanding of male and female vocal attributes.

Objectives: Intramuscular testosterone injections are the principal medical therapy for transgender men. One of the most desired impacts of hormonal therapy is that upon the voice to achieve a lower mean fundamental frequency consistent with cisgender males. The physiologic laryngeal changes are believed to mimic those that occur during puberty and are considered irreversible. Systemic testosterone injections may be wrought with side effects, ineffective, inconsistent, or achieve voice changes too slowly. Here we provide the first ever demonstration of testosterone injections directly into the vocal cold with short term voice outcomes. Study Design: Prospective pilot study. Methods: 2 patients were recruited between 2019-2021. In each participant, 4 injections of 25mg testosterone cypionate (200mg/mL) were administered to each vocal cord over a 6 week period. Point touch transcricothyroid approach was used. Testosterone levels were checked. Perceptual voice analysis was performed before, during, and after all treatments. Results: Both patients experienced a more masculine timbre, less breathiness and more vocal confidence within 4 weeks. One patient had a 40 Hz drop in their fundamental frequency within this same timeframe. Conclusions: Testosterone injections directly into the vocal cords provide a novel therapeutic approach to voice masculinization. This pilot study demonstrates the feasibility and short term effects of this approach.

4:34 **Preoperative Outcomes of Hypoalbuminemia on Patients Undergoing Total Laryngectomy**

Dhvani Shihora, BS, Newark, NJ; Ariel Omiunu, BS, Newark, NJ; Luna Samman, BA, Stratford, NJ; Prayag Patel, MD, Newark, NJ; Jordon G. Grube, MD, Albany, NY; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of malnutrition on postoperative outcomes in patients undergoing total laryngectomy.

Objectives: To investigate the effect of malnourishment, using preoperative albumin levels, on postoperative complications in patients undergoing total laryngectomy (TL). Study Design: Retrospective analysis of the National Surgical Quality Improvement Program (NSQIP). Methods: The NSQIP database was queried for patients who underwent TL from 2005 to 2018. Patients were divided into two cohorts: low (<3.5g/dL) and normal (≥ 3.5 g/dL) preoperative serum albumin. Chi squared and multivariate regression analysis were used to identify differences between patient cohorts and postoperative events. Results: Of the 968 patients included in total, 309 (31.9%) patients had a low preoperative serum albumin level. Hypoalbuminemic patients undergoing TL were more likely to have a history of smoking (p<0.001), COPD (p<0.001), dyspnea (p<0.001), CHF (p<0.001), wound infections (p=0.015), bleeding disorders (p=0.018), systemic sepsis (p=0.006), prolonged ventilator use (p=0.001), weight loss (p<0.001), and dependent functional status (p<0.001). Hypoalbuminemia was associated with higher rates of surgical (p=0.020) and medical complications (p=0.012), more specifically superficial surgical site infections (p=0.045), cardiac arrest (0.5% vs 2.3%, p=0.009), and bleeding requiring transfusion (12.9% vs. 24.9%, p<0.001). Low albumin levels were also associated with prolonged hospital stay (less than 10 days) (p<0.001). Multivariate analysis revealed a significantly greater likelihood of prolonged hospital stay (OR: 2.55, CI:1.81-3.59, p<0.001) and postoperative bleeding (OR:1.73, CI:1.16-2.59, p<0.001) among hypoalbuminemic patients. Conclusions: Hypoalbuminemia alone was a significant predictor of prolonged hospital stay and postoperative bleeding in patients undergoing TL. Our study highlights the importance of preoperative risk assessment and the need to optimize poor nutritional status preoperatively in patients undergoing TL.

4:41 **Effect of Hospital Profit Status on Patient Outcomes and Costs after Laryngectomy**

Vraj P. Shah, BS, Newark, NJ; Amar D. Desai, MPH, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the effect of hospital profit status on postoperative in hospital outcomes and costs of care following laryngectomy.

Objectives: To examine the effect of hospital profit status on postoperative in hospital outcomes and costs of care following laryngectomy. Study Design: Retrospective database study. Methods: The National Inpatient Sample database was queried for patients undergoing laryngectomy from 2003-2014. Statistical associations between nonprofit and for profit hospitals were determined via univariate analysis. Patient outcomes and charges were also compared after propensity score matching the nonprofit and for profit cohorts. Results: 5,142 laryngectomy patients were treated at private hospitals, further stratified into nonprofit (n=4,672) and for profit (n=470). On univariate analysis, a significantly higher proportion of females (23.9% vs. 17.4%, p=0.002), Black patients (16.4% vs. 13.0%, p<0.001) and Hispanic patients (11.5% vs. 5.7%, p<0.001) were treated at for profit hospitals compared to nonprofit hospitals. No difference in age (mean: 60.5 vs. 61.2 years, p=0.347) was noted. For profit hospitals were more likely to be located in the South or West, be a non-teaching hospital, have medium bed size, and treating patients with the highest disease burden who received a total laryngectomy (p<0.05). Propensity score matching on patient demographic and hospital variables yielded 356 matched pairs, with further analysis showing that average length of stay (LOS) (14.67 vs. 12.13 days, p=0.015), total charges ($166,506.32 vs. $122,930.35, p<0.001) and charge per day ($12,827.27 vs. $10,913.30, p=0.002) were greater at for profit hospitals compared to nonprofit hospitals. No significant difference in mortality rates (p=0.505) were noted between the two groups. Conclusions: Patients hospitalized at for profit hospitals following laryngectomy experienced greater LOS, total charges, and charges per day when compared to patients at nonprofit hospitals.

4:48 **Alginates for Protection against Reflux Induced Epithelial Barrier Disruption**

Tina L. Samuels, MS, Milwaukee, WI; Tina Lam, BS, Milwaukee, WI; Nishma Patel, MPharm, Hull, UK; Kate Plehhova, MChem, Hull, UK; Cathal Coyle, PhD, Hull, UK; Nikki Johnston, PhD, Milwaukee, WI

Educational Objective: At the conclusion of this presentation, the participants should better understand how alginate based therapeutics, Gaviscon Advanced and Gaviscon Dual Action, prevent reflux mediated mucosal barrier disruption.

Objectives: Alginates have been successfully used for the treatment of gastroesophageal reflux disease (GERD) for decades and have more recently been shown to confer similar benefit for extraesophageal reflux (EER). EER is characterized by weakly acidic refluxate and predominantly pepsin mediated mucosal injury including mucosal barrier disfunction and subsequent immune cell infiltration. In vitro studies suggest that alginates may protect against loss of mucosal barrier integrity attributed to reflux. The aim of this study was to examine the rescue effect of alginate based Gaviscon Advanced (GA) and Dual Action (GDA) on pepsin and acid mediated barrier disruption in vitro. Study Design: Translational. Methods: Immortalized human true vocal cord epithelial cells cultured to confluence on transwells were treated for 10 minutes with GA, GDA, matched viscous placebo solution, or saline solution (control) followed by 30 minute treatment with saline or pepsin (0.1-1mg/ml) at pH4-5. Cells were exposed basally to horseradish peroxidase (HRP). Peroxidase activity was measured in apical samples by 2,2-azinobis (3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) assay.

Results: Pepsin (1mg/ml) at pH5 significantly increased HRP flux through transwell cultures ($p<0.05$); GA and GDA pretreatment mitigated the effect ($p<0.05$) whereas placebo demonstrated no protective benefit. Conclusions: GA and GDA are effective for protection against laryngeal epithelial barrier disruption caused by weakly acid pepsin. Lack of similar protection by matched viscous placebo suggests that the protective effect of GA and GDA are attributed to alginate. Work is underway to examine GA and GDA protection against reflux attributed barrier disruption and neutrophil migration across esophageal and hypopharyngeal epithelial cultures.

4:55 **Single Cell Analysis of Tracheal Regeneration in Tissue Engineered Tracheal Grafts**

Zheng Hong Tan, BS, Columbus, OH; Sayali Dharmadhikari, MS, Columbus, OH; Lumei Liu, PhD, Columbus, OH; Kimberly M. Shontz, MS, Columbus, OH; Susan D. Reynolds, PhD, Columbus, OH; Tendy Chiang, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the importance of tissue engineered tracheal grafts for the treatment of long segment tracheal defects as well as gain insight on the involvement of various cell types in a trachea during tracheal regeneration.

Objectives: To investigate the cell populations involved in tracheal regeneration and repair of orthotopically implanted tracheal grafts. Study Design: Mice underwent tracheal replacement with partially decellularized tracheal scaffolds (PDTS) or syngeneic tracheal grafts (STG) and were euthanized at 1 month. Single cell RNA sequencing (scRNASeq) was performed on the grafts. Methods: Enzymatic digestion was used to recover all cells from the explanted graft. ScRNASeq libraries were constructed from single cells using 10X Chromium and sequenced with NovaSeq. Sequences were mapped onto a mouse genome. Nonlinear dimensionality reduction was performed and visualized with Seurat v.3.0. Differential gene expression was tested and clusters identified with the Louvain method. Results: Enzymatic digestion returned similar cells yields from both graft types. ScRNAseq identified 23 unique cell clusters in both PDTS and STG. Clusters were consistent with ciliated epithelial cells (N=7 clusters), macrophages (N=7 clusters), myofibroblasts (N=4 clusters), and other rare cell types including brush cells, endothelial cells and T cells. Although all cell clusters were present in both grafts, quantitative differences were observed: myofibroblasts and endothelial cells were ~2-fold higher in PDTS than STG. There was also 1.5-fold increase of a ciliated cell subtype as well as M2 macrophages in PDTS compared to STG. Conclusions: ScRNAseq revealed the possible involvement of myofibroblasts, endothelial cells and macrophages during recellularization of PDTS. Since endothelial cells and epithelial cells are known to play complementary roles in tracheal repair, the scRNAseq studies indicate that endothelial-epithelial interactions may drive regeneration of PDTS. Future studies will use differential gene expression analysis of pseudotime trajectories to test this hypothesis.

5:02 **Ectopic Expression of Pepsinogen and Proton Pumps in Barrett's Esophageal Cells Induces Global Cancer Associated Transcriptomic Changes**

Kaleigh A. Stabenau, MD, Milwaukee, WI; Tina L. Samuels, MS, Milwaukee, WI; Tina Lam, BS, Milwaukee, WI; Kenneth Altman, MD, Danville, PA; Michelle Battle, PhD, Milwaukee, WI; Nikki Johnston, PhD, Milwaukee, WI

Educational Objective: At the conclusion of this presentation, participants should better understand the carcinogenic potential of pepsin and proton pump expression in Barrett's esophagus.

Objectives: Barrett's esophagus (BE) is a well known risk factor for esophageal adenocarcinoma (EAC). Gastric H+/K+ ATPase proton pump and pepsin expression has been demonstrated in some cases of BE; however, the contribution of local pepsin and proton pump expression to carcinogenesis is unknown. In this study, RNA sequencing was used to examine transcriptomic changes in a BE cell line ectopically expressing pepsinogen and/or gastric proton pumps. Study Design: In vitro translational. Methods: BAR-T, human BE cell line devoid of expression of pepsinogen or proton pumps, was transduced by lentivirus encoding pepsinogen (PGA5) and/or gastric proton pump subunits (ATP4A/B). Changes in gene expression relative to the parental line were assessed by RNA sequencing. Results: There were 304, 882, and 722 differentially expressed (DE) genes in BAR-T cells expressing pepsinogen, gastric proton pumps, and both, respectively. There were 69 DE genes shared across all conditions. Top canonical pathways associated with DE protein coding genes in pepsinogen and/or proton pump expressing BAR-T cells included those involving the tumor microenvironment and epithelial mesenchymal transition. Top upstream regulators of coding transcripts included TGFß1 and ERBB2, which are associated with the pathogenesis and prognosis of BE and EAC. Top upstream regulators of noncoding transcripts included p300-CBP, I-BET-151, and CD93, which have known associations with EAC. The top associated disease of coding and noncoding transcripts was cancer. Conclusions: These data support the carcinogenic potential of pepsinogen and proton pump expression in BE and reveal molecular pathways affected by their expression. Further study is warranted to investigate the role of these pathways in carcinogenesis associated with BE.

5:09 **Q&A**

5:15 ***ADJOURN SESSION***

5:30 - 7:00 ***VICE PRESIDENT'S WELCOME RECEPTION (for all attendees) - Sun Deck***

FRIDAY, JANUARY 21, 2022

7:00 - 7:50 **Business Meetings (Fellows Only)**
Southern Section - Crystal/Continental
Western Section - Garden

7:30 ***Attendee Breakfast with Exhibitors*** **- Ocean Ballroom & Garden Patio**

8:00 - 10:00 Concurrent Session 3A

Facial Plastic/Reconstructive Surgery - Crown Room

8:00 **Announcements**

Moderator: J. Madison Clark II, MD FACS, Chapel Hill, NC

8:05 **A Computational Method to Identify Greatest Obstructive Sites in Patients with Nasal Airway Obstruction**
Sarah Megan Russel, MD, Chapel Hill, NC; Dennis Onyeka Frank-Ito, PhD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how changes in sites of obstruction in post-surgical nasal airway anatomy can predict changes in NOSE scores.

Objectives: This project uses computational fluid dynamics (CFD) modeling to identify the most relevant nasal obstructive sites for correction, necessary to improve post-surgical outcomes in patients with nasal airway obstruction. Study Design: Utilize preoperative and postoperative computed tomography (CT) scans of ten patients and CFD airflow simulations to determine the sites of greatest obstruction (SGO). Compare the number of SGOs pre and postoperatively to changes in nasal obstruction symptom evaluation (NOSE) scores. Methods: CT images were used to create anatomically realistic three dimensional nasal airway models. Airflow simulations were performed under steady laminar inspiratory conditions at 15L/min. To determine SGOs, gridlike segments were defined along nasal models. Computed airflow resistance was calculated at each gridlike segment for subjects' predominately obstructed unilateral side. Gridlike segments with airflow resistance greater than three times the predominately obstructed side nasal resistance were identified as SGO. Change in quantity of SGO was determined between preoperative and postoperative nasal models. Results: Differences in SGOs on the affected side generally correlated with improvements in NOSE scores. Two outliers skewed results, for two subjects reported large improvements in obstructive symptoms despite no change/increase in SGOs. When these outliers were present, changes in SGOs could only explain 3.5% of NOSE score improvements (r=0.19). Without these outliers, however, differences in SGOs accounted for 39% of changes in NOSE scores (r=0.62). Conclusions: Changes in SGOs can explain a significant proportion of postoperative changes in NOSE scores. However, phenomena such as the "halo effect" still affect post-surgical obstructive symptoms, which can cause variations in data difficult to explain through objective measures.

8:12 **Postoperative Outcomes in Pediatric Patients following Maxilla and Mandible Reconstruction with Fibula Free Flaps: A Retrospective Review**
Allison Ann Slijepcevic, MD, Portland, OR; Mark K. Wax, MD, Portland, OR; Matt Hanasano, MD, Houston, TX; Yadro Ducic, MD, Dallas, TX; Scott Troob, MD, New York City, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to assess long term outcomes of pediatric facial reconstruction with fibula free flaps.

Objectives: Free flap reconstruction of complex facial defects in pediatric patients is rare. Postoperative complications, donor site morbidity and subsequent impact on craniofacial growth are unknown. Our study assesses the outcomes of pediatric maxilla and mandible reconstruction with fibula free flaps. Study Design: Retrospective chart review. Methods: Multi-institutional retrospective chart review from 2000 to 2020 on pediatric patients undergoing facial reconstruction with

fibula free flaps. Results: Eight-seven patients underwent 88 surgeries; 5 for maxillary defects and 73 for mandibular defects. Median patient age: 12.2 years old. Defects were acquired following resection of sarcoma/carcinoma 44.8% or benign tumors 49.4%. 72.7% cases had immediate free flap reconstruction. Closing osteotomies were reported in 73.9%; 1 in 39.8%, 2 in 27.3%, and more than 2 in 6.82%. Hardware was used in 97.7% and removed in 17.0%; 9.09% demonstrated long term hardware exposure. Short term complications: wound infection 6.82%, flap salvage/failure 2.27%, fistula 2.27%. Compromised craniofacial growth: 23.0%. Two patients developed trismus. Long term fibula donor site complications: dysesthesia 1.15%, scar formation 3.45%. Long term gait abnormality: 1.15%t. Dental rehabilitation was performed in 27.6%. Postoperative speech outcomes showed 93.3% with fully intelligible speech. Conclusions: Pediatric maxillary and mandible defects repaired with fibula free flaps demonstrate low rates of postoperative donor/recipient site complications with favorable outcomes for craniofacial growth. Hardware for flap retention can be used and left in place with low risk of exposure. Postoperative gait abnormality is rare.

8:19 Patients Undergoing Rhinoplasty Do not Have Higher Rates of Antidepressant, Anxiolytic, and ADHD Mediation Use

Alan D. Workman, MD, Boston, MA; Lillian W. Dattilo, AB, Boston, MA (Presenter); Roy Xiao, MD, Boston, MA; David A. Shaye, MD, Boston, MA; Linda N. Lee, MD, Boston, MA; Robin W. Lindsay, MD, Boston, MA; Neil Bhattacharyya, MD MA, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the rates of psychoactive medication use among patients undergoing functional or cosmetic rhinoplasty and the general population in a matched control group.

Objectives: To determine if patients undergoing rhinoplasty are more likely to have concurrent antidepressant/anxiolytic use or attention deficit disorder (ADHD) medication use. Study Design: Case control study. Methods: Patients undergoing cosmetic or functional rhinoplasty (CPT codes: 30410, 30420, 30400, 30435, 30450, 30430) during the years 2017-2019 were identified from the electronic medical record of a large healthcare system. Using a matching algorithm, a control group of patients without rhinoplasty was identified, matched for age (within 5 years), sex, race and health status. For patients and controls, the presence or absence of a prescribed antidepressant/anxiolytic and/or ADHD medication during the study period was identified and tabulated. The relative rates of antidepressant use and ADHD medication use were compared between cases and controls. Results: 830 unique rhinoplasty patients were identified (57.2% female; mean age, 38.4 years) and successfully matched to 830 control patients. The rate of antidepressant/anxiolytic utilization among rhinoplasty patients was 23.6% versus 26.3% for controls (p=0.234). The rate of ADHD medication utilization among rhinoplasty patients was 6.1% versus 6.1% for controls (p=0.999). When only purely cosmetic rhinoplasty cases were included (exclusion of CPT code 30420), there was still no significant difference in antidepressant/anxiolytic medication use (25.4% vs. 26.7%, p=0.708) or ADHD medication use (7.2% vs. 6.5%, p=0.794) between rhinoplasty patients and control patients. Conclusions: Patients undergoing cosmetic or functional rhinoplasty exhibit very similar rates of antidepressant and ADHD medication utilization relative to the general population. This would suggest that rhinoplasty patients do not have higher rates of clinically significant psychiatric comorbidity relative to the general population.

8:26 Wait Time and Cost Drive Patient Preference towards Telemedicine in the Delivery of Skin Cancer Reconstruction Care

Eric Y. Du, BS, St. Louis, MO; Aditya Nellore, BS, St. Louis, MO; Matthew Simpson, MPH, St. Louis, MO; Joseph Sinnwell, MD, St. Louis, MO; Rylee Moody, BS, St. Louis, MO; Collin Chen, MD, St. Louis, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to describe how in person clinic visits are patient preferred in skin cancer reconstruction care, how this preference is altered by changes in cost and wait time as well as patient demographics, and explain the usage of telemedicine and the utility of online crowdsourcing survey platforms in the field of otolaryngology.

Objectives: We aimed to identify which delivery modality for skin reconstruction care, face to face (FTF) in person versus two telemedicine modalities, is patient preferred and how cost, access, wait time and demographics influence this preference. Additionally, we aimed to validate surveying crowdsourcing marketplaces in facial plastics and reconstructive surgery (FPRS). Study Design: Cross-sectional survey. Methods: A 16 question survey querying demographics and six scenario specific preferences questions for the delivery of facial skin cancer reconstruction care was created. The survey was distributed via Amazon Mechanical Turk (MTurk), a crowdsourcing online marketplace, and directly in person to Mohs surgery patients. Results: 1394 MTurk and 55 in person responses were included in analysis. While 82.1% of online respondents prefer FTF clinic visits, this decreases to 58.3% with an in person visit cost ($p < 0.01$) and furthermore to a minority 43.5% with both an in person visit cost and wait time ($p < 0.01$). 77.8% believed that the surgeon's ability would improve with an in person evaluation. Both the MTurk and in person cohorts demonstrated similar response patterns despite considerable demographic differences. Multivariate analyses revealed that telemedicine was preferred by MTurk

respondents with Medicaid (adjusted OR [95% CI]: 1.957 [1.164-3.289]) or Medicare (1.694 [1.106-2.594]) (versus private insurance), prior skin cancer (1.999 [1.173-3.407]), and who believed telemedicine and in person visits were equally useful for the surgeon (10.716 [7.767-14.784]). Conclusions: FTF visits are preferred for skin cancer reconstruction care; this shifts towards primarily virtual care with a cost and wait time despite majority belief that in person evaluations improve outcome. MTurk can be a valuable tool for patient preference research in FPRS.

8:33 **Trends in Facial Trauma during the COVID-19 Pandemic**

Chandler J. Rygalski, BS, Columbus, OH; Lucy Shi, MD, Columbus, OH; Brad deSilva, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to articulate the changes in the epidemiology of facial trauma during the COVID-19 pandemic and describe possible implications for future healthcare crises.

Objectives: This study was performed to evaluate the effect of the COVID-19 pandemic and subsequent social distancing recommendations on the epidemiology of facial trauma. Study Design: We performed a retrospective cohort study of facial trauma patients treated by the otolaryngology department at our institution, identified by current procedural terminology (CPT) code. Methods: Patients presenting during the COVID-19 pandemic between March 17, 2020 - March 16, 2021 (pandemic) were compared to two control periods from March 17, 2018 - March 16, 2019 (control 1) and March 17, 2019 - March 16, 2020 (control 2). The electronic medical record was reviewed for demographic and injury characteristics. These three time periods were then evaluated for differences and trends. Results: Surgical volume across all three time periods was relatively stable with 69 patients, 77 patients, and 58 patients in control 1, control 2, and pandemic respectively (p=0.138). A significant increase in presentations to the emergency department was seen during the COVID-19 pandemic [control 1: 46.4%; control 2: 46.8%; pandemic: 67.2% (p=0.029)]. A larger proportion of patients during the COVID-19 pandemic presented with substance intoxication [period 1: 25.5%; period 2: 19.7%; period 3: 39.1% (p = 0.077)]. Conclusions: Overall, the COVID-19 pandemic and subsequent stay at home orders did not have a significant effect on facial trauma volume; however, patients more often presented with these injuries to the emergency department. Resource allocation strategies during future healthcare shortages should focus on providing support to emergency department systems to handle this volume. Additionally, though not significant, the increased rate of substance intoxication may merit further study.

8:40 **The Worldwide Discussion of Rhinoplasty on Twitter: A Big Data Analysis**

Shreya Mandava, BS, Charlottesville, VA; Andrew M. Strumpf, MPH, Charlottesville, VA; Samuel L. Oyer, MD, Charlottesville, VA; Stephen S. Park, MD, Charlottesville, VA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) describe common terms, sentiment patterns, and trends over time that appear in rhinoplasty related tweets; and 2) discuss how this data can inform their clinical and social media practices.

Objectives: Twitter is a social media platform that allows the world to interact on all topics, including rhinoplasty. The goal of this study was to characterize the content, sentiment, and trends over time in the discussion of rhinoplasty on Twitter. Study Design: Retrospective data mining project. Methods: By querying the Academic Twitter API, 1,427,015 tweets published from 2015-2020 containing the terms "rhinoplasty" or "nose job" were analyzed. The tweets were de-duplicated and filtered for spam. Natural language processing (NLP) and data visualization techniques were utilized to assess temporal trends, key terms, and sentiment scores of tweets. Results: Significantly more "nose job" tweets (80.8 percent) were published compared to "rhinoplasty" (19.2percent). Most "rhinoplasty" tweets were from repeat users linked to a physician or business source, while most "nose job" tweets were from isolated users. Annual tweet frequency increased from 2015 to 2020, with "rhinoplasty" tweets rising sharply in January. There was a statistically significant difference between the average compound sentiment scores (P less than 0.00001) and sentiment composition (P less than 0.00001) of "rhinoplasty" and "nose job" tweets. "Nose job" tweets had over twice the proportion of negative sentiment compared to "rhinoplasty" tweets (27.3 percent vs 12.9 percent, respectively). Content analysis showed the terms "aesthetic", "cosmetic", and "surgeon" were associated with positive sentiment. Conclusions: The discussion on Twitter regarding rhinoplasty has steadily increased, with general public discourse focusing on the term "nose job", particularly when emotional context is elicited. Many "rhinoplasty" tweets are used by physicians for marketing purposes. Tweets mentioning cosmetic enhancement are overwhelmingly positive while other terms are more mixed in sentiment.

8:47 **"Hole Punch" Technique for Recurrent Auricular Hematomas**

Meredith M. Lamb, BS, Lillington, NC; Mark M. Mims, MD, Chapel Hill, NC; J. Madison Clark, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss this new surgical approach to manage recalcitrant auricular hematomas and prevent cosmetic deformity.

Objectives: Effective treatment of auricular hematomas can be a challenging problem for both the otolaryngologist and the patient. Recurrence rates are high even with proper drainage and bolstering. Hematomas can also lead to the development of cauliflower ear. With the current understanding of the pathophysiology of the sequalae of auricular hematomas, we sought to find a novel surgical approach to manage these recalcitrant cases to prevent cosmetic deformity. Study Design: We performed a case series to investigate effectiveness of a novel hole punch technique to prevent recurrent auricular hematomas. Methods: The hole punch technique (presented in video 1) includes removing nonstructural portions of the affected cartilage to allow for improved rates of resolution of recurrent hematomas. Results: The hole punch technique was performed on 5 recalcitrant (at least two prior drainages with subsequent reaccumulation) post-traumatic recurrent auricular hematomas. All patients had excellent results with no additional recurrences and no patients developing cauliflower deformity. Conclusions: The hole punch technique is a powerful tool to address the difficult problem of recurrent auricular hematomas and avoid disfiguring deformities of the ear.

8:54 **Impact of Age on Surgical Outcomes following Mandible Fracture Repair**
Salma Ahsanuddin, BS, Newark, NJ; Joshua Blaine Cadwell, MS, Newark, NJ; Kirolos Georges, BA, Newark, NJ; Boris Paskhover, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how age influences outcomes in open repair of mandible fractures.

Objectives: Open repair of mandibular fractures are frequently performed surgical procedures. Increasing rates of such fractures are seen in the elderly following falls. This study assesses the impact of age on outcomes and complications following mandible fracture repair. Study Design: Retrospective analysis of national registry. Methods: The 2013-2018 National Surgical Quality Improvement Program database was queried for all cases of mandible fracture repair and cases were categorized into three age cohorts. Demographics and comorbidities were compared between the three groups. Post-surgical, medical, and wound complications within 30 days of surgery were determined and univariate and multivariable logistic analyses were performed. Results: Altogether, 1818 open mandible fracture repairs were included for analysis, of which 1269 (69.8%) were age 18-40, 459 (25.2%) were age 41-65, and 90 (5.0%) were age > 65. Complications increased in a stepwise direction with increasing age such that 25.6% of patients age > 65 experienced complications while 7.6% of those age 18-40 experienced complications ($p<0.001$). Increased complications in the elderly included unplanned return to the operating room, unplanned readmission, wound disruption, and medical complications ($p65$ was associated with an increased odds of all complications (OR: 4.19, $p65$ continued to result in a significantly increased risk of medical complications even after adjustment (OR: 21.26, $p<0.001$; adjusted OR: 8.64, $p<0.001$). Conclusions: In this large retrospective analysis of a national database, advanced age was associated with an increased frequency of postoperative complications particularly medical complications in a stepwise manner.

9:01 **Q&A**

9:05 - 10:00 **GENERAL PANEL**
A Transgender Inflection: Demographics and Determinants
Moderator:
P. Daniel Knott, MD, San Francisco, CA
Panelists:
Differences in Sex Related Facial Characteristics and Associated Surgical Procedures
Rahul Seth, MD, San Francisco, CA
Gender Affirming Laryngologic Care: Chondrolaryngoplasty
VyVy N. Young, MD FACS, San Francisco, CA
Gender Affirming Laryngologic Care: Voice Surgery
Clark A. Rosen, MD FACS, San Francisco, CA

10:00 **Q&A**

10:05 - 10:30 ***Break with Exhibitors/View Posters*** **- Ocean Ballroom & Garden Patio**

8:00 - 10:00 Concurrent Session 3B

General & Sleep Medicine - Cabana Ballroom

8:00 **Announcements**

8:05 - 8:55 **SLEEP PANEL**
New Treatments for Obstructive Sleep Apnea
Moderator:
Stacey L. Ishman, MD MPH, Cincinnati, OH
Panelists:
Tracking Sleep with Apps and Wearable Devices: Useful for OSA?
Jolie L. Chang, MD FACS, San Francisco
Role of Insomnia and PTSD in Patient Selection for Hypoglossal Nerve Stimulation
Reena Dhanda Patil, MD MBA, Cincinnati, OH
Advances in Hypoglossal Nerve Stimulation Therapy
Maria V. Suurna, MD FACS, New York, NY

8:55 **Q&A**

Moderator: Jimmy J. Brown, MD FACS, Gainesville, FL

9:00 **2020 - TRIOLOGICAL SOCIETY THESIS HONORABLE MENTION FOR CLINICAL RESEARCH AWARD**
Hypoglossal Nerve Stimulation: Outcomes in Veterans with Common Comorbid Post-Traumatic Stress Disorder
Reena Dhanda Patil, MD MBA, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to…understand the impact of post-traumatic stress disorder on patients with obstructive sleep apnea as well as their reduced ability to tolerate positive airway pressure therapy while recognizing that hypoglossal nerve stimulation therapy is a helpful alternative treatment for sleep apnea in this patient population.

Objectives: Veterans have an increasing prevalence of obstructive sleep apnea (OSA) and high levels of intolerance to positive airway pressure (PAP). The hypoglossal nerve stimulator (HNS) is a promising alternative surgical treatment for OSA in these patients, many of whom suffer from mental health conditions such as post-traumatic stress disorder (PTSD) that may negatively affect their ability to use PAP. Our aims were: 1) to assess postoperative changes in OSA severity and sleepiness in a veteran only population after HNS; 2) to compare postoperative changes in OSA severity, sleepiness and HNS adherence between veterans with and without PTSD; and 3) to compare HNS adherence in our population to HNS adherence in the current literature as well as published PAP adherence data. Study Design: Retrospective and prospective case series. Methods: Clinical data on consecutive patients undergoing HNS in a Veterans Affairs hospital were examined for demographic data as well as medical, sleep, and mental health comorbidities. The overall cohort as well as subsets of patients with and without PTSD were examined for postoperative changes in OSA severity (apnea hypopnea index [AHI], lowest oxygen saturation (LSAT]), and sleepiness (Epworth Sleepiness Scale [ESS]), as well as for device adherence. PTSD and depression symptomatology were measured using the PTSD checklist 5 (PCL-5) and Patient Health Questionnaire 9 (PHQ-9). Results: Forty-six veterans were included. Forty-four patients were male (95.6%), 45 were white (97.8%), and the mean age was 61.3 years. Twenty-six patients met PCL-5 criteria for PTSD and 17 did not. OSA severity and sleepiness improved significantly in the overall cohort after HNS; median (IQR) AHI decreased from 39.2 (24.0, 63.0) to 7.4 (1.2, 20.8) events/hour ($P < .0001$), mean LSAT increased from 81% to 88% ($P < .0001$) and mean ESS decreased from 10.9 to 6.7 ($P < .0001$). These improvements were similar between patients with and without PTSD ($P = .434–.918$). Overall device adherence was 6.1 hours/night for the overall cohort and was not significantly different between patients with and without PTSD ($P = .992$). Conclusions: HNS is an efficacious therapy in a veteran population, providing patients with significant improvements in OSA severity and sleepiness. Veterans with and without PTSD benefited similarly from HNS when comparing improvements in sleep apnea severity and sleepiness as well as device usage. Adherence was similar to previously published HNS adherence data and better than PAP adherence reported in the literature.

9:07 **The Effects of Relationship Status on the Treatment Course of Obstructive Sleep Apnea**

Madeline Goosmann, MD, Detroit, MI; Amy Williams, PhD, Detroit, MI; Anthony Di Ponio, DO, Macomb, MI; Paul Nielsen, PhD, Detroit, MI; Kathleen Yaremchuk, MD MSA, Detroit, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to note the effects of relationship status in the treatment course of OSA.

Objectives: To examine the effects of relationship status in the treatment course of OSA. Study Design: Retrospective analysis of OSA database from a single academic institution. Methods: A univariate two group comparisons are carried out between partnered and unpartnered patients using T-tests for continuous variables and using chi square or Fisher's exact tests for categorical variables. Multivariate regression was used to analyze associations between relationship status and various outcomes while adjusting for other covariates. Results: A total of 10,435 patients included. There were 6271 (60.1%) partnered and 4164 (39.9%) unpartnered patients. When comparing means of partnered people with unpartnered people, partnered people had lower sleep efficiency (76.35,78.29; $p < 0.001$), lower average O2 saturation (91.6, 92.4; p=0.03), lower ESS (10.77, 11.04; p=0.033), and older age at OSA diagnosis (56.69, 47.47; p<0.001) and at starting CPAP (58.25, 51.05; p<0.001). In the multivariate analysis, partnered people have a lower AHI (B=-10.2; CI [-17.22 to -3.17]; p=0.004) than those who are unpartnered. Partnered people have a higher age at diagnosis of OSA compared to unpartnered people (B=10.23; CI [7.19 to 13.26]; <0.001), a higher CPAP adherence (B=7.27; CI [0.32-14.23]; p=0.040), and older age at first CPAP usage (B=9.32; CI [6.24 to 12.28]; p<0.001). Conclusions: Interestingly, partnered patients with OSA had better AHIs and CPAP adherence than their unpartnered counterparts; however, unpartnered patients used CPAP at a younger age and a younger age of diagnosis. Further analysis should be done for overall survival differences between these groups.

9:14 **Impact of Subscription Based and Open Access Journals in Otolaryngology**

Jason R. Crossley, MD, Washington, DC; Nadia L. Samaha, BS, Washington, DC; Mohamad M. Almasri, BS MBA, Washington, DC; Bruce J. Davidson, MD, Washington, DC; Earl H. Harley, MD, Washington, DC; Hung Jeffrey Kim, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand factors leading to the recent rise of open access journals in otolaryngology; 2) appreciate differences in authorship characteristics between open access and conventional subscription based journals; and 3) describe observed differences in citation frequency between articles in open access and subscription based journals.

Objectives: To describe the academic impact and author characteristics of open access journals in otolaryngology. Study Design: Internet based cross-sectional study. Methods: Original articles from three open access (OTO Open, Laryngoscope Investigative Otolaryngology, and World Journal of Otorhinolaryngology) and three conventional subscription based otolaryngology specific journals (Otolaryngology - Head & Neck Surgery, Laryngoscope, JAMA Otolaryngology - Head & Neck Surgery) were assessed. Publication dates of articles from January 2017 to July 2020 were included. Google Scholar and Web of Science citation counts were recorded. H-indexes of first and last authors were included according to Google Scholar and Web of Science. Results: 1,084 articles were included in this analysis. Articles published in open access otolaryngology specific journals had significantly less citations on average (7.19) than articles published in subscription based journals (12.83, $p < 0.0001$). Last authors of articles published in subscription based journals had a significantly higher h-indices (24.11) compared with last authors of articles published in open access journals (18.01, $p < 0.0001$). First authors of articles published in open access journals had similar h-indices (10.92) as first authors of articles published in subscription based journals (11.03). Conclusions: Articles published in open access journals were cited significantly less than those published in subscription based journals. The h-index of last authors was significantly lower in open access journals, however the h-index of first authors was similar between open access and subscription based journals. Open access status does not appear to confer broader reach as measured by citations.

9:21 **Associations of Comorbid Pain and Psychiatric Disease with Surgical Management of Obstructive Sleep Apnea**

Nikolas Robert Block-Wheeler, MD MS, Oakland, CA; Jeanne Darbinian, MPH, Oakland, CA; Peter Debbaneh, MD, Oakland, CA; Ghedak Ansari, MD, Oakland, CA; Megan Durr, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the association of psychiatric and pain comorbidities and the likelihood of undergoing surgery for obstructive sleep apnea.

Objectives: Patients undergoing surgical management for obstructive sleep apnea (OSA) are likely medically distinct from their counterparts not treated surgically. This study examines the associations between psychiatric and pain related comorbidities and likelihood of undergoing sleep surgery. Study Design: This is a retrospective cohort study of adult

members with a diagnosis of obstructive sleep apnea (OSA) made between 2009 and 2016. Methods: The primary outcome was non-nasal, non-bariatric sleep surgery procedures. Associations between baseline demographic and comorbid conditions and undergoing subsequent surgery were analyzed using Chi square tests and multivariable analyses. Results: The final cohort included 172,854 subjects, of whom 2,456 had a qualifying surgery. History of a pain disorder and/or pain medication prescription was associated with a 41% higher odds of undergoing surgery [OR 1.41 (1.29-1.54)], while presence of a pain medication alone conferred a 48% higher odds [OR 1.48 (1.35-1.63)]. Cohort members with a history of headache ($p<0.01$) - in particular migraine ($p<0.01$) - adult personality or behavior disorder ($p=0.025$), or behavioral/emotional disorder ($p<0.001$) were more likely to have surgery. Conclusions: Our study suggests history of pain disorder (including pain medication), migraine, or certain behavioral and personality disorders is associated with increased likelihood of undergoing sleep surgery. The findings highlight the need for preoperative counseling on pain expectations prior to recommending surgery, alternative pain management in light of the opioid epidemic, and surgeons may consider less painful interventions, like hypoglossal nerve stimulator implantation.

9:28 **The Role of the Nutritional Risk Index as a Predictor for Postoperative Complications in Palatopharyngoplasty**

Rushi Patel, BA, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; David Zakay, MD, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to determine the utility of the Nutritional Risk Index in predicting postoperative complications for patients undergoing palatopharyngoplasty.

Objectives: Nutritional status has been shown to be significantly associated with postoperative complications in head and neck surgery. Obstructive sleep apnea (OSA) is associated with obesity, a condition in which identifying malnutrition is challenging. We investigated the utility of the Nutritional Risk Index (NRI) in patients receiving palatopharyngoplasty (PPP) for OSA. Study Design: Retrospective database review. Methods: The 2012-2018 National Surgical Quality Improvement Program (NSQIP) database was queried for all cases of PPP. Patients with missing height, weight, and albumin levels were excluded from the analysis. NRI score was calculated for each patient and patients were subdivided depending on nutritional status into malnourished and non-malnourished. Univariate and multivariate analyses were conducted to assess the NRI's ability to predict postoperative complications. Results: We found a total of 1,351 cases meeting inclusion criteria. Of these cases, 72 (5.3%) were classified as being malnourished. There were significant differences in demographics and comorbidities between the two groups. Independent samples t-test demonstrated that the malnourished group had a longer length of stay (13.25 vs. 2.38 days, $p<0.001$) and operative time (131.67 vs. 468.90 min, $p<0.001$). Multivariate regression analysis demonstrated NRI defined malnourishment was significantly associated with reoperation (OR [95% CI]=3.548 [1.698-7.413], $p=0.001$), surgical complications (OR [95% CI]=4.138 [2.139-9.005], $p<0.001$), and overall complication (OR [95% CI]=5.518 [2.829-10.762], $p<0.001$). Individual complication analysis revealed significant association with bleeding (OR [95% CI]=2.802 [1.384-5.674], $p=0.004$) and sepsis (OR [95% CI]=6.794 [1.557-29.649], $p=0.011$). Conclusions: In patients undergoing PPP, the NRI can serve as a useful clinical tool to identify patients at high risk for reoperation and postoperative complications.

9:35 **Patient Reported Symptom Outcomes after Sialendoscopy Assisted Salivary Duct Surgery: A 5 Year Prospective Cohort Study**

Jacquelyn Kemmer Callander, MD, San Francisco, CA; Karolina Plonowska-Hirschfeld, MD, San Francisco, CA; Arushi Gulati, BS, San Francisco, CA; Jolie L. Chang, MD, San Francisco, CA; William R. Ryan, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the long term impact of sialendoscopic assisted salivary duct surgery (SASDS) on symptoms of chronic sialadenitis.

Objectives: To evaluate the long term impact of SASDS on symptoms of chronic sialadenitis with and without sialolithiasis using the Chronic Obstructive Sialadenitis Symptoms (COSS) questionnaire. Study Design: Prospective cohort study. Methods: The COSS questionnaire, which uses 20 questions to quantify symptoms on a 0-100 scale, was administered prospectively to adult patients preoperatively and 1 year and 5 years postoperatively. At 1 and 5 years, we compared COSS scores and categories representing complete (< 10), partial (10-25), and no (> 25) resolution of symptoms. Results: After 5 years since SASDS, 84 patients reported scores for 97 symptomatic glands (51 with sialolithiasis / 38 without). The mean COSS scores with and without sialolithiasis were 30.8 and 39.7 preoperatively, 5.6 and 21.4 at 1 year postoperatively, and were 4.7 and 20.3 at 5 years postoperatively, respectively. Collectively, for patients with and without sialolithiasis, there were no statistically significant changes in symptom resolution categories between 1 and 5 years postoperatively ($p= 0.097$, $p= 0.834$, respectively). Evaluating for crossover of each patient gland from one resolution group to another from 1 to 5 years, 91% of glands with sialolithiasis and 68% of glands without sialolithiasis had symptoms that remained unchanged or improved, while 9% of glands with sialolithiasis and 32% of glands without sialolithiasis reported a worsened resolution

category. Conclusions: 5 years after SASDS for sialadenitis, a vast majority of patients with sialolithiasis have durable resolution of their symptoms while patients without sialolithiasis have varying degrees of response with nearly a third developing worse symptoms.

9:42 **Age and Gender Interactions on Quality of Life in Otolaryngology Patients**
Christine Komal Raj, BA, Los Angeles, CA; Ian Kim, MFA MS, Los Angeles, CA; Kevin Herrera, BS, Los Angeles, CA; Harrison Ma, BA, Los Angeles, CA; Francis Reyes, BA, Los Angeles, CA; Kevin Hur, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the effect age and gender have on health related quality of life in otolaryngology patients.

Objectives: Despite the fact that age and gender are important markers for individual differences in health related quality of life (HRQoL), no published studies have thus far examined the combined effects of age and gender on HRQoL in otolaryngology patients. This study tested the hypothesis that the effect of age on HRQoL differs by gender in otolaryngology patients. Study Design: Cross-sectional. Methods: Patients seen in a general otolaryngology clinic participated in this study. HRQoL was measured by the SF-6D score. Patient characteristics including demographics and category of chief otolaryngology complaint were extracted from medical records. A multivariable linear regression analysis was used to analyze the combined effect of age and gender on HRQoL. The model was adjusted for race, ethnicity, and category of chief otolaryngology complaint. Results: The study included 407 patients (mean age 51.5 with sd of 18.4; 46% male). Multivariable linear regression models demonstrated that aging had a greater effect on HRQoL in women compared to men (p-value of .031). For younger patients, female gender was protective; however, at ages greater than 48 years, female gender was a risk factor for decreased HRQoL. Hispanic or Latino compared to non-Hispanic or Latino (p-value of .020) and African American or Black compared to non-Hispanic White (p-value of .007) patients reported significantly lower HRQoL. Conclusions: Age affects HRQoL differently in men than in women. Among otolaryngology patients, women experience a greater decrease in HRQoL as they age.

9:49 **Harnessing the Power of Claims Data to Examine Healthcare Costs and Quality: Research Gaps and Opportunities in Otolaryngology - A Systematic Review**
Sara B. Hobday, BA, Philadelphia, PA; Leila J. Mady, MD PhD MPH, Philadelphia, PA; Austin C. Cao, BA, Philadelphia, PA; Robert M. Brody, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the strengths and limitations of the Optum Clinformatics Database (a national commercial health insurance claims database), describe existing investigations performed with this dataset, and identify opportunities for future applications in cost and quality outcomes research.

Objectives: To provide an overview of the Optum Clinformatics Database, describe its strengths and limitations, and review existing studies related to the surgical treatment of head and neck pathology performed with this dataset. Study Design: Systematic review of Optum, an administrative health claims database from a large national insurer, within otolaryngology research. Methods: A literature search of articles that use Optum data and are related to the surgical treatment of head and neck pathology was conducted from first available article to May 28, 2021, using Medline via PubMed, Scopus, and EMBASE databases. Results: Of 3962 initial search results, 71 studies underwent full text review, and 21 met inclusion criteria. Disciplines represented in current literature include laryngology/n=2, otology/n=4, rhinology/n=1, pediatric otolaryngology/n=2, head and neck oncology/n=1, cutaneous/n=4, endocrinology/n=4, and allergy/immunology/n=3. Fifty-seven percent (n=12) of studies were published within the last two years. Study cohort size ranged from 431 to 1,933,552 patients (mean 185,440, StDev 461,172). Data covariates captured by Optum include age, sex, race/ethnicity, patient comorbidities, geographic region, educational attainment, occupation, household income, and health insurance plan. Outcomes studied in existing literature include health resource utilization, healthcare costs, disease incidence and prevalence, and differences in treatment modalities over time. Conclusions: Optum provides longitudinal, geographically diverse patient data that presents opportunities to examine health economics, outcomes, and treatment patterns. Limitations of Optum include incompletely captured clinical and disease specific parameters, potential disease misclassification, and incomplete treatment information. The database allows investigators to correlate clinical information with sociodemographic and economic data, providing critical opportunities to inform policy and decision making in otolaryngology.

9:56 **Q&A**

10:05 - 10:30 ***Break with Exhibitors/View Posters*** **- Ocean Ballroom & Garden Patio**

10:30 - 12:30 Concurrent Session 4A

General and Rhinology/Allergy/Sinus - Crown Room

10:30 - 11:20 **GENERAL/RHINOLOGY/ALLERGY PANEL**
Multimodality Approach to Nasal Obstruction
Moderator:
Ralph B. Metson, MD FACS, Boston, MA
Panelists:
Turbinate Treatments
Ashutosh Kacker, MD FACS, New York, NY
Chronic Rhinitis and Nasal Valve Treatments
Jivianne T. Lee, MD FACS, Los Angeles, CA
Interesting Cases of Nasal Obstruction: Treatment Options
Ralph B. Metson, MD FACS, Boston, MA

11:20 **Q&A**

Moderator: Hassan H. Ramadan, MD FACS, Morgantown, WV

11:25 **Evaluation of Current Triological Thesis Trends and Demographics of the Society**
Kenneth H. Lee, MD PhD, Dallas, TX; Dana M. Thompson, MD MS MBA FACS, Chicago, IL; Myles L. Pensak, MD, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate the standard timeline for successful candidates who have completed a thesis necessary for acceptance into the Triological Society as an active fellow. In addition, participants will gain an understanding to the current demographics of the society and how it is changing with the addition of new and younger members of the society.

Objectives: 1) Identify the time required for completion, submission, and acceptance of a Triological thesis and trends for success of induction into the society; 2) determine the current demographics of the society and identify any variance based on separating age groups of the current membership. Study Design: Retrospective review of society database and survey of candidates and fellows. Methods: Data from the records of all candidates and fellows of the society were reviewed to determine the number of years from active candidate to active fellow status for all members inducted into the society from 1990 to 2018. In addition, all current active candidates, active fellows and senior fellows were surveyed online to capture demographic data and opinions regarding the society. Results: Since 1990, there has been a steady increase in the number of active candidates and theses successfully completed. Of candidates successfully completing theses, 73% did so within 3 years and 90% within 5 years. Of the current active and senior fellows, 83% reported being male and 15% female. Also, 73% reported as Caucasian, 12% Asian, 2% Hispanic, 2% Black, 0% Native American, and 2% Mixed Race. Of the active candidates, 70% reported as male, 28% female, 58% Caucasian, 17% Asian, 6% Hispanic, 5% Black, 0% Native American, and 3% Mixed Race. Conclusions: The Triological Society continues to grow and its membership is becoming more diverse, including more women and wider ethnic diversity. Candidates should plan for submitting their thesis as early as possible as data demonstrates greatest likelihood of success if done within 5 years.

11:32 **Adjuvant Radiation and Survival following Surgical Resection of Sinonasal Adenocarcinoma**
Lena Kheir, BA, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; Patrick Hu, MBS, Newark, NJ; Dylan F. Roden, MD, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ

Educational Objective: To investigate the utility of adjuvant radiation in patients who undergo surgical resection for management of sinonasal adenocarcinoma.

Objectives: This study aims to investigate the utility of adjuvant radiation in patients who undergo surgical resection for management of sinonasal adenocarcinoma. Study Design: Retrospective database review. Methods: The 2004-2016 National Cancer Data Base (NCDB) was used to extract patients with surgically resected sinonasal adenocarcinoma. Kaplan-Meier survival analysis and Cox Proportional Hazards Modeling were used to analyze the impact of adjuvant radiation on overall survival following surgery. Results: 349 patients with sinonasal adenocarcinoma underwent surgical resection. Of these patients, 154 (44.1%) received adjuvant radiotherapy (RT). While there was no significant difference in race, age, or sex in patients receiving RT, those receiving RT had more advanced disease and were more likely to have

positive margins. Kaplan Meier analysis showed no significant difference in 5 year overall survival (OS) in patients who received adjuvant RT in comparison to those who underwent surgical resection alone (65.7% vs 72.6%, respectively; P=0.378). In addition, when looking at only patients with positive margins, 5 year OS still did not have a significant difference (66.7% vs 53.7%; P=0.359). Only patients with clinical AJCC T4 showed a statistically significant survival benefit with adjuvant RT (56.9% vs 29.9%; P=0.009). Conclusions: Adjuvant RT does not appear to provide a significant survival benefit in patients with resected sinonasal adenocarcinoma, with the exception of those with clinically AJCC T4 disease.

11:39 **The Relationship of SARS-CoV-2 on Smell Loss and Neurocognitive Outcomes**

Deesha D. Desai, BS, Pittsburgh, PA; Brock M. Salvatore, BS, Pittsburgh, PA; Zoe H. Goldberg, BS, Pittsburgh, PA; Eve Bowers, MD, Miami, FL; John A. Moore, BA, Pittsburgh, PA; Stella E. Lee, MD, Boston, MA

Educational Objective: This study is designed to show the impact of SARS-CoV-2 on smell and cognition at different stages of infection.

Objectives: Anosmia is a frequent symptom of COVID-19 (around 11-77% prevalence). Less reported, patients also present with neurocognitive deficits. We aim to address how different stages of infection (active infection, recovered, and healthy controls) influence anosmia and neurocognitive dysfunction. Study Design: Prospective, longitudinal, case controlled. Methods: After pre-assessment testing, participants completed smell identification tests and CNS Vital Signs (CNSVS) examinations to assess anosmia and neurocognitive function, respectively. Followups occurred: at 1 and 3 months for the active group; 3 months for the recovered group; none for healthy controls. Results: Results were separated and compared based on initial and followup data. The recovered group had the lowest average UPSIT score of 27.6 compared to the 32.7 (active) and 32.6 (healthy control). 76% of the recovered patients and 53.3% of the active patients suffered from mild to total anosmia. In followup, the active group improved in UPSIT scores while the recovered group decreased. In terms of neurocognitive performance, recovered patients had drastic differences with lower processing speed, neurocognitive index, psychomotor speed, executive function, and cognitive flexibility. Conclusions: SARS-CoV-2 impacts smell and cognition following initial acute infectious symptoms.

11:46 **A Machine Learning Algorithm for the Diagnosis and Management of Acute Invasive Fungal Sinusitis (AIFS)**

Chengetai R. Mahomva, MD, Cleveland, OH; Firas Sbeih, MD, Cleveland, OH; Chaaban Mohamad, MD MSCR MBA FACS, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to describe a novel machine learning derived diagnostic and management algorithm for AIFS

Objectives: To develop a machine learning algorithm to predict AIFS and guide management. Study Design: Retrospective cohort for algorithm derivation and validation. Methods: All cases sent to pathology from 2010-2020 for concern for AIFS were included. Patients with chronic invasive fungal sinusitis and those without biopsy results were excluded. Patient demographics, clinical, microbiology and pathological data were extracted. Chi squared analysis and independent T-tests were used to assess differences between patients with and without AIFS and for patients with AIFS; differences between those alive versus (vs) deceased. Recursive partitioning was used to assess whether patients could accurately be classified as either having or not having AIFS based on their clinical data prior to biopsy. Results: Forty patients met inclusion criteria. Patient characteristics associated with increased likelihood of a positive biopsy for AIFS included facial pain (p=0.047), platelet count < 50 (p=0.028) and abnormal CT findings, most commonly, opacification (p=0.003). In the 26 patients who had biopsy proven AIFS, the postoperative 30 day all cause mortality was 50% (13/26) and predictors of mortality included prolonged interval between biopsy and OR start time (4 hrs. vs 17 hrs. p = 0.042) and initiation of antifungal therapy prior to OR start time (0.5 days prior vs 7 days prior. p=0.042). A recursive partitioning model was developed and was able to stratify patients into low (0.4-2%) and high (> 44%) risk groups of a positive biopsy of AIFS. Conclusions: Mortality from AIFS is high. We propose a machine learning derived risk stratification system to improve diagnosis and management. Future studies can access the accuracy of this model in a multi-institution fashion.

11:53 **Utility of Telemedicine in Otolaryngology: Need for In Person Followup and Physician Satisfaction**

Janet S. Choi, MD MPH, Minneapolis, MN; James Kim, MD, Los Angeles, CA; Courtney Voelker, MD PhD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the percentage of telemedicine visits requiring in person followup visits in an otolaryngology outpatient setting and its associated physician satisfaction and clinical factors.

Objectives: We investigated the pattern of followup after telemedicine visits and associated physician satisfaction at a tertiary center outpatient setting during early COVID-19 pandemic. Study Design: Prospective cohort study. Methods: Study data included 651 telemedicine encounters delivered from May-June 2020 with available physician satisfaction scores. Encounter specific physician satisfaction was rated by 15 otolaryngologists using Provider Satisfaction Questionnaire. Physicians were additionally asked whether each telemedicine encounter needed in person followup for further workup. A multivariable linear mixed effects model was used to compare physician satisfaction scores for telemedicine encounters by the need for in person followup. Results: Of 651 telemedicine visits, 47% was determined by physicians not to need in person followup for further workup. Physician satisfaction scores for encounters not requiring in person followup were significantly higher at 86.2 [95% CI: 81.0-91.4] in comparison to scores for encounters requiring in person followup at 80.5 [95% CI: 75.4-85.7] (differences: 5.7 [95%CI: 3.7-7.6]). 30% of new patient and 54% of followup telemedicine visits did not require further in person followup. In a multivariate model, otology/neurotology, laryngology, and rhinology subspecialty encounters were more likely to need in person followup in comparison to comprehensive otolaryngology encounters. Conclusions: Nearly half of telemedicine encounters were determined not to require in person followup for further workup in an otolaryngology outpatient setting. Physician satisfaction remained high especially for telemedicine encounters that did not require further in person workup. Telemedicine is a feasible alternative option in otolaryngology beyond the pandemic when used with appropriate triaging.

12:00 **Effectiveness of Preoperative Laboratory Testing in Patients Undergoing Outpatient Tonsillectomy Procedures**

Abigail Walrond, BS, Rochester, NY; Chiya Abramowitz, BA MS, Glen Head, NY; Pritish Sahoo, BS, New York, NY; Ariel Omiunu, BS, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the utility of preoperative laboratory testing in patients undergoing tonsillectomy with/without adenoidectomy

Objectives: To examine the significance of obtaining PLTs in low risk patients undergoing outpatient tonsillectomy and/or adenoidectomy procedures on surgical complication rates and overall clinical outcomes. Study Design: Retrospective database review. Methods: The 2005-2018 American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database was queried for elective outpatient tonsillectomy ± adenoidectomy procedures in ASA classification I or II patients. The rates of PLT administration were measured and analyzed against patient demographics and comorbidities by chi squared analysis, frequency analysis, and multivariate logistic regression analysis. Results: 23,577 cases met the inclusion criteria, of which 44.3% received at least one PLT. The most common PLT received was a complete blood count (CBC) panel (94.3%). Female patients (p40 years ($p<0.001$) were more likely to receive PLTs. Major complications occurred in 4.5% of the cases. There were no statistically significant differences in postoperative complications between those who obtained and did not obtain PLTs, specifically among those with unplanned readmission ($p=0.638$), postoperative sepsis ($p=0.426$), urinary tract infection ($p=0.932$), and pneumonia ($p=0.250$). Conclusions: Patients who obtained PLTs had similar postoperative outcomes compared to those who did not obtain PLTs. This study supports current ASA guidelines that recommend against this practice as there is no direct clinical benefit.

12:07 **Factors Influencing Medical Student Choice of Otolaryngology: What Impacts Their Decision**

Emma De Ravin, BS, Philadelphia, PA; Ariel S. Frost, MD, Philadelphia, PA; Neal R. Godse, MD, Pittsburgh, PA; Noel Jabbour, MD, Pittsburgh, PA; Barry M. Schaitkin, MD, Pittsburgh, PA; Leila J. Mady, MD PhD MPH, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of otolaryngology specific requirements on applications and match rate success.

Objectives: Over the last two decades, mean number of applications per candidate has increased by 250%. Otolaryngology specific requirements were piloted to minimize applicant and program burdens. We investigated the impact of introducing and then removing these pre-match requirements on match outcomes during this period. Study Design: Retrospective cohort study. Methods: 2014-2021 NRMP/ERAS data was examined. Primary outcome was impact of otolaryngology resident talent assessment phone interview (ORTA; conducted pre-match 2017, post-match 2019) and program specific paragraph (PSP; implemented 2016, changed to optional 2018) on applications and match rates. Secondary survey analysis assessed candidate perceptions. Results: Applications declined significantly during ORTA/PSP (19%, $p=0.001$). After the optional PSP and post-match ORTA, there was a significant increase in applications (39%, $p=0.002$). Examined individually, mandatory PSP was associated with decline in applications ($p=0.007$), whereas post-match ORTA was associated with application increases ($p=0.01$). Among PGY1-2 survey participants (118/610, 19%), ORTA/PSP had negative impacts on

their decisions in 60% and 52% of applicants, respectively. Match rate success demonstrated opposite trends, with significant improvements from 75% to 91% during ORTA/PSP (p=0.01), followed by significant decline to 73% after optional PSP and post-match ORTA (p=0.002). Examined individually, the PSP and ORTA changes were similarly associated with trends described above. Conclusions: Both the ORTA and PSP were associated with declines in applicant numbers and increases in match rate success. The ORTA change to post-match demonstrated the most impact on increasing candidate numbers. As programs seek ways to remove barriers to applying into our specialty, we must also consider the potential consequences of an increasing pool of unmatched candidates.

12:14 **Examination of Medical Student Research Activity and Correlates to Productivity in Otolaryngology**

Tiffany Chen, BA, Nutley, NJ; Bethany Ho, BA, Nutley, NJ; Megan Decker, BS, Nutley, NJ; Daniel Basta, BS, Nutley, NJ; Ellen M. Hong, BA, Nutley, NJ; Brian Benson, MD, Nutley, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify institutions with greatest medical student research productivity and factors correlated with productivity.

Objectives: To investigate medical student research productivity by institutions associated with otolaryngology residency programs and to identify possible correlates of productivity. Study Design: Systematic search. Methods: A systematic search for articles indexed on PubMed published by 116 programs from January 1, 2016, to February 28, 2021, was conducted. The primary outcomes were total number of publications, number of first author medical student publications and number of distinct medical students from each institution. Secondary outcomes included number of faculty members, geographic region, and program rankings. Results: Nationally, the mean number of faculty was 21.67 with a mean number of 98.72 total publications. The mean number of medical student first author publications was 15.77, consisting of a mean of 10.03 number of distinct medical students. A positive correlation was found between number of medical student first author publications and number of faculty ($P<0.05$, $R=0.43$). When comparing the top 30 programs ranked by U.S. News and Report or National Institutes of Health, these institutions had a statistically significantly greater mean number of medical student first author publications and distinct medical student first authors than all other programs ($P<0.05$). One way analysis of variance showed no statistically significant difference in medical student productivity ($p=0.09$) nor in department size ($p=0.12$) between regions. Conclusions: This analysis identifies the institutions that not only provide greater inclusivity of medical students in otolaryngology research but also allow medical students to take on a more active role in projects that lead to first author publications. These findings provide more specific data that can aid in career planning for premedical and medical students.

12:21 **Q&A**

12:30 ***ADJOURN - afternoon activities are listed after Concurrent Session 4B***

10:30 - 12:30 Concurrent Session 4B
Laryngology/Bronchoesophagology and Pediatric Otolaryngology - Cabana Ballroom

Moderator: Mausumi N. Syamal, MD, Bethlehem, PA

10:30 **2020 - TRIOLOGICAL SOCIETY THESIS WITH DISTINCTION AWARD**
Evaluating Patient Benefit from Laryngochondroplasty

Christopher G. Tang, MD, San Francisco, CA

Educational Objectives: At the conclusion of this presentation, the participants should be able to 1) elucidate and review the surgical technique for laryngochondroplasty in male to female transgender patients; and 2) determine the degree of benefit afforded to male to female transgender patients by laryngochondroplasty using the Glasgow Benefit Inventory (GBI).

Objectives: To elucidate and review the surgical technique for laryngochondroplasty in male to female transgender patients. To determine the degree of benefit afforded to male to female transgender patients by laryngochondroplasty using the Glasgow Benefit Inventory (GBI). Methods: After IRB approval was obtained, the GBI survey was given to patients who underwent laryngochondroplasty by the author. Demographic information was analyzed including: age, race, wait time to surgery, distance travelled, median zip code income, and concomitant gender affirming surgeries such as vaginoplasty, breast augmentation, or facial feminization. Results: From April 2016 - April 2020, 209 patients received

laryngochondroplasty within the Kaiser Permanente Northern California Medical System. Of those, 91 received laryngochondroplasty with the author and were given the GBI with 73 patients (80%) responding. Patients were on average 31.4 years old, travelled 45.4 miles to the surgical site, lived in a zip code with a median income of $86793.61, and waited 95.7 days for surgery. Patients had a statistically significant improvement in all three subscores (general, social, and physical) of the GBI as well as in their overall score. Conclusions: Laryngochondroplasty is a safe and effective procedure to reduce the thyroid cartilage prominence (Adam's apple) in male to female transgender patients. There was a statistically significant improvement in the overall score and all subscores of the Glasgow Benefit Inventory after laryngochondroplasty.

10:37 **Altered Airway Anatomy Course Using 3-D Printed Models for Medical Students**

Rishabh Sethia, MD, Columbus, OH; Yazen Alfayez, BS, Columbus, OH; Kyle K. VanKoevering, MD, Columbus, OH; Nolan B. Seim, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the value of teaching all medical students the fundamentals of altered airway anatomy using 3-D printed models.

Objectives: Many non-airway trained personnel are uncomfortable managing altered airway anatomy (AAA) including tracheostomy and total laryngectomy patients. There has been significant morbidity and mortality from first responders' inability to stabilize the airway until expert airway providers arrive. All medical school graduates should demonstrate competency of this lifesaving skill. Our hypothesis was that hands-on interactive simulation using 3-D printed models would improve AAA knowledge and confidence. Study Design: IRB approved prospective study. Methods: A novel curriculum was designed to teach all third year medical students fundamentals of AAA via case based discussions, surgical videos, and hands-on student demonstration of competency by inserting a tracheostomy and endotracheal tube through 3-D printed tracheostoma models. Pre- and post-course 5 item Likert scale surveys and AAA knowledge assessments were administered. Results: Students (n=65) felt more comfortable with knowledge of AAA equipment, ability to stabilize AAA patients until expert airway providers arrive, and AAA overall post-course vs. pre-course (3.89 vs. 1.35, 3.60 vs. 1.32, 3.74 vs. 1.46, all $p<0.0001$). AAA knowledge assessment scores improved from 29.1% pre-course to 73.1% post-course ($p<0.0001$). Interestingly, 23.4% chose bag-mask ventilation over mouth and nose, and/or transoral/transnasal intubation for a TL patient pre-course vs. 4.7% post-course ($p<0.0003$). 90.8% felt they had not received adequate exposure to AAA in medical school and 100.0% found the course to be a valuable experience. Conclusions: This hands-on course significantly increases knowledge and comfort managing AAA patients for all medical students regardless of specialty interest. The course can be expanded to residency orientation to further promote AAA education amongst all other specialties and ultimately improve patient safety.

10:44 **Feasibility of an Ear, Nose, and Throat (ENT) Practice Vaccinating against Human Papillomavirus (HPV)**

Victoria J. Palacios, BS, Reno, NV; Dante J. Merlino, MD PhD, Rochester, MN; Joshua P. Wiedermann, MD, Rochester, MN; Eric J. Moore, MD, Rochester, MN; Robert M. Jacobson, MD, Rochester, MN; Kathryn M. Van Abel, MD, Rochester, MN

Educational Objective: Approximately 3,500 new cases of HPV associated oropharyngeal cancers are diagnosed in women and about 16,200 are diagnosed in men each year in the United States. At the conclusion of this presentation, the participants should be able to report the HPV vaccination uptake of eligible patients presenting to an ENT practice, identify risk factors for under-vaccination, and estimate the potential impact of onsite HPV vaccination at an ENT practice.

Objectives: To measure baseline HPV vaccination rates of ENT clinic patients, to determine risk factors for under-vaccination, and predict the potential impact of onsite HPV vaccination. Study Design: Cross-sectional survey. Methods: Retrospective chart review of patients aged 9-26 years presenting to an ENT clinic from 2017 to 2019. Patients were considered complete for HPV vaccination if they received two doses of HPV vaccine with the first one received before age 15 years or three doses of HPV vaccine otherwise. Results: We measured 8,532 unique patients aged 9-26 years. Only 2,776 (32.5%) had completed the HPV series. 5,756 (67.5%) were due for one or more doses. Of those due, most (3,305/5,756 or 57.4%) were past due by age (13 years old or greater). Of these, 2,694 (31.6%) were partially vaccinated and 3,062 (35.9%) had received no doses. More males (3,072/3,920 or 78.4%) were due for an HPV vaccine than females (2,684/4,612 or 58.2%). Non-white and Hispanic patients (897/1,215 or 73.8%) were more likely to be due for a dose than white, non-Hispanic patients (4,714/7,144 or 66.0%). Conclusions: The majority of patients 9-26 years old seen in our ENT practice from 2017 to 2019 were due for a dose of HPV vaccine. Older patients, males, and non-white and Hispanic patients were more likely to be due. Implementation of an onsite HPV vaccination program within an ENT practice has the potential to improve HPV vaccination completion rates. Next steps include piloting onsite availability and assessing uptake in practice.

10:51 **Emergent Airway Experience of Otolaryngology Residents: Past and Present**

John Boyle, MD, Norfolk, VA; Ryan Truitte, BS, Norfolk, VA; Eric Dobratz, MD, Norfolk, VA

Educational Objective: Emergent airway calls often test the limits of the trainee's skills. Residents are responsible for managing these scenarios, often with little, if any, experience. This study seeks to characterize the experience of current and past residents managing emergent airways during training. It also examines the experience of residents with simulation to look for differences between past and present. Simulation may serve to fill any gaps in training.

Objectives: 1) Assess current experience of otolaryngology residents in managing emergent airways, both surgical and nonsurgical; 2) assess former residents' (attendings) experience and compare to examine for trends; and 3) compare exposure to simulation among current and former residents. Study Design: Cross-sectional survey. Methods: U.S. otolaryngology residents and academic faculty (past residents) sent a 20-22 question anonymous, voluntary survey seeking information on experiences during residency managing emergent airways in addition to experience with simulation. Chi square and Fisher's exact test used to examine data for differences between current residents' and current attendings' answers. Results: There were 173 respondents. Past residents overall had more experience managing emergent surgical airways. This is evidenced by a greater proportion of pages relating to surgical airway requests, the performance of more emergent intubations, and the performance of more emergent tracheotomies/cricothyrotomies. All these differences were statistically significant. Additionally, current residents' simulation experience, including simulated airway management, has grown compared to past residents. Conclusions: Airway emergencies are rare, making adequate training difficult. Overall past residents had a greater experience managing emergent airways, both surgical and nonsurgical. In parallel with this, simulation experience in managing airways has grown. Given the decreased experience of residents managing emergent airways, simulation may be a necessary component of resident training.

10:58 **Bilateral Sudden Sensorineural Hearing Loss in Pediatric Patients: A Systematic Review**

Sean Z. Haimowitz, BS, Newark, NJ; Kendyl A. Barron, BA, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Nicole Raia, ScD, Newark, NJ; Yu-Lan Mary Ying, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the frequency of pediatric bilateral sudden sensorineural hearing loss, as well as common etiologies, management, and outcomes.

Objectives: Bilateral, sudden sensorineural hearing loss (SSNHL) is a rare phenomenon potentially detrimental to language acquisition and social development during childhood. Our study aims to comprehensively review reported cases of pediatric bilateral SSNHL to understand common etiologies, management, and outcomes. Study Design: Systematic review. Methods: PubMed, Cochrane, Scopus and Web of Science databases were systematically searched for articles related to pediatric SSNHL from 1970 to 2021. Case series, case reports, and cohort studies were included. Data on patient demographics, etiology, imaging, treatment, followup, and outcomes were collected. Results: Excluding duplicates, 496 unique titles were identified by established search criteria, of which 327 titles were relevant to pediatric sudden hearing loss. Forty papers reported cases of bilateral SSNHL, totaling 219 individual cases. Of these, 45 cases were documented as nonorganic hearing loss. The average age of patients was 7.9 years and 61.6% (n=37) were male. Reported etiologies included cytomegalovirus (n=5), meningitis (n=12), mumps (n=3), ototoxic drugs (n=9), and enlarged vestibular aqueduct (n=5). Vertigo (n=14) was the most commonly reported concurrent symptom, followed by tinnitus (n=11). Systemic steroids was the most common treatment and, when followup was reported, most patients (69.8%) had complete or partial recovery of hearing. Conclusions: To our knowledge, this is the first systematic review of pediatric bilateral SSNHL. Though often idiopathic, there are a variety of identified etiologies. Treatment mostly consists of systemic therapy and outcomes vary from progressive worsening of hearing to complete resolution.

11:05 **CANCELLED - Temporal Variation in Pediatric Epistaxis Referrals**

Joshua Senter, MD, Danville, PA; Randy W. Lesh, BS, Danville, PA; Aileen Wertz, MD, Danville, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the temporal variation of pediatric epistaxis referrals to an otolaryngology clinic.

Objectives: Epistaxis is classically thought to be worse in winter when air has a low moisture content. We have anecdotally observed increased epistaxis referrals during peak fall allergy season. We sought to determine if there is a seasonal association to frequency of epistaxis. Study Design: Retrospective analysis of pediatric patients referred to otolaryngology for epistaxis and determination of the season in which they were referred. Methods: Our inclusion criteria were patients aged 1 year to 17 years old with a referral to otolaryngology for epistaxis within a single health system between 01/01/2010 and 12/31/2020. Exclusion criteria were being older than 17 years old or younger than 1 year old, new nasal trauma diagnosis within one month of referral, a diagnosed bleeding disorder, and chronic anticoagulation medication use. We compared the distribution of patients who presented with epistaxis among the four seasons using chi squared analysis with a P value of 0.05. Results: 2326 patients were included in our study, of which 65.5% were male and 34.5% were female.

The median age was 10. The distribution of otolaryngology referrals for epistaxis by season over a 10 year period was 23.6% in fall, 24.2% in winter, 29.4% in spring, and 22.7% in summer. Chi squared with 3 degrees of freedom was 34.2 (P=<0.001). Conclusions: Epistaxis referrals were most common in the spring. We present data incongruent with conventional teaching that epistaxis is most common in dry, winter weather. This knowledge of referral patterns aids in addressing patient needs and increasing access to care for the pediatric population.

11:12 Applying Machine Learning to Predict in Hospital Postoperative Complications following Laryngectomy

Christopher C. Tseng, BS, Newark, NJ; Jeff Gao, BS, Newark, NJ; Rachel Kaye, MD, Newark, NJ; Soly Baredes, MD FACS, Newark, NJ; Richard Chan Woo Park, MD FACS, Newark, NJ; Boris Paskhover, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss how machine learning algorithms can be applied to predict in hospital complication risk following laryngectomy.

Objectives: Complications following laryngectomy can significantly affect patients' quality of life. This study applied machine learning algorithms in an effort to improve such outcomes by predicting in hospital complication risks. Study Design: Database machine learning analysis. Methods: The Nationwide Inpatient Sample was queried for patients who had received a laryngectomy from 2003 to 2014. Nine machine learning classifiers, namely support vector machine, k-nearest neighbor, na├»ve Bayes, decision tree, random forest, gradient boosting machine, multilevel perceptron, logistic regression, and ensemble voting classifier, were trained to predict probabilities of in hospital, postoperative medical complications, surgical complications, and any complications. Results: A total of 7,306 laryngectomy cases were analyzed. Most laryngectomy patients in our study cohort were 41 - 64 years old (55%), male (81.1%), white (61.2%) and insured by Medicare (46.5%). The incidence rates of in hospital medical, surgical, and any complications were 34.4%, 22.1%, and 45.8% respectively. Machine learning approaches demonstrated modest performance at predicting these outcomes with an AUC of 0.65 - 0.72 for medical complications, 0.56 - 0.62 for surgical complications, and 0.62 - 0.68 for any complications. The most important variables for predicting complications were ranked by the ensemble voting classifier, where heart failure was the most important for predicting medical complications, undergoing reconstructive procedure for predicting surgical complications, and nutritional deficiency for predicting any complications. Conclusions: Machine learning showed modest performance in predicting medical, surgical, and any complications following laryngectomy among inpatients. As such, machine learning algorithms should be further explored to predict in hospital complication risk following laryngectomy. Additional research is necessary to delineate risk stratification algorithms.

11:19 Diagnostic Yield of Flexible Laryngoscopy in Patients Hospitalized for Brief Resolved Unexplained Events

Thomas C. Flowers, MD MPH, New Orleans, LA; John Carter, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to determine the utility of flexible laryngoscopy in pediatric patients hospitalized for brief resolved unexplained events (BRUE) or apparent life threatening events (ALTE).

Objectives: To determine the utility of flexible laryngoscopy in pediatric patients hospitalized for brief resolved unexplained events (BRUE) or apparent life threatening events (ALTE). Study Design: Retrospective cohort study. Methods: 275 records of patients were reviewed in a ten year period from February 2011 to February 2021. Data collected included demographic information, symptoms related to the diagnosis of BRUE, and if an otolaryngology consultation was done, flexible laryngoscopy findings were recorded. Multivariate logistic regression was used to identify risk factors for positive laryngoscopy findings. Results: Of 263 patients who met inclusion and exclusion criteria hospitalized for BRUE in a ten year period, the otolaryngology service was consulted 31 times and 31 flexible laryngoscopies were performed. Patients with symptoms of apnea (OR=2.2, 95% CI 0.66-7.44), cyanosis (OR=1.99, 95% CI 0.633-6.25) or decreased responsiveness (OR=1.18 95% CI 0.38-3.60) were more likely to have normal flexible laryngoscopy findings, however these results were not statistically significant. The six BRUE patients who had complaints of noisy breathing were significantly more likely to have an otolaryngology consultation (OR=16.21, 95% CI 2.84-92.58 and were significantly more likely to have either an omega shaped epiglottis or laryngomalacia, defined as an omega shaped epiglottis in addition to arytenoid prolapse (OR=126, 95% CI 17.68-897.99). Of the 31 patients who received an otolaryngology consultation, one underwent supraglottoplasty while inpatient. One other patient underwent supraglottoplasty six months after hospitalization. One patient in this cohort was diagnosed with a laryngeal cleft within a year after hospitalization and underwent repair. Zero patients in this cohort were diagnosed with subglottic stenosis. Conclusions: While these results are underpowered, there is a trend towards normal findings on flexible laryngoscopy for patients hospitalized with BRUE. Flexible laryngoscopy should be reserved for specific patients who have symptoms of noisy breathing or dysphonia or those patients at high risk for other airway pathology such as subglottic stenosis.

11:26 **Q&A**

11:30 - 12:25 **LARYNGOLOGY/BRONCHOESOPHAGOLOGY PANEL**
COVID and Timing of Tracheotomy: Safe Management
Moderator:
Natasha Mirza, MD FACS, Philadelphia, PA
Panelists:
Then and Now, Timing of Tracheostomies -- How Has Management Changed in 22 Months?
Rebecca J. Howell, MD, Cincinnati, OH
How Was the Need for a Trach Managed during the Worst of the Pandemic
Libby J. Smith, DO, Pittsburgh, PA
Discussion of Clinical Cases Presented to the Panelists

12:25 **Q&A**

12:30 ***ADJOURN SESSIONS***

AFTERNOON & EVENING - LEISURE OR ACTIVITIES

12:30 ***GOLF OUTING (pre-registration required)* - Coronado Course**

12:45 - 1:30 ***TRIOLOGICAL THESIS SEMINAR (pre-registration required)* - Cabana Ballroom**

12:45 - 2:45 ***NEELY PHYSICIAN/SCIENTIST MEETING (by invitation) - Garden***

1:00 - 2:30 ***RESIDENT BOWL (pre-registration required) - Crown Room***

12:30 - 5:00 ***ARS COUNCIL MEETING - Crystal/Continental***

SATURDAY, JANUARY 22, 2022

7:00 - 7:50 **Business Meetings (Fellows Only)**
Eastern Section - Garden
Middle Section - Crystal/Continental

7:30 ***Attendee Breakfast/View Posters* - Ocean Ballroom & Garden Patio**

8:00 - 9:45 General Session - Crown Room

8:00 **Announcements**

Introduction of Vice Presidents-Elect by Section Vice Presidents
Sujana S. Chandrasekhar, MD FACS, New York, NY - Vice President-Elect, Eastern Section
M. Boyd Gillespie, MD MSc FACS, Memphis, TN - Vice President-Elect, Southern Section
Peter A. Weisskopf, MD FACS, Phoenix, AZ - Vice President-Elect, Western Section
Bruce J. Gantz, MD FACS, Iowa City, IA - Vice President-Elect, Middle Section

8:10 - 9:20 **TRIOLOGICAL BEST PRACTICES SESSION**
Moderator:
Anil K. Lalwani, MD FACS, New York, NY
Panelists:
Does Cochlear Implantation Improve Cognitive Function?
Aaron C. Moberly, MD, Columbus, OH

To Vaccinate or not to Vaccinate: Should Adults Age 26-45 Receive the HPV Vaccine?
Maie A. St. John, MD PhD FACS, Los Angeles, CA
Is Olfactory Training Effective Treatment for Postinfectious Smell Loss?
Ralph B. Metson, MD FACS, Boston, MA
Should We Routinely Use Pulmonary Function Testing in the Management of Subglottic Stenosis?
Ramon A. Franco Jr., MD, Boston, MA (Dr. Franco unable to attend in person, but his prepared slides are to be presented)
What Is the Optimal Timing for Tracheostomy in Intubated Patients?
Edward J. Damrose, MD FACS, Stanford, CA

9:20 **Q&A**

9:30 - 10:00 ***Break/View Posters* - Ocean Ballroom & Garden Patio**

10:00 - 12:00 Concurrent Session 5A
General and Head & Neck - Crown Room

10:00 - 11:00 **HEAD & NECK/PLASTIC & RECONSTRUCTIVE SURGERY PANEL**
Treatment and Reconstructive Options for Head and Neck Malignancies: Multidisciplinary Perspectives
Moderator:
Adam M. Zanation, MD, Chapel Hill, NC
Panelists:
Greg A. Krempl, MD FACS, Oklahoma City, OK looking for new panelist
Cherie-Ann Nathan, MD FACS, Shreveport, LA
Stephen S. Park, MD, Charlottesville, VA
Samip N. Patel, MD FACS, Chapel Hill, NC

11:00 **Q&A**

Moderator: Michael L. Hinni, MD FACS, Phoenix, AZ

11:05 **Emergent Cricothyroidotomy Preparedness in ICUs: A Novel Quality Improvement Intervention**
Matthew J. Marget, MD, Detroit, MI; Michael R. Moentmann, BA BS, Detroit, MI; Amy M. Williams, PhD, Detroit, MI; Christie L. Morgan, MD MS, Detroit, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the importance of emergency airway preparedness among intensive care unit nurses, understand quality improvement study design, and recognize the significance of nursing education in quality improvement initiatives.

Objectives: In the high stress situation of an airway emergency, many human factors can delay an appropriate surgical airway. The current study developed and evaluated a novel educational intervention for intensive care unit nursing staff to improve the knowledge of cricothyroidotomy and the necessary equipment to safely and efficiently perform the procedure at the bedside. It was hypothesized that a brief educational intervention with the ICU nursing staff could improve knowledge of the location of critical airway supplies in the ICU, and familiarity with the name, appearance, and proper use of the instruments required for cricothyroidotomy. Study Design: Pretest post-test quality improvement study. Methods: A six question pre-education test regarding the location and contents of the ICU cricothyroidotomy tray was administered to ICU nursing staff. Next a short didactic session was provided to nursing staff regarding cricothyroidotomy, the location of the cricothyroidotomy tray, and the critical instruments needed to perform the procedure. Finally, an identical six question post-education survey was administered. Results from the pre- and post-education test were compared to evaluate for improvement in knowledge of and familiarity with the ICU cricothyroidotomy equipment and procedure. Results: Thirty-four ICU nurses participated in the study. The mean pre-education score was 3.44 of 6 (SD ± 0.96). Post-education scores demonstrated a significant improvement after our educational intervention with a mean of 5.79 (SD ± 0.59), a 68% improvement over pre-test scores ($p < 0.001$). Conclusions: Brief intervention in this important provider population is a

feasible and effective quality improvement activity which can enhance preparedness of ICU staff for emergent cricothyroidotomy procedures.

11:12 **Carotid Blowout Syndrome in Head and Neck Cancer Patients: A Systematic Review of the Identification and Management of Patients at risk for Developing CBS**

Allison Ann Slijepcevic, MD, Portland, OR; Joseph Roh, MD, St. Louis, MO; Patrik Pipkorn, MD, St. Louis, MO; Kim Lipsey, MLS, St. Louis, MO; Joseph P. Bradley, MD, St. Louis, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to identify patients at risk for carotid blowout syndrome and be aware of expected outcomes following treatment of carotid blowout syndrome.

Objectives: Carotid blowout syndrome (CBS) is an acute, rare life threatening hemorrhage that occurs in patients with a history of head and neck cancer and radiation therapy. The primary objective of this review was to identify risk factors and assess treatment and survival outcomes following CBS. Study Design: The study is a systematic review. Methods: A systematic review of published literature was performed. Information including risk factors, treatment, and outcomes of CBS were collected. Results: A total of 49 articles and 2,220 patients were included in the systematic review. Risk factors for developing CBS included a history of radiation therapy, wound complications, and advanced tumor stage. The initial management of CBS included establishing a stable airway, gaining hemostasis, and repletion of blood loss. Endovascular and surgical procedures treat CBS with infrequent rates of rebleeding and periprocedural complications. Short term survival following treatment of CBS shows high survival rates when considering CBS related complications and underlying disease, however long term survival related to underlying disease demonstrated high mortality. Conclusions: Identifying patients at risk for CBS enables practitioners to counsel patients on life saving interventions and expected outcomes following treatment of CBS. Treatment of CBS is associated with high short term survival, although long term survival related to underlying disease is low.

11:19 **Virtual Surgical Planning and 3D Printed Surgical Guides for Osseous Free Flap Mandibular Reconstruction: Factors Impacting Accuracy**

Donald J. Annino Jr., MD DMD, Boston, MA; Rosh K.V. Sethi, MD MPH, Boston, MA (Presenter); Tanujit Dey, PhD, Boston, MA; Eleni M. Rettig, MD, Boston, MA; Ravindra Uppaluri, MD PhD, Boston, MA; Laura A. Goguen, MD FACS, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to determine accuracy of virtual surgical planning and 3D printed surgical guides in the context of osseous free flap reconstruction for mandibular defects.

Objectives: Examine accuracy and factors impacting accuracy for mandibular reconstruction with virtual surgical planning (VSP) and 3D printed surgical guides. Study Design: Retrospective review of osseous free flap mandibular reconstructions with VSP, surgical guides and preoperatively bent mandibular reconstruction plates between January 2015 and July 2020 at a single academic medical center. Methods: Patient demographics, disease, and treatment variables were extracted. Accuracy was assessed by 3D overlay models with cephalometric measurements. Multivariate analyses were performed to determine factors impacting accuracy. Results: 60 cases met criteria: 41 (68%) cancer, 14 (23%) osteoradionecrosis, 5 (8%) secondary mandibular reconstruction. Thirteen cases (22%) were Brown Class III or IV. Thirty-nine cases (65%) had ≥ 2 flap bone segments. Average donor bone length was 82 mm (SD 28). 3D overlay accuracy demonstrated minimal change between planned and actual reconstruction: intercondylar distance = 2.1 mm (SD 2.2); intergonial distance = 2.2 mm (SD 1.9); anterior-posterior distance (APD) = 1.7 mm (SD 1.5); gonial angle (GA) = 3.2 degrees (SD2.4). Higher number of donor bone segments was associated with decreased accuracy in GA ($p=0.023$) and longer donor bone length was associated with decreased accuracy in APD ($p=0.031$). Conclusions: To our knowledge this is the largest series assessing surgical accuracy of VSP and 3D printed surgical guides for osseous free flap mandibular reconstruction. We demonstrate highly accurate results, with number of donor bone segments and donor bone length associated with decreased accuracy. Our findings further support VSP and 3D printed surgical guides as a reliable and accurate tool for mandibular reconstruction.

11:26 **National Analysis of Human Papillomavirus Status on Oral Cavity Squamous Cell Carcinoma Prognosis**

Christopher James Didzbalis, BA, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Rushi Patel, BA, Newark, NJ; Guy Talmor, MD, Newark, NJ; Dylan F. Roden, MD, Newark, NJ; Richard Chan Woo Park, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to assess the prognostic implication of human papillomavirus status for patients with oral cavity squamous cell carcinoma.

Objectives: To assess the prognostic implication of human papillomavirus (HPV) status for patients with oral cavity squamous cell carcinoma (SCC). Study Design: Retrospective database analysis. Methods: Oral cavity SCC cases from 2008-2016 were gathered from the National Cancer Database (NCDB). Univariate and multivariate analyses were utilized to assess patient demographics, tumor characteristics, and treatment types. Results: Among 10,904 patients with oral cavity SCC included in this study, 1,417 (13%) were HPV-positive and 9,487 (87%) were HPV-negative. HPV-positive patients were more frequently male (71.1% vs 60.2%, p<0.001), White (89.9% vs 87.9%, p=0.036), <60 years old (49.3% vs 44.6%, p=0.001), and from urban areas (85.7% vs 83.0%, p=0.037) compared to HPV-negative patients. Moreover, HPV-positive oral cavity SCC cases had a greater proportion initially presenting with a tongue primary site (56.0% vs 52.1%, p<0.001), overall stage 4 (46.2% vs 35.2%, p<0.001), nodal metastasis (N1-3) (47.9% vs 35.8%, p<0.001) and grade III/IV (25.8% vs 17.2%, p<0.001) tumor. Being <60 years old (HR 1.29, 95% CI 1.18-1.41, p<0.001), on government insurance (HR 1.61, 95% CI 1.47-1.77, p<0.001) and uninsured (HR 1.30, 95% CI 1.09-1.56, p=0.004) were associated with decreased survival for HPV-positive patients, whereas treatment at an academic/research program (HR 0.84, 95% CI 0.77-0.92, p<0.001) improved survival. More advanced tumor grade and TNM stage worsened survival (p<0.001). 5 year overall survival for HPV-positive (54.2%) and HPV-negative (53.6%) patients showed no significant difference (p=0.176). Conclusions: HPV-positive oral cavity SCC patients were more likely to be younger and present with advanced disease. HPV status lacks statistically significant impact on oral cavity SCC prognosis.

11:33 **Assessing the Role of Ultrasound for the Evaluation of Adult Neck Masses**

Joel Feier, BA, Burlington, VT; Quinn Self, MD, Burlington, VT; Alexander Karabachev, MD, Burlington, VT; William Brundage, MD, Burlington, VT; Mirabelle Sajisevi, MD, Burlington, VT

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the use of office based ultrasound for the management of neck masses.

Objectives: American Academy of Otolaryngology clinical practice guidelines recommends cross-sectional imaging or fine needle aspiration for a neck mass in adults that is persistent beyond two weeks. We aimed to assess the role of ultrasound in the evaluation and management of neck masses. Study Design: Retrospective chart review. Methods: Retrospective chart review of adult patients who presented to the otolaryngology clinic at a single institution in 2015 with a visible or palpable neck mass was performed. Patients without a history of head and neck malignancy who had a neck ultrasound during the visit were included. Sonographic features, patient demographics, other imaging and biopsy results were recorded. Results: Of the 63 patients who met inclusion criteria, 43 (68.3%) had FNA or biopsy of which 21 demonstrated malignant pathology. Twenty patients (31.7%) with benign features on ultrasound did not undergo tissue sampling and only two of these patients underwent subsequent cross-sectional imaging. Eight of these 20 patients were followed with serial ultrasound with an average of 2.9 exams over 13.4 months while the remaining 12 patients had spontaneous resolution of their adenopathy on subsequent physical exam. None of these 20 patients were subsequently diagnosed with malignancy. Conclusions: In this study, nearly one-third of patients presenting with a visible or palpable neck mass were able to avoid tissue sampling or cross-sectional imaging when ultrasound demonstrated features consistent with a benign lymph node. Our results suggest that ultrasound may play a role in the initial evaluation and management of adults presenting with a neck mass.

11:40 **Relating Academic Productivity with Diversity Metrics across US Otolaryngology Programs**

Deesha D. Desai, BS, Pittsburgh, PA; Rishabh Kumar Sehra, BA, Pittsburgh, PA; Carl Snyderman, MD MBA, Pittsburgh, PA

Educational Objective: This project studies the relation of academic productivity, measured in terms of the h-index, with both women and underrepresented minority (URM) representation in US otolaryngology programs.

Objectives: We aim to examine the relationship of the h-index with women and underrepresented minority (URM) representation in both faculty and resident populations across US otolaryngology programs. Study Design: Data analysis of academic otolaryngology departments with residency programs along with a survey system. Methods: 115 otolaryngology departments with residency programs were included. The h(5) index was calculated cumulatively for faculty (MD, DO, MBBS, DDS, DMD, and PhD degrees) within the department over a five year period (2016-2020) using Elsevier's database SCOPUS. Audiologists, speech pathologists, and clinical adjunct faculty were excluded. Women faculty and resident metrics were confirmed by referencing department websites. URM faculty and resident metrics were confirmed by contacting program directors and program coordinators of each department. Results: The medians were 26.36%, 40%, 6.25%, 10.53% for % women faculty, % women residents, % URM faculty, and % URM residents across the programs, respectively. There was a 46.09% and 49.57% response rate from program directors and/or program coordinators for URM faculty and URM resident metrics, respectively. h(5) vs % women faculty and h(5) vs % women residents both had positive correlations, with the latter being statistically significant (p<0.001). h(5) vs % URM faculty had a weak negative correlation.

h(5) vs % URM residents had no detectable correlation. Conclusions: The h-index is a widely used metric to objectively measure the academic productivity of otolaryngology departments. Increased gender diversity is associated with academic productivity as measured by h-index. A variable relation with URM representation across otolaryngology residency departments may have been impacted by the response rate and deserves further investigation.

11:47 **Otolaryngology Residents and Attendings Differ in Their Attitudes toward Residency Training in the Ambulatory Surgery Center Setting**
John F. Ryan, MD, Baltimore, MD; Nicholas R. Rowan, MD, Baltimore, MD; Francis X. Creighton, MD, Baltimore, MD; Jonathan Walsh, MD, Baltimore, MD; Alexander T. Hillel, MD, Baltimore, MD; Shaun C. Desai, MD, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to describe unique considerations for residency training in ambulatory surgery centers and describe differences between otolaryngology resident and attending attitudes toward residency training in the ambulatory surgery center setting.

Objectives: An increasing number of surgical cases are performed at ambulatory surgery centers (ASCs), including within academic health systems. We sought to characterize the attitudes of otolaryngology residents and attendings toward the role of ASCs in residency training. Study Design: Cross-sectional anonymous survey study of residents and attendings at an academic medical center. Methods: Agreement with statements regarding residency training at ASCs was graded on a 7 point Likert scale. Differences between groups were analyzed with Mann-Whitney U tests. Results: A total of 18 residents and 21 attending surgeons responded. Attendings were more likely to agree that only senior residents should participate in ASC cases ($p=0.005$), that time limits should be placed on otolaryngology resident participation in cases ($p<0.001$), and that timely completion of operative cases was important to them ($p=0.044$). Residents were more likely to agree that they could perform significant portions of operative cases without adversely affecting surgical outcomes or timely case completion ($p=0.018$) and that their participation in operative cases at ASCs is necessary to assure operative competency during residency ($p=0.023$). Both attendings and residents agreed it is possible to simultaneously provide high quality patient care and surgical training in ASCs, that residents should participate in ASC cases during residency, and that the efficiency of ASCs provided an opportunity for repetition in performing common procedures in residency training. Conclusions: Otolaryngology residents and attendings differ in their attitudes toward residency training in the ASC setting. Future investigation focused on optimizing residency training in ASCs is warranted.

11:54 **Q&A**

12:00 - 1:00 ***Lunch/View Posters* - Ocean Ballroom & Garden Patio**

12:10 - 1:00 ***Tips for Peer-Reviewing for The Laryngoscope, Sam Selesnick, Editor (open to current and interested reviewers) - Crystal/Continental***

12:30 - 1:00 **Meet the Authors Poster Viewing (Even Numbered Posters Only)**

10:00 - 12:00 Concurrent Session 5B
Otology/Neurotology - Cabana Ballroom

Moderator: Jedidiah J. Grisel, MD, Wichita Falls, TX

10:00 **Factors Associated with Idiopathic Pulsatile Tinnitus**
Stephanie H. Kim, BS, Loma Linda, CA; Kaitlin McArthur, BS, Loma Linda, CA; Hector Perez, MD, Loma Linda, CA; Yuan Liu, MD, Loma Linda, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to identify patient factors associated with idiopathic pulsatile tinnitus.

Objectives: To characterize potentially modifiable risk factors in adult patients with idiopathic pulsatile tinnitus (IPT) at an academic tertiary referral center. Study Design: Case control. Methods: Patients aged 18 and older evaluated in a neurotology clinic from 2012-2020 for pulsatile tinnitus were included. Those with potentially identifiable causes for PT were excluded. Demographics, comorbidities, and hearing data were collected for these patients and age and sex matched to control patients with cerumen impaction. Regression analyses were used to calculate odds ratios (OR). Results: 169 patients were included (84 IPT and 85 controls). Mean age was 50 +/- 14.7 years. 31 patients (18.3%) were male and 138

patients (81.7%) were female. In terms of comorbidities, individuals with prior head or neck trauma (OR 6.25, 95% CI 1.34-29.13, p=0.02), osteoarthritis (OR 5.14, 95% CI 1.65-16.01, p=0.005), or other chronic musculoskeletal complaint (OR 5.47, 95% CI 1.51-19.80, p=0.001) had significantly greater odds for having IPT, while those with asthma had lower odds (OR 0.33, 95% CI 0.12-0.90, p=0.03). Symptomatically, IPT was more likely to be exacerbated by stress (OR 8.84, 95% CI 1.08-72.34, p=0.04) and less likely to be associated with ear pain (OR 0.29, 95% CI 0.13-0.65, p=0.002), ear fullness (OR 0.32, 95% CI 0.11-0.94, p=0.04), ear pressure (OR 0.43, 95% CI 0.19-0.96, p=0.04), or hearing loss (OR 0.38, 95% CI 0.19-0.76, p=0.007). There was no significant association with drug use, cardiovascular, neurologic, psychiatric, endocrine, or gastrointestinal comorbidities. Conclusions: Our findings suggest that prior head or neck trauma, osteoarthritis, or other chronic musculoskeletal complaints are independent risk factors associated with idiopathic PT. Further studies are needed to characterize these associations.

10:07 **The Best Offense Is a Good Defense: Simultaneous Fascia Lata Free Flap with Cochlear Implantation after Prior Radical Tympanomastoidectomy**

Jason Glenn May, MD, Kansas City, MO; John Kerr, DO, Columbia, MO (Presenter); Arnaldo L. Rivera, MD, Columbia, MO; Patrick Tassone, MD, Columbia, MO

Educational Objective: At the conclusion of the presentation, the participants should be able to describe the novel technique of the use of a vascularized fascia lata anterolateral thigh free flap for simultaneous coverage and obliteration of canal wall down mastoidectomy in patient undergoing cochlear implantation. This novel technique enables single stage implantation of patients undergoing cochlear implantation with previous canal wall down mastoidectomy.

Objectives: Patients undergoing cochlear implant after prior radical mastoidectomy are at increased risk of device infection, a potentially devastating complication requiring device explant. In order to mitigate risks of infection, various techniques including two stage operations have been used in patients with radical mastoidectomy anatomy. Here, we report the novel technique of a single stage procedure for cochlear implantation in a patient with canal wall down mastoidectomy anatomy with the use of a vascularized fascia lata anterolateral thigh free flap. Study Design: Case report and literature review of techniques for patients undergoing cochlear implantation with canal wall down mastoidectomy anatomy. Methods: Case report, including photographs, and literature review. Results: A 61 year old man with history of left lateral temporal bone resection and right radical tympanomastoidectomy with bilateral profound sensorineural hearing loss presented for cochlear implantation in his ear with prior radical tympanomastoidectomy. A vascularized fascia lata anterolateral thigh free flap was used to obliterate the mastoid cavity and provide a robust layer of well vascularized tissue between the implant and the overlying compromised auricular skin. The use of free tissue allowed for single stage implantation. The patient did excellently postoperatively with hospital discharge on postoperative day 3 and activation of his device at two weeks. Conclusions: The use of free tissue coverage and mastoid cavity obliteration during cochlear implantation allowed for single stage procedure for this patient. This is an excellent option for appropriately selected patients with canal wall down mastoidectomy anatomy undergoing cochlear implantation.

10:14 **Preoperative Evaluation of Otosclerosis: A National Survey of Otologists**

Karl William Doerfer, MD, Farmington Hills, MI; Nathan Tu, MD, Albany, NY; Alex Luryi, MD, Farmington Hills, MI; Pedrom Shioshansi, MD, Wake Forest, NC; Christopher Schutt, MD, Farmington Hills, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to understand trends in preoperative evaluation of otosclerosis among practicing otologists and neurotologists.

Objectives: To describe variations in practice patterns regarding preoperative assessment for stapedectomy. Study Design: Survey based study. Methods: An email based survey was sent to active ANS/AOS members regarding routine use of acoustic reflexes (AR), electrocochleography, vestibular evoked myogenic potentials (VEMP), and computed tomography (CT) for suspected otosclerosis. Those not ordering routine CT were asked if CT was ordered for clinical scenarios including: prior ear surgery, vestibular complaints, childhood hearing loss, AR inconsistent with otosclerosis, possible advanced otosclerosis, and atypical complaints, including autophony. Years in practice and practice setting (private vs academic) were also obtained. Results: Of 85 respondents, most had been in practice over 15 years (56.5%) and worked in academic settings (69.4%). Routine AR and VEMP testing was ordered by 80% and 4.7% respectively. There was no significant difference in AR or VEMP testing based on time in practice or academic vs private practice settings. No respondents routinely ordered ECochG. Regarding CT, 35.3% ordered routine imaging, and a statistically significant difference was seen between academic and private practice respondents (42.4% vs 19.2%, p = 0.040). For CT contingent on specific clinical factors, only AR inconsistent with otosclerosis showed a statistically significant difference between academic and private practice providers (85.3% vs 57.1%, p = 0.020). Conclusions: A majority of otologists routinely obtain AR prior to stapes surgery. CT is more commonly ordered in academic settings either routinely or based on testing showing AR inconsistent with otosclerosis. Otherwise, there is a high level of consistency in preoperative evaluation regardless of practice setting or time in practice.

10:21 **Association of Tobacco Smoke Exposure with Surgery for Pediatric Otitis Media**

Tina Lam, BS, Wauwatosa, WI; Ke Yan, PhD, Wauwatosa, WI; Tina Samuels, MS, Wauwatosa, WI; Kaleigh Stabenau, MD, Wauwatosa, WI; Joseph Kerschner, MD, Wauwatosa, WI; Nikki Johnston, PhD, Wauwatosa, WI

Educational Objective: At the conclusion of this presentation, the participants should better understand the association between passive smoke exposure and poorer pediatric otitis media outcomes.

Objectives: Otitis media (OM) is a common inflammatory disease spectrum. Pediatric exposure to tobacco smoke has been shown to have deleterious effects on childhood health including susceptibility to OM and increased risk of surgery. Since prior population studies regarding smoke exposure and OM, tobacco products and smoker demographics have changed dramatically with the advent of electronic cigarettes and concomitant increase in tobacco use amongst young adults. Given these changes, we aimed to examine the association of household tobacco smoke exposure with surgery for pediatric OM within a recent patient population. Study Design: Retrospective chart review. Methods: Electronic health records from 2013 to 2019 were collected for patients [ZL1] aged 2 - 25 years who had tympanostomy tube placement (TTP). Results: A total of 11419 patients' records were collected. Among them there were 58.6% males, 41.5% with allergy, 10.1% with asthma, and 10% were exposed to smoke in home. Patients exposed to smoke in the home had a higher probability of having a second TTP (p=0.036) and a greater number of TTP (p =0.038). Adjusted for sex, race, allergies and asthma, patients exposed to smoke in home were more likely to have a second TTP (p=0.010) if they had no allergy or asthma. Conclusions: These data suggest that an association between household tobacco smoke exposure and poorer OM outcomes persist despite changes in tobacco products and smoker demographics. The findings support interventional strategies to reduce pediatric smoke exposure for the improvement of childhood respiratory health.

10:28 **Assessment of Nonopioid Pain Management in Otologic Surgery**

Brandon Kamrava, MD, Miami, FL; Clifford Scott Brown, MD, Atlanta, GA; Michael Ellis Hoffer, MD, Miami, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to consider the use of nonopiate pain regimens for outpatient otologic/neurotologic surgeries.

Objectives: Examine rates of postoperative pain and satisfaction for patients receiving nonopiate pain regimens for outpatient otologic/neurotologic surgeries. Study Design: A retrospective review of prospectively collected data in the electronic medical record. Methods: Adult patients who underwent outpatient otologic surgery with neurotologists at our hospital with adequate postoperative followup (<60 days) were included in this study. Surveys regarding patient's pain control and satisfaction were administered at the initial followup visit. The medical record was reviewed to acquire data regarding demographic and surgical data. Results: A total of 75 patients, 58.7% female and 41.3% male, were included for analysis. The most common performed surgical cases performed included myringoplasty/tympanoplasty (34.7%), mastoidectomy (17.3%), stapedotomy/stapedectomy (16.0%), Laser myringoplasty (6.7%), and cochlear implantation (6.7%). Postoperative home pain regimens were ibuprofen (80.5%), celecoxib (17.1%), and no medication (2.4%). Mean postoperative followup day was 23.5 days. With 5 being the highest possible satisfaction score, the mean score was 4.987 with standard deviation of 0.115. 45.3% of surveyed individuals reported no postoperative pain. Of the 54.7% patients with postoperative pain, the average and maximum reported pain scores were 3.46 and 7 out of 10. After use of the prescribed pain regimen and lifestyle modification, the average reported score was 0.43 with no reported score greater than 3. Conclusions: Patients undergoing outpatient otologic procedures express high rates of satisfaction with nonopiate pain regimens and describe strong rates of pain control when non-opiate medications are used.

10:35 **Intratympanic Steroid Therapy for Sudden Sensorineural Hearing Loss: A Comparison of Low Dose Versus High Dose Treatment**

Lacey Nelson, BS, Washington, DC; Elizabeth Borowiec, MD, Washington, DC; Daniel Swanson, BS, Washington, DC; Jason Crossley, MD, Washington, DC; H. Jeffrey Kim, MD, Washington, DC; Michael Hoa, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to describe how steroid dosage has been demonstrated to affect intratympanic steroid therapy for sudden sensorineural hearing loss.

Objectives: To investigate how steroid dosage impacts intratympanic steroid therapy (IST) for treatment of sudden sensorineural hearing loss (SSNHL) in cases of idiopathic SSNHL (iSSNHL) and Meniere's disease (MD). Study Design: Retrospective case control. Methods: Inclusion criteria identified subjects who received IST between January 1, 2010, and June 1, 2020. Subjects were stratified by dexamethasone dosage: low dose (10 mg/ml) versus high dose (24 mg/ml).

Diagnosis (iSSNHL versus MD), time to treatment, and oral steroid therapy use were utilized for subgroup analysis. Outcome measures included post treatment improvement in 4 frequency pure tone average (PTA), low and high frequency PTA (250-1000 Hz and 2000-8000 Hz, respectively). Results: Of the 84 included subjects (68.3% iSSNHL, 31.7% MD), 47 received high dose while 37 received low dose injections. 86.9% of subjects were treated with oral steroids prior to or during IST. No significant differences in hearing outcomes between low and high dose cohorts or when stratifying by oral steroid use were noted. Analysis of time to treatment groupings including </= 1 week (20.2%), </= 1 month (33.3%), > 1 month (35.7%), > 3 months or unknown time (10.7%) demonstrated a significant difference in post treatment 4 frequency PTA ($p<0.001$). Significant differences between iSSNHL and MD cases for post treatment changes in 4 frequency PTA ($p=0.006$) and high frequency hearing thresholds were noted ($p=0.003$). Conclusions: Steroid dosage was not found to significantly impact the efficacy of dexamethasone IST. Prior or concurrent oral steroid therapy also was not found to significantly influence hearing outcomes. Our results support that a shorter time to treatment is favorable for hearing improvement.

10:42 **Longitudinal Changes in Speech Recognition following Cochlear Implantation in Adults: A Systematic Review and Meta-Analysis**

Cheng Ma, BS, El Paso, TX; Jacob Fried, MD, Buffalo, NY; Shaun A. Nguyen, MD, Charleston, SC; Judy R. Dubno, PhD, Charleston, SC; Kara Leyzac, AuD PhD, Charleston, SC; Theodore R. McRackan, MD MSCR, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to describe long term speech recognition changes in adults after cochlear implantation.

Objectives: To describe longitudinal changes in speech recognition following cochlear implantation. Study Design: Systematic review with meta-analysis. Methods: Articles in English reporting post-implantation speech recognition scores of postlingual adults at pre-implantation and at least two post-implantation time points were included. Meta-analysis of continuous measures and the 95% measurement error interval were used to determine statistically significant changes. Results: A total of 18 articles representing 1753 patients with weighted mean age of 58.1 years (range 45.8 to 71 years) were included. Meta-analysis of continuous measures demonstrated significant improvements in speech recognition score for words in quiet (37.38%; 95% CI [34.35%, 40.40%]), sentences in quiet (49.38%; 95% CI [44.86%, 53.90%]), and sentences in noise (30.81%; 95% CI [25.24%, 36.39%]) from preop to 3 months. Scores continued to increase from 3 months to 12 months but did not reach significance. Similarly, significant improvements from preop to 3 months were observed for CNC words in quiet (37.08%; 95% CI [33.77%, 40.39%]), HINT sentences in quiet (46.52%; 9x5% CI [37.04%, 56.00%]), AzBio sentences in quiet (45.85%; 95% CI [44.19%, 47.51%]), and AzBio sentences in noise (26.37%; 95% CI [18.58%, 34.16%]). HINT sentences in noise demonstrated improvement from preop to 3 months (35.14%; 95% CI [29.95%, 40.33%]) and from 3 months to 12 months (15.47%; 95% CI: [7.16%, 23.78%]). Conclusions: Mean speech recognition scores demonstrate rapid and significant improvement within the first 3 months, with no further significant improvement for the average patient after 3 months. However, large individual variation should be expected and future research is necessary to capture individual differences.

10:49 **Q&A**

10:55 - 11:55 **OTOLOGY/NEUROTOLOGY PANEL**
Techniques to Improve Tympanoplasty Outcomes
Moderator:
Kevin D. Brown, MD PhD, Chapel Hill, NC
Panelists:
Graft Materials and Cartilage Tympanoplasty
Joni K. Doherty, MD PhD FACS, Los Angeles, CA
Transcanal and Endaural Techniques for Tympanoplasty
Rick F. Nelson, MD PhD FACS, Indianapolis, IN
Post-Auricular Tympanoplasty Approach
Samuel H. Selesnick, MD FACS, New York, NY
Lateral Graft Technique for Tympanoplasty
Michael E. Hoffer, MD, Miami, FL

11:55 **Q&A**

12:00 - 1:00 ***Lunch/View Posters* - Ocean Ballroom & Garden Patio**

12:10 - 1:00 *Tips for Peer-Reviewing for The Laryngoscope, Sam Selesnick, Editor (open to current and interested reviewers) - Crystal/Continental*

12:30 - 1:00 **Meet the Authors Poster Viewing (Even Numbered Posters Only)**

1:10 - 3:05 Concurrent Session 6A
Pediatric Otolaryngology - Crown Room

Moderator: Jeffrey A. Koempel, MD MBA, Los Angeles, CA

1:10 **Accidental Tracheostomy Decannulations in Children**
Erin Wynings, MD, Dallas, TX; Rebecca L. Brooks, MSN APRN RNC-NIC PCNS-BC, Dallas, TX; Candice H. Bailey, RN, Dallas, TX; Cindy Whitney, RRT-NPS, Dallas, TX; Romaine F. Johnson, MD MPH FACS, Dallas, TX; Stephen R. Chorney, MD MPH, Dallas, TX

Educational Objective: The American Academy of Otolaryngology-Head and Neck Surgery Foundation (AAO-HNSF) identified the need for further research to define important factors in patients with a tracheostomy that may influence the frequency of accidental tube displacement. At the conclusion of this presentation, the participants should be able to recognize the rate and characteristics of accidental tracheostomy decannulations in children.

Objectives: To determine the incidence of accidental tracheostomy decannulations among pediatric inpatients and identify patterns associated with these events. Study Design: Prospective cohort study. Methods: All patients under 18 years of age admitted with a tracheostomy at a tertiary children's hospital system between August 2018 and April 2021 were included. Accidental tracheostomy decannulations were recorded and patient harm was classified as minor, moderate, or severe. Monthly incidence was described as events per 1000 tracheostomy days. Results: A total of 117 accidental decannulations occurred among 67 children with 33% (22/67) experiencing multiple events (median: 2.5 events, range: 2-10). The mean age at decannulation was 4.7 years (95% CI: 3.9-5.5) and 58% (39/67) were male. Accidental decannulations were due to patient movement (32%, 37/117), performing tracheostomy care (27%, 31/117), repositioning or transporting (15%, 17/117), or for unclear reasons (27%, 32/117). Most events (39%, 46/117) occurred on a pulmonology floor and involved the child's parent or guardian in 28% (33/117) of cases. Nearly all decannulations resulted in no more than minor harm to the child (84%, 98/117) but moderate (12%, 14/117) and severe (4%, 5/117) events were recorded. There were no deaths. Children were more likely to sustain minimal harm (94% vs. 76%, P=.03) and were more often on floor units (88% vs. 60%, P<.001) on subsequent decannulations. Tracheostomy care or patient repositioning were frequently responsible for acute care events as opposed to subacute care (48% vs. 26%, P=.04). The mean monthly decannulation incidence was 4.7 events per 1000 tracheostomy days (95% CI: 3.7-5.8). Conclusions: Accidental tracheostomy decannulations in children occur at an incidence of nearly 1 event per 200 tracheostomy days and are commonly associated with minimal patient harm particularly on subsequent events. Quality initiatives should target patient movement and tracheostomy care as factors that might contribute more frequently to these complications.

1:17 **The Utility of Computed Tomography Angiography in Pediatric Oropharyngeal Trauma: A Systematic Review and Meta-Analysis**
Nicolas S. Poupore, BS, Charleston, SC; W. Nicholas Jungbauer Jr., BS, Charleston, SC; Shaun A. Nguyen, MD MA, Charleston, SC; David R. White, MD, Charleston, SC; Phayvanh P. Pecha, MD, Charleston, SC; William W. Carroll, MD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the risk of stroke secondary to internal carotid artery (ICA) injury after oropharyngeal trauma (OT), recognize the utility of computed tomography angiography (CTA) to identify ICA injury, and identify risk factors where CTA may be clinically useful.

Objectives: To analyze the utility of screening CTA in identifying ICA injury for otherwise healthy children presenting with normal neurologic exams and OT. Study Design: Using PubMed, Scopus, CINHAL, and Cochrane Library, this meta-analysis was performed in accordance with PRISMA guidelines. Methods: Retrospective studies of pediatric OT were included. Of 1227 studies screened, 16 studies met inclusion criteria. Meta-analysis of weighted proportions was performed. Results: We analyzed 895 children with OT. The weighted proportion of having an ischemic stroke due to ICA injury was 0.31% [95% CI 0.06, 0.93]. If a child presented without neurologic deficits, 0.30% [95% CI 0.05, 0.95] returned with new neurologic deficits. An ICA injury was identified in 0.89% [95% CI 0.16, 2.74] of screening CTAs. A stroke occurred in 0.52% [95% CI 0.041, 2.16] of children after negative screening CTA compared to 0.42% [95% CI 0.06, 1.37] of children who did not receive CTA and had no neurologic deficits. Risk factors for stroke included peritonsillar site (33.33% vs. 8.17%,

p<0.001), writing utensil (22.86% vs. 11.11%, p=0.03), and falling onto object (15.15% vs. 4.92%, p=0.01). Conclusions: The likelihood of a child experiencing a clinically relevant ICA injury including stroke after sustaining OT is very low. CTAs rarely show any ICA changes before a child exhibits neurologic findings. Children who have negative CTAs do not have a significantly lower incidence of stroke than children who do not receive CTAs. Clinicians must carefully weigh the risks and benefits of a CTA and explain this information thoroughly to families for shared decision making.

1:24 ACE2 and TAS2R38 Receptor Expression in Pediatric and Adult Patients in the Nasal and Oral Cavity

Zechariah G. Franks, MD, Baltimore, MD; Kavitha Nandakumar, PhD, Baltimore, MD; Lakshmi Santhanam, PhD, Baltimore, MD; Nicholas Dalesio, MD, Baltimore, MD; Jonathan Walsh, MD, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the role of ACE2 and TAS2R38 in COVID-19 and the comparison we investigated across different age populations and disease states.

Objectives: Investigate angiotensin converting enzyme 2 (ACE2) and bitter taste receptor (TAS2R38) and different age groups and disease states to further characterized the pathophysiology of coronavirus disease 19 (COVID-19). ACE2 is the implicated receptor in SARS-CoV-2 infections and levels of expression may correlate severity of COVID-19. TAS2R38 has many non-gustatory roles in disease. There is growing evidence of severe COVID-19 disease in certain phenotypes. Study Design: Prospective cohort study. Methods: Recruit healthy pediatric and adult patients undergoing elective procedures and collect nasal and tongue cells during general anesthesia. RNA isolation and qPCR was performed targeting ACE2 and TAS2R38. 2-ΔΔCT analysis and Wilcoxon Rank Sum statistical testing was used to analyze the results. Results: 25 adults (52% male and 44% obese) and 22 children (50 male and 36% obese) were recruited. We found that adults have significantly less ACE2 than children in the nose (median fold change, 0.988 vs 0.6889, p <0.05) but no differences on the tongue. No difference in TAS2R38 in the nasal or oral cavity. When stratifying for obesity, the significant difference remained in the ACE2 nasal samples comparing children and adults (median fold change, 1.033 vs 0.5634, p<0.05). Conclusions: This is the first prospective cohort of patients to compare ACE2 and TAS2R38 in children and adults in the nasal and oral cavity using targeted qPCR techniques. These results demonstrate that ACE2 and TAS2R38 mRNA levels and their overlap with COVID-19 severity are likely more complicated than direct correlation of higher mRNA levels in populations more likely to have severe disease.

1:31 Delayed Primary Excision of Pediatric Rhabdomyosarcoma of the Head and Neck: A National Analysis

Amar D. Desai, MPH, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Mayand Vakil, MD, Newark, NJ; Sydney Zaransky, DO, Newark, NJ; Evelyne Kalyoussef, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the efficacy and feasibility of delayed primary excision after induction chemotherapy for pediatric patients with invasive rhabdomyosarcoma.

Objectives: Delayed primary excision (DPE) after induction chemotherapy (IC) has been suggested to improve outcomes in children with invasive rhabdomyosarcoma (RMS). However, the feasibility of DPE has not been analyzed on a national cohort of head and neck patients. Study Design: Retrospective database study. Methods: 423 cases of invasive head and neck RMS among patients age 0-19 were identified in the National Cancer Database from 2004-2016. DPE is defined as any surgical resection after IC. Univariate and multivariate analyses were performed to study demographic and survival differences. Results: 23 (5.4%) patients received DPE while 400 (94.6%) patients received other treatment modalities. Among included patients, the majority were male (52.3%) and White (77.6%). The average DPE delay was 16.9 days (standard deviation: 44.3). Significant differences between groups were found in age (p=0.0061), Charlson-Deyo comorbidity score of 1 or 2 (p=0.0265), primary site (p<0.0001) and tumor size (p=0.0013). Kaplan-Meier survival analysis revealed no significant survival difference between DPE and other treatment modalities (p=0.14). When adjusting for confounders on Cox regression, DPE was not associated with improved survival (p=0.3849). Being male (HR 1.4, 95% CI:1.1-1.9, p=0.0215), race other than Black or White (HR 2.0, 95% CI:1.1-3.8, p=0.0271), tumor site of tongue (HR 2.5, 95% CI:1.0-6.0, p=0.0453) and incomes $38,000-$47,999 (HR 1.8, 95% CI: 1.1-3.0, p=0.0203) were associated with worse survival outcomes in this RMS cohort. Conclusions: Despite smaller studies indicating improved efficacy of DPE for treating invasive RMS in the pediatric population, our findings indicate that DPE does not confer a survival benefit for head and neck primary sites.

1:38 The Impact of Sociodemographic Factors on Perioperative Healthcare Utilization in Pediatric Chronic Suppurative Otitis Media Patients

William C. Ruffin, DO, Lexington, KY; Jacob Crouch, BS, Lawrenceburg, KY; Clayton Burruss, BS, Louisville, KY; Matthew Bush, MD PhD MBA, Lexington, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the associations between sociodemographic factors and perioperative care utilization of pediatric chronic suppurative otitis media patients (CSOM).

Objectives: Access to and utilization of perioperative clinical appointments may influence care delivery and surgical outcomes in patients undergoing surgical management of CSOM. The factors influencing utilization in pediatric CSOM patients have not been adequately described. The objective of this study is to assess the association between sociodemographic factors and perioperative healthcare utilization for pediatric patients undergoing surgery for CSOM. Study Design: Retrospective case series study. Methods: We identified pediatric patients (≤ 18 years old) who underwent tympanoplasty with or without mastoidectomy between 2010 and 2020. We collected sociodemographic data (age, gender, race, ethnicity, insurance type, rural/urban residence) and clinical data (surgery type, number of surgeries, presence of cholesteatoma) on all participants and conducted multivariate analysis to assess the association between these factors and healthcare utilization (defined as nonadherence to attend perioperative otolaryngology and audiology clinic appointments). Results: A total of 427 patients (≤ 18 year old) were included in the study and, based on multivariate analysis, insurance status and location of residence had significant associations with healthcare utilization. For patients undergoing tympanoplasty, Medicaid patients have 1.66 higher odds of more preoperative no show visits (p=0.01), 1.31 higher odds of more postoperative no show visits (p=0.02), 59% lower odds of having a postoperative audiogram (p=0.01), and 2.64 higher odds of being from a rural community (p=0.02). For patients undergoing mastoidectomy, rural patients had 69% lower odds of having a postoperative audiogram (p=0.04) and Medicaid patients have a 1.25 higher odds of more postoperative no show visits (p=0.01), 39% lower odds of re-look/revision procedures for ossicular reconstruction (p=0.045), and 4.32 higher odds of being from a rural community. Appalachian rural children who underwent mastoidectomy had 3.62 higher odds of having cholesteatoma (p=0.05). Conclusions: Pediatric patients with CSOM who have Medicaid insurance or who reside in rural regions are at risk for lower perioperative hearing healthcare utilization. As these findings may impact care delivery and clinical outcomes, efforts should be focused on promoting utilization among these populations. These data demonstrate the need for further investigation into the impact of social determinants of health factors on hearing healthcare access, utilization, and outcomes.

1:45 **Benign Paroxysmal Positional Vertigo in Young Children**

Jacob R. Brodsky, MD, Boston, MA; Alicia Wang, BA, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize BPPV as a potential cause of vertigo in young children and identify its clinical features in this age group.

Objectives: This study aimed to determine the clinical characteristics of benign paroxysmal positional vertigo (BPPV) in young children. Study Design: Retrospective case review. Methods: All children <10 years old that have been diagnosed with BPPV at our pediatric vestibular program between December 2012 - July 2021 were identified. Clinical features were reviewed by medical record review, including demographics, comorbidities, canal involvement, response to treatment, and incidence of recurrence. Results: A total of 34 children were diagnosed with BPPV with a mean age of 7.9 years old (SD +/- 1/7; range 5 - 9) at time of diagnosis and a male:female ratio of 1:1. Involved canals included posterior in 82% (n=28), lateral in 41% (n=14), and superior in 24% (n=8) of patients, respectively. Comorbid diagnoses included migraine (n=14), concussion (n=10), acute vestibular syndrome (n=4), and persistent postural perceptual dizziness (n=6). Recurrence with initial confirmed resolution occurred in 10 patients (29%) with a mean of 2.5 recurrences per patient (SD: 2.2; range 1-8). A family history of vertigo or migraine was identified in 11 and 17 patients, respectively. Conclusions: BPPV is a cause of vertigo in children that may be overlooked. A relatively high proportion of patients demonstrated lateral or superior canal involvement, recurrence, and additional comorbid causes of dizziness. Thus, providers evaluating young children with dizziness should perform diagnostic maneuvers to evaluate BPPV of all semicircular canals and continue to monitor children after successful treatment for recurrence.

1:52 **Development and Implementation of a Risk Assessment Tool for Otolaryngology Procedures in Pediatric ICU: A Quality Improvement Initiative**

Charles M. Myer IV, MD, Cincinnati, OH; Doug C. von Allmen, MD, Cincinnati, OH; Emily A. Shears, Cincinnati, OH; Erika L. Stalets, MD MS, Cincinnati, OH; David S. Cooper, MD MPH, Cincinnati, OH; Alessandro de Alarcon, MD MPH, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the methodology to create and implement a procedural risk assessment tool.

Objectives: Communication is frequently identified as a contributing etiology to adverse events. We sought to facilitate reliable communication between ICU and otolaryngology teams through creation and implementation of a standardized risk assessment tool to identify patients at risk of physiologic decompensation or complication during elective otolaryngology bedside procedures. Study Design: Quality improvement. Methods: Representatives from institutional ICUs and otolaryngology identified risk factors for possible adverse event during bedside procedures, including cardiorespiratory support, bleeding risk, underlying pathophysiology, and vital signs. A methodological Quality Improvement approach was used to develop a risk stratification process. Multiple Plan Do Study Act (PDSA) cycles were used to test and implement interventions including risk stratification and preprocedure hold point. EMR data were collected following intervention including number of consults, and identification of risk stratification within the consult. Results: Number of consults per week ranged from 0-9. Over the 73 week observational period, 43 (23.6%) consult patients were identified as high risk, 56 (30.7%) moderate risk, and 83 (45.6%) low risk. Early in the study period, 60% of patients did not receive a risk assessment. In the last 9 weeks, 100% of ICU consult patients were categorized. No sentinel or near miss events occurred during the observational period. Conclusions: Implementation of a risk assessment tool and hold point for ICU procedures facilitates reliable standardized communication between providers. Most patients in an ICU environment are at increased risk for adverse events during otolaryngology procedures. Using a risk stratification tool can effectively identify these patients so appropriate resources and personnel are present at the time of the procedure.

1:59 **Q&A**

2:05 - 3:00 **PEDIATRIC OTOLARYNGOLOGY PANEL**
Biologics as Emerging Therapeutics in the Pediatric Otolaryngology Patient
Moderator:
Jennifer M. Lavin, MD, Chicago, IL
Panelists:
Biologic Therapies in the Management of Pediatric Chronic Sinusitis
Amber U. Luong, MD PhD FACS, Houston, TX
Bevacizumab and Pediatric Patients with Neurofibromatosis Type 2
Richard K. Gurgel, MD, Salt Lake City, UT
Reduction of Disease Burden in Recurrent Respiratory Papillomatosis: The Role of Biologic Therapies
Alessandro De Alarcon, MD MPH, Cincinnati, OH

3:00 **Q&A**

3:10 - 3:30 ***Break/View Posters* - Ocean Ballroom & Garden Patio**

1:10 - 3:05 Concurrent Session 6B

General and Sleep Medicine - Cabana Ballroom

1:10 - 2:05 **GENERAL PANEL**
Addressing Challenging Issues in Virtual Teaching: Presentation with Audience Participation
Moderator:
David E. Eibling, MD FACS, Pittsburgh, PA
Panelists:
Ozlem E. Tulunay-Ugur, MD, Little Rock, AR
Karen M. Kost, MD, Westmount, QC, Canada

2:05 **Q&A**

Moderator: Michael E. Dunham, MD FACS, New Orleans, LA

2:10 **2021 - TRIOLOGICAL SOCIETY THESIS WITH DISTINCTION AWARD**
Underrepresentation of Women Leaders: Lasting Impact of Gender Homophily in Surgical Academic Faculty Collaboration Networks
Maria V. Suurna, MD FACS, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) define organizational network analysis; 2) understand how relationships networks impact academic career progression; and 3) identify gender based differences in collaboration networks.

Objectives: Despite the increase of women in surgical fields and resources toward advancing women, there is no corresponding increased representation of women in higher academic ranks and leadership. The following hypotheses are explored: 1) men and women build/maintain different relationship networks and 2) women are not similarly included within the organization and do not receive the same sponsorship as male counterparts. Study Design: Prospective observational study. Methods: Three months of prospective, passive organizational network data of full-time faculty at an academic medical center were collected by analysis of deidentified internal email communication logs. Data were analyzed and strength of network relationships was assessed using algorithms measuring the tie, or connection, score. Data analysis was performed with standard statistical methods and multivariable regression models, comparing network relationships based on gender and academic rank. Results: Among 345 full-time faculties from surgical departments, 45.2% were female Assistant Professors, but only 9.8% were female full Professors. Men had 55% more network relationships with other men than women had with men. Gender homophily was particularly pronounced at the higher academic ranks. Men compared to women in higher ranks had 157% more network relationships to other men in lower ranks. Multivariable regression models suggested direct association of these gender differences in relationships with more women in lower academic ranks. Conclusions: Higher academic rank can be predicted by male gender, tenure, and number of meaningful relationships. Women are underrepresented at the leadership level in surgical departments. Gender homophily is present in collaboration networks among academic surgeons and is associated with impeded female career advancement.

2:17 Patient Experiences with Off Label Nimodipine for Vocal Fold and Facial Paresis/Paralysis

Jordan I. Gewirtz, BS, Columbus, OH; Hannah N. Kuhar, MD, Columbus, OH; Laura Matrka, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to better understand patient experiences related to treatment with off label nimodipine for vocal fold and facial paresis/paralysis.

Objectives: Nimodipine has been utilized as a therapeutic agent for functional recovery after cranial nerve injury. Patient tolerance and experiences with this off label use are not well characterized. Study Design: Retrospective. Methods: Medical records of otolaryngology-head and neck surgery patients over 18 years of age prescribed nimodipine for vocal fold or facial paresis/paralysis were reviewed up to 19 months postoperatively through retrospective chart review. Results: 29 patients met inclusion criteria. Average patient age was 52.32 years. 44.83% of patients (n=13) were male. The average nimodipine course lasted 61.59 days, with 8 patients (27.59%) reporting a negative side effect, and 5 patients (17.24%) prematurely stopping their nimodipine course. 23 inpatients started nimodipine. 2 inpatients (8.70%) discontinued therapy prior to discharge due to side effects including headache, GI upset, and inability to swallow the drug in either pill or liquid form. 7 patients were advised to discontinue the medication at discharge. 6 patients started nimodipine as outpatients. 1 outpatient did not fill the prescription due to cost. Thus, 19 outpatients continued nimodipine for an average of 88.84 days. 6 outpatients (31.57%) reported negative side effects, including symptomatic hypotension (n=3), palpitations (n=2), and difficulty swallowing the drug in pill form (n=1). 3 outpatients (15.79%) discontinued therapy early due to symptomatic hypotension (n=2) and palpitations (n=1). Conclusions: This is the first study to specifically evaluate side effects and patient experiences with off label use of nimodipine for vocal fold and facial paresis/paralysis. A majority of patients completed their prescribed course (82.76%), however the side effect rate remained high (27.59%).

2:25 Medical Student Mentorship in the COVID-19 Era

Ryan Bishop, BS, Columbus, OH; Rishabh Sethia, MD, Columbus, OH; David Z. Allen, MD, Houston, TX; Soham Roy, MD, Houston, TX; Charles Elmaraghy, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of the COVID-19 pandemic on mentorship for medical students and may utilize this data to justify the expansion of mentorship programs.

Objectives: To determine the perspective of third and fourth year medical students regarding the impact of the COVID-19 pandemic on mentorship. Study Design: Cross-sectional, multicenter study. Methods: The authors distributed a modified Likert scale questionnaire (score: 1-10) to third and fourth year medical students at two large US allopathic medical schools. Responses to each survey item were analyzed to characterize the impact of the COVID-19 pandemic on mentorship relationships in medical school. A score of 1-5 was considered "disagree" and a score of 6-10 was considered "agree". Results: A total of 144 responses were collected with a response rate of 16.2%. Overall, 80.6% (n=116) of respondents agree that the COVID-19 pandemic has had a negative impact on their medical school experience. Nearly half (41.0%, n=59) expressed concern over the lack of mentorship opportunities, and 66.0% (n=95) reported that the pandemic has

made it more difficult to form or maintain connections with their mentors. Importantly, 43.6% (n=61) of respondents reported that having close mentoring relationships reduced the impact of the pandemic on their medical training. While many respondents (79.9%, n=114) did not change career plans due to the pandemic, most students are concerned about evaluating prospective residency programs (88.9%, n=128). Notably, M3s have much lower confidence than M4s in their ability to choose a specialty (5.9 vs. 8.2, p = 6.43e-08). Conclusions: This investigation illustrates the concerns that medical students have regarding access to mentorship opportunities due to the COVID-19 pandemic. We hope that these findings encourage medical schools to evaluate and expand their current mentorship programs.

2:32 **Otolaryngologic Side Effects after COVID-19 Vaccination**

Salma Ahsanuddin, BS, Newark, NJ; Ryan Jin, BS, Newark, NJ; Kirolos Georges, BA, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the adverse event profile of COVID-19 vaccination as it pertains to otolaryngology.

Objectives: With widespread vaccination against COVID-19, concerns regarding side effects have been raised. We aim to assess the significance of otolaryngologic adverse events (AEs) following vaccination. Study Design: Retrospective analysis of national registry. Methods: The Food and Drug Administration's Vaccine Adverse Event Reporting System (VAERS) database was queried from December 2020 to May 2021 for all COVID-19 vaccination AEs. Complaints were categorized as otolaryngologic and substratified into different anatomic components. Reporting odds ratios (ROR) and proportional reporting ratios (PRR) were determined for AEs of clinical significance. Results: The total number of AEs reported from vaccination with the Moderna, Pfizer-BioNTech, and Janssen vaccines equaled 1,280,950. Of these, 62,660 (4.9%) were otolaryngologic in nature with 32.6% belonging to the oropharynx/larynx, 18.3% belonging to the nasal cavity/sinuses, 17.1% belonging to the ears/vestibular system, 10.0% belonging to the oral cavity, and 21.9% being miscellaneous. Signal ratios reached significance levels for dysgeusia (n=2124, PRR: 17.33, ROR: 16.36), ageusia (n=1376, PRR: 2.81, ROR: 2.81), anosmia (n=983, PRR: 4.01, ROR: 4.01), rhinorrhea (n=2203, PRR: 2.99, ROR: 3.00), throat tightness (n=3666, PRR: 4.99, ROR: 5.00), throat irritation (n=3313, PRR: 4.51, ROR: 4.52), dysphagia (n=2538, PRR: 2.07, ROR: 2.07), tinnitus (n=4377, PRR: 3.97, ROR: 3.98), and vertigo (n=2887, PRR: 3.93, ROR: 3.93). Signal ratios were not significant for facial paralysis, Bell's palsy, anaphylaxis, sinusitis, hearing disability, and ear pain. Conclusions: Although several otolaryngologic complaints were reported on VAERS, few were found to be clinically significant. Of note, facial paralysis, Bell's palsy, and anaphylaxis did not meet signal thresholds to be determined significant.

2:39 **Race Disparity in Hypoglossal Nerve Stimulation Implantation**

Deeyar A. Itayem, MD, Memphis, TN; Michael Tyler Bone, MD, Memphis, TN; Leighton F. Reed, MD, Memphis, TN; M. Boyd Gillespie, MD, Memphis, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize race disparities in our sleep clinic in respect to those who undergo surgery.

Objectives: To investigate the race disparity in hypoglossal nerve stimulator implantation in order to propose interventions to improve equity for this surgical intervention. Study Design: Retrospective cohort study. Methods: The source data reviewed originated from a prospective tertiary sleep surgery clinic database and electronic medical records from October 2016 to June 2020. Variables of interest included race (Black, White, Other); gender; age; body mass index (BMI); insurance type; tonsil size (1, 2, 3, 4); modified Mallampati scores (1, 2, 3, 4); apnea hypopnea index (AHI); oxygen nadir scores; VOTE scores of airway collapse site; and treatment selection. The Kruskal-Wallis test and chi-square test were used to assess association between race and the remaining variables. Results: The majority of sleep surgery patients identified as White (66%) as compared to 31% Black and 4% Other. Black patients were younger ($p<0.001$) and had a higher statistically significant BMI compared to Whites ($p<0.001$). There was no difference in the proportion of males or females in each race ($p=0.08$) or insurance type ($p=0.95$). Black and Other patients had larger tonsil sizes ($p<0.001$). There is no statistically significant difference in VOTE scores (H statistic 0.479), Mallampati scores (H statistic 0.195), or oxygen nadir (H statistic=2.99). AHI was statistically similar between Blacks and Whites ($p=0.066$). Hypoglossal nerve implantation was skewed with only 3% (1/37) of implants performed in Blacks. Conclusions: Black patients are less likely to undergo hypoglossal nerve stimulation placement for the management of OSA. Although the reasons for this requires further investigation, the present study found that possible explanations include a lower percentage of Black patients presenting to sleep surgery clinic than would be expected based on the race composition of the community; significantly higher BMI among Black patients; and significantly larger tonsil size among Black patients. Therefore, access to sleep surgery clinic should be expanded to include more Black patients with OSA and efforts increased to educate Black patients on the variety of OSA treatment options.

2:46 **To Tube or not to Tube: Comparing Ventilation Techniques in Microlaryngeal Surgery**

Mausumi N. Syamal, MD MSE, Bethlehem, PA; Jill Hanisak, DNP CRNA, Allentown, PA; Jennifer Macfarlan, MPH, Allentown, PA; Briana Ortega, MD, San Diego, CA; Robert T. Sataloff, MD DMA FACS, Philadelphia, PA; Michael S. Benninger, MD FACS, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how oxygenation in apneic techniques compare with traditional intubation. They should be able to identify pros and cons to each method of ventilation and identify potential differences in oxygen and carbon dioxide distributions. They should also be able to understand how factors such as BMI and supplementary oxygenation can affect apnea times.

Objectives: The objective of this study was to compare ventilation techniques utilized in microlaryngeal surgery. Study Design: Retrospective cohort study. Methods: Two hundred surgeries performed from May 1, 2018, to March 1, 2020, and stratified as intubated, intermittently intubated (AAIV) or apneic. Patient demographics, comorbidities, anesthetic agents, intraoperative parameters/events and complications were studied and compared across the three groups using inferential analyses. Results: Median BMI in the AAIV group was significantly higher (33 vs 29; p=0.0117). Median oxygen nadirs were lower in AAIV cases (81% vs 91-92%) while CO2 peak measurements were lower (33 mmHg vs 48 mmHg) in the fully apneic cohort which were significantly shorter cases (p<0.0001). CO2 peak measurements were comparable between AAIV and intubated cohorts (median 48.5 mmHg vs. 48.0 mmHg). Median apnea times were significantly prolonged by 2-5½ minutes using nasal cannula and THRIVE/Optiflow in fully apneic cases when compared to no supplementary oxygenation (p=0.0013). Systolic blood pressures following insertion of laryngoscope were higher (159.5 vs 145 mmHg) and postoperative diastolic pressures were lower (68.5 vs 76.5 mmHg) in fully apneic cases than intubated cases. No differences existed between frequencies of complications. Conclusions: This study compares intubated, intermittently apneic, and fully apneic surgeries. No statistically significant differences were noted in comorbid conditions. While intraoperative hemodynamic fluctuations were more pronounced in the fully apneic cohort, and oxygenation distributions were lower in the AAIV cohort, no significant differences existed between events and complications. Apneic techniques are as safe and effective as traditional intubation.

2:53 **Effect of the COVID-19 Pandemic on Pediatric Otolaryngology Procedures and Consultations**

Kevin Jacob, BS, Louisville, KY; Elizabeth Cash, PhD, Louisville, KY; Swapna Chandran, MD, Louisville, KY

Educational Objective: At the conclusion of this presentation, the participants will gain an understanding of how the COVID-19 pandemic shifted patient healthcare utilization and access with respect to pediatric otolaryngology.

Objectives: Investigate the clinical, pathologic, and demographic changes to pediatric otolaryngology practice that occurred as a result of the COVID-19 pandemic. Study Design: Hospital encounter records and retrospective chart review. Methods: Records for all patients that underwent ENT procedures or were evaluated in the emergency department (ED)/inpatient setting by ENT surgeon consults from March 2019 to February 2021 were reviewed for demographics, procedure type, preoperative diagnosis, and principal reason for consult. Data between March 2019 - February 2020 was compared to March 2020 - February 2021 (pandemic year study period). Results: The relative percentage of consults for infectious etiologies significantly decreased in both the ED (53.8% vs 30.8%, p<.001) and inpatient setting (29% vs 23.8%, p=.019) in the pandemic year study period. There was a 44.7% decrease in total procedures between study periods. Average age increased (M = 4.3 years vs. 4.9 years, p=.002) and a higher proportion of patients did not utilize an insurance policy (36.5% vs 49%, p<.001) for procedures during the pandemic. A higher proportion of tonsillectomies (32.9% vs. 37.1%, p=.031) and a lesser proportion of myringotomies (48.5% vs. 42.9%, p=.005) were performed during the pandemic. Conclusions: The effects of social distancing measures, policy, and public awareness of COVID-19 likely contributed to the decreased number of head and neck infections for which our pediatric ENT service was consulted during the pandemic year. The volume of pediatric ENT procedures decreased during the pandemic period and shifted provider decision making with regards to tonsillectomy and myringotomy.

3:00 **Comparing Outcome Metrics of Laryngotracheal Reconstructions Under the "No Look" Extubation Philosophy**

Andrea Brittany Clinch, BS, Minneapolis, MN; Lindsey Katelyn Greenlund, BS, Minneapolis, MN; Brianne Roby, MD, Minneapolis, MN; Andrew Scott, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the traditional endoscopic exam prior to extubation following SSLTR to the "no look" philosophy and consider the benefits of forgoing OR trips.

Objectives: To examine a "no look" postoperative extubation philosophy compared to endoscopic evaluation at time of extubation for single stage laryngotracheal reconstruction (SSLTR). Study Design: A multi-institution retrospective chart review of children who underwent SSLTR. Methods: Outcome metrics were charted for patients who underwent SSLTR and were extubated without first undergoing airway endoscopy from 2010-2020. This data was compared to rates in existing literature to examine efficacy and safety of foregoing the return to the OR prior to extubation. Results: There were 47 SSLTRs with 53.2% male (n=25) and mean age 31.4 months. There were 30 anterior graft, 1 posterior graft, and 16 anterior/posterior graft procedures included. Historical controls were defined through literature review revealing the following outcome metrics: mean PICU LOS was 7-13 days; mean hospital LOS was 11-18 days; re-stenosis rate was 10%; decannulation rate was 96%. In comparison, the 47 "no look" patients in this series had the following outcomes: mean PICU LOS of 10 days; mean hospital LOS 13 days; re-stenosis rate 4.3% (n=2); decannulation rate 97.9% (n=46). The rate of reintubation was 8.5% (n=4) and unplanned return to the OR was 28% (n=13 patients). Revision surgery was the primary risk factor for such interventions. Conclusions: This study suggests that in select patients undergoing SSLTR, a "no look" philosophy may eliminate unnecessary surgical procedures, a benefit to both patient care and to healthcare costs.

3:05 **Q&A**

3:10 - 3:30 ***Break/View Posters* - Ocean Ballroom & Garden Patio**

3:30 - 4:40 - General Session - Crown Room

3:30 - 4:30 **PANEL: THE IMPACT OF NOISE IN THE MILITARY**

Panel Introduction:

Michael E. Hoffer, MD (CAPT(ret) MC(FMF) USN) Professor of Otolaryngology and Neurological Surgery University of Miami, Miller School of Medicine

Moderators:

Earl H. Harley, MD (CAPT (ret) MC USN) Professor of Otolaryngology and Pediatrics, Georgetown University

Tony Hughes, MD (CAPT MC(FMF)/FS, USNR) Senior Medical Officer (SMO), Expeditionary Medical Facility (EMF) HQ Great Lakes, IL

Panelists:

The Impact of Noise in the Military Population

Carlos Esquivel, MD (COL MC USAF (ret)) Chief Medical Officer - Hearing Center of Excellence

Does Jet Fuel Potentiate Noise Induced Central Auditory Nervous System Difficulties: An Exploratory Study in Military Personnel

Caroline Schlocker, MD (CDR MC USN))

Prior Noise History Impacts Cochlear Implant Outcomes in Veterans

Suhrud Rajguru, PhD Associate Professor of Otolaryngology and Biomedical Engineering, Director Neuroengineering Institute, University of Miami, Miller School of Medicine

Noise Exposure in the Million Veteran Program: When Age is added to Noise, Traumatic Brain Injury, and Blast

Royce Clifford, MD MPH (CDR (ret) MC(FS) USN) - Research Scientist, Department of Otolaryngology, University of California School of Health Sciences, San Diego

4:30 **Q&A**

4:45 ***ADJOURN SESSION***

5:00 ***SUNSET, S'MORES AND MORE - for all attendees - Hotel Boardwalk & Beach***

POSTER PROGRAM

Allergy/Rhinology

1. Olfactory Dysfunction in People with Cystic Fibrosis: A Systematic Review

Lorena M. Ayoub, BS, Burlington, VT; Jessa E. Miller, MD, Los Angeles, CA; Jennifer L. Taylor-Cousar, MD MSCS, Los Angeles, CA; Daniel M. Beswick, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand the prevalence of subjective and objective olfactory dysfunction among people with cystic fibrosis; and 2) discuss how olfactory dysfunction impacts quality of life.

Objectives: Evidence describing olfactory dysfunction (OD) in people with cystic fibrosis (PwCF) is limited. The goal of this study was to systematically review the literature on OD in PwCF and describe the prevalence and impact of this complication. Study Design: Systematic review. Methods: A systematic review was performed using PRISMA guidelines. Inclusion criteria consisted of articles that examined OD in PwCF. PubMed, Ovid Medline, Google Scholar, Cochrane Library, MedRxiv, Web of Science, and NSHL databases were searched. A total of 85 articles were identified, of which 12 met inclusion criteria. Results: Of twelve studies analyzed, eleven were prospective observational studies and one was a retrospective cohort study. Psychophysical olfactory testing, such as Sniffin' Sticks Testing and the 40 question Smell Identification Test, were utilized in eight studies. A total of 282 PwCF were included in these studies (136 females, mean age 21.1 years). Three of eight studies examined pediatric patients. In these eight studies, the prevalence of OD ranged from 9.5-81.7%, while rates of anosmia ranged from 5-14%. In two studies, OD was associated with an elevated odor detection threshold, however odor identification was not affected. Four studies failed to identify any association between OD and nutritional status. Conclusions: OD is common in PwCF. Most PwCF have hyposmia while anosmia is less common. Understanding how OD affects PwCF is critical to disease management and quality of life optimization.

2. Efficacy and Complications of Endovascular Embolization for the Treatment of Intractable Epistaxis: A Systematic Review

Maximilian Bonnici, ScM, Morgantown, WV; Norman Orabi, MD, Morgantown, WV; Michael Gannon, ScM, Norfolk, VA; Nathan Williams, BS, Charleston, WV; Hassan Ramadan, MD MSc, Morgantown, WV; Chadi Makary, MD, Morgantown, WV

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the risk factors and causes of intractable epistaxis as well as the embolic agents, target vessels, and outcomes of endovascular embolization for intractable epistaxis.

Objectives: To assess the risk factors and causes of intractable epistaxis, review common trends in endovascular embolic agents and target vessels, and report the outcomes of endovascular embolization for intractable epistaxis. Study Design: Systematic review. Methods: A systematic review was conducted in accordance with the guidelines set forth by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). PubMed, Web of Science, and Cochrane library were searched for original studies investigating endovascular embolization for the treatment of epistaxis. Exclusion criteria were studies on a single etiology, a language other than English, case reports, inaccessible manuscripts, unoriginal studies, a sample size of less than 5 patients, and non-human entities. Studies were assessed for causes and risk factors of epistaxis, embolic agents and target vessels, and outcomes including complications. Results: Twenty-three studies were included, totaling 954 patients. The leading cause of intractable epistaxis was idiopathic, and the leading risk factor was hypertension. Bilateral embolization of the internal maxillary artery was increasingly favored in newer studies. Polyvinyl alcohol was the main embolic agent followed by gelatin particles. The immediate and overall success rates ranged from 71% to 100% and 74% to 97%, respectively. The minor complication rate ranged from 4% to 81%, all of which spontaneously resolved. The major complication rate ranged from 0% to 17%. The most common major complication was necrosis followed by stroke. Conclusions: Endovascular embolization is an effective treatment for intractable epistaxis. The decision to perform embolization should be carefully weighed given the rare but significant major complications.

3. Surgeon Specialization and Case Volume in Transsphenoidal Pituitary Surgery and Their Effect on Adverse Disposition and Mortality

David Avery Cohen, BA, Newark, NJ; Daniel J. Zunger, BS, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Jean Anderson Eloy, MD FACS, Newark, NJ; Wayne D. Hsueh, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how surgeon specialization and surgical case volume are associated with improved patient outcomes in transsphenoidal pituitary surgery.

Objectives: Surgeon specialization (SS) and surgical case volume (SCV) has been shown to be associated with improved patient outcomes in neurosurgical intracranial and spinal surgeries. We investigated the effect of SCV and SS in transsphenoidal pituitary surgery (TSPS). Study Design: Retrospective database analysis. Methods: The Nationwide Inpatient Sample (NIS) was used to identify patients who underwent TSPS from 2003-2009. SS was defined as the percentage of TSPS cases and SCV as the total TSPS cases performed per surgeon per year. Surgeons were further subdivided into quartiles depending on SS and SCV. Univariate and multivariate analyses were then performed. Results: A total of 6,472 TSPS cases were identified. Overall average SS was 2.60% (range: 0.01%-100%) and average SCV was 3.33 cases (range: 1-127). Overall patient mortality (0.621% vs 0.282%) and adverse disposition rates (8.1% vs 2.9%) decreased from least to most specialized. Similarly, overall patient mortality (0.8% vs 0.2%) and adverse disposition rates (5.7% vs 2.5%) decreased from lowest to highest SCV. Logistic regression showed lower odds of mortality (OR 0.23, 95% CI 0.06-0.89, p=0.034) and adverse disposition (OR 0.55, 95% CI 0.35-0.88, p=0.013) for the highest SCV quartile compared to the lowest, and lower odds of adverse disposition for the third (OR 0.49, 95% CI 0.25-0.98, p=0.043) and fourth (OR 0.47, 95% CI 0.24-0.94, p=0.032) SS quartiles than the first. Conclusions: Increased surgeon TSPS specialization and case volume were associated with improved mortality and discharge disposition. Upon multivariate analysis, increased TSPS specialization led to lower likelihood of adverse disposition but was not significantly associated with mortality.

4. Effect of Hospital Profit Status on Patient Outcomes and Costs after Transsphenoidal Pituitary Surgery

Amar D. Desai, MPH, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to study the effect of hospital profit status on postoperative short term outcomes and costs of care following transsphenoidal pituitary surgery (TSPS).

Objectives: To study the effect of hospital profit status on postoperative short term outcomes and costs of care following transsphenoidal pituitary surgery (TSPS). Study Design: Retrospective database study. Methods: The National Inpatient Sample (NIS) database was queried for individuals undergoing TSPS from 2003-2014. Patient demographics and hospital characteristics for those treated at nonprofit versus for profit facilities were assessed using univariate analysis. Patient outcomes and charges were also compared after propensity score matching the nonprofit and for profit cohorts. Results: 12,269 patients were treated at private hospitals, further stratified into nonprofit (n=11,138) or for profit (n=1,131). A significantly higher proportion of Hispanic patients (26.7% vs. 10.7%, p<0.001) and lower proportion of White patients (50.0% vs. 63.6%, p<0.001) were treated at for profit compared to nonprofit hospitals on univariate analysis. No differences in age (mean: 51.8 vs. 52.0 years, p=0.753) or sex (male %: 48.7% vs. 49.0%, p=0.891) were noted. Additionally, for profit hospitals were more likely to be located in the South or West, be a non-teaching hospital, treat self-paying patients, serve metropolitan areas with a population over 1 million, treat patients with the lowest disease severity and have medium bed size (p<0.05). Propensity score matching on patient demographic and hospital variables yielded 664 matched pairs, with analysis showing that total charges ($71,057.30 vs. $61,199.53, p<0.001) were greater at for profit hospitals compared to nonprofit hospitals, with no significant difference in length of stay (LOS) (p=0.057) and charge per day (p=0.882). Conclusions: Patients undergoing TSPS at for profit hospitals had greater total charges despite similar LOS when compared to those at nonprofit hospitals.

5. Impact of Facility Volume on Outcomes of Sinonasal Mucosal Melanoma

Amar D. Desai, MPH, Newark, NJ; Ryan Jin, BS, Newark, NJ; Salma Ahsanuddin, BS, Newark, NJ; Prayag Patel, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how facility volume influences outcomes in sinonasal mucosal melanoma.

Objectives: To determine the impact of hospital/facility volume status on surgical and survival outcomes of sinonasal mucosal melanoma (SNMM). Study Design: Retrospective analysis of a national registry. Methods: The 2004-2016 National Cancer Database was queried for cases of SNMM. Facility volume status was divided into tertiles based on group frequency. Demographic characteristics, Kaplan-Meier, and Cox multivariable survival analysis were performed to assess differences in presentation and outcomes between volume groups. Results: 543 cases of SNMM were identified, of which 253 (46.6%) were male and 290 (53.4%) were female. 27 high volume, 62 medium volume, and 208 small volume facilities were included. There were no differences between the three groups by age (p=0.4677), sex (p=0.6793) or race (p=0.4051). A greater proportion of patients at high volume facilities (83.6%) received surgery compared to those at medium volume

(73.7%) or low volume (67.8%) facilities (p=0.0015). On Kaplan-Meier analysis, there was no significant difference in survival among the three groups (p=0.1254). On Cox multivariable analysis, no survival difference was observed between high volume (p=0.6878) or medium volume (p=0.6139) facilities and low volume facilities when adjusting for confounders. Surgery resulted in a significantly lower probability of death (HR:0.533, p=0.0335) when compared to a nonsurgical intervention. Conclusions: Unlike other head and neck cancers, no survival differences are observed between facilities with different patient volumes for SNMM. High volume facilities are likely to offer their patients a surgical intervention which can potentially result in a lower probability of death.

6. Microscopic versus Endoscopic Approach in Pituitary Tumor Resection

Samer T. Elsamna, BA, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Ibraheem Shaikh, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to compare outcomes between microscopic and endoscopic approach to pituitary tumor resection and identify trends in approach over the years.

Objectives: Pituitary tumor excision can be performed with either the microscopic or endoscopic endonasal (EEA) approach. We seek to compare trends and postoperative complications between these two approaches using a large national database. Study Design: Retrospective study of a national surgical quality database. Methods: The 2005-2018 ACS-NSQIP database was queried for cases of microscopic and EEA pituitary tumor excision using CPT codes. Chi square and logistic regression analyses were utilized for comparisons between the two approaches. Odds ratios (OR) were obtained. Outcomes were also compared after propensity score matching the microscopic and EA cohorts. Results: Of the 2188 patients, 2002 (91.5%) had microscopic and 186 (8.5%) had EEA. Patients in the EEA cohort were more likely to be younger than 60 years old (70.4% vs. 60.3%, p=0.007). Smoking history (OR 1.600, p=0.024), Black race (OR 1.719, p=0.004), and later admission year (OR 1.268, p<0.001) were all associated with EEA. The proportion of patients having EEA increased over time (1.3% in 2010 vs. 15.6% in 2018). After propensity score matching, patients who underwent EEA had similar odds compared to the microscopic cohort for overall (OR 2.238, 95% CI: 0.941-5.323, p=0.068), surgical (OR 3.067, 95% CI: 0.611-15.395, p=0.173), and medical complications (OR 1.764, 95% CI: 0.678-4.584, p=0.244). Mortality was similar between the two cohorts (OR 1.000, 95% CI: 0.062-16.108, p=1.000). Conclusions: There has been an increased use of EEA over time. Although the demographics of patients undergoing EEA and microscopic varies, the risk for developing complications is similar.

7. Changing Prevalence of Eustachian Tube Dysfunction: An NHANES Multiyear Cross-Sectional Study

Jacqueline Elizabeth Harris, MD, San Francisco, CA; Hailey Juszczak, MD, San Francisco, CA; Patricia Loftus, MD, San Francisco, CA; Jeffrey Sharon, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the change in prevalence of eustachian tube dysfunction in the last two decades.

Objectives: To describe the change in the prevalence of eustachian tube dysfunction (ETD) across a 15 year period using a nationally validated database and to determine if the trend correlates with changes in allergic rhinitis (AR) prevalence. Study Design: Multiyear cross-sectional study. Methods: Using the National Health and Nutrition Examination Survey (NHANES) database, data was collected for 8 two year intervals beginning in 1999. ETD was estimated using objective audiometric data; tympanometric types were defined using peak pressure and compliance values. AR was estimated using responses to the respiratory health questionnaire. Univariate and multivariate logistic regression analyses were performed. Results: The percentage of abnormal tympanograms increased over time (0.12 to 0.16), but it was not a significant change (p=0.11). Subgroup analysis revealed that type B tympanograms increased over time, nearly doubling in the period between 1999 and 2012 (0.06 to 0.11), and this was statistically significant (p=0.025). At each timepoint, the prevalence of type B tympanograms increased with increasing age (0.018 to 0.14, p=0.0081; 0.037 to 0.15, p=0.025; 0.048 to 0.16, p=0.017; 0.10 to 0.18, p=0.085), with significant differences each year. In 2011-2012, the prevalence of hay fever increased by age in cohorts with and without ETD with a significant difference (0.0031 and 0.011), but more so in those with ETD. Conclusions: The prevalence of specifically type B tympanograms significantly increased across the years 1999-2012. The odds of having ETD increase with each decade of age. There is a higher prevalence of AR with ETD and this also increases with age.

8. Impact of Obesity on Postoperative Outcomes following Anterior Skull Base Surgery

Suat Kiliç, MD, Cleveland, OH; Samer T. Elsamna, BA, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Troy Woodard, MD, Cleveland, OH; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to determine the potential impact of obesity on outcomes following skull base surgery of the anterior cranial fossa.

Objectives: Obesity (body mass index ≥ 30) has been associated with perioperative morbidity and mortality. In this study, we sought to determine if obesity has impact on postoperative outcomes of patients undergoing ASBS. Study Design: Retrospective cohort study of a national surgical quality database. Methods: The 2005-2018 ACS-NSQIP database was queried via CPT codes for ASBS cases. Patients were divided into obese and non-obese cohorts. Age, gender, race, American Anesthesiology Society (ASA) class, functional status, operative time, emergency status of case, and comorbidities were compared between the two groups using chi square and logistic regression. Propensity score matching (PSM) was used to adjust for differences. Logistic regression analysis was used to determine association with postoperative complications. Results: Of the 1191 patients, 42.1% were obese (n=501). The mean age was 55.4 years. Obesity was associated with age > 60 years (OR: 1.83), diabetes mellitus (OR: 1.86), hypertension (OR: 2.21), smoking (OR: 0.65), and weight loss (OR: 0.08). Overall complications occurred at similar rates (obese: 23%, non-obese: 21.9% P=0.673). Obese patients had a higher rate of medical complications (obese: 13.0%, non-obese: 9.6%), but this did not reach statistical significance (P=0.074). Prior to PSM, obesity was associated with mortality (obese: 2.6% vs non-obese: 0.9%, P=0.032). Following PSM, no statistically significant difference in any outcome was observed. Conclusions: ASBS is safe for obese patients as there is no statistically significant difference in postoperative outcomes between the two cohorts following PSM. Obesity by itself should not be considered as a relative contraindication to SBS.

9. Impact of Facility Volume on Patient Safety Indicator Events after Transsphenoidal Pituitary Surgery

Mehdi S. Lemdani, BA, Newark, NJ; Hannaan S. Choudhry, BA, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Christina H. Fang, MD, Bronx, NY; Jordon G. Grube, MD, Albany, NY; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of facility volume on patient safety indicator (PSI) events and outcomes following transsphenoidal pituitary resection.

Objectives: To investigate the impact of facility volume on patient safety indicator (PSI) events following transsphenoidal pituitary surgery (TSPS). Study Design: Retrospective database review. Methods: The 2003-2011 National Inpatient Sample was queried for TSPS cases. Facility volume was defined by tertile of average annual number of TSPS performed. PSI events were identified using ICD-9 codes of in-hospital complications from the Agency of Healthcare Research and Quality. Univariate and multivariate analyses were utilized. Results: 16,039 cases were included; 804 cases ≥ 1 PSI event and 15,235 had no PSI events. A greater proportion of males compared to females (5.8% vs. 4.3%) and Black compared to White (7.0% vs. 4.5%) TSPS patients experienced PSI events. There was increased likelihood of poor outcome (OR 3.1, 95% CI 2.5-3.7, p<0.001) and mortality (OR 30.1, 95% CI 18.5-48.8, p<0.001) with PSI event. The incidence of PSI events at low, intermediate, and high volume facilities were 5.7%, 5.1%, and 4.2% respectively. Odds of poor outcome with PSI events were greater at low (OR 3.3, 95% CI 2.4-4.4, p<0.001) compared to intermediate (OR 3.1, 95% CI 2.1-4.2, p<0.001) and high volume facilities (OR 2.5, 95% CI 1.7-3.8, p<0.001). Odds of mortality with PSI events were greater at high (OR 43.0, 95% CI 14.3-129.4, p<0.001) compared to intermediate (OR 40.0, 95% CI 18.5-86.4, p<0.001) and low volume facilities (OR 17.3, 95% CI 8.0-37.7, p<0.001). Conclusions: PSI events were associated with higher likelihood of poor outcome and mortality following TSPS. Patients who experienced PSI events had lower risk of poor outcome, but increased mortality, at higher volume facilities.

10. Medial Orbital Wall Decompression Surgery: Demographic Factors Influencing Postoperative Followup and Complications

Gifty D. Marfowaa, BS, Milwaukee, WI; David M. Poetker, MD, Milwaukee, WI; Jazzmyne A. Adams, MPH, Milwaukee, WI; Kristen Osinski, MS, Milwaukee, WI; David R. Friedland, MD PhD, Milwaukee, WI

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) recognize demographics of patients undergoing orbital wall decompression; 2) recognize complications associated with OWD and their association with patient demographics and compliance with followup; and 3) understand factors warranting further study to address disparities in postoperative compliance within rhinology.

Objectives: To examine barriers that impair patient followup in orbital wall decompression (OWD) secondary to thyroid associated orbitopathy (TAO). Study Design: Retrospective chart review of patients undergoing OWD for TAO. Methods: Demographics (age, gender, race, insurance status, ZIP code) of patients who underwent OWD secondary to TAO were analyzed to identify correlations among social determinants of health, postoperative compliance, and surgical complications. Noncompliance was defined as <3 visits in the first 90 days postoperative. Results: There were 46 patients with average

age 59.08 years (SD 14.43) with 76.1% female, 67.4% White, and 43.5% publicly insured. Noncompliant followup was noted in 30.4% of patients of which 85.7% were female, 71.4% were White, and 57.1% publicly insured. Compliant patients were proportionately 71.9% female, 65.6% White, and 37.5% publicly insured. Complications were noted in 50.0% of OWD patients of which 87.0% were female, 60.9% were White, and 39.1% publicly insured. Sinus infection represented 47.8% of all complications while epistaxis comprised only 4.3%. Conclusions: This study reveals higher rates of noncompliant followup in White females with public insurance. Our cohort indicates that minority race is more associated with complications rather than compliance with followup. Further exploration of social determinants and their impact on postoperative followup and complication rate in rhinologic surgery is warranted.

11. Endoscopic Management of a Post-Traumatic Internal Maxillary Artery Pseudoaneurysm: Case Report and Review of the Literature

Jessa E. Miller, MD, Los Angeles, CA; Justin P. McCormick, MD, Los Angeles, CA; Jeffrey D. Suh, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recite the diagnostic and treatment algorithms for internal maxillary artery pseudoaneurysms and should consider endoscopic management of these lesions.

Objectives: To review the literature on internal maxillary artery (IMA) pseudoaneurysms and present the first reported case of an IMA pseudoaneurysm successfully treated endoscopically. Study Design: Literature review and case report. Methods: A literature search on IMA pseudoaneurysms was conducted using PubMed and Google Scholar. The epidemiology, presentation, diagnosis, treatment, and outcomes of IMA pseudoaneurysms were reviewed. The patient's medical record, imaging, and surgical videos of the operation were reviewed. Results: A 66 year old female presented with headaches, epistaxis, and left V2 numbness. Three months prior, she had a syncopal episode following a COVID-19 vaccination. She initially presented to her local hospital and was noted to have nonoperative zygomaticomaxillary complex and maxillary sinus fractures. Three months later, due to increasing facial pain and recurrent epistaxis, repeat imaging was obtained. CT angiogram demonstrated complete maxillary sinus opacification and an IMA pseudoaneurysm. Preoperative embolization was unavailable, and given her epistaxis and pain, the patient was taken urgently to the operating room for endoscopic ligation of a large pseudoaneurysm within the maxillary sinus, pterygopalatine fossa, and infratemporal fossa via a Denker's medial maxillectomy. IMA pseudoaneurysms are rare entities, and typically occur following trauma, orthognathic surgery, or temporomandibular joint surgery. Treatment of these lesions generally involves embolization or open surgical techniques; however, we present a unique case that was managed entirely endoscopically. Conclusions: Pseudoaneurysms are life threatening conditions and an expeditious workup and accurate diagnosis is critical. Here, we review the diagnostic and treatment algorithms of IMA pseudoaneurysms and discuss a delayed presentation of a post-traumatic IMA pseudoaneurysm treated endoscopically.

12. An Analysis of Olfactory Mucosa in Presbyosmia

Allison Oliva, BS, Durham, NC; Khalil Issa, MD, Durham, NC; Ralph Abi Hachem, MD, Durham, NC; David Jang, MD, Durham, NC; Bradley Goldstein, MD PhD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand possible mechanisms underlying presbyosmia.

Objectives: To identify cellular and molecular changes in presbyosmic olfactory mucosa. Study Design: Prospective basic science study. Methods: Following an IRB approved protocol, olfactory function from adult human subjects was assessed using the Smell Identification Test. Biopsies were obtained from olfactory mucosa and were used for immunohistochemistry and/or molecular assays. Results: Combining psychophysical testing with olfactory mucosa biopsy analysis, single cell RNA-seq, and human olfactory culture studies, we identified gene expression changes in specific cell populations, including olfactory basal stem cells. Differential expression analysis identified transcripts selectively enriched in presbyosmic versus normosmic cell populations. Gene set enrichment analysis determined molecular function of enriched transcripts, identifying significant terms (corrected p values less than 0.05). Immunohistochemical studies confirmed a picture consistent with neurogenic exhaustion in presbyosmic olfactory mucosa. Conclusions: Our data are consistent with a process by which aging related changes in olfactory mucosa, including olfactory stem cells, may contribute to presbyosmia, via the disruption of normal epithelial homeostasis.

13. Management of Sinonasal Angiosarcoma: A Systematic Review

Ariel Omiunu, BS, Newark, NJ; Dhvani Shihora, BS, Newark, NJ; Kendyl A. Barron, BA, Newark, NJ; Prayag Patel, MD, Newark, NJ; Christina H. Fang, MD, Bronx, NY; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to gain a comprehensive understanding of sinonasal angiosarcoma, including common clinical features and treatment modalities.

Objectives: This study reviews the published literature regarding the management of sinonasal angiosarcoma (SNAS), a rare malignant vascular neoplasm of endothelial cells. Study Design: Systematic review of the literature. Methods: A systematic review of articles pertaining to SNAS was performed using PubMed, Scopus, CINAHL, and the Cochrane Library electronic databases. Each case was analyzed for patient demographics, clinical findings, radiographic findings, pathology, treatment, and management outcomes. Results: A total of 42 articles were included, comprising a total of 51 cases. Individual patient data were reported in 50 cases. The mean age was 44.5 years (range, 8 to 87 years), with a slight male predilection (2.3:1). Most patients presented initially with epistaxis (n=20, 39.2%) and nasal obstruction/blockage (n=13, 25.5%). The nasal cavity (e.g., septum, meatus, turbinates) was the most common tumor site (n=30, 58.8%), followed by the maxillary sinus (n=27, 52.9%). Mean followup was 32.1 months (range, 0.25 to 136 months). Surgical resection alone was the most common treatment modality (n=16, 31.4%), followed by surgery with radiotherapy (n=14, 27.4%). Of 45 patients with reported outcomes, there were 7 cases of local recurrence, 6 cases of metastasis, and 3 cases of both local recurrence and metastasis. 45.1% of patients survived with no evidence of disease at their most recent followup. Conclusions: This review presents the largest pool of SNAS patients to date. Patients commonly presented with epistaxis and nasal obstruction. Surgical resection alone and surgery with radiotherapy were the most frequently employed treatment modalities. Prognosis remains poor for this disease.

14. Hypoalbuminemia and Sinonasal Cancer: An Analysis of Postoperative Complications

Sudeepti Vedula, BS, Newark, NJ; Rushi Patel, BA, Newark, NJ; David Zakay, MD, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to ascertain the relationship of hypoalbuminemia with postoperative complications in patients with sinonasal cancer.

Objectives: Hypoalbuminemia has been associated with negative postoperative outcomes in head and neck surgery. Our aim was to determine the relationship between hypoalbuminemia and postoperative complications in patients with sinonasal cancer. Study Design: Retrospective database review. Methods: The 2012-2018 National Surgical Quality Improvement Program (NSQIP) database was queried for all cases with a primary diagnosis of sinonasal cancer. Patients with missing albumin levels were excluded from the analysis. An albumin level of 3.5g/dl was used to define hypoalbuminemia and stratify the patient population into two cohorts: hypoalbuminemia and normal albumin. Univariate and multivariate analyses were conducted to assess the impact of hypoalbuminemia on postoperative complications. Results: A total of 205 cases met inclusion criteria of which 43 (20.9%) met criteria for hypoalbuminemia. Univariate analysis revealed no significant differences in demographics and comorbidities between the two groups. Independent samples t-test demonstrated that the hypoalbuminemia cohort had longer length of stay (13.56 vs. 7.06 days, p<0.001) and operative time (440.70 vs. 551.72 min, p=<0.021). Multivariate regression analysis also demonstrated that hypoalbuminemia was a significant predictor of surgical complications (OR [95% CI]=3.680 [1.577-8.591], p=0.003) and overall complications (OR [95% CI]=3.151 [1.362-7.287], p=0.007). Individual complication analysis revealed significant association with bleeding (OR [95% CI]=3.914 [1.676-9.140], p=0.002). Conclusions: Hypoalbuminemia is associated with poor postoperative outcomes in patients with sinonasal cancer. Preoperative albumin assessment can identify patients requiring increased postoperative monitoring.

15. Complications of Pediatric Endoscopic Sinus Surgery for Chronic Rhinosinusitis: A 25 Year Single Surgeon Experience

Hassan H. Ramadan, MD MSc, Morgantown, WV; Mustafa G. Bulbul, MD MPH, Morgantown, WV (Presenter); Fatima Asad, MSc, Morgantown, WV; Kareem Wasef, BS, Morgantown, WV; Chadi A. Makary, MD, Morgantown, WV

Educational Objective: To report our 25 years' experience with complications of pediatric endoscopic sinus surgery and share lessons learned.

Objectives: To report our 25 years' experience with complications of pediatric endoscopic sinus surgery (ESS) and share lessons learned. Study Design: Retrospective cohort study. Methods: This is a retrospective cohort study of pediatric ESS performed from 1991 to 2016. Inclusion criteria was children (age < 12 years old) who underwent primary ESS with or without adenoidectomy for chronic rhinosinusitis (CRS). All patients underwent maxillary antrostomy +/- partial or total ethmoidectomy. Patients with complicated acute rhinosinusitis were excluded. Complications reviewed included: orbital injuries (blindness, orbital hemorrhage, periorbital swelling and bruising, fat exposure, and emphysema), skull base injury, CSF leak, and bleeding requiring intervention. Results: A total of 337 patients underwent ESS between 1991-2016. There was no blindness or orbital hematoma reported and no major nasal bleeding requiring intervention. The total number of

complications was 31 (9.2%): 1 (0.3%) CSF leak, 3 (0.89%) orbital emphysema, 5 (1.48%) periorbital ecchymosis and 22 (6.53%) lamina papyracea violation with orbital fat exposure. Maxillary antrostomy technique was modified in 2002 to reduce the incidence of orbital injury. One sixty-one ESS cases were performed from 1991-2001 compared to 176 ESS from 2002-2016. Prior to 2002, 12.4% of patients had lamina papyracea violation compared to 1.14% after 2002 (Fisher's exact, p-value < 0.0001). Conclusions: Complications of pediatric ESS are rare, the most common being orbital injury. We describe a modified maxillary antrostomy technique to reduce that complication.

16. Cost Utility Analysis of Postoperative Aspirin Desensitization for Aspirin Exacerbated Respiratory Disease

George A. Scangas, MD, Boston, MA; Rachel Elisa Weitzman, MD MPH MS, Boston, MA (Presenter); Alan D. Workman, MD MTR, Boston, MA; Ralph B. Metson, MD, Boston, MA; Tanya M. Laidlaw, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to evaluate cost effectiveness of aspirin desensitization compared to continued medical therapy post endoscopic sinus surgery (ESS) for patients with aspirin exacerbated respiratory disease (AERD).

Objectives: To evaluate cost effectiveness of aspirin desensitization compared to continued medical therapy post endoscopic sinus surgery (ESS) for patients with aspirin exacerbated respiratory disease (AERD). Study Design: Cohort study. Methods: The study design consisted of a cohort style Markov decision tree economic model with a 30 year time horizon. A cohort of 61 AERD patients who underwent aspirin desensitization post ESS were matched with a cohort of 61 patients who continued appropriate medical therapy post ESS. Utility scores were calculated from responses to the SNOT-22 instrument in both cohorts. Decision tree analysis and a ten way Markov model utilized published event probabilities and primary data to calculate long term costs and utility. The primary outcome measure was incremental cost per quality adjusted life year (QALY). One way and probabilistic sensitivity analyses were performed. Results: The reference case demonstrated that the ESS + ASA strategy cost a total of $47505.48 and produced a total of 8.39 QALYs. The ESS + medical management strategy cost a total of $46316.61 and produced a total of 8.36 QALYs. The incremental cost effectiveness ratio for ASA versus medical therapy was $39619.00 per QALY. One-way analysis and probabilistic sensitivity analysis were performed. Conclusions: This study demonstrates the value of aspirin desensitization as a cost effective intervention compared to continued medical therapy for the management of AERD patients post ESS.

17. Impact of Hypertension on Postoperative Outcomes following Anterior Skull Base Surgery

Samantha Shave, BS, Newark, NJ; Samer T. Elsamna, BA, Newark, NJ; Prayag S. Patel, MD, Newark, NJ; Jordon G. Grube, DO, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the possible impact of hypertension on outcomes following skull base surgery of the anterior cranial fossa.

Objectives: Skull base surgery (SBS) of the anterior cranial fossa patients are vulnerable to perioperative morbidity and mortality. Hypertension is a common comorbidity in this population, and these patients may be at higher risk for postoperative issues. As hypertension has been shown to impact outcomes in other surgical procedures, this study sought to investigate its impact on SBS outcomes. Study Design: Retrospective study of a national surgical quality database. Methods: The 2005-2018 ACS-NSQIP database was queried via CPT codes for cases involving SBSA. Patients were categorized into non-hypertensive and hypertensive groups. These groups were compared by pre and postoperative variables using chi square and logistic regression to determine odds ratios (OR). A propensity score match (PSM) was conducted. Results: A total 1217 patients were included of which 41.2% had hypertension (n=502). The mean age was 55.4. Overall complications occurred in 19.9% and 26.7% of non-hypertensive and hypertensive patients, respectively (P=0.005). Prior to PSM, multivariate analysis showed that the preoperative variables significantly associated with hypertension included age, diabetes, and obesity. Following PSM, overall medical complication (OR: 1.588, P=0.034) and prolonged postoperative stay (OR: 1.949, P=0.017) were the only variables statistically significant different in hypertensive compared to non-hypertensive patients. Conclusions: In hypertensive patients undergoing SBS, there is an increased associated risk of overall medical complications and prolonged postoperative stay. Hypertension should be considered when treating SBS patients.

18. Computational Modeling of Nasal Spray Conditions for Maximizing Drug Delivery to the Olfactory Bulb

Ryan Michael Sicard, BS, Durham, NC; Dennis Onyeka Frank-Ito, PhD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how drug particle characteristics and patient positioning affect the efficacy of drug delivery to the olfactory bulb.

Objectives: The olfactory cleft is considered a viable pathway for cerebral drug delivery to treat certain central nervous system disorders. This study investigates drug particle characteristics and inhalation conditions for maximizing drug deposition in the olfactory bulb. Study Design: Computational study using extensive parametrical optimization modeling in a healthy subject with normal nasal anatomy. Methods: A patient specific nasal airway model was constructed from computed tomography images. Nasal airflow simulations were performed using computational fluid dynamics modeling at six inspiratory flow rates (10, 15, 20, 30, 40, 50 L/min) and five head positions (upright, tilted back, tilted forward, Mygind, supine). Drug particle transport simulations of 1-100 microns and 10-990 nanoparticles released from five different locations (bottom, center, lateral, medial, top) at 10mm nozzle insertion depth and three particle velocities (1, 5, 10 m/s) were performed. Particle deposition at the olfactory bulb was computed. Results: Across all particles and head positions, maximum deposition were 0.056%-0.10% (left olfactory bulb) and 0.10%-2.30% (right olfactory bulb). On the left olfactory bulb, 11-20 micron particles had the highest deposition (0.91%), occurring at 10L/min flowrate, medial release location, Mygind head position, and 10m/s particle velocity. Best deposition for right olfactory bulb was also 11-20 (26.36%), at 10L/min flowrate, top release location, Mygind head position, and 1m/s particle velocity. No deposition in the olfactory bulb was observed for nanoparticles under any release conditions. Conclusions: Preliminary findings suggest that the best drug particle deposition in the olfactory bulb is achieved under lower inspiratory flow rates and with the Mygind head position. Micron particles between 11 and 20microns resulted in the greatest deposition.

19. Analysis of Care and Outcomes for Epistaxis Weekend Admissions

Christopher C. Tseng, BS, Newark, NJ; Maria Manuela Chemas-Velez, MD, Newark, NJ; Prayag S. Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss differences in care for patients admitted for epistaxis during the weekend compared to the weekday.

Objectives: To study differences in care for patients admitted for epistaxis during the weekend compared to the weekday. Study Design: Retrospective database review. Methods: Patients admitted for a primary diagnosis of epistaxis were extracted from the National Inpatient Sample from 2003-2014. Univariate and multivariate analyses were applied to assess differences in patient demographics, clinical characteristics, treatment, and outcomes between weekend and weekday admissions. Results: A total of 39,329 cases were included in our study cohort, with 28,458 weekday admissions and 10,892 weekend admissions. There was no significant difference between patient race, gender, insurance status, hospital ownership status or location between weekend and weekday admissions ($p > 0.05$). Most weekend admissions were emergent (82.2%) and were treated with packing (51.8%). Upon performing logistic regression, likelihood of emergent admission (OR 1.41, 95% CI 1.32-1.51, $p<0.001$) and prolonged length of stay (OR 1.11, 95% CI 1.05-1.17, $p<0.001$) was higher on the weekends versus the weekdays. Moreover, odds of epistaxis treated with packing were significantly higher (OR 1.14, 95% CI 1.09-1.19, $p<0.001$) on the weekend, while odds of ligation (OR 0.88, 95% CI 0.80-0.97, $p=0.013$) and endovascular arterial embolization (OR 0.74, 95% CI 0.65-0.84, $p<0.001$) were lower, compared to weekdays. There were no significant differences in in-hospital mortality, patient discharge disposition, and total hospital charges ($p > 0.05$). Conclusions: Patients primarily admitted for epistaxis over the weekend were more likely to be emergent, experience prolonged length of stay, and be treated non-operatively with packing, than weekday admissions. No significant difference in patient insurance or hospital ownership were identified.

20. Survival in HPV Positive Sinonasal Squamous Cell Carcinoma

Kevin Wang, BA, Newark, NJ; Samer T. Elsamna, BA, Newark, NJ; Prayag S. Patel, MD, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify factors and treatment methods associated with survival in HPV positive sinonasal squamous cell carcinoma.

Objectives: No previous study has assessed outcomes of human papillomavirus positive (HPV+) sinonasal squamous cell carcinoma (SNSCC) based on tumor characteristics and treatment modality. The ongoing discussion of deescalation in HPV+ cancers warrants an examination of the potential benefit of adjuvant radiotherapy (RT) over chemoradiotherapy (CRT). Study Design: Retrospective study of a national cancer registry. Methods: The National Cancer Database was queried for cases of HPV+ SNSCC from 2010-2016. Data were stratified by treatment cohorts. Survival rates, hazard ratios (HR), and odds ratios (OR) were obtained using Kaplan-Meier method and Cox and logistic regression analyses. A propensity score match (PSM) was conducted to compare adjuvant RT and CRT cohorts. Results: 458 patients met inclusion criteria. Factors associated with different treatments included insurance status, clinical T/N stage, and primary site ($p<0.05$). Age as a continuous variable (OR: 0.97) and clinical T4 stage (OR: 7.55) were predictive of receiving adjuvant

CRT over adjuvant RT (p<0.05). Age over 60 years (HR: 2.53), CRT (HR: 2.54), treatment with RT or chemotherapy (HR: 4.04), and no treatment (HR: 7.05, p<0.05) were associated with increased risk of death. Even after matching cohorts, there was no significant difference in survival between adjuvant RT and CRT cohorts (log rank p=0.354). Conclusions: Age and no treatment are negative prognostic features in HPV+ SNSCC. The use of CRT over RT did not impart a survival benefit in patients with HPV+ SNSCC, even when accounting for higher staging.

Facial Plastic and Reconstructive

21. WITHDRAWN - Facial Bone Contouring for Acromegalic Facies

Mopileola Tomi Adewumi, MS MHA, Tulsa, OK; Samuel A. Collazo, MD, Oakland, CA (Presenter); Ghedak Ansari, MD, Oakland, CA; David X. Chou, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the novel treatment of facial bone hypertrophy in acromegaly with cranioplasty and mandibuloplasty.

Objectives: Describe novel treatment of facial bone hypertrophy in acromegaly with cranioplasty and mandibuloplasty. Study Design: Case report. Methods: A retrospective chart review was performed in August 2021 on a patient with acromegaly. The setting was an integrated health care system. Outcomes of interest included facial form, cephalometrics, and patient satisfaction. Independent variables included age and medical history. Signed patient consent to photograph and publish was obtained. Results: We present the case of a 55 year old Caucasian female with a history of acromegaly, depression, and undesired gradual masculinization of her face. Surgical history included transsphenoidal pituitary resection and LeFort 1 advancement osteotomies for maxillary hypoplasia and malocclusion. We performed cranioplasty and mandibuloplasty to refeminize the appearance of her face. A coronal approach was used to set back the anterior table of the frontal sinus and drill down the frontal bone and orbital rims. The mandibular angle, body, and symphysis were reduced transorally with a combination of powered instruments. Postoperatively, the patient's nasofrontal angle measured 142° (from 133°) and her mandibular prognathism was reduced. 5 months after surgery, the patient was very satisfied and reported improved self-confidence and a decrease in dysphoria. Conclusions: To our knowledge, surgical treatment of the prominent forehead and brows for patients with acromegaly has not been described in the literature. We report a successful case of cranioplasty and mandibuloplasty to address acromegalic facies.

22. Aesthetic Outcomes following Hyoid Suspension for OSA

Ezer H. Benaim, MD, Memphis, TN; Michael Eggerstedt, MD, Los Angeles, CA; Raj D. Dedhia, MD, Memphis, TN; M. Boyd Gillespie, MD, Memphis, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to determine if hyoid suspension surgery for obstructive sleep apnea results in a negative cosmetic outcome of the neck.

Objectives: The primary objective is to determine whether patients perceive or exhibit a negative cosmetic outcome following hyoid suspension surgery for obstructive sleep apnea (OSA). Study Design: Two phase study: retrospective cohort (phase I) and a prospective controlled cohort (phase II). Methods: Phase I is a retrospective review of experience with a patient perception survey on cosmetic changes following hyoid suspension surgery (HS). Phase II is a prospective study of patients before and 6 weeks after HS (study population) or septoplasty (controls). At both visits, patients complete validated neck and chin perception surveys. The images were randomized by one author and subsequently measured by a facial plastic surgeon for cervicomental angle (CMA), hyomental distance (HMD), and assigned a Rainbow Scale score. Measurements were performed using the ImageJ software. Results: In phase I, 13/24 (54%) felt "satisfied" or "very satisfied" with their surgery. Out of the seven patients that noticed cosmetic changes to their chin/neck after surgery, four (17%) felt like it was negative result (i.e., thickening). Thus far 12 patients have completed the phase II study (8 hyoid suspension and 4 controls), though 21 are currently enrolled. No significant differences were seen in preop CMA, HMD, and RS between the study and control patients (p= 0.8455, p= 0.3850, p=0.1378, respectively). BMI was significantly higher in the control group for completed participants (p=0.0105). CMA and HMD were decreased by 3.7 degrees and 0.8mm, respectively, following HS. The changes in CMA, HMD, and RS were not statistically different between both groups. Conclusions: Preliminary results suggest that there is not a significant objective difference in cosmetic outcomes following hyoid suspension for OSA, although a minority of patients have a subjective perception of negative cosmetic change.

23. Reimbursement Trends for Surgical Repair of Facial Fractures: A Medicare Database Analysis

Jack Birkenbeuel, BS, Irvine, CA; Sina J. Torabi, MD, Irvine, CA; Ashley R. Lonergan, MD, Irvine, CA; Edward C. Kuan, MD MBA, Irvine, CA; Babak Azizzadeh, MD, Los Angeles, CA; Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the end of this presentation, participants should be able to understand the patterns of facial fracture repair and reimbursement trends among all Medicare patients between 2000 and 2019.

Objectives: To describe reimbursement trends in all Medicare patients undergoing surgical repair of facial fractures. Study Design: Retrospective review. Methods: We queried the annual procedure data from the Centers for Medicare and Medicaid Service National Part B Data File from 2000 to 2019. From the extracted data, we describe the total number of annual operations and reimbursement trends for surgical repair of facial fractures. Results: The total number of surgically corrected facial fractures increased from 10,148 in 2000 to 19,631 in 2019 in a linear pattern (r=0.924), with a corresponding increase in total reimbursement from $2,574,317 in 2000 to $4,129,448 in 2019 (r=0.895). However, the mean reimbursement for all procedures decreased from $253.68 to $210.35 over the same time. Among all fracture sites, nasal bone/septum fracture repairs increased the most by 200.6% (n=4,682 to n=14,075), whereas operations for TMJ dislocations, malar/zygoma fractures, and alveolar ridge/mandibular fractures decreased by 27.9%, 12.3%, and 3.2%, respectively, between 2000 and 2019. The percent of nasal bone/septum repairs as a percent of total operations increased by 25.6% (46.1% to 71.7%) from 2000 to 2019, while alveolar ridge and TMJ dislocation repairs decreased by 8.5% and 10.4%, respectively. Among Part B enrollees, the number of facial fractures per 100,000 increased by 22.0% (48.7 to 59.4) from 2008 to 2019. Conclusions: There has been a significant increase in the number of surgical repairs of facial fractures in Medicare patients between 2000 and 2019. This increase in is likely accounted for by the increase in nasal bone/septum repairs between 2000 and 2019.

24. Concomitant Orthognathic Surgery and Feminizing Mandibuloplasty in a Transgender Woman

David W. Chou, MD, Oakland, CA; Jacob E. Hoerter, MD, Oakland, CA; Wenli Yu, DDS, Oakland, CA; Charles Shih, MD, Oakland, CA; W. Bradford Williams, DMD MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the importance of orthognathic concepts when evaluating patients for facial gender affirmation surgery to optimize functional and cosmetic outcomes.

Objectives: Orthognathic surgery and facial gender affirming surgery have been independently performed for decades. We describe a unique case where orthognathic surgery with feminizing mandibuloplasty was performed in a transgender woman with skeletal malocclusion. Study Design: Case report. Methods: A retrospective chart review was performed in January 2021 on a transgender woman undergoing orthognathic surgery for skeletal malocclusion with concomitant feminizing mandibuloplasty for gender dysphoria. The setting was an integrated healthcare system. Outcomes of interest included occlusion, facial form, and cephalometrics. Independent variables included age and medical history. Results: A 26 year old transgender female presented to address her malocclusion and pursue facial feminization surgery. She had class III skeletal malocclusion with mandibular asymmetry and a square shaped chin. With the aid of preoperative virtual surgical planning, the patient underwent maxillary advancement with clockwise rotation, mandibular osteotomies, mandibular angle ostectomy, and reduction genioplasty while establishing proper functional occlusion. At three months after surgery, the patient achieved class I occlusion, an orthognathic facial profile, improved lip support, and a more feminine lower facial contour. There was slight contour asymmetry due to intrinsic convexity of her left mandibular body, though the patient was happy with her results. Conclusions: A thorough understanding of both orthognathic concepts and goals of facial feminization is necessary when treating transgender patients with skeletal malocclusion to optimize functional and cosmetic outcomes. An experienced multidisciplinary team is beneficial for these cases, and virtual surgical planning can further guide intraoperative decisions.

25. Gender and Ethnic Diversity in Academic Facial Plastic Surgery

David W. Chou, MD, Oakland, CA; Eleanor Layfield, BS, Philadelphia, PA; Karthik Prasad, BS, Irvine, CA; Charles Shih, MD, Oakland, CA; Kathleyn A. Brandstetter, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the demographic representation of academic facial plastic surgeons and how it correlates with tenure track faculty positions and academic productivity.

Objectives: To characterize academic facial plastic surgeons by demographics and time in practice and correlate these factors with academic productivity and tenure track faculty position. Study Design: Cross-sectional study. Methods: United States allopathic and osteopathic otolaryngology residency programs were identified via the American Medical Association FREIDA database. Faculty in facial plastic and reconstructive surgery with a title of assistant professor, associate professor, or professor were identified. Surgeons' demographic and academic data were obtained from institutional and professional society web profiles and Scopus. Results: One hundred sixty-eight surgeons were identified, of whom females comprised 25.6%. Most surgeons were White (69.6%), followed by Asian (25%), Hispanic (3.6%), and Black (1.8%). Males had a

longer mean time in practice than females (mean 14.2 vs. 8.0 years, P=.001). Mean h-index was higher among males than females (11.2 vs. 7.0, P=.008) although similar between sexes when standardized to index points by years in practice (1.13 vs. 1.14, P=.575). Among female surgeons, there was a higher percentage of assistant professors (65% vs. 44%, P=.017) and a lower percentage of professors (9% vs. 26%, P=.012). The correlation of years in practice with academic title was similar between sexes. Conclusions: Ethnic diversity in academic facial plastic surgery was poorly representative of Hispanic and Black surgeons but similar to that of otolaryngology residents. Although females were underrepresented, there was greater parity of sexes among early career facial plastic surgeons. Academic title and productivity were similar between sexes when controlling for years in practice.

26. Objective Outcomes of Trichophytic Brow Lift and Hairline Advancement in Facial Feminization Surgery

Abel P. David, MD, San Francisco, CA; Adrian E. House, MD, San Francisco, CA; Sonia Targ, MS, San Francisco, CA; Andrea M. Park, MD, San Francisco, CA; Rahul Seth, MD, San Francisco, CA; P. Daniel Knott, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to analyze trichophytic brow lift and hairline advancement outcomes in patients undergoing facial feminization surgery.

Objectives: The upper facial third is an important area to address in facial feminization surgery (FFS). This study seeks to quantify the changes in eyebrow, hairline, and forehead features after trichophytic browlift (TBL) and hairline advancement (HLA). Study Design: Cross-sectional study. Methods: Frontal view photographs were taken pre and postoperatively and pixel measurements were performed using ImageJ. Brow position was measured from the interpupillary axis (IPA) to 3 positions along the upper border overlying the medial canthus (MC), mid-pupil (MP) and lateral canthus (LC); the hairline was measured from the IPA to the trichion and over the MP bilaterally. Hairline position was calculated as the difference between hairline and brow heights at the midline and lateral positions. Patients with obscured landmarks were excluded. Results: Forty-six patients underwent FFS with TBL and HLA. Eyebrow analysis was performed in 33 patients and hairline/forehead analysis was accomplished in 30 patients. The mean (standard deviation) brow elevation was 4.5 (3.6) mm at MC, 4.5 (3.4) mm at MP, and 4.7 (3.7) at LC. The mean HLA laterally was 11.3 (6.1) mm and at the midline 9.8 (7.3) mm, with an improvement in hairline shape distribution from M shaped/rectangular to more round/rectangular. All surgical changes were statistically significant ($p<0.01$). Conclusions: Surgical outcomes were reliably quantified from standardized clinical photographs. On average, 4-5 mm of browlift and 10-11 mm of hairline lowering were achieved, contributing to a more feminine and rejuvenated appearance of the upper facial third.

27. Prolonged Facial Swelling in the Setting of Multiple Cosmetic Facial Fillers and Moderna SARS-CoV-2 Vaccine

Sonam Dodhia, MD, New York, NY; Anthony P. Sclafani, MD, New York, NY; David J. Phillips, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the differential diagnosis, workup, and treatment of inflammatory responses to cosmetic dermal fillers. In addition, this presentation highlights the difficulty of management in a patient with multiple types of fillers and recent SARS-CoV-2 vaccine.

Objectives: To present the case of an infectious/inflammatory reaction of unclear etiology and highlight the difficulty of management in a patient with multiple types of fillers and recent SARS-CoV-2 vaccine. Study Design: Case report and review of literature. Methods: Case report and review of literature. Results: A 75 year old female with a history of COPD, Hashimoto's, and diabetes mellitus underwent injection with multiple facial fillers (hyaluronic acid, poly-L lactic acid, and CAHA) at an outside facility and subsequently developed bilateral malar swelling, pain, and erythema 5 days post procedure. Her symptoms were exacerbated after receiving the SARS-CoV-2 vaccine one month later. She has had waxing and waning of symptoms over 10 times during the next 5 months. Workup included a CT maxillofacial with contrast that demonstrated hyperdense foreign material throughout the midface with multiple small rim enhancing fluid collections. Subsequent IR guided needle aspiration resulted in a sterile culture. The patient was managed with extended courses of antibiotics, hyaluronidase and triamcinolone injections (by patient's original provider), and oral steroids. The differential diagnosis included infection with biofilms vs. allergy vs. autoimmune response. Ultimately, an extended course of low dose prednisone has led to a quiescence of the underlying process. Conclusions: It is important to consider a broad differential (infectious, allergic, autoimmune) and multiple treatment strategies for the challenging management of inflammatory processes in a patient with multiple types of cosmetic fillers, complicated by subsequent SARS-CoV-2 vaccination.

28. Cross-Sectional Survey of Patient Preferences in Delivery of Skin Cancer Reconstruction Care

Eric Y. Du, BS, St. Louis, MO; Aditya Nellore, BS, St. Louis, MO; Matthew Simpson, MPH, St. Louis, MO; Joseph Sinnwell, MD, St. Louis, MO; Rylee Moody, BS, St. Louis, MO; Collin Chen, MD, St. Louis, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the how in person clinic visits are patient preferred in skin cancer reconstruction care, how this preference is altered by changes in cost and wait time as well as patient demographics, and explain the usage of telemedicine in the field of otolaryngology.

Objectives: We aimed to identify which delivery modality for skin reconstruction care, face to face (FTF) in person versus store and forward (S&F) telemedicine versus live video chat (LVC) telemedicine, is patient preferred. Additionally, we looked to determine how cost, access, wait time and demographics influence this preference. Study Design: Cross-sectional survey. Methods: We created a 16 question survey querying ten demographics questions and six scenario specific preference questions regarding delivery of facial skin cancer reconstruction care. The survey was distributed via Amazon Mechanical Turk, a crowdsourcing online marketplace, to the United States general population. Results: 1394 responses were included in analysis. The overwhelming majority own smart phones (98.8%) and have heard of video chat applications (99.1%). While 82.1% of respondents prefer FTF clinic visits, this decreases to 58.3% with an in person visit cost ($p < 0.01$) and furthermore to a minority 43.5% with both an in person visit cost and wait time ($p < 0.01$). 77.8% believed that the surgeon's ability to repair the defect would improve with an in person evaluation. Between telemedicine modalities, respondents preferred LVC (76.6%) over S&F (23.4%). Multivariate analyses revealed that telemedicine was preferred by respondents with Medicaid (adjusted OR [95% CI]: 1.957 [1.164-3.289]) or Medicare (1.694 [1.106-2.594]) (versus private insurance), prior skin cancer (1.999 [1.173-3.407]), and who believed telemedicine and in person visits were equally useful for the surgeon (10.716 [7.767-14.784]). Conclusions: FTF visits are preferred for skin cancer reconstruction care; this shifts towards primarily virtual care with a cost and wait time despite majority belief that in person evaluations improve outcome.

29. Online Crowdsourcing Survey Platforms for the Assessment of Patient Preferences in Skin Cancer Reconstruction Care

Eric Y. Du, BS, St. Louis, MO; Aditya Nellore, BS, St. Louis, MO; Matthew Simpson, MPH, St. Louis, MO; Joseph Sinnwell, MD, St. Louis, MO; Rylee Moody, BS, St. Louis, MO; Collin Chen, MD, St. Louis, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the utility of online crowdsourcing survey platforms like Amazon Mechanical Turk for the usage of researching patient preferences in skin cancer reconstruction care.

Objectives: Online fast survey platforms have shown to be reliable; however, this has not been described in facial plastics and reconstructive surgery (FPRS). We aimed to evaluate the usage of such platforms for skin cancer reconstruction care. Study Design: Cross-sectional survey. Methods: A 16 question survey querying ten demographics questions and six scenario specific preferences questions for the delivery modality of post-Mohs surgery skin cancer reconstruction care was created. The preference questions compared face to face (FTF) with store and forward (S&F)/live video chat (LVC) modalities. The survey was distributed via Amazon Mechanical Turk (MTurk), a crowdsourcing online marketplace, and directly in person to Mohs surgery patients. Results: 1394 MTurk and 55 in person responses were included in analysis. Mean (SD) age was 37.1 (12.1) and 68.1 (14.1) in the MTurk and in person cohort respectively. For visits without cost, 82.1%/87.3% of the MTurk/in person cohort preferred FTF ($p = 0.33$). For visits with a cost, 58.3%/47.3% of the MTurk/in person cohort preferred FTF ($p = 0.10$). For visits with a visit cost and wait time, 43.5%/32.7% of the MTurk/in person cohort preferred FTF ($p = 0.11$). Both cohorts demonstrated a majority belief that a surgeon's ability would improve with an in person evaluation ($p = 0.57$) and a majority telemedicine preference of LVC over S&F ($p = 0.51$). Conclusions: Both MTurk and in person cohorts demonstrated similar patterns of responses despite considerable demographic differences. The in person cohort demonstrated a trend towards preference of telemedicine with FTF visit cost and wait time. MTurk can be a valuable tool for patient preference research in FPRS.

30. Reconstruction of Helical Defects with Postauricular Flap and Primary Skin Graft to Postauricular Defect

Ameer Ghodke, MD, Chapel Hill, NC; Mark M. Mims, MD, Oklahoma City, OK; Meredith Meyer, BS, Buies Creek, NC; Madison Clark, MD, Chapel Hill, NC; William Shockley, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how a novel technique using the postauricular flap can be used to repair helical defects.

Objectives: This study aims to describe a novel technique using a postauricular flap to repair moderate to large helical and antihelical defects. Study Design: Case report. Methods: A case report is provided to illustrate the surgical technique used. Results: A postauricular flap is designed leaving a small bridge of native skin posterior to the defect edge. The flap is elevated and advanced over the defect in interpolated fashion. The secondary defect is then immediately skin grafted. The flap is then divided three weeks later. The remaining portion of the flap is sutured down to the postauricular sulcus. Postoperative followup shows excellent contour, color, and thickness match to the surrounding ear. Conclusions: The postauricular flap described here is an excellent choice for medium to large defects involving the helix and antihelix of the ear.

31. Perioperative Costal Cartilage Considerations: Novel Use of Portable Ultrasound in Rhinoplasty

Asher Chulsoon Park, BS, Irvine, CA; Dana Hutchison, MS, Irvine, CA; Karthik Prasad, BS, Irvine, CA; Kelly Hernandez, BS, Irvine, CA; Halton W. Beumer, MD, Irvine, CA; Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: The audience should be able to understand how to use a handheld ultrasound device to evaluate costal cartilage for rhinoplasty rib graft harvest.

Objectives: In revision rhinoplasty, costal rib cartilage is considered ideal for cartilaginous tissue needs. However, excessive calcification can be problematic, resulting in the inability to use harvested material. We describe novel use of an inexpensive, portable, handheld ultrasound device (HUD) to perioperatively evaluate the quality of costal cartilage for rhinoplasty. Study Design: Methods. Methods: Perioperatively, a member of the research team with minimal HUD training used a portable US (Butterfly Network, Butterfly iQ) device paired with an iPad to perform ultrasonographic evaluation of ribs planned for cartilage harvest for rhinoplasty. Calcification patterns as well as the extent of cartilaginous calcification identified in ultrasound were then correlated to preoperative CT or gross pathology when available. Results: HUD are able to identify the quality and calcification patterns of costal cartilage in a convenient and inexpensive manner. Conclusions: Recent advances in HUD have made ultrasound technology inexpensive, accessible and easily operated by individuals from varying backgrounds. In facial plastic surgery, HUD examinations are cost effective, convenient and effective for quality preoperative planning for costal cartilage graft harvest in rhinoplasty, especially in patients without CT scans. This tool allows the surgeon to evaluate and locate areas of cartilage ideal for rib graft harvesting in rhinoplasty.

32. Examining Postoperative Complications following Open Reduction of Le Fort I-III Fractures

Vraj P. Shah, BS, Newark, NJ; Samer T. Elsamna, BA, Newark, NJ; Prayag S. Patel, MD, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the most common complications following open reduction of LeFort fractures.

Objectives: LeFort fractures (LF) are midface fractures that involve varying degrees of separation of the midface from the skull base. LF are classified by their maxillary fracture patterns as LF types I-III. We investigated the differences in postoperative complications between open reduction of mild LF (type I) and severe LF (types II & III). Study Design: Retrospective national database analysis. Methods: The 2005-2018 ACS-NSQIP database was queried for cases involving open reduction of LF. Patients with multiple fracture types were recorded by their highest fracture type. Chi square and logistic regression were used for statistical associations between mild and severe LF. Odds ratios (OR) were obtained from multivariate regression performed with Bonferroni adjustment to determine association with postoperative outcomes. Results: 1243 patients with LF were classified with type I (n=1011), II (n=140), and III (n=92) fractures. Patients with severe LF were older (OR: 1.030, $p<0.001$), less likely to be female (OR: 0.509, $p<0.001$), and more likely to be smokers (OR: 3.252, $p<0.001$). Overall and surgical complications were seen in 9.0% of type II/III patients but 3.0% and 2.1%, respectively in type I patients. Outcomes significantly associated with severe LF included overall complications (OR: 2.33), surgical complications (OR: 3.48), and bleeding complications (OR: 3.77). Mortality was rare in patients with mild and severe LF (0.2% vs. 0.0%, $p=0.498$). Conclusions: Patients with LF type II or III are at increased risk for bleeding, surgical, and overall complications. Although mortality is low for all LF types, special attention might be warranted for patients with severe LF.

33. Otolaryngology and Plastic Surgery Postoperative Outcomes following Open Reduction of Le Fort Fractures

Vraj P. Shah, BS, Newark, NJ; Samer T. Elsamna, BA, Newark, NJ; Prayag S. Patel, MD, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to compare outcomes following open reduction of Le Fort fractures between otolaryngologists and plastic surgeons.

Objectives: Le Fort fractures (LF) are midface fractures categorized as type I-III. The surgical management of LFs can be accomplished by otolaryngologists (ENT) or plastic surgeons (PS). We sought to compare postoperative outcomes following open reduction of LFs between otolaryngologists (ENT) and plastic surgeons (PS). Study Design: Retrospective study of a national surgical quality database. Methods: The 2005-2018 ACS-NSQIP database was queried using CPT codes for cases involving open reduction of LF. Patients were split into ENT and PS cohorts. These groups were compared using chi square and logistic regression. A propensity score match (PSM) was conducted to compare ENT and PS groups. Odds ratios (OR) were obtained with logistic regression to determine association with postoperative outcomes. Results: A total 1185 patients were identified; 69.4% (n=822) and 30.6% (n=363) were managed by ENT and PS, respectively. The mean age was 34.3 years for ENT and 36.9 years for PS. Overall complication rates for ENT and PS were 3.4% and 5.0%, respectively. Mortality was very rare in both groups (0.1%). ENT was more likely to manage type I LF fractures (OR: 1.60, 95% CI 1.08-2.38. p=0.019) and non-smokers (OR: 1.57, 95% CI 1.07-2.28, p=0.020). Following PSM, no statistically significant difference between any measured outcome was discerned between ENT and PS cohorts. Conclusions: Otolaryngologists perform more open reduction of LFs. Comparable outcomes between ENT and PS may support the notion of comparable training as well as the interdisciplinary nature of LF management.

34. Clinical Outcomes following Intraoperative Pedicle Disruption in Fibula Free Flaps

Allison Ann Slijepcevic, MD, Portland, OR; Yadro Ducic, MD, Dallas, TX; Karthik Rajasekaran, MD, Philadelphia, PA; Mark K. Wax, MD, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to assess long term outcomes of fibula free flaps following accidental pedicle severance.

Objectives: Iatrogenic injury of the fibula free flap pedicle is rare. Postoperative flap survival and reconstructive outcomes following intraoperative pedicle severance are unknown. This study assesses free flap outcomes following accidental severance of the peroneal vessels. Study Design: Retrospective chart review. Methods: Multi-institutional retrospective chart review from 2000-2020. Results: Of 2,975 harvested fibula free flaps, 26 had a history of pedicle severance during surgical reconstruction. Reasons for intraoperative pedicle severance included misjudgment of vessel location in 10/26 (38.5.0%), accidental severance with the bone saw in 12/26 (46.2%), and aberrant anatomy in 1/26 (3.85%). The surgeon responsible for pedicle severance included residents in 5/26 (19.2%), fellows in 10/26 (38.5%), and attendings in 10/26 (38.5%). The pedicle artery and vein were severed in 10/26 (38.5%), artery in 8/26 (30.8%) and vein in 8/26 (30.8%). Truncated pedicle vessels were used in 1/26 (3.85%), intraoperative anastomoses were performed in 23/26 (88.5%); no repair was performed in 2/26 (7.69%). Postoperative revision in the OR within 7 days of surgery was required in 6/26 (23.1%); 1 flap was salvaged, 2 flaps failed, and 3 flaps survived. Flap failure was attributed to vascular thrombosis. Long term flap survival and successful reconstructions were reported in 24/26 (92.3%). Conclusions: Accidental severance of fibula free flap pedicle vessels can be corrected with intraoperative repair, without affecting long term flap survival or reconstructive outcomes. Protecting the flap vessels while using the bone saw prevents accidental severance.

35. Characterizing Patient Reviews and Satisfaction following Blepharoplasty on Social Media

Guy Talmor, MD, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Jeffrey Gao, BS, Newark, NJ; Boris Paskhover, MD, Newark, NJ

Educational Objective: To elucidate which aspects of the surgical process have the most significant impact on overall patient satisfaction following blepharoplasty.

Objectives: Patient satisfaction is a significant factor in aesthetic surgery. As such, it is important to understand the individual factors that drive overall patient satisfaction. The objective of this study was to analyze patient reviews following blepharoplasty on the social media platform Realself.com in an effort to elucidate which aspects of the surgical process have the most significant impact on patient satisfaction. Study Design: Review of the media platform Realself.com. Methods: Reviews regarding blepharoplasty were gathered from posts about the procedure on Realself.com. These reviews were characterized as positive or negative, and then given a specific category that more specifically defined the theme of the review. The specialty of the reviewed physician who had performed the initial procedure was documented as well. Results: 1991 reviews pertaining to blepharoplasty were collected in total, consisting of 1865 positive and 126 negative reviews. Of the positive reviews, the most common overall themes driving patient satisfaction were bedside manner (n=899, 48.2%), aesthetic result (n=859, 46.1%) and overall comfort (n=58, 3.1%). Among negative reviews, most pertained to aesthetic result (n=100, 79.4%) and bedside manner (n=14, 11.1%). The most frequently encountered physician specialties performing blepharoplasty were plastic surgery (n=790, 39.7%), oculoplastics (n=612, 30.7%) and facial plastic surgery (n=369, 18.5%). Conclusions: Positive reviews following blepharoplasty were more common than negative reviews. The most prominent factor driving positive reviews was bedside manner, followed by aesthetic results. Negative reviews were

most frequently attributed to suboptimal aesthetic results. Among queried cases, most blepharoplasties were performed by plastic and oculoplastic surgeons.

36. The Relationship between Frailty, Age, ASA Classification, and Body Mass Index on Postoperative Outcomes in Mandibular Fracture ORIF

Sina J. Torabi, MD, Irvine, CA; Khodayar Goshtasbi, MD MS, Irvine, CA; Ashley R. Lonergan, MD, Irvine, CA; Yarah M. Haidar, MD, Irvine, CA; Tjoson Tjoa, MD, Irvine, CA; Edward C. Kuan, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how frailty, age, ASA, and BMI interplay to affect outcomes in mandibular fracture open reduction internal fixations (ORIFs).

Objectives: To assess how traditional, simple markers of health independently affect postoperative complications of mandibular fracture open reduction internal fixations (ORIFs). Study Design: Retrospective cohort study. Methods: The 2005-2017 National Surgical Quality Improvement Project database was queried for patients who underwent mandibular ORIF. To control for severity of trauma, an additional "concurrent surgery" variable was created. Bonferroni correction was applied and significance was set at $p<0.0056$. Results: Within 1806 mandibular ORIFs (mean age 34.8 ± 15.4 years), modified frailty index (mFI) was associated with medical complications ($p<0.001$), reoperation ($p<0.001$), and readmission ($p=0.005$) on univariate analysis. Increased age was associated with prolonged hospitalization ($p<0.001$) and medical complications ($p<0.001$). Increased American Society of Anesthesiologists (ASA) status was associated with all endpoints ($p \leq 0.003$ for all), while increased body mass index (BMI) was associated with none. On multivariate analysis, only increased ASA was associated with the occurrence of any adverse event (reference: ASA 1; ASA 2 OR 2.17 [95% CI: 2.17-3.71], $p=0.004$; ASA 3-4 OR 3.63 [95% CI 1.91-6.91], $p<0.001$), but mFI, age, or BMI were not. Similarly, mFI and BMI were not independently associated with prolonged hospitalization ($p \geq 0.015$), but the 65+ age (reference: 18-49; OR 2.33 [95% CI 1.40-3.86], $p=0.001$) and ASA 3-4 groups (reference: ASA 1; OR 3.26 [95% CI 2.06-5.14], $p<0.001$) were. Conclusions: ASA status and age are more useful modalities than mFI or BMI in predicting poor postoperative outcomes in mandibular ORIF. These simple metrics can assist with managing expectations and postoperative planning for mandibular ORIF patients.

37. The Impact of the COVID-19 Pandemic on the Interest of Facial Cosmetic Surgery

Lily N. Trinh, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the trends of public interest regarding facial cosmetic surgery during the COVID-19 pandemic.

Objectives: To evaluate the public's interest in facial aesthetic plastic surgery and procedures during the COVID-19 pandemic. Study Design: A retrospective analysis was performed using a large database of Google search results (Google Trends) with various key terms related to facial plastic surgery. Methods: This study used publicly available data and thus, institutional review board approval was not required. Various key terms related to aesthetic plastic surgery or medical procedures including facelift, rhinoplasty, brow lift, blepharoplasty, chin augmentation, lip fillers, tear trough filler were used to evaluate online search volume in August 2021. The search included search results from January 2019 to July 2021. Linear regression analysis was performed across all data points to determine predicted values. Results: Contrary to our hypothesis that interest in lower facial procedures (e.g., lip filler, chin augmentation, rhinoplasty) would increase during the COVID-19 pandemic compared to upper face procedures (e.g., blepharoplasty, browlift), there was no difference in interest of upper versus lower facial procedures ($p=0.10$). In accordance with the announcement of the COVID-19 pandemic, public interest was lowest during March 2020. Interest in facial procedures steadying rose from April 2020 to July 2021. Conclusions: As local COVID-19 restrictions were lifted, public interest in cosmetic procedures rose which may be reflective of stimulus checks, economic upturn, vaccine rollouts, concept of Zoom dysphoria, or patients schedule their cancelled procedures. Aesthetic providers should be aware of this interest as they may be able to offer virtual appointments or alternatives until in office procedures can be completed safely.

38. Automated Sentiment Analysis of Patient Blepharoplasty Reviews

Christopher C. Tseng, BS, Newark, NJ; Guy Talmor, MD, Newark, NJ; Boris Paskhover, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss how natural language processing can automatically calculate blepharoplasty review sentiment and the ability of artificial intelligence to accurately identify positive and negative reviews.

Objectives: Patient sentiment expressed on social media can be utilized to assess patient satisfaction following facial plastic surgery. This study applied natural language processing to automatically calculate blepharoplasty review sentiment and

evaluate the ability of artificial intelligence (AI) to accurately identify positive and negative reviews. Study Design: Social media analysis. Methods: Blepharoplasty reviews were extracted from the aesthetic surgery social media platform Realself.com. Patient determined sentiment was based on the review's self-reported "worth it" rating, recorded as positive if deemed "worth it" or negative if deemed "not worth it". Human determined sentiment was assessed by the primary author categorizing each review as either positive or negative. AI determined sentiment was calculated by the Valence Aware Dictionary for Sentiment Reasoning (VADER) sentiment analysis tool to automatically determine review sentiment based on positive and negative words in the review text. Results: A total of 1,991 blepharoplasty reviews were gathered, with 93.5% positive rating. Using patient determined sentiment as the gold standard for true review sentiment, human determined positive sentiment was 99.6% concordant and AI determined positive sentiment was 96.6% concordant with patient determined positive sentiment. Especially positive key terms extracted from these reviews included the surgeon being "friendly", "kind", "responsive", and "caring". When assessing negative reviews, human determined negative sentiment was 100% concordant while AI determined negative sentiment was 59.0% concordant with patient determined negative sentiment. Especially negative key terms included excessive cost and postoperative pain. Conclusions: Automated sentiment analysis performed well in accurately identifying positive blepharoplasty reviews but was less successful at identifying negative reviews. Extraction of significant key terms can garner additional factors underlying these sentiments.

39. Clinical Applications of Artificial Intelligence to Answering Patient Rhinoplasty Questions

Christopher C. Tseng, BS, Newark, NJ; Jeff Gao, BS, Newark, NJ; Guy Talmor, MD, Newark, NJ; Boris Paskhover, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to better understand how artificial intelligence driven analysis of crowdsourced data can help guide consensus recommended answers to patient questions about rhinoplasty.

Objectives: With the growing prevalence of online health information, it is increasingly imperative for physicians to become familiar with the diverse array of web based medical knowledge and explore their uses for informing patient management. This study utilizes an artificial intelligence (AI) driven analysis of crowdsourced data to guide consensus recommended answers to patient questions about rhinoplasty. Study Design: Social media analysis. Methods: 2,014 top viewed patient questions about rhinoplasty and their accompanying physician answers were gathered from Realself.com, a cosmetic surgery social media site where verified physicians can respond directly to patient questions. An AI driven workflow was designed to accept a given query about rhinoplasty and automatically generate a consensus answer from best matching Realself.com data. Performance was evaluated by comparing the similarities of AI generated answers with physician curated answers to 16 common rhinoplasty questions on Realself.com. Results: The AI generated answers performed proficiently in comparison to the physician curated answers, with all but 2 having similarities ranging from 0.67-0.92 on a scale of 0-1. Similarity calculations include word count and sentence length, hence the 2 answers with particularly low similarities of 0.17 and 0.24 were correctable to 0.84 and 0.76 respectively after normalizing their text structure with the physician answers. Conclusions: Big data analysis can synergize a wide range of online health information and create actionable patient guidelines based on consensus best practice recommendations. While AI generated answers may require additional input for quality control, they are an advantageous clinical application of modern data driven techniques to better guide patient education.

General

40. Patterns of Care for Elderly Patients with Salivary Gland Cancers

Hernoor Athwal, MS, Newark, NJ; Salma Ahsanuddin, BS, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how treatment patterns vary for elderly patients with salivary gland malignancies as compared to their younger counterparts.

Objectives: Salivary gland malignancies are rare cancers of the head and neck. In other head and neck malignancies, elderly patients have poor outcomes with fewer receiving definitive therapy. We aimed to assess the treatment patterns for elderly patients with salivary gland cancer. Study Design: Retrospective analysis of a national cancer registry. Methods: The National Cancer Database (NCDB) was queried for all cases of salivary gland cancer from 2004-2016. Demographic and clinicopathologic characteristics were determined across two patient groups, those defined as elderly greater than 70 years old and non-elderly <70 years old. Differences in treatment options between elderly and non-elderly patients were examined with chi squared and logistic regression analyses. Results: 21,824 patients matched the inclusion criteria, of which 6,192 (28.4%) were elderly and 15,632 (71.6%) were non-elderly. Elderly patients were more likely to present with advanced stage disease and have poorly or undifferentiated disease ($p<0.001$). Elderly patients were more likely to receive no definitive treatment as compared to non-elderly patients (1.8% vs 3.8%, $p <0.001$, OR: 0.46, $p=0.019$) and were less likely to receive surgery (85.7% vs 94.2%, $p < 0.001$, OR: 0.58, $p<0.001$). They were also more likely to receive radiation

therapy alone compared to surgery alone (5.6% vs 1.2%, p< 0.001) as well as palliative care compared to no palliative care (2.6% vs 1.0%, p< 0.001). Conclusions: Elderly patients were less likely to receive any form of treatment much less definitive treatment with surgery as compared to non-elderly patients. Elderly patients were also more likely to receive palliative care than their non-elderly counterparts.

41. Evaluating YouTube Videos on Palatal Surgery for Obstructive Sleep Apnea as a Resource for Patients

Daniel J. Campbell, BS, Philadelphia, PA; Kevin Xiao, MS, Philadelphia, PA; Zachary Elliott, BS, Philadelphia, PA; Eric V. Mastrolonardo, MD, Philadelphia, PA; Maurits S. Boon, MD, Philadelphia, PA; Colin T. Huntley, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the quality of YouTube videos on palatal surgery for obstructive sleep apnea and how it relates to video popularity.

Objectives: This study evaluated the content quality of YouTube videos on palate surgery for the treatment of obstructive sleep apnea (OSA). This study investigated the relationship between video content, video metrics, and popularity. Study Design: Cross-sectional study. Methods: We identified a total of 250 videos across five search terms: "UPPP", "uvulopalatopharyngoplasty", "modified UPPP", "lateral pharyngoplasty", and "expansion sphincteroplasty". Videos that were unrelated to palate surgery for OSA, operating room (OR) recordings, lectures for medical professionals, non-English, non-audio, and testimonials were excluded from review. Video quality was assessed using the Global Quality Score (GQS) (range: 1-5), modified DISCERN score (range: 5-25), and JAMA Benchmark Criteria (range: 0-4). Secondary outcomes included video metrics (views, likes, dislikes, duration, days since upload, comments) and Video Power Index (VPI) to measure popularity. Results: After excluding 84 duplicate occurrences and 148 videos not meeting criteria, 18 videos were included for review. Eighty-one (54.7%) videos were excluded as OR recordings or lectures intended for medical professionals. Overall video quality was poor across all three scoring systems: GQS (2.92+/-1.14), modified DISCERN (13.03+/-3.64), and JAMA Benchmark Criteria (1.78+/-0.52). Higher quality videos did not correlate with increased video popularity. Conclusions: There is a lack of quality, educational videos available to patients on palatal surgery for OSA. Palatal procedures are among the most performed surgeries for OSA. Given the increasing use of YouTube by patients as a health information resource, there is opportunity for medical institutions to produce higher quality and more accessible patient educational videos on these procedures.

42. Otolaryngology Residency Program Factors Associated with Female Resident Representation

James C. Campbell, MD, Durham, NC; Charles R. Woodard, MD, Durham, NC; Lars J. Grimm, MD, Durham, NC; Alissa M. Collins, MD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand what otolaryngology residency program factors did and did not affect the percentage of female residents in the program.

Objectives: Identify associations between otolaryngology residency program factors and resident gender distribution. Study Design: Cross-sectional study of public data on otolaryngology residencies in the US. Methods: Otolaryngology residency programs with public information of current residents and faculty were included. Resident, faculty, and leadership gender was collected, as well as the program's geographic location and city population (above 500,000 = urban). Female residency representation was dichotomized relative to median representation from all programs. Pearson $\chi 2$ and logistic regression were used for analysis. Results: 107/124 programs fit criteria, with 626 (39%) female and 968 (61%) male residents, and 650 (25%) female and 1,901 (75%) male faculty. Median resident female representation was 40%. There were more female residents in programs that were larger (mean of 17 vs 13 residents, $p = 0.01$), had more female faculty (mean of 8 vs 5 female faculty, $p < 0.01$), had more faculty (mean of 29 vs 20 total faculty, $p = 0.03$), and were in an urban population (61% of above median female programs vs 33% of below median female programs, $p < 0.01$). Residency gender distribution was not associated with the percentage of female faculty ($p = 0.22$), the gender of the program director ($p = 0.34$) or chair ($p = 0.44$), or with geographic region ($p = 0.47$). Conclusions: Greater female residency representation was associated with larger programs, urban location, and greater numbers of female and total faculty, but not associated with geographic region, percentage of faculty that are female, or the gender of the program's leadership.

43. Comparison of Pneumothorax Complication Rate between Two and Three Incision Approach for Hypoglossal Nerve Stimulator Implantation, Single Institution Case Series

Emily Commesso, MD, Durham, NC; Alan Tesson, MD, Durham, NC; Matthew Ellison, MD, Raliegh, NC; Russel Kahmke, MD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to evaluate potential risks and benefits of two and three incision approach for hypoglossal nerve stimulator implantation with the aim of informing surgical decision making and patient counseling.

Objectives: With new FDA approval for two incision approach for hypoglossal nerve stimulator (HGNS) in March 2021, we seek to understand preliminary changes in complication rates and evaluate risks and benefits of procedure technique within our institution. Study Design: Case series. Methods: Chart review was conducted on consecutive patients undergoing HGNS implantation within our institution from August 2017-July 2021, with at least 30 days followup postoperatively. Demographic and outcome data including complication rates were collected and analyzed. Results: 203 hypoglossal nerve stimulator implants have been performed within our institution as of July 1, 2021; 138 with three incision approach and 65 with two incision approach. Rate of pneumothorax was 0% with three incision approach and 4.6% with two incision approach (p= 0.03). All patients with postoperative pneumothorax were female with BMI less than 33. Conclusions: In this case series, there was an increase in pneumothorax complication rate with switching from three incision approach to two incision approach for HGNS implantation. A larger multicenter database analysis is required to further study the risks and benefits with transitioning to two incision approach and to understand the relationship of patient factors including sex and BMI.

44. Distinguishing Contributors to Hypercalcemia in Patients with Primary Hyperparathyroidism and Sarcoidosis

Colin D.F. Cotton, BA, Cincinnati, OH; Robert P. Baughman, MD, Cincinnati, OH; Abid Yaqub, MD, Cincinnati, OH; Alice Tang, MD, Cincinnati, OH; Tammy M. Holm, MD PhD, Cincinnati, OH; David L. Steward, MD, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to determine the etiology of hypercalcemia in patients with possible primary hyperparathyroidism and/or granulomatous disease.

Objectives: Primary hyperparathyroidism and granulomatous diseases are relatively common causes of hypercalcemia, which can cause diagnostic challenges if coexistent. We compare three patients with hypercalcemia and sarcoidosis and/or primary hyperparathyroidism. Study Design: Retrospective review. Methods: Clinical and laboratory data from three patients with hypercalcemia referred for parathyroidectomy were collected and compared. Results: Patients 1 and 2 were 78 and 79 y/o females with histories of sarcoidosis presenting with asymptomatic hypercalcemia (11.2 and 11.5mg/dL, respectively), variable 25(OH)D (22.4 and 29.5ng/dL), variable 1,25(OH)2D (15.4 and 108pg/mL), and elevated iPTH (112 and 152mg/dL). Single hypercellular parathyroid glands were identified on imaging and removed, with iPTH improvement intraoperatively (138 to 15pg/mL and 265 to 74pg/mL). Postoperatively, calcium normalized (9.4 and 9.6mg/dL). Patient 3 was a 61 y/o female with longstanding hypercalcemia (10.9mg/dL), low 25(OH)D (22.4ng/dL), elevated 1,25(OH)2D (75-109ng/mL), normal iPTH (24-38pg/mL), and upper-normal ACE (50U/L). Ultrasound demonstrated normal thyroid without enlarged parathyroid glands. Sestamibi scan was nonlocalizing. Chest CT identified calcified mediastinal lymph nodes consistent with granulomatous disease. Conclusions: In patients with hypercalcemia and sarcoidosis, it is important to check PTH to exclude coexistent primary hyperparathyroidism, which may benefit from parathyroidectomy. In patients with hypercalcemia and suspected normo-hormonal primary hyperparathyroidism, a complete biochemical workup to exclude other causes is fundamental. Granulomatous disease should be suspected when 25(OH)D is low and 1,25(OH)2D is elevated in the presence of a low-normal PTH level, as vitamin D conversion occurs by macrophages (extrarenal and not under PTH regulation). Neck and chest imaging may contribute to the assessment but the evaluation is predominantly biochemical.

45. A National Analysis of the Effect of Weekend Admission Status on Tracheostomy Outcomes

Aatin K. Dhanda, BA, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Maria Manuela Chemas-Vejlez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jordon G. Grube, DO, Albany, NY; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the effect of weekend admission status on tracheostomy outcomes.

Objectives: A "weekend effect" has been described as worse outcomes for patients admitted on weekends. In this analysis we seek to determine the effect of weekend admission for patients receiving a tracheostomy. Study Design: Retrospective database analysis. Methods: The National Inpatient Sample was used to identify 31,904 patients undergoing tracheostomy the day of hospital admission from 2003-2014. Variables included patient and hospital demographics. Admissions were assessed by weekend or weekday admission status. Univariate and multivariate analyses were performed. Results: 31,904 patients were identified, with 28,298 (88.7%) weekday admissions and 3,606 (11.3%) weekend admissions. A total of 56.9% of weekend admissions were emergency or urgent admissions in comparison to 25.1% for weekdays. Urgent (HR 0.71, 95% CI 0.59-0.85, p<0.001) and elective admissions (HR 0.38, 95% CI 0.32-0.45, p<0.001) were associated with better survival compared to emergency admissions. Kaplan-Meier analysis demonstrated better overall survival for weekday

patients. Multivariate analysis demonstrated lower odds of death during hospitalization (OR 0.7, 95% CI 0.59-0.83, p<0.001) for weekday vs. weekend admission. Multivariate logistic analysis demonstrated that weekday patients were more likely to be discharged as opposed to death. Weekday admissions were also associated with decreased total charges (mean difference: -$41,417) and length of stay (-4.24 days). Conclusions: Weekend admission status may play a role in outcomes following tracheostomy. While direct survival benefit was not observed in our analysis, weekday admissions were more likely to be discharged to home or subacute care, have decreased length of stay, and charges.

46. Lemierre's Syndrome Requiring Bilateral Internal Jugular Vein Ligation: A Case Report

Josh A. Geller, BS, New Orleans, LA; Anna K. Bareiss, MD, New Orleans, LA; Dylan Levy, MD, New Orleans, LA; Ryan Winters, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to diagnose Lemierre's syndrome, understand the evolving presentations and bacterial etiology, and identify cases that may require surgical intervention.

Objectives: To present a case of Lemierre's syndrome that required bilateral internal jugular vein ligation. Study Design: Case report. Methods: Lemierre's syndrome (LS) is a septic thrombophlebitis of the internal jugular vein (IJV) caused by the spread of an oropharyngeal infection to the ipsilateral neck. Uncomplicated cases may respond to antibiotic therapy. Over the past few decades, this classic picture has evolved to include presentations of bilateral and larger thrombi, with additional bacterial species as the etiology. In cases refractory to antibiotic treatment, surgical ligation of the IJV is indicated. Presented here is the case of a patient with bilateral LS due to methicillin resistant staphylococcus aureus (MRSA) who ultimately required concurrent ligation of both IJVs. Results: A 43 year old female presented with a five day history of left postauricular neck swelling that had failed outpatient antibiotics. CT showed bilateral IJV thrombosis with septic emboli. Blood cultures were positive for MRSA. She did not improve with inpatient antibiotics, and the decision was made to perform bilateral internal jugular ligation. The patient began to improve soon after, with cessation of fevers and decreasing WBC. Two weeks postoperatively, she was discharged and recovered with no further complications. Conclusions: While it is rare for cases of LS to have either bilateral IJV involvement or MRSA as the causative agent, this case had both. This case demonstrates that bilateral IJV ligation can be performed successfully and may be necessary for severe, bilateral presentations of Lemierre's syndrome refractory to antibiotic therapy. Efforts should be made to identify severe or resistant cases early with appropriate surgical consultation for consideration of intervention to decrease morbidity from continued septic thromboembolization. Clinicians should continue to assess the utility of surgical treatment of Lemierre's syndrome on a case by case basis.

47. Exploring Careers and Inspiring Teens to Excel (EXCITE): Improving Attitudes towards Otolaryngology through One Day Workshops for Underrepresented College Students

Carlos L. Green, MD, Miami, FL; Ezinne U. Agwaramgbo, BS, Miami, FL; Anya T. Hall, BS, Miami, FL; Rainya N. Heath, MS BS, Miami, FL; Nareka A. Trewick, MS BS, Miami, FL; Giovana R. Thomas, MD, Miami, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the factors that prevent underrepresented students from entering otolaryngology and how to strengthen pipeline programs to increase representation.

Objectives: A diverse medical workforce is vitally important for ensuring proper care of the increasingly diverse population in the United States (US). While the lack of black physicians and surgeons are directly linked to poorer health outcomes experienced by blacks in the US, including inferior outcomes from head and neck cancers, otolaryngology (ENT) remains amongst the least represented specialties in medicine. Here, we aim to determine current perceived barriers for minority undergraduate students to pursuing ENT and assess the role of EXCITE workshops in influencing undergraduate students towards becoming otolaryngologists. Study Design: Single arm prospective cohort study with survey utilizing a modified Likert scale pre and post intervention. Methods: Underrepresented undergraduate college students participated in a one day workshop held over the Zoom online platform that included an introduction to ENT, history taking and cases, anatomy, career planning and more. Participants answered survey questions to assess barriers to entering medical school and ENT before and after participation in workshop. Results: In early cohorts, we noted the largest changes in student's perceived access to mentorship as well as increased understanding of ENT when compared to responses prior participation in EXCITE. Financial constraints and lack of exposure to medicine/ENT are most frequently cited as barriers to entry into medical school in our study population. Conclusions: EXCITE is an effective, inexpensive method to increase underrepresented undergraduate student exposure to otolaryngology and forge mentee-mentor relationships that may be critical in improving representation in otolaryngology.

48. Analysis of Key Chronic Sialadenitis Symptoms: Comparisons between Patients and Providers

Arushi Gulati, BS, San Francisco, CA; Jolie L. Chang, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize that there is a need for a validated patient centered questionnaire to monitor patients with chronic sialadenitis and to understand that a comprehensive questionnaire would include symptoms of importance to both patients and physicians in multiple domains.

Objectives: We previously developed the Chronic Obstructive Sialadenitis Symptoms questionnaire (COSS) to assess symptom changes for chronic sialadenitis, but the instrument has been described as difficult to use. We aim to refine and create a standardized measure of sialadenitis associated symptoms. This study analyzes COSS responses and surveys sialadenitis patients and sialendoscopy experts on key domains for chronic sialadenitis management. Study Design: Retrospective analysis of COSS and cross-sectional query of patients and providers. Methods: Exploratory factor analysis (EFA) for COSS item reduction was performed. Patients with sialadenitis completed open ended questionnaires on symptom domains. Expert sialendoscopy physicians rated symptoms for relevance in patient assessment. Results: COSS responses (n=311) demonstrated high internal reliability (Cronbach's alpha=0.92). On EFA with 1 factor model, 16/20 items demonstrated adequate explanation of response variance (factor loading greater than 0.40). Items with loadings below 0.40 queried xerostomia, excess saliva, mouth opening, and chewing. When collapsing response categories from 10 to 5 levels of severity, EFA results were similar. Experts (n=5) ranked symptoms of gland swelling, pain with eating, and presence of foul taste as most important in patient assessments, while patients (n=8) ranked swelling, non-mealtime pain, and difficulty eating as most bothersome. Most patients experienced functional impairment (n=6,75%) or psychosocial symptoms (n=5,63%). Despite poor contributions of xerostomia and difficulty chewing on EFA, physicians and patients found these symptoms important. Conclusions: To improve survey usability, COSS survey items must be reworded and number of response levels can be reduced. Domains of importance to address include discomfort, physical function, and psychosocial function.

49. Leave No Stone Unturned. A Peculiar Case of Throat Pain and Chronic Cough

Matthew N. Harmon, BA, La Jolla, CA; Joshua A. Stramiello, MD, San Diego, CA; Andrew M. Vahabzadeh, MD, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the pathophysiology, risk factors for, and treatment of actinomyces infections in the head and neck.

Objectives: A 54 year old male presented with throat pain and chronic cough. He had a long history of GERD but denied any sinonasal symptoms. On flexible laryngoscopy, a hard mass was found wedged in place between the inferior turbinate and septum. Here we describe a unique case of an actinomyces rhinolith resulting in throat pain and cough. This case highlights the comprehensive assessment needed to appropriately diagnose and treat these complex patients. Study Design: Case report. Methods: CT sinus without contrast demonstrated asymmetric opacification and slight expansion of the right inferior nasal cavity with internal high density debris which appeared partially calcified. The findings were concerning for superimposed fungal rhinosinusitis vs mycetoma formation. He then underwent limited endoscopic sinus surgery for diagnosis and treatment. Results: Intraoperative findings showed right sided hard sinonasal mass with inflammatory change and friability of surrounding mucosa. Biopsy revealed free mucin with clusters of filamentous organisms consistent with actinomyces. The patient was seen in clinic two weeks later and started on amoxicillin 500mg BID for actinomyces rhinolith. He was referred to infectious disease clinic to assist with treatment strategy and duration. His cough and throat pain resolved. Conclusions: Nasal cavity actinomycosis is extremely rare. This case demonstrates an actinomyces rhinolith incidentally found in a patient with no nasal obstructive symptoms or history of sinus infections.

50. Risk Factors Associated with Loss to Followup among Otolaryngology Patients

Kevin William Herrera, BS, Los Angeles, CA; Ian Kim, MFA MS, Los Angeles, CA; Harrison Joseph Ma, BS, Los Angeles, CA; Christine Raj, BA, Los Angeles, CA; Francis Reyes, BA, Los Angeles, CA; Kevin Hur, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to have a better understanding of the factors associated with loss to followup in an otolaryngology clinic.

Objectives: Loss to followup (LTFU) has been shown to have detrimental effects on patient care, but risk factors specific to otolaryngology patients have not been sufficiently explored. This study investigates factors associated with LTFU in an otolaryngology clinic. Study Design: Retrospective cohort. Methods: Ten months of retrospective data of all adult patients seen at a general otolaryngology clinic were extracted from patient medical records, with variables regarding patient demographics, health complaints, care plan, and previous visits. Six dimensions of health related quality of life - physical functioning, role functioning, social functioning, pain, mental health, energy - were examined using SF6D scores. Multivariable logistic regression analysis was performed to identify factors associated with LTFU status. Results: Of the 486 patients included, 139 (28.6%) were LTFU and 347 (71.4%) returned for all scheduled visits. Higher energy (OR:1.52,

95% CI:1.16-2.10, p < .01) and improved role functioning (OR:1.42, 95% CI:1.05-1.92, p < .05) were associated with significantly higher LTFU risk. Patients requiring a referral to another provider for their care plan (OR:0.66, 95% CI:0.48-0.89, p < .01) and more frequent previous clinic visits (OR:0.54, 95% CI:0.40-0.69, p < .001) were less likely to be LTFU. Hispanics/Latinos compared to non-Hispanics/Latinos (OR:3.02, 95% CI:1.16-2.20, p < .01) and Asians compared to non-Hispanic Whites (OR:2.23, 95% CI:1.23-4.16, p < .01) had significantly higher risk of LTFU. Conclusions: Higher energy, improved role functioning, Hispanic/Latino ethnicity, and Asian race are risk factors for LTFU, while established patients and patients requiring a more complex treatment plan are less likely to be LTFU.

51. Impact of Metabolic Syndrome on 30 Day Outcomes following Obstructive Sleep Apnea Surgery

Emily Keenan, BA, Newark, NJ; Matthew Linz, BS, Newark, NJ; Salma Ahsanuddin, BS, Newark, NJ; Ariel Omiunu, BS, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how metabolic syndrome influences outcomes after surgery for obstructive sleep apnea.

Objectives: The impact of metabolic syndrome on 30 day outcomes following surgical intervention for obstructive sleep apnea (OSA) has not previously been characterized. This study aims to determine any association between metabolic syndrome and postoperative outcomes after palatopharyngoplasty for obstructive sleep apnea. Study Design: Retrospective analysis of a national registry. Methods: The National Surgical Quality Improvement Program (NSQIP) database was queried for patients undergoing palatopharyngoplasty for obstructive sleep apnea between 2015 and 2018. Patients were stratified based on the presence or absence of metabolic syndrome defined as a BMI > 30 with comorbid hypertension and diabetes. Multivariate analyses were performed to compare demographics, pre and intraoperative characteristics, and postoperative outcomes. Results: 1,935 patients were identified of which 5.0% had metabolic syndrome. Metabolic syndrome was significantly associated with male gender, dyspnea, history of severe COPD, age, use of general anesthesia, and American Society of Anesthesiologists classification. In patients who underwent palatopharyngoplasty, metabolic syndrome was significantly associated with systemic sepsis within 48 hours prior to surgery ($p<0.05$) and superficial surgical site infections (SSIs) ($p<0.01$) but not readmissions, need for transfusions, pulmonary embolism, or urinary tract infections. Multivariate regression showed male patients with metabolic syndrome had nearly 11 times the risk of preoperative sepsis relative to female patients (HR: 10.8 95% CI: 2.06 to 56.00, $p<0.01$). Conclusions: Metabolic syndrome is a risk factor for adverse outcomes after surgical interventions for OSA, resulting in increased risk of SSIs. Appropriate preoperative evaluation and risk stratification is warranted to determine the best surgical candidates.

52. Utility of Preoperative Laboratory Testing Among Low Risk Patients in Ambulatory Uvulopalatopharyngoplasty Procedures

Edward Lai, BSE, Straford, NJ; Sugosh M. Anur, BS, Stratford, NJ; Ariel Omiunu, BS, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the utility of preoperative laboratory testing among patients who underwent uvulopalatopharyngoplasty procedures.

Objectives: The objective of this study is to examine the patterns of preoperative laboratory testing (PLT) in low risk patients undergoing ambulatory uvulopalatopharyngoplasty (UPPP) and to assess their effects on postoperative outcomes. Study Design: Retrospective database study. Methods: The National Surgical Quality Improvement Program (NSQIP) database from 2005-2018 was used to examine patients undergoing UPPP. ASA class 1 or 2 patients were considered to be low risk patients. Patterns of PLTs (chemistry, liver function, hematology, and coagulation studies) were examined. Univariate analyses, including Pearson chi square and Fisher's exact test, and logistic regression analyses were performed to examine factors associated with testing and postoperative complications. Results: 676 low risk patients underwent ambulatory UPPP, 351 of which had at least one PLT performed (51.9%). Major complications were seen in 2.8% of patients. On univariate analysis, patients who were between the ages of 16 through 40 ($p=0.001$), diabetic ($p=0.008$), or hypertensive requiring medication ($p<0.001$) were more likely to receive PLTs. There was no statistical significance in postoperative outcomes between those who did and did not undergo PLT. Specifically, no significant difference was seen among superficial incisional surgical site infection ($p=1.000$), wound disruption ($p=1.000$), return to operating room after surgery ($p=0.893$), urinary tract infection ($p=0.481$), unplanned intubation ($p=1.000$), or unplanned readmission ($p=1.000$). These findings were confirmed on multivariate analysis, after adjusting for patient and procedure characteristics. Conclusions: This study supports evidence based guidelines in demonstrating that there is no difference in postoperative outcomes between low risk patients who did and did not undergo preoperative lab testing for ambulatory UPPP procedures.

53. Ethnic Diversity among Otolaryngology Department Chairs

Eleanor Layfield, BA, Philadelphia, PA; David Chou, MD, Oakland, CA; Karthik Prasad, BS, Irvine, CA; Nancy Jiang, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe ethnic and racial diversity and academic productivity among otolaryngology department chairs.

Objectives: To characterize racial/ethnic diversity among otolaryngology department chairs by examining demographics, time in practice, and academic productivity. Study Design: Cross-sectional study. Methods: United States allopathic and osteopathic otolaryngology residency programs were identified via the American Medical Association FREIDA database and included if they had a listed department chair or division chief. Surgeons' demographic and academic data were obtained from institutional and professional society web profiles and Scopus. Results: One hundred and six chairs were identified. Twelve chairs (11.3%) were female. Eighty-six chairs were identified as White (81.1%), seventeen Asian (16.0%), two African American/Black (1.9%), and one Hispanic/Latinx (0.9%). Only two female chairs (16.7%) were non-White. On average, White chairs were in practice for longer than non-White chairs (mean 26.3 vs. 20.65 years, P=.003). There was no difference in mean h-index (p=.083), number of publications (P=.254), or number of citations (p=.227) between White and non-White chairs. Conclusions: African American/Black and Hispanic/Latinx surgeons are underrepresented as chairs of otolaryngology departments. However, there was no difference in academic productivity as defined by h-index, number of publications, and number of citations between White and non-White chairs.

54. Managing Sensor Lead Complications in Hypoglossal Nerve Stimulator Implantation

Brandon K. Nguyen, MD, Newark, NJ; Bethany Ho, BA, Hackensack, NJ; May Fang, BS, Minneapolis, MN; Kent Lee, MS MBA, Minneapolis, MN; Senja Tomovic, MD, Hackensack, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize hypoglossal nerve stimulator sense lead dysfunction as a risk of implantation. Participants will gain new knowledge in diagnosing and managing sense lead complications as well as postoperative implant care after sense lead dysfunction. Lastly, participants will be introduced to a preoperative and intraoperative algorithm for management of sensor lead malfunction and replacement.

Objectives: Upper airway stimulation provides an effective management option for obstructive sleep apnea, dramatically improving AHI, ODI, and sleepiness symptom outcomes. Prior studies have discussed commonly associated adverse events including infection and device migration. However, no cases of sensor lead dysfunction have been presented. This study evaluates four cases of hypoglossal nerve stimulator (HGNS) sense lead dysfunction that required revision, accompanied by a review of diagnosis, management, and postoperative implant care. Study Design: Retrospective case series. Methods: A retrospective case review of patients who received the HGNS implant was performed. Four cases of sense lead malfunction that required surgical revision were identified. Patient characteristics, preoperative and postoperative device performance metrics were assessed and intraoperative management techniques were compiled for this case series. Results: Four patients with sense lead dysfunction were identified, demonstrating a risk of approximately 2%. Three of the patients, originally implanted with the 4340 sensing lead, were noted to have severed sense lead tip. One patient, implanted with the 4323 sensing lead, experienced an insulation breach within the sense lead. Three patients required surgical replacement of only the sensor lead and one required replacement of the entire implanted system. Immediate intraoperative interrogation confirmed proper device functionality. Conclusions: Preoperative counseling for patients receiving HGNS implantation should include the low risk of implant dysfunction. We provide a preoperative and intraoperative algorithm for management of sensor lead malfunction and replacement. As more HGNS procedures are performed, it is important to report unexpected complications in order to keep surgeons mindful and prevent recurrence in future cases.

55. Current and Temporal Trends in Otolaryngology Department Chair Appointment

Madeline Nottoli, BA, Irvine, CA; Carina Tedesco, Ann Arbor, MI; Lana Boladian, BS, Yorba Linda, CA; Khodayar Goshtasbi, MD, Irvine, CA; Sunil Verma, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand academic and professional characteristics associated with being appointed department chair of otolaryngology, as well as identify temporal trends in these characteristics that may help determine future directions of the field and provide assistance to those seeking this highly competitive position.

Objectives: This cross-sectional study aims to characterize current otolaryngology-head and neck surgery department chairs and evaluate whether there have been significant changes in the appointment of this position over time. Study Design: Cross-sectional study. Methods: All department chairs or division chiefs at allopathic ACGME accredited otolaryngology residency programs (n=109) were identified and academic and professional information was collected using publicly available websites. Results: After excluding 12 department chairs due to interim status, 97 chairs were included

with mean and median tenure length of 9±8 and 7±5 years, respectively (range=0-35 years). The largest proportion of chairs are head and neck surgeons (42.3%). Most chairs (71.1%) did not complete residency or fellowship training at their current institution. However, most chairs (77.3%) previously held a faculty position within their institution before becoming chair. The average time between graduating residency or fellowship and being appointed chair was 15.5±7.7 years. Those appointed within the last 6 years had more years of experience than those appointed previously (18.0±7.2 vs. 13.1±7.4 years, p=0.002). The number of female chairs remains low (n=9), though when grouped by order of appointment, the most recently appointed group of chairs within the last 3 years contained a significantly higher proportion of women than all other groups (24% vs 3-5%, p=0.034). Conclusions: A large proportion of otolaryngology department chairs are internally recruited from their home institution but have not completed residency or fellowship training at that department. Head and neck surgery is the best represented subspecialty among department chairs and an increasing number of women are being appointed chair.

56. Otolaryngologists' Involvement in the Multidisciplinary Care of Thyroid Eye Disease (TED)

Victoria J. Palacios, BS, Reno, NV; Yanhan Ren, MS, Chicago, IL; Dane Bothun, Rochester, MN; Lilly H. Wagner, MD, Rochester, MN; Janalee K. Stokken, MD, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the benefits of endoscopic orbital decompression (EnOD) vs. traditional external approaches in the multidisciplinary care of thyroid eye disease (TED).

Objectives: To investigate trends in multidisciplinary collaboration in thyroid eye disease (TED) related research, as an indication for overall collaboration in clinical and surgical treatment of patients with TED requiring orbital decompression. To identify otolaryngologist contribution to scientific literature relevant for the management of TED by a multidisciplinary team. Study Design: A systematic search and review for TED was conducted for both 2010 and 2020 in PubMed. Methods: A systematic search and review for TED was conducted for both 2010 and 2020 in PubMed. Results: The 2020 literature review revealed 139 multidisciplinary articles of 303 total articles (45.87%). This is slightly more than double the number of articles published regarding TED in 2010, 147 total articles, with 87 (59.18%) being multidisciplinary. Of the 303 articles reviewed in 2020, only 21 articles (6.93%) had collaboration with otolaryngology authorship. Comparing this to the 10 articles (6.80%) published in 2010 that included ENT authorship, there has been almost no increase in collaboration with ENT over a decade even with total publications doubling. Conclusions: Based on our analysis of the literature, there is a lack of multidisciplinary care in the treatment of TED in both the US and internationally. Our study highlights that multidisciplinary care, including ENT collaboration, is uncommon for the treatment of thyroid eye disease patients. ENT involvement is necessary for ENoD as an extensive understanding of anatomical and functional complexity of the nose and sinuses is required to avoid complications related to postsurgical sinus obstruction. We encourage otolaryngologists and oculoplastic surgeons to consider collaboration in the treatment of TED.

57. Patterns of Preoperative Laboratory Testing in Low Risk Patients Undergoing Elective Outpatient Parotidectomy

Devanshi Patel, BA, Newark, NJ; Vivienne Qie, BS, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; Ariel Omiunu, BS, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify patterns of preoperative testing in low risk patients undergoing elective outpatient parotidectomy to further describe the utility of testing.

Objectives: Preoperative laboratory testing is not associated with complications among healthy patients in various ambulatory procedures. Few studies have studied this association in ambulatory head and neck surgery. This study aims to identify patterns of preoperative testing in low risk patients undergoing elective outpatient parotidectomy to further describe the utility of testing. Study Design: Retrospective database review. Methods: The 2005-2018 National Surgical Quality Improvement Program database was queried for elective outpatient parotidectomy procedures in American Society of Anesthesiologist (ASA) classification 1 and 2 patients. Patients with significant comorbidities were excluded. Univariate and multivariate analysis were performed to analyze the patterns of preoperative laboratory testing. Results: 2,958 low risk patients undergoing outpatient parotidectomy were identified. The mean age was 52.9 years (range, 18-90+ years). Among these patients, 2,029 (68.6%) received preoperative laboratory testing and 1,095 (53.0%) had at least one abnormal test. On multivariate analysis, Black race (OR: 1.950; CI: 1.004-3.789; P=0.049), Asian race (OR: 1.950; CI: 1.250-4.837; P=0.009), diabetes (OR: 1.832; CI: 1.197-2.804; P=0.005) and hypertension (OR: 1.938; CI: 1.575-2.384; P<0.001) were predictive of receiving preoperative labs. Increased rates of surgical site infections were found in patients with preoperative laboratory testing (85.3% vs 14.7%, P=0.035). Preoperative testing was not associated with any other wound complications, procedure related complications, major surgical complications, or mortality. Conclusions: We found limited association between preoperative laboratory tests and postoperative morbidity and mortality. Preoperative testing in low risk parotidectomy patients may have limited clinical benefits.

58. Evaluation of the Nutritional Risk Index as a Predictor of Postoperative Complications in Thyroid Surgery

Rushi Patel, BA, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; David Zakay, MD, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to evaluate the clinical utility of the Nutritional Risk Index in predicting postoperative complications for patients undergoing thyroid surgery.

Objectives: Previous studies on nutrition status in head and neck cancer patients have observed a significant association between nutritional status and postoperative complications. Our aim is to determine the clinical utility of the Nutritional Risk Index (NRI) in thyroid surgery. Study Design: Retrospective database review. Methods: The 2015-2018 National Surgical Quality Improvement Program (NSQIP) database was queried for all cases of thyroid surgery. Patients with missing height, weight, and albumin levels were excluded from the analysis. NRI score was calculated for each patient, and patients were subdivided depending on their nutritional status, into malnourished and non-malnourished. Univariate and multivariate analyses were conducted to assess the NRI's ability to predict postoperative complications. Results: A total of 31,866 cases met inclusion criteria of which 615 (1.9%) were classified as being malnourished. There were significant differences in demographics and comorbidities between the two groups. Independent sample t-test demonstrated the malnourished group had a greater length of stay (6.76 vs. 1.36 days, p=<.001) and operative time (183.72 vs. 125.78 min, p=<.001). Multivariate regression analysis demonstrated NRI defined malnourishment, was a significant predictor of readmission (OR [95% CI]=1.655 [1.116-2.454], p=.012), and medical complications (OR [95% CI]=1.782 [1.096-2.897], p=.020). Individual complication analysis revealed significant association with organ space surgical site infection (OR [95% CI]=7.663 [1.237-47.46], p=.029), sepsis (OR [95% CI]=3.75 [1.191-11.809], p=.024), and septic shock (OR [95% CI]=8.121 [1.402-47.02], p=.019). Conclusions: NRI can be a useful clinical tool to assess high risk patients and risk for readmission in patients undergoing thyroid surgery.

59. Surgical Management of an Exuberantly Calcified Stylohyoid Ligament in a Patient with Eagle's Syndrome and Diffuse Idiopathic Skeletal Hyperostosis

Andrea Marie Plawecki, MD, Detroit, MI; Tamer A. Ghanem, MD PhD, Detroit, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to identify exuberant calcification of the stylohyoid ligament as a potential rare cause of Eagle's syndrome, especially in patients with a history of idiopathic skeletal hyperostosis, and advocate for a safe, effective surgical approach to management.

Objectives: Eagle's syndrome is a rare condition characterized by elongation of the styloid process or calcification of the stylohyoid ligament, which can be associated with symptoms of pain, dysphagia, or globus sensation. An association with diffuse idiopathic skeletal hyperostosis (DISH) has been proposed in a limited subset of these patients. This case highlights the rare association and describes a surgical resection technique for the successful relief of symptoms. Study Design: Case report and literature review. Methods: Review of case and literature. Results: A 62 year old female presented with odynophagia and acute inability to swallow, along with worsening neck stiffness and pain. CT neck demonstrated exuberant calcification of her right stylohyoid ligament, spanning the entire length of the styloid process to the hyoid bone (length 8 cm, maximum thickness 2 cm). Her CT was also notable for evidence of DISH throughout the cervical spine. Surgical resection of a 3 cm segment of the ossified stylohyoid ligament resulted in resolution of her dysphagia and pain, as well as improvement in neck mobility. Few cases in the literature have reported this degree of enlargement, and even fewer have described surgical management of such cases. Conclusions: This case is unique in that it is the first to demonstrate that a conservative, limited surgical resection of such a significantly hypertrophic ossified stylohyoid ligament is an effective treatment, leading to resolution of symptoms, while minimizing risk of injury to important anatomic structures in the area. In addition, it supports early theories of an association between Eagle's syndrome and DISH.

60. Nasopharyngeal Mass in an Adult with Mycosis Fungoides, a Case Report and Literature Review

Karthik R. Prasad, BS, Irvine, CA; Benjamin Bitner, MD, Irvine, CA; Harrison Lin, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand otolaryngological manifestations of large cell transformation of mycosis fungoides.

Objectives: To describe a rare manifestation of large cell transformation of mycosis fungoides (MF-LTCL) and discuss previously documented otolaryngologic manifestations of MF-LTCL. Study Design: Case report and literature review. Methods: The patient's medical record was reviewed. A PubMed search for otolaryngological manifestations and treatment recommendations of MF-LTCL was performed. Results: A 79 year old male presented with four weeks of worsening

dysphagia, dyspnea, and nasal congestion refractory decongestants, corticosteroids, and antibiotics. Past medical history included chronic sinusitis, novel coronavirus (COVID-19) infection and cutaneous mycosis fungoides on brentuximab therapy. In the ER, the patient was stertorous and reported dyspnea improved with leaning forward. The patient remained afebrile with O2 saturation greater than 95% on room air. Repeat laryngoscopy showed severe palatal edema and adenoid hypertrophy obstructing the nasopharynx without laryngeal obstruction. Nasopharyngeal biopsy demonstrated large cell transformation of mycosis fungoides. We believe this is the second documented case of MF-LTCL involving the nasopharynx. Existing literature reports around 60 cases of oral MF/MF-LTCL, 10 cases of laryngeal MF, and 4 cases of nasal cavity MF. In all cases, symptoms were secondary to mass effect of the neoplastic process. Oral cases of MF predominately involved the tongue and presented with tenderness, swelling, and sleep apnea. Laryngeal MF presented with hoarseness or dysphagia. Nasal cavity MF presented with epistaxis and nasal obstruction. Conclusions: As MF treatments improve, later stage development such as LTCL will become more common. Practitioners should consider a neoplastic obstructive process in patients with MF presenting with stertor, dysphagia, oral tenderness, hoarseness, or nasal obstruction. Furthermore, clinicians should visualize and biopsy the mass to aid in diagnosis.

61. Trends in Residency Size and Research Productivity in Academic Facial Plastic Surgery

Karthik R. Prasad, BS, Irvine, CA; David Chou, MD, Oakland, CA; Eleanor Layfield, BA, Pennsylvania, PA; Charles Shih, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand research productivity in academic facial plastics and its relationship to residency size.

Objectives: To characterize academic facial plastic surgeons' research productivity with regards to residency size. Study Design: Cross-sectional study. Methods: The United States allopathic and osteopathic otolaryngology residency programs were identified via the American Medical Association FREIDA database. Residency size per program and academic facial plastic surgeons were identified via the program website. Surgeons' demographic and academic data were obtained from Scopus, Doximity, and professional society web profiles. Non-MD/DO faculty members and fellows were not included in academic productivity analysis and residency size, respectively. Results: One hundred sixty-eight academic facial plastic surgeons were identified across eighty-nine programs. The average residency size with at least one facial plastic academic faculty member was 16.3 [95% CI, 14.9 - 17.6]. When adjusted for years in practice, the average facial plastic academic faculty members published 7.5 publications per year (PPY) [95% CI, 5.9 - 9.1], with 86.2 citations per year (CPY) [95% CI, 65.4 - 108.2], corresponding to an annual h-index increase (AHII) of 2.14 [95% CI, 1.78 - 2.51]. PPY, CPY, and AHII were all positively correlated with residency size with correlation coefficients of .32, .43, and .34, respectively (P-value less than .05). Conclusions: In academic facial plastics, residency size appears to be weakly positively correlated with PPY, CPY, or AHII. Most notably, the strongest correlation is CPY rather than PPY. Nevertheless, all quantitative research productivity metrics reviewed showed a positive correlation with residency size.

62. Critical Assessment of Gender and Ethnicity in the Residency Selection Process

Kaylee Renee Purpura, MD, Norfolk, VA; Benjamin Rubinstein, MD, Norfolk, VA; Angela Toepp, PhD, Norfolk, VA; Lucia Diaz Garcia, MD, Camden, NJ; Eric Dobratz, MD, Norfolk, VA

Educational Objective: At the conclusion of this presentation, the participants should be able to analyze one scoring system for evaluating otolaryngology residency applicants.

Objectives: This study evaluates a scoring system utilized at one residency program to assess resident applications. The impact of each scoring component on the overall score and differences among gender and underrepresented minority (URM) group candidates were evaluated. Study Design: Retrospective data from 1252 applicants from 2015-2020 were evaluated. The scoring system includes objective categories (USMLE 1 and 2 scores, basic science and clinical clerkship grades and research experience) and subjective categories (letters of recommendation, personal statement, and extracurricular activities). Methods: Variance analysis and Welch's t-test were used to determine the impact of each category on the overall score. Scores were analyzed based on candidate gender and race and reviewer gender. The reviewer scores were assessed for variability over time as well as interrater reliability. Results: Applicants invited for an interview scored higher in objective categories, with clerkship scores being most significant. Female applicants (35% of applicants) scored lower in the USMLE, but higher in subjective categories: extracurricular activities and letters of recommendation. There were no statistically significant differences in scores for URM applicants (9.8% of applicants) invited or not invited for interview. Conclusions: Both objective and subjective evaluation of resident applications impact interview invitations, however, objective scores have more impact. This is particularly important considering upcoming changes to USMLE step 1 scoring. Programs who utilize similar scoring criteria should continue to evaluate their scoring systems in order to best assess candidates.

63. Full Thickness Graft Outcomes by Specialty

Dip Rana, BA, Newark, NJ; Samer T. Elsamna, BA, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to compare outcomes of full thickness grafts between otolaryngologists and plastic surgeons.

Objectives: Full thickness skin grafts (FTSG) in the head and neck are commonly performed by both otolaryngologists (ENT) and plastic surgeons (PS). We sought to determine if there any differences in patient characteristics and outcomes based on subspecialty. Study Design: Retrospective study of a national surgical outcomes database. Methods: The ACS National Surgical Quality Improvement Program was queried for cases of FTSG from 2005-2018 using CPT codes. Data regarding patient demographics, comorbidities, and outcome measurements were obtained. Cohort differences and odds ratios (OR) were obtained using chi square and logistic regression analyses. Results: 2614 patients met inclusion criteria for the FTSG. 64.5% were performed by PS (n=1686) and 35.5% by ENT (n=928). ENT cases were associated with an increased risk of prolonged operative times (OR: 1.86, p<0.001). There were no statistically significant differences in any of the measured outcomes between PS and ENT cohorts, including surgical infection, dehiscence, and bleeding. However, PS patients were more likely to be admitted following surgery (OR: 1.64, p<0.001). Conclusions: Patients who underwent FTSG by PS had a higher risk of postoperative admission. While ENT cases were associated with longer operation times, there were no differences in outcomes which may be reflective of case complexity.

64. Coagulopathy and Adverse Outcomes in Patients Undergoing Inpatient Thyroidectomy for Thyroid Cancer

Avneet Randhawa, BS, Newark, NJ; Karandeep Singh Randhawa, BS, Newark, NJ; Christina H. Fang, MD FACS, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the adverse outcomes associated with coagulopathy in patients undergoing thyroidectomy for thyroid cancer.

Objectives: To analyze the association between coagulopathy and adverse outcomes in thyroid cancer patients undergoing inpatient thyroidectomy. Study Design: Retrospective database review. Methods: This retrospective cohort analysis utilized the 2003-2014 National Inpatient Sample to identify patients with a primary diagnosis of malignant thyroid neoplasms who underwent thyroidectomy. Higher total charges and prolonged length of stay (LOS) were indicated by values greater than the 90th percentile. Demographics, hospital characteristics, and complications were compared among hospitalized patients with coagulopathy and without coagulopathy using chi square analysis and one way ANOVA. The independent effect of coagulopathy on adverse outcomes was analyzed using logistic regression, while adjusting for the aforementioned variables. Results: 145,765 patients were identified and divided into coagulopathy (n=778) and non-coagulopathy (n=144,987) cohorts. Hospital characteristics and demographics were significantly different between coagulopathy and non-coagulopathy cohorts. Patients with coagulopathy had an increased incidence of anemia, liver disease, and renal failure (p<0.001). Coagulopathy was associated with prolonged LOS (4.14 days vs. 1.90 days, p<0.001) and greater hospital charges ($54,564.13 vs. $27,613.16, p<0.001). Multivariate regression indicated that coagulopathy patients had prolonged LOS (OR 2.053, 95% CI 1.437-2.932, p<0.001) and higher total charges (OR 2.118, 95% CI 1.374-3.266, p<0.001). Coagulopathy patients had higher odds of experiencing all complications (OR 3.226, 95% CI 1.862-5.591, p<0.001), nervous complications (OR 4.829, 95% CI 1.469-15.873, p=0.010), pulmonary complications (OR 2.286, 95% CI 1.037-5.036, p=0.040), and operative complications (OR 3.224, 95% CI 1.773-5.862, p<0.001), such as hemorrhage/hematoma (OR 3.785, 95% CI 2.009-7.131, p<0.001). Conclusions: Coagulopathy is an important factor associated with increased incidence of complications following thyroidectomy in the inpatient setting.

65. The Impact of Resilience and Health Literacy on the Quality of Life of Otolaryngology Patients

Francis Reyes Orozco, BA, Los Angeles, CA; Ian Kim, MFA MS, Los Angeles, CA; Harrison Joseph Ma, BA, Los Angeles, CA; Christine Raj, BA, Los Angeles, CA; Kevin Herrera, BS, Los Angeles, Ca; Kevin Hur, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the effect of resilience on health related quality of life in patients with adequate and inadequate health literacy.

Objectives: The effects of health literacy (HL) and resilience on health related quality of life (HRQoL) are well established. However, the interactions between HL and resilience have been raised by studies linking social determinants and healthcare utilization. This study evaluated the combined effects of HL and resilience on HRQoL in otolaryngology patients. Study Design: Cross-sectional study. Methods: Survey responses were collected from patients from three otolaryngology clinics in our city. HRQoL was assessed by time to trade off scores and resilience was assessed using the Brief Resilience Scale

(BRS). Health literacy was assessed using the Brief Health Literacy Screen (BHLS). A multivariable linear analysis was performed with an interaction term. All analyses were controlled for ethnicity, age and gender. Results: Of the 296 patients included in the study (mean age 50.7; male 40%; Hispanic or Latino 37%), 21% were found to have inadequate HL. Generally, patients with higher resilience reported significantly better HRQoL ($p < .05$). A significant synergistic interaction effect was found between increased resilience and adequate HL ($p < .05$). For patients with lower resilience, inadequate HL was a protective factor for decreased HRQoL. Hispanic or Latino patients reported significantly lower HRQoL than non-Hispanic or Latinos ($p < .001$). No significant effects of age and gender were found. Conclusions: There are HL differences in associations between resilience and HRQoL. Resilience is a more important factor to predict HRQoL in patients with adequate HL. Inadequate HL has a protective effect on decreased HRQoL in patients with lower resilience.

66. **WITHDRAWN - Feasibility Study on the Use of an Ultrasonic Aspirator for Performing Tonsillectomy in Adults**

Eric Suh, Lawrenceville, NJ; Gerald D. Suh, MD, Princeton, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the rationale and clinical outcomes for performing tonsillectomy using an ultrasonic aspirator.

Objectives: The objective of this study was to determine if there were any advantages or disadvantages of using a Sonopet ultrasonic aspirator to perform tonsillectomy in adults. Study Design: Prospective case series of 10 consecutive adult patients undergoing tonsillectomy using an ultrasonic aspirator performed by a single surgeon in an outpatient surgicenter. Methods: Patient demographics including age, gender, BMI, preoperative tonsil size and surgery indications were tabulated as well as type of handpiece used, device settings, length of surgical time, amount of intraoperative bleeding, time in the recovery room, daily average postop pain scores, highest postop pain score, amount of narcotic use, time to regular diet, and time to normal activities as well as amount of residual tonsil tissue observed at 30 days postop and any complications noted. All patients had the same postoperative pain control regimen including gabapentin x 3 days, prednisolone solution x 4 days, and hydrocodone with acetaminophen for breakthrough pain. Results: Results are still being tabulated, but the length of surgery, equipment costs, and time in the recovery room are comparable with other modalities of performing tonsillectomy, but with the ability to remove 95 to 100% of tonsil tissue with decreased overall pain scores, narcotic use, time to regular diet and normal activities. No complications were observed in this case series as of yet. Conclusions: The ultrasonic aspirator is a viable option for performing tonsillectomy in adults with the potential for complete removal if desired and decreased recovery.

67. **Invasive Fungal Sinusitis in COVID-19 Positive Patients: A Case Series**

Daniel Swanson, BS, Washington, DC; Eric Wu, MD, Washington, DC; Daniel Blumenthal, MD, Washington, DC; Suzette Mikula, MD, Washington, DC; Timothy Deklotz, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to overview how COVID-19 infections can make an excellent environment for acute invasive fungal sinusitis to grow and cause significant morbidity, especially in immunosuppressed patients.

Objectives: To report our clinical experiences with three patients diagnosed with acute invasive fungal sinusitis (AIFS) and concurrent COVID-19 infection. We strive to enhance the understanding of both disease entities and their potential interactions. Study Design: The clinical records of three patients diagnosed with COVID-19 and AIFS were reviewed at our institution over the past year. A comprehensive literature review related to the intersection of the two diseases was performed. Methods: A literature review using Ovid MEDLINE, PubMed, NCBI databases, and Google Scholar encompassing all relevant publications related to patients with both invasive fungal sinusitis and COVID-19 infections was conducted and the underlying pathophysiology reviewed. Results: All three patients had significant comorbid conditions. Two patients suffered from uncontrolled diabetes, and one with hemophagocytic lymphohistiocytosis. Two of our patients had severe infections with eventual mortality and one patient was discharged home. Conclusions: COVID-19 and COVID pneumonia have been linked to invasive fungal sinusitis infections, but the exact pathogenesis behind the linked infections remains unclear. Inflammation and immune dysregulation seen in COVID-19 infections make it an opportune environment to develop concomitant invasive fungal infections. Our case series shows that steroids may worsen immunosuppression and augment T-cell dysfunction seen in both COVID-19 and AIFS. More research is needed to further elucidate this relationship, especially to optimize treatment given the challenges of treating both conditions concomitantly.

68. **Analyzing Patient Characteristics and Outcomes for Tracheostomy by Surgeon Specialty**

Christopher C. Tseng, BS, Newark, NJ; David A. Cohen, BA, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jordon G. Grube, DO, Albany, NY; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to analyze differences in patient demographics, comorbidities and outcomes for tracheostomies performed by general surgeons compared to otolaryngologists.

Objectives: To analyze differences in patient demographics, comorbidities and outcomes for tracheostomies performed by general surgeons (GS) compared to otolaryngologists. Study Design: Retrospective database analysis. Methods: All tracheostomy cases performed by GS or otolaryngologists were queried from the National Surgical Quality Improvement Program from 2005-2017. Preoperative patient characteristics and outcomes were stratified by surgeon specialty through univariate analysis. Logistic regression was then used to control for significant comorbidities and predict postoperative outcomes for GS compared to otolaryngologists. Results: 2,819 tracheostomy cases were included: 2,395 cases performed by otolaryngologists and 424 cases by GS. Preoperatively, there were significantly more GS patients who were older than 65 years, emergent cases, ASA class IV, and had comorbid obesity, sepsis, hypertension, diabetes, dyspnea, chronic steroid use, bleeding disorder, COPD, and CHF ($p<0.05$) than otolaryngology patients. Postoperatively, significantly more GS patients developed a DVT, MI, pneumonia, renal failure, prolonged ventilation, and sepsis ($p<0.001$). Moreover, GS patients more frequently experienced 30 day mortality (16.3% vs. 1.8%, $p<0.001$) return to the OR within 30 days (25.5% vs. 18%, $p<0.001$), and minor (15.6% vs. 9.4%, $p<0.001$) or major complications (73.5% vs. 60.2%, $p<0.001$). However, upon controlling for statistically significant comorbidities from univariate analysis through logistic regression, no significant differences in patient outcomes by surgeon specialty were identified. Conclusions: Poorer outcomes post-tracheostomy by GS compared to otolaryngologists were likely attributable to more severe preoperative comorbidities and emergent cases among general surgery patients. After accounting for clinical characteristics, there were no significant differences in patient outcomes post-tracheostomy by surgeon specialty.

69. WITHDRAWN - Systematic Review of Outcomes Assessment in Past Decade of ENT Research

Rahul M. Varman, MD, Lubbock, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to list most common etiologies of 10 common complaints seen by otolaryngologists along with relative incidences.

Objectives: Otolaryngologists see a variety of complaints presenting to ENT clinic or as hospital consult. Understanding common etiologies of common complaints can help guide clinical assessment for new trainees and even established practitioners. The aim of this systematic review was to discover information of clinically reported etiologies and incidences of common presenting complaints. Study Design: Systematic review. Methods: PubMed, Scopus, and Embase were searched using the PRISMA guidelines. The inclusion and exclusion criteria were established a priori. All results were analyzed using a Bayesian methodology for point estimation and credible interval calculation. Results: From the database searches, 2471 titles were reviewed. Fifty-six titles met inclusion criteria. Most commonly reported etiologies and where reported incidence percentages were reported for anosmia, conductive hearing loss, dysphonia, epistaxis, thyroid enlargement, neck swelling, nasal obstruction, neck mass, neck swelling, otorrhea, parotid mass, parotid swelling, pedi neck masses, rhinitis, sinus complaints, dysphagia, tinnitus, vertigo are reported. Conclusions: Most common reported etiologies of common complaints are reported. These can help guide clinician in evaluation and management of complaints seen in otolaryngology setting.

70. Systematic Review of Outcomes Reporting in Past Decade of ENT Research

Rahul M. Varman, MD, Lubbock, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to list common outcomes reported across ENT and state strengths and limitations of such outcomes reports.

Objectives: To analyze outcomes reporting in therapeutic studies published in Laryngoscope over the past ten years. Study Design: Laryngoscope articles over past five years were collected. Outcomes were recorded from included articles with reference to clinical complaints or diagnoses of interest. Methods: Articles from 2010 - 2019 (pre-Covid) were analyzed. Total of 3,517 titles were assessed. 856 met inclusion criteria. Outcomes from therapeutic studies were collected for analysis. Results: Outcomes by type of study (RCT, retrospective cohort study, prospective cohort study) described. Outcomes split by subcategories of sleep, allergy/rhinitis, broncho/esophagology, skull base, FPRS, general, head/neck, laryngology, otology, pediatrics, endocrine were collected and compared. Increased reports of Patient Reported Outcomes Measures (PROM) noted over past decade. Conclusions: Common outcomes reported over past decade reported, to help guide clinical and therapeutic management. Discrepancies in reporting (single, multi, absent standardized outcomes).

Head and Neck

71. Facility Volume as a Prognosticator of Patient Survival in Locally Advanced Papillary Thyroid Cancer

Arash Abiri, BS, Irvine, CA; Khodayar Goshtasbi, MD, Irvine, CA; Jack Birkenbeuel, BS, Irvine, CA; Edward C. Kuan, MD MBA, Irvine, CA; Tjoson Tjoa, MD, Irvine, CA; Yarah Haidar, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the influence of facility case volume on survival in patients with locally advanced papillary thyroid cancer.

Objectives: To evaluate the influence of facility case volume on survival outcomes in patients with locally advanced papillary thyroid cancer (PTC), and to identify prognostic case volume thresholds for facilities managing this vulnerable patient population. Study Design: Retrospective analysis of the National Cancer Database (NCDB). Methods: The 2004-2017 NCDB was queried for patients receiving definitive surgical treatment for locally advanced PTC. Using K-means clustering and univariate Cox proportional hazards (CPH) regression, three groups with increasing facility case volumes were generated. Multivariable CPH regression and Kaplan-Meier analysis were used to assess the influence of facility case volume and the prognostic meaning of its stratification on patient survival. Results: Of 54,938 patients treated at 1,309 facilities, there were 37,856 (68.9%) females and the mean (SD) age was 48.6 (16.2) years. Three facility volume cohorts were identified: low (1-11 cases/year), intermediate (12-27 cases/year), high (28-107 cases/year). On multivariable CPH analysis, facility volume was significantly associated with reduced all cause mortality (HR 0.996; 95% CI, 0.993-0.999; p=0.005). Compared to patients in low volume centers, those in intermediate (HR 0.888; 95% CI, 0.801-0.985; p=0.025) and high (HR 0.766; 95% CI, 0.661-0.888, p<0.001) volume facilities were associated with reduced mortality. Kaplan-Meier curves of propensity score matched patients demonstrated improved overall survival in higher volume cohorts (all p<0.001). Conclusions: Facility case volume was an independent predictor of improved overall survival in locally advanced PTC, indicating a possible survival benefit of referrals to high volume medical centers. Increasing survival rates were associated with higher volume facilities, suggesting that the identified thresholds may serve as informative quality markers.

72. Predictors of Readmission and Reoperation in Patients Undergoing Thyroidectomy for Thyroid Cancer

Sugosh M. Anur, BS, Stratford, NJ; Ariel Omiunu, BS, Newark, NJ; Kathryn Bregna, BS, Newark, NJ; Prayag S. Patel, BS, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the predictors of readmission and reoperation after thyroid surgery in thyroid cancer patients.

Objectives: To identify predictors of 30 day unplanned readmission and reoperation after thyroidectomy in patients with thyroid cancer. Study Design: Retrospective database study. Methods: 30 day readmission and reoperation rates following thyroidectomy are low. Risk factors for readmission and reoperation were specific to race, gender, and preoperative medical comorbidities. Preoperative counseling for at risk patients may aid in decreasing perioperative morbidity. Results: A total of 20,411 patients (mean age 50.2 ± 14.9 years) with thyroid cancer underwent thyroidectomy (51.3% outpatient). Only 707 patients (3.5%) experienced at least one major perioperative morbidity. There were 403 patients (2.0%) who were readmitted within 30 days of the operation, and 200 (1.0%) patients who underwent reoperation. Patients with a history of greater than 10% weight loss (OR 1.284, 95% CI 1.284-7.165, p<0.011) and disseminated cancer (OR 1.865, 95% CI 1.040-3.343, p<0.036) demonstrated increased risk for readmission. Black (OR 2.413, 95% CI 1.524-3.821, p<0.001) and White (OR 2.195, 95% CI 1.621-2.972, p<0.001) patients were also at increased risk for readmission compared to other racial groups. Patients undergoing completion thyroidectomy were less likely to be readmitted compared to other thyroidectomy procedures (OR 0.461, 95% CI 0.237-0.899, p=0.023). Risk factors for reoperation included male gender (OR 1.810, 95% CI 1.351-2.427, p<0.001) and history of bleeding disorders (OR 2.766, 95% CI 1.316-5.815, p< 0.007). Conclusions: 30 day readmission and reoperation rates following thyroidectomy are low. Risk factors for readmission and reoperation were specific to race, gender, and preoperative medical comorbidities. Preoperative counseling for at risk patients may aid in decreasing perioperative morbidity.

73. Timing of Postoperative Complications in Thyroidectomy and Parathyroidectomy

Kendyl A. Barron, BA, Newark, NJ; Sean Z. Haimowitz, BS, Montclair, NJ; Aksha Parray, BS, Newark, NJ; Prayag Patel, MD, Newark, NJ; Christina H. Fang, MD, New York, NY; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to characterize the frequency and timing of postoperative complications following thyroidectomy and parathyroidectomy and evaluate their associations with certain clinical and demographic factors.

Objectives: Thyroidectomy and parathyroidectomy are common otolaryngological procedures. This study aims to characterize the frequency and timing of postoperative complications following thyroidectomy and parathyroidectomy and evaluate their associations with clinical and demographic factors. Study Design: Retrospective cohort study. Methods: Data were compiled from the American College of Surgeons National Surgical Quality Improvement Program. A total of 19 complications were identified and their frequency and timing after discharge were recorded. Univariate analysis was performed to explore associations between post-procedural complications and clinical and demographic characteristics. Results: Data from 22,807 patients with a mean age of 52.2 years was collected. The cohort was mostly White (74.6%) and female (76.8%), with hypertension (41.2%), obesity (41.8%), smoking (14.8%), and diabetes (12.7%) as the most common comorbidities. A total of 786 complications were recorded. Average days to discharge was 1.3 while number of days to diagnosis of postoperative complications were: sepsis (10.9), deep vein thrombosis (7.6), pulmonary embolism (6.5), urinary tract infection (UTI) (12.2), superficial surgical site infection (SSI) (11.2), and wound disruption (11.9). Most common complications were bleeding requiring transfusion (0.57%), unplanned intubation (0.42%), superficial SSI (0.40%), and UTI (0.36%). There was a significant relationship between female sex and stroke (p=0.018) as well as between age (41-60 years) and superficial SSI (p=0.033). Wound disruption was more common in White (p=0.044) and Hispanic (p=0.025) patients. Conclusions: The timing of complications following thyroidectomy and parathyroidectomy can aid clinicians in monitoring patients' postoperative clinical course. There are also significant associations between these complications and certain demographic factors.

74. Functional Outcomes in Patients with HPV Associated Oropharyngeal Squamous Cell Carcinoma Treated with Trimodality Therapy Including Transoral Robotic Surgery

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Educational Objective: At the conclusion of this presentation, the participants should understand the benefits and drawbacks of trimodality therapy in advanced HPV+ head and neck cancer in the context of patient swallowing and nutrition outcomes.

Objectives: To describe swallowing and nutrition outcomes in patients with high risk oropharyngeal cancer treated with trimodality therapy (TMT), including transoral robotic surgery (TORS) and adjuvant chemoradiotherapy. Study Design: Retrospective cohort study. Methods: Chart review was conducted on patients with HPV + OPSCC receiving TMT with TORS at an academic medical center from January 2010 to December 2020. Data collected included demographics, treatment, feeding tube placement, functional oral intake scale (FOIS) scores, and swallowing language pathology (SLP) evaluations. Data was analyzed with descriptive statistics and univariable logistic regression. Results: In a cohort of 181 patients, the median age was 60 years and 87.9% (159/181) were male. An intraoperative nasogastric tube was placed in 95% (171/181) of patients, and 23.8% (43/181) remained NG tube dependent at 4 weeks. Gastrostomy tubes were placed during treatment in 14.4% (26/181) and after end of treatment in 4.4% (8/181). Median time to removal was 91 days, and at one year after end of treatment, 2.2% (4/181) were tube dependent. Most (157/181) patients were routinely evaluated by SLP postoperatively, and 5.7% (9/157) showed signs of aspiration/penetration on barium swallow or swallowing trial. At one year, 60.2% (109/181) continued to receive SLP evaluations, with 12 showing signs of aspiration/penetration. Median FOIS scores were 7 at preop visit, 2 at first postop visit, and 6 at 1 year. Conclusions: Patients with HPV associated OPSCC who underwent TMT experienced low rates of aspiration, long term feeding tube dependence, and deficits in functional oral intake. SLP evaluations provide a useful and documented measure for quantifying chronic dysphagia.

75. A Multimodal Approach to Quantify Chondrocyte Viability for Airway Tissue Engineering

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Educational Objective: At the conclusion of this presentation, the participants should be able to comprehensively analyze chondrocyte viability with a combination of in vitro and in vivo approaches.

Objectives: Partially decellularized tracheal scaffolds have emerged as a potential solution for long segment tracheal defects. These grafts have exhibited regenerative capacity and the preservation of native mechanical properties resulting from elimination of immunogenic cell types in the epithelium while sparing immunoprivileged chondrocytes. With partial decellularization, new considerations must be made about the viability of these preserved chondrocytes. In this study, we propose a multimodal approach for quantifying chondrocyte viability for airway tissue engineering. Study Design: Tracheal replacement, chondrocyte viability, regenerative medicine, animal model. Methods: Tracheal segments (5 mm) were harvested from C57BL/6 mice, and immediately stored in phosphate buffered saline at -20° C (PBS-20) or cryopreserved at -80° C (CP-80). Stored and control (fresh) tracheal grafts and were implanted as syngeneic tracheal grafts (STG) for 3 months. STG were scanned with micro-positron emission tomography computed tomography (U-PETCT) in vivo. STG (control, stored in PBS-20 or CP-80) were characterized with live/dead assay, terminal deoxynucleotidyl transferase dUTP

nick end labeling (TUNEL), and von Kossa. Results: Live/dead assay detected higher chondrocyte viability in CP-80 condition compared to PBS-20. TUNEL staining indicated that storage condition did not alter the proportion of apoptotic cells. Increased tracheal radiographic density (Hounsfield unit) measured by micro CT was correlated with larger cartilage calcification area detected by von Kossa. Conclusions: There is currently no gold standard for quantification of chondrocyte viability. We predict that a strategy integrating radiologic and histologic techniques leveraging respective strengths and weaknesses can be used in combination to assess chondrocyte viability. In the future, these techniques may prove useful in determining the merit of partially decellularized tracheal scaffolds.

76. The Impact of COVID-19 on Presentation and Diagnosis of Head and Neck Squamous Cell Carcinoma

Jason R. Crossley, MD, Washington, DC; Lacey Nelson, BS, Washington, DC; Hunter VanDolah, BS, Washington, DC; Bruce J. Davidson, MD, Washington, DC; Jessica H. Maxwell, MD MPH, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to describe how the COVID-19 pandemic has affected trends in presentation and diagnosis of head and neck cancer.

Objectives: To analyze how the COVID-19 pandemic has influenced trends in head and neck squamous cell carcinoma (HNSCC) presentation and diagnosis -- including referral patterns, stage at presentation, and time to diagnosis -- over a longitudinal time course. Study Design: Retrospective review. Methods: A retrospective review of patients with HNSCC presenting between January 1, 2019, and December 31, 2020, was performed. Patients were stratified into pre-COVID and COVID cohorts based upon presentation date either before or after the COVID pandemic was declared a national emergency. Data was collected on demographics, referral site, symptoms, tumor characteristics, and time to diagnosis. Results: Of 182 patients with HNSCC identified, 73.6% (134/182) were in the pre-COVID cohort and 21.9% (48/182) were in the COVID cohort. Patients in the COVID cohort were more likely to present through inpatient consultation (14% versus 8%) or established patient visits (21.4% versus 2.5%) and had a higher proportion of oropharynx primaries compared to the pre-COVID cohort (64.3% versus 34.7%), however these only trended towards significance. Cancer stage at presentation trended towards more advanced in the COVID cohort compared to the pre-COVID cohort (71.4% stage III-IV compared to 51.8%, respectively). Time from presentation to diagnosis was similar between the cohorts at approximately 30 days. Conclusions: These results suggest that patients presenting during the COVID pandemic may have unique referral patterns, advanced stage at presentation, and a higher proportion of oropharynx primaries. Further investigation with a larger sample size is warranted.

77. Impact of Facility Volume on Presentation and Outcomes of Oral Cavity Squamous Cell Carcinoma

Amar D. Desai, MPH, Newark, NJ; Ryan Jin, BS, Newark, NJ; Salma Ahsanuddin, BS, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how facility volume influences outcomes in patients with oral cavity squamous cell carcinoma.

Objectives: Although studies have suggested improved survival in hospitals with greater volume for a variety of cancers, this association is yet to be investigated in cancers of the oral cavity. This study assesses the impact of facility volume on outcomes in patients with oral cavity squamous cell carcinoma (SCC). Study Design: Retrospective analysis of a national cancer registry. Methods: The 2004-2016 National Cancer Database was queried for cases of oral cavity SCC. Facility volume status was divided into tertiles based on frequency. Demographic characteristics, Kaplan-Meier, and Cox multivariable survival analysis were performed to assess differences in presentation and outcomes between volume groups. Results: 57,281 cases of oral cavity SCC were identified of which 34,257 (59.8%) were male and 23,024 (40.2%) were female. 47 high volume, 176 medium volume, and 1079 low volume facilities were included. Age, race, insurance status, facility type, distance, time to surgery, radiation, chemotherapy, surgery, tumor size and stage were significantly different between volume groups ($p<0.0001$). Low volume facilities had the greatest proportion of cancers of the lip (42.8%) and tongue (36.5%) whereas high volume facilities saw the greatest proportion of gum tumors (44.1%) ($p<0.0001$). On Kaplan-Meier analysis, low volume facilities had the lowest 5 year (45.1% vs. medium volume: 50.8% vs. high volume: 51.9%) and 10 year (27.2% vs. medium volume: 33.4% vs. high-volume: 33.1%) overall survival ($p<0.0001$). On Cox multivariable survival analysis, high volume had significant mortality benefit when compared to low volume facilities (HR: 0.9, $p=0.001$). Conclusions: Significant differences in patient presentation exist between high, medium, and low volume facilities. High volume facilities have better outcomes on both Kaplan-Meier and Cox multivariable survival analysis compared to low and medium volume facilities.

78. The Effect of Gender on Presentation and Survival of Carcinomas of the Lip: Analysis of the SEER Database

Amar D. Desai, MPH, Newark, NJ; Geetasravya Vegunta, BA, Newark, NJ; Aatin K. Dhanda, BA, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the importance of gender in the presentation of lip carcinomas and the differences in lip carcinomas between men and women which may impact recognition and appropriate diagnosis.

Objectives: Lip carcinomas (LC) are the most common oral cancers. Although widespread, the demographics of LC, especially gender differences, have not been fully characterized. Study Design: Retrospective database study. Methods: The 1975-2018 Surveillance Epidemiology and End Results (SEER) database was queried for LC cases. Demographic characteristics were compared between men and women using chi squared and t-tests. Subsequent Kaplan-Meier and Cox multivariable models were performed to assess differences in survival. Results: A total of 12,413 LC patients were identified, with 10,118 (81.5%) males and 2,295 (18.5%) females. Upon univariate analysis, men had a younger age of onset (69.0 vs. 57.0) ($p<0.001$) and longer survival (130.4 vs. 113.0 months) ($p<0.0001$) than women. Men were more likely to have a presentation on the external lip (84.4% vs. 78.3%) and less likely to have mucosal tumors (9.0% vs. 13.8%) ($p<0.0001$). Men were more likely to have squamous cell variations (95.4% vs. 84.7%) ($p<0.0001$) on histopathology. Other univariate analyses revealed gender was associated with differences in race, income, tumor size, histology, and grade. On Kaplan-Meier analysis, men had higher 5 and 10 year (99.1%, 98.6%) overall survival than women (98.0%, 96.4%) ($p<0.0001$). On Cox multivariable analysis, while there were no gender differences in disease specific survival ($p=0.6259$), tumor grade, classification as melanoma, and external lip presentation were associated with worse outcomes. Conclusions: This study highlights important gender differences in the presentation of LC patients. While significant in Kaplan-Meier analysis, gender was not a predictor of survival in multivariable analysis. Future studies investigating the etiology of these gender differences should be performed to improve survival outcomes.

79. Racial Disparities in Surgical Treatment of Oropharyngeal Cancer: A Surveillance, Epidemiology, and End Results Review

Dontre' M. Douse, MD, Rochester, MN; Linda X. Yin, MD, Rochester, MN; Amy E. Glasgow, MHA, Rochester, MN; Elizabeth B. Habermann, PhD, Rochester, MN; Eric J. Moore, MD, Rochester, MN; Kathryn M. Van Abel, MD, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss how patient race influences the inclusion of surgery in the treatment received for patients with OPSCC based on national Surveillance, Epidemiology, and End Results (SEER) data.

Objectives: The incidence of oropharyngeal squamous cell carcinoma (OPSCC) has been rising due to the increase in human papillomavirus associated cases. Racial disparities exist in overall survival for OPSCC patients. While many high volume centers offer surgery for patients with OPSCC as a part of deescalation protocols, racial disparities in the use of surgery for management of OPSCC have yet to be explored. Study Design: Cross-sectional survey. Methods: The SEER database was queried for OPSCC patients diagnosed between 2004-2017. Univariate and multivariable logistic regressions were used to evaluate associations between patient race, surgical treatment, and reasons for lack of surgery. Results: 50,207 patients with OPSCC were included for analysis. 3,154 (6.3%) patients identified as Hispanic, 40,445 (80.6%) identified as White, 4,656 (9.3%) identified as Black, and 1,952 (3.9%) identified as Other. 33,567 (66.8%) patients did not undergo surgical treatment, while 12,901 (25.7%) patients did undergo surgical treatment. Black patients were less likely to undergo surgery than other races (17.9% Black versus 26.5% White, 26.6% Hispanic, and 25.8% Other that underwent surgery; $p <0.0001$). After controlling for age, income, and tumor, Black patients remained significantly less likely to undergo surgery (OR: 0.58, 95%CI: 0.53-0.63; $p < 0.0001$) compared to White patients. Conclusions: Racial differences exist in treatment for OPSCC. Black patients are less likely than white patients to undergo surgical management of their OPSCC. Further study is needed to better understand and overcome the racial disparity observed in the surgical management of OPSCC.

80. Cavernous Sinus Metastasis of p16 Tonsillar Squamous Cell Carcinoma: A Diagnostic Challenge

Eric Arthur Dunipace, PhD MA MS, Los Angeles, CA; Alexander Cronkite, MD, Los Angeles, CA; Albert Y. Han, MD PhD, Los Angeles, CA; Jivianne Lee, MD, Santa Monica, CA; Jennifer Long, MD PhD, Los Angeles, CA; Marilene B. Wang, MD, Los Angeles, CA

Educational Objective: After reading this poster, participants should be able to understand the disease course of our patient and the diagnostic challenge of the unusual metastasis to the cavernous sinus.

Objectives: Cavernous sinus metastasis is a rare manifestation of head and neck cancer and improving the diagnosis of this condition can improve patient outcomes. Study Design: A case report of a 78 year old male who recently completed adjuvant chemoradiation for p16- cT2 N3b M0 right palatine tonsillar squamous cell carcinoma and presented with seven days of progressive cranial nerve deficits including: facial numbness, ptosis, and complete ophthalmoplegia. Methods: We utilized a review of the patient's electronic medical record to obtain an accurate history of the disease course. Relevant imaging and laboratory studies have been reviewed and included. Results: Initial imaging, including MRI of the brain/head and neck, demonstrated a new right cavernous sinus lesion suspicious for tumor, infection, or thrombosis. Additional imaging findings of a new right sphenoid opacification and pulmonary emboli clouded the diagnostic picture. After additional workup to rule out thrombosis/emboli, invasive fungal sinusitis, or other sources of metastases, additional magnetic resonance imaging revealed continued expansion of the cavernous sinus lesion into to the foramen ovale consistent with tumor spread. The patient subsequently received expedited palliative immunotherapy and radiation. Conclusions: Several other reports in the literature discuss the metastasis of head and neck cancer to the cavernous sinus from locations such as the thyroid, buccal mucosa, parotid gland, nasopharynx, oropharynx, and larynx. Unfortunately, all of these reports emphasize that the diagnosis of metastasis involving the dural venous sinuses can be elusive. Reducing the time to an accurate diagnosis will allow for early palliative involvement and optimal patient outcomes.

81. Assessment of the Basaloid Variant of HPV+ Oropharyngeal Squamous Cell Carcinoma

Samer T. Elsamna, BA, Newark, NJ; Ghayoour Mir, DO, Newark, NJ; John Stein, DO, Newark, NJ; Ibraheem Shaikh, BS, Newark, NJ; Evelyne Kalyoussef, MD, Newark, NJ; Dylan F. Roden, MD MPH, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the significance of the basaloid histological subtype of HPV+ oropharyngeal squamous cell carcinoma.

Objectives: Basaloid squamous cell carcinoma (BSCC) is a rare subtype of squamous cell carcinoma (SCC). BSCC is particularly aggressive with a poor prognosis in oral cavity cancer. Whether BSCC in oropharyngeal HPV+ cancer has a different prognosis compared to conventional oropharyngeal HPV+ SCC is unknown. Study Design: Retrospective study of a national cancer registry. Methods: The National Cancer Database (NCDB) was queried for cases of HPV+ SCC from 2010-2015. Data on demographics, tumor characteristics, treatment, and survival were obtained. Hazard (HR) and odds (OR) ratios were determined with Cox and logistic regression while survival rates were determined with Kaplan-Meir analysis. A propensity score match (PSM) was conducted between BSCC and conventional SCC groups to develop statistically comparable cohorts. Results: 37585 patients were included, 7.4% (n=2793) were BSCC. The demographics between BSCC and conventional SCC were comparable. BSCC was slightly more likely to have extranodal extension (12.9% vs 10.7%) and be treated with surgery and adjuvant therapy (36.9% vs 30.4%). BSCC was twice as likely to be diagnosed at a community hospital (OR: 2.00). Factors independently associated with survival for BSCC included metastasis (HR: 4.40) and lymphovascular invasion (HR: 3.14). The 3 year overall survival for BSCC and conventional SCC were 85.7% and 84.1%, respectively; there was no difference in survival following PSM (log rank p= 0.149). Conclusions: There was no difference in survival between HPV+ BSCC and HPV+ conventional SCC. Unlike in oral cavity, basaloid histology does not appear to be a clinically distinct form of SCC in HPV+ oropharyngeal SCC. Community hospitals are more likely to diagnosis BSCC.

82. Comparing Perioperative Factors ande Outcomes between Soft Tissue and Osteocutaneous Free Flaps

Samer T. Elsamna, BA, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Ghayoour Mir, DO, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ; Dylan F. Roden, MD MPH, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the difference in outcomes between soft tissue and osteocutaneous free flaps.

Objectives: Soft tissue free flaps (STFF) and osteocutaneous free flaps (OCFF) are both commonly utilized methods of reconstruction following head and neck (H&N) cancer extirpation. We sought to compare perioperative factors and outcomes between these two reconstructive modalities. Study Design: Retrospective study of a national surgical quality database. Methods: The 2005-2018 ACS-NSQIP database was queried for cases of STFF and OCFF performed by otolaryngologists using CPT codes. Patients that received both STFF and OCFF were excluded. Chi square and logistic regression analyses were utilized for comparisons between STFF and OCFF cohorts. Odds ratios (OR) were obtained to quantify associations and measured risk. Results: 4656 patients were identified, 3665 (78.7%) received STFF and 991 (21.3%) received OCFF. Patients in the OCFF cohort were younger (median age 61 vs 63). OCFF patients were more likely to be female (OR: 1.20), and less likely to be taking steroids prior to surgery (OR: 0.603). Median postoperative stay was 8 days for STFF and 9 days for OCFF. OCFF patients were more likely to experience overall (OR: 1.45), medical (OR: 1.24), and surgical (OR: 1.50) complications. OCFF patients were also more likely to have a prolonged postoperative stay (>18 days, OR: 1.58).

Mortality (p=0.443) and return to the OR (p=0.382) were comparable between the OCFF and STFF cohorts. Conclusions: When compared to STFF, OCFF were associated with prolonged hospital stay and increased risk of surgical, medical, and overall complications, without an increased risk of mortality. This data serves as a risk stratification reference important in the preoperative counseling of patients regarding reconstructive options.

83. Clinical and Histopathological Features of Parathyroid Carcinoma: An 18 Year Experience

Lauran K. Evans, MD MPH, Los Angeles, CA; Albert Y. Han, MD PhD, Los Angeles, CA; Cheikh Mballo, BS, Los Angeles, CA; Michael Armaneous, BS, Las Vegas, NV; Dipti Sajed, MD, Los Angeles, CA; Maie St. John, MD PhD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe clinical and histopathological features of parathyroid carcinoma, examine the invasive nature of the disease, and identify difficulties in diagnosis.

Objectives: To evaluate parathyroid carcinoma clinical and histopathological features, as only a few hundred cases of parathyroid carcinoma have been reported in the literature, and pathologic ambiguity and variations in histopathologic determination cause diagnostic difficulty for the histopathologist and surgical team. Study Design: Retrospective cohort. Methods: A chart review was performed of parathyroid surgical specimens procured our medical center between 2000-2018. Out of 1513 specimens, five histopathologically confirmed parathyroid carcinoma cases were identified. The H&E stains were retrieved and reviewed with a senior head and neck pathologist. Results: Four females and one male ranging 33- 49 years were identified. Histopathological features associated with parathyroid carcinoma included fibrous bands (four cases), prominent nuclear atypia (two cases), and vascular invasion (two cases). The size of resected tumors ranged from 1.6-4 cm. Preoperative PTH levels ranged from 196-1,700 with calcium levels of 12.5-16. Postoperative PTH and calcium levels fell within the normal range in all patients after surgical resection. Treatment for all patients included parathyroidectomy and ipsilateral thyroid lobectomy; four patients also underwent neck dissection, with one displaying positive nodes. Adjuvant external beam radiotherapy was used for the one patient with regional metastases, in addition to adjuvant chemoradiation for the one patient with distant (lung) metastases. Two operative reports detailed the adherent nature of the tumor; RLN sacrifice was reported in three cases. Four cases recurred after initial treatment and are currently living disease free; the fifth case passed away from unknown causes. Conclusions: Parathyroid carcinoma is a rare entity. Our review reveals that it impacts mainly females under 50. Large tumor size, clinical signs of adhesion and fibrous bands on histopathology can be indicators for parathyroid carcinoma. Aggressive surgical management of parathyroid carcinoma is warranted given high rate of recurrence with common RLN involvement.

84. The Influence of Frailty, Age, ASA Classification, and Body Mass Index on Postoperative Outcomes in Parotidectomy

Khodayar Goshtasbi, MD MS, Irvine, CA; Sina J. Torabi, MD, Irvine, CA; Monica S. Trent, MD, Irvine, CA; Edward C. Kuan, MD MBA, Irvine, CA; Tjoson Tjoa, MD, Irvine, CA; Yarah M. Haidar, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should have a better understanding of the influence of frailty, age, ASA classification, and BMI on postoperative outcomes in parotidectomy.

Objectives: To assess the influence of modified frailty index (mFI), age, American Society of Anesthesiologists (ASA) classification, and body mass index (BMI) on short term outcomes following parotidectomy. Study Design: Population based study. Methods: The 2005-2017 ACS-NSQIP database was queried for patients undergoing parotidectomy. Multivariate logistic regression analyses evaluated the independent relationship between these factors and postoperative outcomes while adjusting for the confounding effects of each other and extent of parotidectomy. Patients were divided into three groups according to mFI (reference: mFI=0), age (reference: age=18-49), ASA (reference: ASA=1), and BMI (reference: BMI<30). Results: A total of 10,834 patients (51.4% female, 23.4% total parotidectomy) with a mean age of 57.6 ± 15.3 years were included. ASA classification 3-4 (OR=2.14, p=0.008) and age 50-64 (OR=0.70, p=0.040) were independently associated with surgical complications. ASA classification 3-4 (OR=2.91, p=0.040), age ≥ 65 (OR=2.25, p=0.017), and BMI 30-35 (OR=0.57, p=0.035) were independently associated with medical complications. ASA classification 3-4 (OR=2.15, p35 (OR=0.83, p=0.018) were independently associated with ≥ 2 day hospitalization. ASA classification 3-4 (OR=2.68, p=0.033) and BMI >35 (OR=0.61, p=0.044) were independently associated with reoperation. MFI 1 (OR=1.64, p=0.019), MFI 2-5 (OR=1.84, p=0.016) and ASA classification 3-4 (OR=2.27, p=0.049) were independently associated with readmission. Lastly, mFI 1 (OR=1.30, p=0.019), mFI 2-5 (OR=1.61, p=0.001) and ASA classification 3-4 (OR=2.07, p=0.001) were independently associated with any adverse event. Conclusions: Age, frailty, BMI, and ASA classification should all be considered when evaluating and consulting patients for parotidectomy, as they associate with various adverse events.

85. Microvascular Surgery Using Surgical Loupes Versus Operating Microscope - A Single Head and Neck Reconstructive Surgeon's Experience

Jeewanjot Singh Grewal, MD, Detroit, MI; Uthman Alamoudi, MD, Detroit, MI; Amy M. Williams, PhD, Detroit, MI; Mohammed Shama, MD, Detroit, MI; Tamer A. Ghanem, MD PhD, Detroit, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the differences in surgical outcomes of head and neck microvascular reconstructive surgery when using surgical loupes versus the operating microscope.

Objectives: To present surgical outcomes of free tissue transfers performed by a single head and neck reconstructive surgeon comparing two surgical techniques. Study Design: Prospective randomized study. Methods: Head and neck free flap vascular anastomoses using surgical loupes versus microscope magnification between January 1, 2017, and July 15, 2020, were included. Cases using surgical loupes were routinely performed under x3.5 magnification, whereas cases using the microscope were done using the standard operating microscope. Patient demographics, comorbidities, operative times, operative details, and surgical outcomes including take backs, and flap failure were assessed using statistical analysis. Results: Eighty-five free tissue transfer surgeries were included in this study. Of these, 44 (51.8%) free tissue transfers were performed under x3.5 loupe magnification and 41 (48.2%) free tissue transfers were performed using the operating microscope. Total cases requiring intraoperative microvascular anastomosis revision was 12 (15.4%) - surgical loupes was 5 (41.7%) and the microscope was 7 (58.3%) (p=0.2392). Total free tissue transfer failure rate was 3.5% (n=3) with 2 cases occurring in the microscope group and 1 case occurring in the surgical loupe group (p=.2398). Conclusions: The current study provides novel data regarding a single head and neck reconstructive surgeon's experience at a single academic institution. From this either surgical loupes or the operating microscope can be used to perform head and neck microvascular reconstruction with acceptable rates of free tissue transfer survival and favorable perioperative outcomes, without significant differences in outcomes or complications.

86. Postoperative Level of Care following Microvascular Free Flap Reconstruction of the Head and Neck: A Systematic Review and Meta-Analysis

Rahul Dave Gulati, MD, Brooklyn, NY; Ryan Kong, BS, Brooklyn, NY; Prayag S. Patel, MD, Brooklyn, NY; Richard M. Rosenfeld, MD MPH MBA, Brooklyn, NY; Ofer Azoulay, MD, Brooklyn, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the current literature and important factors for consideration in the postoperative level of care for patients undergoing head and neck microvascular free flap reconstruction.

Objectives: To examine outcomes of head and neck microvascular free flap (HNMVFF) reconstruction based on postoperative care in an intensive vs. non-intensive setting. Study Design: Systematic review with meta-analysis. Methods: We reviewed the PubMed, Web of Science, and EMBASE databases with independent screening for eligibility and data extraction by two authors. Only two arm studies directly comparing postoperative outcomes in both an intensive and non-intensive care unit (ICU) setting were included. Data were pooled with random effects meta-analysis to determine the standardized mean differences (SMDs), risk differences, and 95% confidence intervals (CIs). Heterogeneity was assessed using the I2-statistics. The Methodological Index for Non-Randomized Studies (MINORS) tool was used to assess risk of bias. Results: The initial query yielded 4,095 results of which 9 comparative studies remained for final analysis with low to moderate risk of bias. The pooled sampled sizes for the ICU and non-ICU cohorts were 1,511 and 766 respectively. Postoperative care in a non-ICU setting was associated with a reduction in hospital stay of 1.7 days (SMD, 0.40; 95% CI, 0.12-0.68) and small reduction in flap failure (risk difference, 1.7%; 95% CI, 0.4-3.0; number need to treat of 59 patients). The incidence of additional surgical complications, medical complications, reoperation, 30 day readmission, and mortality were comparable between the two groups with high heterogeneity among studies. Conclusions: Routine postoperative admission to the ICU may be unnecessary after HNMVFF reconstruction. Additional studies are needed for informed decisions, but our analyses shows that a non-ICU setting can be comparable to an ICU in properly selected and monitored patients.

87. Mucosal Melanoma of the Oral Cavity: A Review of the National Cancer Database

Sean Z. Haimowitz, BS, Newark, NJ; David A. Cohen, BA, Newark, NJ; Kendyl A. Barron, BA, Newark, NJ; Roman Povolotskiy, MD, Newark, NJ; Dylan F. Roden, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to describe demographic and clinical characteristics of oral cavity mucosal melanoma, as well as understand the impact of these factors on survival.

Objectives: Mucosal melanoma (MM) is a rare head and neck malignancy. Oral cavity is the second most common primary site in the head and neck, following the sinonasal cavity. This study describes demographic and clinical factors, and investigates their impact on survival in oral cavity MM. Study Design: Retrospective National Cancer Database (NCDB) review. Methods: The NCDB was used to evaluate 432 patients with oral cavity MM between 2004 and 2016. Demographics, clinicopathologic characteristics, and treatments were collected. Kaplan-Meir and Cox regression analyses were used to determine variables associated with survival. Results: The mean age was 64.0 (±16.0) years. The majority of patients were White (84.5%) and male (60.0%). Alveolar mucosa (34.0%) and hard palate (32.6%) were the most common primary subsites in the oral cavity. Surgery alone (38.0%) was the most common treatment regiment, followed by surgery plus radiation (24.8%). Five year overall survival was 30.6% with a median survival of 32.9 months. Advanced age, higher TNM stage, and no surgery were significantly associated with worse survival on Kaplan-Meir analysis ($p<0.01$). On Cox regression, lymph node involvement (HR 3.67, $p<0.001$), distant metastasis (HR 6.49, $p<0.001$), and male sex (HR 1.73, $p=0.038$) were significantly associated with worse survival. 153 patients (35.4%) underwent neck dissection, of which 42 were elective. The rate of occult nodal positivity was 40.4%. Performing a neck dissection did not improve overall survival ($p=0.226$). Conclusions: Oral cavity MM has a poor prognosis. Lymph node involvement, distant metastasis, and male sex are associated with worse outcomes.

88. National Utilization Trends of Transoral Robotic Surgery (TORS) in the Management of Oropharyngeal Malignancies

Ryan Jin, BS, Newark, NJ; Salma Ahsanuddin, BS, Newark, NJ; Kirolos Georges, BS, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand use of transoral robotic surgery and endoscopy has changed in the management of oropharyngeal malignancies over time.

Objectives: Transoral robotic surgery (TORS) offers an alternative approach to the management of oropharyngeal malignancies, increasing access to regions otherwise inaccessible. We assess trends in utilization of TORS compared to open and endoscopic resection in T1/T2 base of tongue and tonsillar squamous cell carcinoma (SCC). Study Design: Retrospective analysis of a national cancer registry. Methods: The 2010-2016 National Cancer Database was queried for all cases of T1/T2 tonsillar and base of tongue SCC. Surgical management was stratified based on TORS, endoscopic, or open approaches. Kaplan-Meier, and Cox multivariable survival analyses were performed to determine differences in clinicopathologic characteristics and outcomes between the groups. Results: 11311 cases of T1/T2 tonsil and base of tongue SCC were identified of which 6975 (61.7%) were performed via open approach, 747 (6.6%) were performed endoscopically, and 3589 (31.7%) were performed via TORS. Tonsils comprised 8910 (78.8%) of all cases with most cases being performed via open resection with 5646 (63.4%) cases or TORS with 2710 (30.4%) cases. Use of TORS significantly increased from 2010 to 2016 while use of endoscopic and open resection significantly decreased ($p<0.001$). TORS was significantly protective against positive margins (OR 0.65, $p<0.001$) and resulted in a significantly higher 5 year overall survival (TORS: 78.6% vs open: 75.9% vs endoscopic: 74.2%, $p=0.008$). On Cox multivariable survival analysis, TORS resulted in a significantly lower hazard of death (HR 0.87, $p=0.020$) compared to open surgery. Conclusions: Utilization of TORS in T1/T2 oropharyngeal SCC has increased significantly from 2010 to 2016 and confers significantly improved survival compared to open and endoscopic approaches.

89. Delay to Diagnosis in Human Papilloma Virus Unassociated Oropharynx Cancer

Emily E. Karp, MD, Rochester, MN; Linda X. Yin, MD, Rochester, MN; Thomas Jamie O'Byrne, MAS, Rochester, MN; Daniel L. Price, MD, Rochester, MN; Eric J. Moore, MD, Rochester, MN; Kathryn M. Van Abel, MD, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to identify timing of diagnosis and factors that delay diagnosis in human papilloma virus unassociated oropharynx squamous cell carcinoma.

Objectives: Failure to recognize symptoms of non-human papilloma virus associated oropharyngeal squamous cell carcinoma (HPV(-)OPSCC) at presentation can delay diagnosis and treatment. Determine symptom onset to presentation and final diagnosis. Identify patient factors and provider practice patterns that delay presentation and care in HPV(-)OPSCC. Study Design: Retrospective review at a tertiary care center. Methods: Patients with HPV(-)OPSCC receiving intent to cure treatment from 2006 to 2016. Clinical data, workup, and care timelines were abstracted. Univariate and multivariable linear regressions were performed to determine associations. Results: Of 70 included patients, 52 (74%) were male and median age at diagnosis was 59 years (SD=9.0). The median delay to diagnosis was 69 days (SD=154.57), with a median delay of 30 days (SD=65.1) from symptom onset to first presentation. Most patients visited at least 2 providers (n=34, 55.7%) before diagnosis and saw their primary care physician at first presentation (n=46, 75.4). The most common imaging obtained before diagnosis was neck computed tomography (n=46, 65.7%). Evaluation by 3 or more providers prior to diagnosis was associated with significant delays in diagnosis ($P<0.001$) and being prescribed analgesia prior to diagnosis approached significance ($P=0.09$) on multivariable regression analysis. Receiving no analgesia, steroid, or antibiotic at first presentation

was associated with decreased delays in diagnosis (P=0.01). Conclusions: Delays in care related to evaluations by multiple providers and misdiagnosis prolonged time to diagnosis in HPV(-)OPSCC. Improved patient and provider education is necessary to expedite the diagnosis of HPV(-)OPSCC.

90. The Effect of Neck Dissection on Postoperative Outcomes in Glossectomy

Nikhit Kethidi, BA, Newark, NJ; Rushi Patel, BA, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify differences in postoperative outcomes in glossectomy patients with and without concurrent neck dissections.

Objectives: Tongue carcinoma has a high rate of metastasis to cervical lymph nodes and can be treated with concurrent elective neck dissection. Our study aims to evaluate the effect of neck dissection on postoperative complications in patients undergoing glossectomy. Study Design: Retrospective database review. Methods: The 2015-2018 National Surgical Quality Improvement Program (NSQIP) database was queried for all cases of glossectomy. Patients were subdivided into two cohorts depending on if they received concurrent neck dissection. Univariate and multivariate analyses were conducted to characterize the impact of concurrent neck dissection on postoperative outcomes. Results: Analysis yielded 4,223 patients, of which 2,559 (60.59%) received concurrent neck dissection. There were significant differences in body mass index (BMI), sex, ASA score, and other comorbidities between the cohorts. Patients with neck dissection had significantly longer hospital stays (9.18 vs. 2.62 days, p<0.001) and lengths of surgery (438.00 vs. 134.24 min, p<0.001). Univariate analysis demonstrated neck dissection was associated with reoperation (p<0.001), readmission (p<0.001), surgical complications (p<0.001), and overall complications (p<0.001). After multivariate analysis, these significant differences persisted in reoperation (OR [95% CI]=1.454 [1.073-1.97], p=0.016), surgical complications (OR [95% CI]=2.327 [1.578-2.598], p<0.001), and overall complications (OR [95% CI]=2.025 [1.578-2.598], p<0.001). Conclusions: This analysis demonstrates neck dissection is associated with increased rates of postoperative complications and reoperation; however, neck dissection did not significantly affect readmission rates.

91. Relationship between Patient Safety Indicator Events and Facility Volume for Free Flap Reconstruction

Dongmin C. Kim, BS, Newark, NJ; Rushi Patel, BA, Newark, NJ (Presenter); Christopher J. Pettit, BS, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Maria M. Chemas Velez, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the potential outcomes in patients undergoing head and neck microvascular reconstruction with free tissue transfer with PSI events and understand the effects of facility volume status on the surgical outcomes.

Objectives: Facility volume has been shown to be associated with postoperative outcomes in vascular surgical procedures. We investigated the impact of facility volume on postoperative outcomes and mortality in head and neck microvascular reconstruction with free tissue transfer (FTT). Study Design: A retrospective cohort study. Methods: The 2003-2011 National Inpatient Sample was queried for microvascular reconstruction involving FTT. Cases were categorized into low, intermediate, and high facility volume. Patient safety indicator (PSI) events were determined, and associated with poor postoperative outcomes, defined as discharge to hospice/nursing/extended/care facility, in hospital mortality, and tracheostomy or gastrostomy. Results: Of the 9,587 cases that met the inclusion criteria, 2,259 (23.7%) had a PSI event. PSI events were significantly associated with poor outcomes (87.9% vs. 42.6%; p<0.001) and mortality (11.9% vs. 0.7%; p<000.1). This remains after multivariate logistic regression (poor outcomes OR 1.89; p<0.001; and mortality OR 1.96; p<0.001). Low volume facilities had greater PSI events, poor outcomes and mortality than high volume facilities (PSI event: 42.1% vs. 25.9%; poor outcome: 36.2% vs. 29.5%; mortality: 47.4% vs. 19.6%). After multivariate logistic regression, high volume facilities were less likely to have poor outcomes than low volume facilities (OR 0.728; p<0.001). However, intermediate volume facilities were more likely to have poor outcomes than low facility volume facilities (OR 1.205; p=0.005). Conclusions: Facility volume may have an impact on patient outcomes based on analysis of PSI events. High volume facilities were less likely to have PSI events, poor outcomes, and mortality.

92. Effect of Weight Loss on Postoperative Complications in Laryngectomy

Stefanie Lagalia, BA, Newark, NJ; Teren Yedikian, MS, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the association between preoperative weight loss and postoperative complications in patients undergoing laryngectomy.

Objectives: The study aims to examine the association between preoperative weight loss and postoperative complications in patients undergoing laryngectomy. Study Design: Retrospective database review. Methods: The National Surgical Quality Improvement Program was queried for all patients who underwent laryngectomies between 2005-2018. The patients were then divided into 2 cohorts: those with greater than 10% weight loss in the 6 months prior to surgery versus those without. Univariate analysis and binary logistic regression were conducted to characterize the impact of weight loss on postoperative complications, readmission rates, and reoperation rates while controlling for significant demographics and comorbidities. Results: A total of 2836 cases of laryngectomies were identified of which 377 (15.3%) had recent weight loss. Comorbidities that were significant among the two cohorts were obesity, smoking, dyspnea, COPD, hypertension medication, disseminated cancer, wound infection, ASA status, and functional status. These patients also had higher rates of surgical complications (OR [95% CI] = 2.005 [1.606 - 2.628], p<0.001) and all complications (OR [95% CI] =1.805 [1.413-2.306], p<0.001). Specifically, the patients with weight loss had increased rates of bleeding transfusion (OR [95% CI] =2.469 [1.893-3.220], p<0.001). The rates of medical complications, readmission, and reoperation in both groups were insignificant. Conclusions: In patients who underwent laryngectomy, those who experienced greater than 10% weight loss in the 6 months prior to surgery were at an increased risk for surgical as well as overall complications.

93. Does Nutrition and Fluid Status Impact Postoperative Outcomes of Head and Neck Free Flap Surgeries for Patients with Oral Cancer?

Mehdi S. Lemdani, BA, Newark, NJ; Aksha Parray, BS, Newark, NJ; Prayag S. Patel, MD, Newark, NJ; Christina H. Fang, MD, Bronx, NY; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to determine whether serum albumin, a marker of preoperative nutrition state, and fluid status, measured by a blood urea nitrogen (BUN) to serum creatinine ratio, impact postoperative complications of free flap surgeries for oral cancers.

Objectives: Patients with oral cancer can present with inadequate oral nutrition. This study examines whether serum albumin, a marker of preoperative nutrition state, and fluid status, measured by a blood urea nitrogen (BUN) to serum creatinine ratio, impact postoperative complications of free flap surgeries for oral cancers. Study Design: Retrospective database review. Methods: The National Surgical Quality Improvement Program database was queried for patients who underwent free flap surgeries for oral cancers between 2005 and 2018. Univariate and multivariate analyses were conducted to investigate the association between hypoalbuminemia or high BUN/creatinine ratio and postoperative complications. Results: 936 patients were included, with all having a preoperative serum albumin, BUN, and creatinine available. The mean age was 62.5 years. The mean BUN/creatinine ratio was 18.57 (SD=9.63) and serum albumin was 3.96 g/dl (SD=0.51). Univariate analysis showed preoperative hypoalbuminemia was associated with increased likelihood of postoperative reintubation, perioperative blood transfusion, reoperation, mortality, and any complication. Multivariate analysis showed that hypoalbuminemia was associated with increased likelihood of transfusion (OR 1.670, 95% CI 1.193 - 2.338, p=0.003), reoperation (OR 1.488, 95% CI 1.062 - 2.085, p=0.021), and any complication (OR 1.435, 95% CI 1.085 - 1.898, p=0.011). Univariate and multivariate analysis showed elevated BUN/creatinine ratio was associated with perioperative blood transfusion (OR 1.579, 95% CI 1.124 - 2.218, p=0.008). Conclusions: This study found an association between hypoalbuminemia and elevated BUN/creatinine ratio and postoperative complications in patients undergoing free flap procedures for oral cancer. Nutrition and fluid status should be evaluated prior to surgery.

94. Is There an Association between MELD-Na Score and Postoperative Outcomes of Head and Neck Free Flap Surgery?

Mehdi S. Lemdani, BA, Newark, NJ; Aksha Parray, BS, Newark, NJ; Prayag S. Patel, MD, Newark, NJ; Christina H. Fang, MD, Bronx, NY; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the model for end stage liver disease sodium (MELD-Na) score, designed for the prognosis of chronic liver disease, as a predictive tool of postoperative outcomes in otolaryngology as well as understand its association between MELD-Na score and free flap surgical complications.

Objectives: The model for end stage liver disease sodium (MELD-Na) score, designed for the prognosis of chronic liver disease, has predicted postoperative outcomes in many subspecialties. In otolaryngology, this score's predictive ability of postoperative outcomes is relatively unknown. This study investigates the association between MELD-Na score and free flap surgical complications. Study Design: Retrospective database review. Methods: The National Surgical Quality Improvement Program database was queried for patients who underwent head and neck free flap surgeries between 2005 and 2018. Univariate and multivariate analyses were conducted to determine associations between MELD-Na score and postoperative complications. Results: 2,914 patients undergoing free flap surgeries by otolaryngologists or plastic surgeons

and had the laboratory values available to calculate a MELD-Na score were queried. The mean age was 59.0 years. The mean MELD-Na score was 9.05 (SD=3.57). Univariate analysis showed elevated MELD-Na was associated with increased age (62.95 vs 57.76 years) and male gender (57.1% vs. 72.1%) as well as increased incidences of postoperative pneumonia, reintubation, extended ventilator use, myocardial infarction, transfusion, superficial surgical site infection, cerebrovascular accident, septic shock, reoperation, medical complications, surgical complications, any complication, extended length of stay, readmissions, and mortality. Multivariate analysis found associations between elevated MELD-Na and risk of transfusion (OR 1.393, 95% CI 1.007 - 1.928, p=0.045) and mortality (OR 4.582, 95% CI 1.015 - 20.679, p=0.048). Conclusions: This study suggests an association between liver disease and postoperative complications in free flap procedures. Future studies implementing MELD-Na score as a predictive tool for postoperative complications with free flap procedures merit consideration.

95. Thyroid Abscess: A Case Series and Review of the Literature

Randy W. Lesh, BS, Danville, PA; Jeff Wong, MD, Danville, PA; Kevin Stavrides, MD, Danville, PA; Nicholas C. Purdy, DO, Danville, PA; Phillip K. Pellitteri, DO, Danville, PA; Thorsen W. Haugen, MD, Danville, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the pathophysiology, clinical presentation, and treatment options for thyroid abscess.

Objectives: Chronicle five patients presenting with acute suppurative thyroiditis (AST) with progression to thyroid abscess in a single institution. Study Design: Retrospective case series of patients presenting with AST with progression to thyroid abscess. Methods: A retrospective electronic medical record analysis was carried out to identify patients with thyroid abscesses in a single institution. Clinic and hospital notes, imaging, and laboratory results were reviewed and are described in this case series. A complete literature review was performed to determine etiologies, common findings, and management of similar cases. Results: Five patients with thyroid abscess were identified. The age range of these patients was 16 to 67 years old. The most common presenting symptoms were progressive unilateral neck pain and swelling and odynophagia. Two patients presented with hoarseness. Two patients presented with systemic signs of infection including fever, nausea, and weight loss. Diagnosis of thyroid abscess was made with CT scan of the neck and fine needle aspiration. Management of these patients included antibiotic therapy, incision and drainage, and thyroidectomy. Conclusions: The thyroid gland is well protected from infection by inherent protective mechanisms such as encapsulation, extensive vascular supply and lymphatic drainage, and high iodine content. We identified five patients with thyroid abscess who all presented with neck pain and swelling. Some patients had additional systemic signs of infection. A high degree of suspicion for thyroiditis should be maintained in patients with anterior neck pain and swelling to ensure prompt diagnosis and treatment and prevent complications.

96. Management of Post-Surgical Cervical Chyle Leak: A Systematic Review

Matthew Maksimoski, MD, Chicago, IL; Ahmed Ibrahim, MD, Chicago, IL; Elliot Koo, MD, Chicago, IL; Evan Greenbaum, MD, Chicago, IL

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss various management strategies for post-surgical neck chyle leak. Participants should decide which of these strategies would be most suitable for use in a given case. Participants should understand areas for further investigation into this subject.

Objectives: Single institutional studies, case series, and case reports have discussed experience at individual institutions regarding the need for various interventions and their success. No systematic reviews have yet been conducted on this subject, limiting conclusions from these single institution studies. This study seeks to examine the existing literature and provide a systematic review of relevant data and management strategies. Study Design: Systematic review. Methods: PubMed and Embase databases were queried from inception to June 1, 2021, using the terms "cervical chyle leak", "post neck dissection chyle", "cervical thoracic duct injury", "thyroidectomy chyle leak", and "neck chyle drainage". Duplicates were removed, as were non-English articles. Abstracts were screened to identify only those manuscripts which described management of post-surgical chyle leaks which occurred in the neck, outside of the thoracic cavity. Reference lists were reviewed for included studies to ensure manuscripts were not missed. Results: A total of 474 articles were reviewed, of which 18 met inclusion criteria as outlined above. Primary treatment modalities included medium chain fatty acid (MCFA) diet, octreotide (intravenous and subcutaneous injections are described), pressure wraps, bed rest, stool softeners, cervical surgical exploration, and thoracic surgical exploration. There was variability on the expediency with which these actions were taken and the inclusion of all or some of the steps. Conclusions: While heterogeneity exists among practitioners in the precise protocol for post-surgical neck dissection, success is most frequently described with the use of octreotide, MCFA diet, and bed rest. There is variability on the role of pressure wraps, with many reports documenting success with or without their use. In high volume post-surgical chyle leaks, conservative management is unlikely to prove successful and early exploration and identification of the location of injury can prevent a protracted treatment course. Thoracic exploration is rarely needed in cervical injuries except in the most extreme of outliers.

97. Impact of Treatment Delay in Head and Neck Mucosal Melanoma on Overall Patient Survival

Elaine Martin, MD, Irvine, CA; Kotaro Tsutsumi, BA, Irvine, CA; Khodayar Goshtasbi, MD, Irvine, CA; Sina Torabi, MD, Irvine, CA; Arash Abiri, BS, Irvine, CA; Edward Kuan, MD MBA, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand what clinical factors are associated with mucosal melanoma treatment delays and how these delays and other factors impact patient survival.

Objectives: To characterize clinical factors associated with mucosal melanoma treatment delays and determine the impact of these delays on overall survival. Study Design: Retrospective cohort database study. Methods: Patients with surgically managed head and neck mucosal melanoma treated with subsequent radiation were identified from the 2004-2016 National Cancer Database. Durations of diagnosis to treatment initiation (DTI), radiotherapy (RT), surgery to RT initiation (SRT), diagnosis to treatment end (DTE), and total treatment package (TTP) were calculated. The cohort was split into two groups per each delay interval using the median as the threshold. Results: A total of 772 patients (51.3% female, 89.9% white) with a mean age of 66.6 years met the inclusion criteria for analysis. Median DTI, RTD, SRT, DTE, and TTP were 30, 44, 48, 126, and 92.5 days, respectively. A significant association was identified between insurance status (private/managed care) and longer TTP (p=0.03). Regional dose of radiation was also associated with increased TTP (p=0.03). Non-White race was associated with longer RT (p=0.04). Positive surgical margins were associated with longer DTE (p=0.003). Cox proportional hazards analysis showed worse survival with chemotherapy administration (hazard ratio=1.44, 95% confidence interval 1.10-1.88, p=0.01). Age, gender, race, facility type, insurance status, Charlson-Deyo comorbidity index, surgical margins, radiation dose, DTI, length of RT, SRT, DTE, and TTP did not significantly affect survival (all $p > 0.05$). Conclusions: Age, race, facility type, insurance type, radiation dose, surgical margins, and treatment delay do not appear to impact survival in patients with mucosal melanoma. Chemotherapy administration is significantly associated with worse survival in mucosal melanoma. Median delay durations can be used as a clinical reference.

98. Kimura Disease Presenting as an Oropharyngeal Mass: A Case Report and Review of Literature

Cheikh Mballo, BS, Los Angeles, CA; Myungjun Ko, PhD, Los Angeles, CA; Victoria Palacios, BS, Reno, NV; Lauran K. Evans, MD MPH, Los Angeles, CA; Abie H. Mendelsohn, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate the rarity, difficult diagnostic process, and different treatment modalities of Kimura disease (KD) affecting an uncommon anatomic site.

Objectives: Only approximately 200 cases of Kimura disease (KD) have been reported in the English literature, with the majority of cases predominantly found in postauricular and submandibular areas. Herein, we discuss the clinical presentation and treatment of a patient with oropharyngeal KD arising from the left base of the tongue, an unusual location previously reported by only a few case reports according to our knowledge. Study Design: Case report and review of literature. Methods: The authors reviewed the chart findings (notes, images, surgical specimens) of one patient for the following case report. A review of literature was also conducted for literature pertaining to Kimura disease. Results: A 33 year old female with no sign of cervical lymphadenopathy was admitted with a history of sinonasal symptoms including airway obstruction, throat discomfort, as well as smell and taste disturbance. On evaluation, she was found to exhibit hypertrophy of the pharyngeal tonsils, a deviated nasal septum, and a singular vallecular mass extending from the base of the tongue onto the lingual surface of the epiglottis. Surgical resection of the 3cm mass indicated KD. Repair of her nasal septum and removal of the KD mass resulted in resolution of her presenting symptoms. Conclusions: KD is a rare, chronic, inflammatory condition normally characterized by benign lymphadenopathy. The occurrence of KD in the oropharynx is extremely rare thereby making the establishment of an accurate preoperative diagnosis challenging. Report of the specific findings of our case is critical in better understanding the prognosis, appropriate treatment, and impending complications of KD presenting as an oropharyngeal mass.

99. Lymph Node Yield from Salvage Neck Dissection in Oropharyngeal Squamous Cell Carcinoma

Isaac Obermeyer, MD, Irvine, CA; Khodayar Goshtasbi, MD, Irvine, CA; Michael Berger, MD, Irvine, CA; Yarah M. Haidar, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the importance of lymph node yield in salvage neck dissections for oropharyngeal squamous cell carcinoma.

Objectives: To evaluate the impact of lymph node yield (LNY) in salvage neck dissections for oropharyngeal squamous cell carcinoma (OPSCC) on survival outcomes. Additionally, we sought to establish a threshold LNY which was associated with improved survival. Study Design: Retrospective analysis of the National Cancer Database (NCDB). Methods: The 2004-2015 NCDB was queried for patients diagnosed with histologically confirmed OPSCC and had undergone radiation with or without chemotherapy prior to surgical intervention. This included patients with human papillomavirus (HPV)-positive and HPV-negative disease. Univariate and multivariate cox proportional hazard models were used to calculate the association between lymph node yield and survival while adjusting for clinical/sociodemographic confounders. Results: There were 1,100 patients identified with OPSCC who underwent salvage neck dissection after primary medical management. Most patients received radiation with chemotherapy (92.1%) as opposed to radiation only (7.9%) prior to surgery. Average LNY was 21.4 ± 14.3. Patients were categorized into groups by LNY; ≤ 18 (n=554) or > 18 (n=546). Among the study population, LNY ≤ 18 was associated with increased mortality outcomes when relevant covariates were accounted for (HR=1.183, 95% CI 1.009-1.387, p=0.039). Conclusions: For patients undergoing salvage neck dissection for OPSCC, lymph node yield greater than 18 was associated with improved survival outcomes.

100. Evaluating the Impact of Preoperative Dehydration in Head and Neck Microsurgery

Rushi Patel, BA, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; David Zakay, MD, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to evaluate the effect of preoperative dehydration on postoperative complications and readmissions for patients undergoing head and neck microsurgery.

Objectives: Thrombosis is a common cause of free flap failure. Dehydration has been shown to increase the risk blood clot formation. We aimed to evaluate the effect of preoperative dehydration on postoperative complications and readmission for patients undergoing head and neck microsurgery with free tissue transfer (FTT). The BUN to creatinine ratio was used to evaluate dehydration. Study Design: Retrospective database review. Methods: The 2015-2018 National Surgical Quality Improvement Program (NSQIP) database was queried for all cases of FTT performed by otolaryngologists. Patients with missing BUN or creatine values were excluded from the analysis. Patients were determined to have preoperative dehydration if BUN/creatinine ratio was greater than 20:1. Univariate and multivariate analyses were conducted to evaluate the impact of preoperative dehydration. Results: We queried 2,435 cases of which 802 (32.93%) had preoperative dehydration. The dehydration cohort was older (mean: 65.01 vs. 60.44, p<0.001), had a larger percentage of females (38.7% vs. 26.9%, p<0.001) and people of White race (85.9% vs. 79.4%, p<0.001). The two groups differed significantly in several comorbidities including obesity (p<0.001), smoking status (p<0.001), functional status (p=0.002), and ASA score (p=0.002). Independent samples t-test demonstrated that patients with dehydration experienced significantly longer hospital stays (12.46 vs. 11.25 days, p=0.002). However, on multivariate regression analysis, we found no significant association between preoperative dehydration and surgical complications (p=0.083), medical complications (p=0.821), overall complications (p=0.308), unplanned readmission (p=0.804), and reoperation (p=0.965). Conclusions: While dehydration can increase risk for clots, preoperative dehydration measured using the BUN to creatinine ratio was not found to be a significant risk factor for complications in FTT.

101. Predicting Bleeding Complication in Patients Undergoing Pharyngectomy

Rushi Patel, BA, Newark, NJ; Sudeepti Vedula, BS, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jordon G. Grube, DO, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand risk factors associated with bleeding complications in patients undergoing pharyngectomy.

Objectives: Pharyngectomy is often reserved for advanced disease, carrying poor prognosis and significant perioperative morbidity for patients. Our study aims to ascertain factors associated with bleeding complications in patients undergoing pharyngectomy. Study Design: Retrospective database review. Methods: The 2015-2018 National Surgical Quality Improvement Program (NSQIP) database was queried for all cases of pharyngectomy. Patients were subdivided into two cohorts: bleeding complication and no bleeding complication. Patients were determined to have suffered a bleeding complication if they required transfusion within 72 hours of surgery start time. Univariate and multivariate analyses were conducted to determine associated factors. Results: Analysis yielded a total of 713 patients, of which 106 (14.9%) experienced a bleeding complication. Univariate analysis demonstrated significant differences in race and comorbidities including obesity and history of bleeding disorder. Independent samples t-test demonstrated that patients that experienced a bleeding complication had longer lengths of stay (16.90 vs. 8.46 days, p<0.001) and operative times (629.52 vs. 392.50 min, p<0.001). Multivariate regression analysis demonstrated bleeding complication as significantly associated with Black race (OR [95% CI]=2.544 [1.380-4.688], p=0.003), concurrent neck dissection (OR [95% CI]=2.401 [1.400-4.118], p=0.001),

history of bleeding disorder (OR [95% CI]=5.089 [1.170-22.138], p=0.030), and systemic sepsis (OR [95% CI]=9.591 [1.330-69.155], p=0.025). This analysis also showed an inverse relationship between bleeding complication and obesity (OR [95% CI]=0.411 [0.205-0.827], p=0.013). Conclusions: This analysis suggests that Black patients are associated with increased risk for bleeding complications when undergoing pharyngectomy.

102. Synchronous Head and Neck and Thyroid Cancer

Phillip K. Pellitteri, DO FACS, Danville, PA; Kevin Stavrides, MD, Danville, PA (Presenter); Jeffrey Goldstein, DDS, Danville, PA; Nicholas Purdy, DO, Danville, PA; Thorsen Haugen, MD, Danville, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to Recognize the importance of simultaneous thyroid cancer diagnosis with that of head and neck cancer and formulate a practical and oncologically sound protocol for managing the thyroid malignancy.

Objectives: Synchronous thyroid cancer with head and neck cancer is very uncommon yet significant. This presentation serves to present illustrative clinical examples and offers a protocol for management. Study Design: Retrospective review of index patient cases and review of the literature with respect to synchronous primary malignancy of the thyroid gland and head and neck. Methods: Medical record review of 2 index patient cases involving synchronous primary malignancies of the thyroid gland and head and neck, together with a review of the literature. Results: Both patients had thyroid cancer diagnosed at various points in the management of head and neck cancer. In one patient, the thyroid malignancy was definitively diagnosed shortly following the multidisciplinary management of HPV related oropharyngeal squamous carcinoma. In the second patient, metastatic cervical disease, suspected of being thyroid malignant origin, was diagnosed as head and neck adenoid cystic carcinoma, a distinctly unique finding. Conclusions: Synchronous primary malignancies of the thyroid gland and head and neck are distinctly uncommon. There is no acknowledged protocol for management of these simultaneous malignancies. The unique presentation of patient 2, together with a review of the literature, offers the opportunity for a discussion on the management of these uncommon clinical scenarios.

103. The Effect of Neck Dissection on Postoperative Outcomes in Pharyngectomy

Christopher J. Pettit, BS, Newark, NJ; Rushi Patel, BA, Newark, NJ (Presenter); Dongmin C. Kim, BS, Newark, NJ; Maria Manuela Chemas Velez, MD, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the potential postoperative complications in patients undergoing pharyngectomy with neck dissection.

Objectives: Neck dissection is an important procedure in the treatment of head and neck cancers. Our study characterizes the postoperative complication rates of concurrent neck dissection in patients undergoing pharyngectomy. Study Design: Retrospective database review. Methods: The 2015-2018 National Surgical Quality Improvement Program (NSQIP) database was queried for all cases of pharyngectomy. Patients were subdivided into two cohorts depending on if they received concurrent neck dissection. Univariate and multivariate analyses were conducted to characterize the impact of concurrent neck dissection. Results: We queried a total of 713 patients, of which 433 (60.7%) received concurrent neck dissection. Univariate analysis demonstrated significant differences in sex, smoking status, preoperative weight loss, and bleeding disorders. Independent samples t-test showed that receiving neck dissection resulted in no significant difference in length of stay (9.11 vs. 7.13 days, p=0.09). However, univariate analysis showed neck dissection was associated with surgical complications (p=0.001) and overall complications (p=0.002). This relationship persisted on multivariate regression as neck dissection was associated with increased surgical complications (OR [95% CI]=2.003 [1.308-3.068], p<0.001) and overall complications (OR [95% CI]=1.901 [1.299-2.781], p<0.001). Further study of individual complications showed a significant association between neck dissection and bleeding complication requiring transfusion (OR [95% CI]=2.382 [1.394-4.070], p<0.001). Conclusions: More than half of patients undergoing pharyngectomy received concurrent neck dissection. Neck dissection was associated with increased rates of surgical complications and overall complications. Understanding these risks can help guide clinicians' postoperative management.

104. Thyroidectomy Outcomes for Patients with RET Mutations Detected in a Rural Tertiary Care Population Genomic Screening Program

Priscilla F.A. Pichardo, DO, Danville, PA; Ryan Hellums, DO, Danville, PA; Jing Hao, PhD MD MSc MPH, Danville, PA; Dina Hassen, MPP, Danville, PA; Juliann Savatt, , Danville, PA; Nicholas Purdy, DO, Danville, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of a population genomic screening program in identifying patients at risk for occult thyroid malignancies.

Objectives: Evaluate clinical care and outcomes among patients identified to have thyroid malignancy risk due to a RET variant found through a population genomic screening program (MyCode). Study Design: Retrospective review. Methods: A retrospective review of electronic medical records was performed of MyCode participants with pathogenic RET variants from June 2016, when RET results were first available for disclosure, to March 2021. Main outcomes included imaging, laboratory findings, extent of thyroidectomy, pathology diagnosis, cancer stage, and surgical complications. Results: A final cohort included 41 patients with median age of 58 (23-87) years at results disclosure and a median of 18 (3-58) months post-identification followup. Thirty-one (76%) patients were identified solely through MyCode, i.e., not via clinical approach. Nine of these (29%) underwent thyroidectomy, 5/9 (56%) also had central neck dissection. All 9 were diagnosed with thyroid malignancies with 7 (78%) at stage I, 2 (22%) at stage II-III, and 0 (0%) at stage IV. Based on postoperative imaging and labs, 8/9 (89%) had no evidence of disease. Of these, 1/9 (11%) had post surgery short term complications. Of note, only 1/9 (11%) patient met preoperative imaging criteria for biopsy, based on ATA guidelines. Conclusions: The majority of patients with RET variants identified via genomic screening would not have met current guidelines for further workup. Genomic screening may provide opportunities for early detection, prevention, and treatment with improved patient outcomes. However, the low uptake of thyroidectomy in this group suggests an opportunity to improve followup care after genomic risk identification.

105. Congestive Heart Failure and Adverse Outcomes in Patients Undergoing Transsphenoidal Surgery

Avneet Randhawa, BS, Newark, NJ; Karandeep Singh Randhawa, BS, Newark, NJ; Christina H. Fang, MD FACS, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of congestive heart failure on outcomes following transsphenoidal surgery in patients with pituitary neoplasms.

Objectives: To analyze the association between congestive heart failure (CHF) and adverse outcomes in patients undergoing transsphenoidal surgery. Study Design: Retrospective database review. Methods: The 2003-2014 National Inpatient Sample was used to identify cases with a primary diagnosis of benign or malignant pituitary neoplasm that underwent transsphenoidal surgery using ICD-9 codes. Higher total charges and prolonged length of stay (LOS) were indicated by values greater than the 90th percentile. Demographics, hospital characteristics, and complications were compared among patients with CHF and without CHF (non-CHF) using chi square analysis and one way ANOVA. The independent effect of CHF on outcomes was analyzed using logistic regression. Results: Of the 70,711 cases included, 1.6% (n=1155) had CHF. Age, race, payer type, median income quartile, hospital region, and hospital teaching status were significantly different between CHF and non-CHF cohorts. CHF was associated with prolonged LOS (8.54 days vs. 4.26 days, $p<0.001$) and greater hospital charges ($99,572.71 vs. $57,300.46, $p<0.001$) compared to the non-CHF cohort. CHF patients had increased odds of higher total charges (OR 1.471, 95% CI 1.081-2.002, $p=0.014$) and prolonged LOS (OR 1.620, 95% CI 1.202-2.183, $p=0.002$). CHF patients had increased odds of all complications (OR 1.892, 95% CI 1.388-2.579, $p<0.001$), cardiac complications (OR 2.472, 95% CI 1.308-4.673, $p=0.005$), pulmonary complications (OR 2.208, 95% CI 1.308-3.725, $p=0.003$), urinary/renal complications (OR 3.100, 95% CI 1.756-5.474, $p<0.001$), and infectious complications (OR 3.065, 95% CI 1.108-8.476, $p=0.031$). Additionally, CHF patients had increased odds of mortality (OR 3.783, 95% CI 1.335-10.724, $p=0.012$). Conclusions: Congestive heart failure is an important factor associated with increased incidence of complications following transsphenoidal surgery.

106. Association between Insurance Type and Adverse Outcomes following Laryngectomy for Laryngeal Cancer

Karandeep Singh Randhawa, BS, Newark, NJ; Avneet Randhawa, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of payer status and its association with complications following laryngectomy for laryngeal cancer.

Objectives: To analyze the association between insurance type and adverse outcomes in patients undergoing laryngectomy for laryngeal cancer. Study Design: Retrospective database review. Methods: The 2003-2014 National Inpatient Sample was used to identify cases with a primary diagnosis code of laryngeal neoplasm and a primary procedure code for laryngectomy. Prolonged length of stay (LOS) was indicated by values greater than the 75th percentile of the sample. Chi square analysis, ANOVA, and binary logistic regression were used to analyze the effects of insurance type (Medicaid, Medicare, and private insurance) on outcomes. Results: A total of 23,532 patients who underwent laryngectomy for a laryngeal neoplasm were included. 7,241 had Medicaid, 4,285 patients had Medicare, and 12,006 had private insurance. Compared to private insurance, Medicare patients experienced increased odds of pulmonary complications (OR 1.393, 95% CI 1.069-1.814, $p=0.014$). Medicaid patients had increased odds of operative complications (OR 1.602, 95% CI 1.307-

1.964, p=0.002) and decreased odds of cardiovascular complications (OR 0.657, 95% CI 0.433-0.997, p=0.048). Overall, odds of any complication were higher in patients with Medicare (OR 1.356, 95% CI 1.119-1.644, p=0.002) and Medicaid (OR 1.559, 95% CI 1.294-1.877, p<0.001) vs. private insurance. Additionally, both Medicare and Medicaid patient cohorts had higher odds of prolonged LOS (Medicare: OR 1.380, 95% CI 1.033-1.842, p=0.029; Medicaid: OR 1.827, 95% CI 1.374-2.429, p<0.001) than privately insured patients. Conclusions: Insurance type is an important factor associated with increased incidence of complications and prolonged LOS in patients undergoing laryngectomy for laryngeal cancer.

107. Association between Insurance Type and Adverse Outcomes following Salivary Gland Tumor Resection

Karandeep Singh Randhawa, BS, Newark, NJ; Avneet Randhawa, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of payer status and its association with complications following resection of salivary gland neoplasms.

Objectives: To analyze the association between insurance type and adverse outcomes in patients undergoing salivary gland tumor resection. Study Design: Retrospective database review. Methods: The 2003-2014 National Inpatient Sample was used to identify cases with a primary diagnosis code of benign and malignant salivary gland neoplasms and a primary procedure code for sialoadenectomy. Values greater than the 75th percentile of the sample defined high total charges and prolonged length of stay (LOS). Chi square analysis, ANOVA, and logistic regression were used in this analysis. Results: A total of 37,849 cases were identified, including 17,570 privately insured, 15,325 Medicare, 2,616 Medicaid, and 1,192 uninsured. Chi square analysis indicated that Medicare, Medicaid, and uninsured patients had higher incidences of cardiovascular (p=0.014), pulmonary (p=0.036), urinary/renal (p=0.001), and operative (p<0.001) complications. Medicaid and uninsured patients faced increased odds of cardiovascular (OR 3.521, 95% CI 1.371-9.043, p=0.009) and operative complications (OR 3.161, 95% CI 1.867-5.353, p<0.001), respectively. Odds of any complication overall were increased in uninsured patients (OR 1.702, 95% CI 1.024-2.829, p<0.040). Medicare and Medicaid patients were both significantly more likely to experience a prolonged LOS compared to privately insured patients (Medicare: OR 1.289, 95% CI 1.009-1.648, p=0.042; Medicaid: OR 1.810, 95% CI 1.372-2.387, p<0.001). Conclusions: Insurance type is a significant factor associated with complications and prolonged LOS in patients undergoing salivary gland tumor resection. Privately insured patients were less likely to have cardiovascular, pulmonary, urinary/renal and operative complications.

108. Association between Obesity and Adverse Outcomes following Laryngectomy for Laryngeal Cancer

Karandeep Singh Randhawa, BS, Newark, NJ; Avneet Randhawa, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of obesity and its association with complications following laryngectomy for laryngeal cancer.

Objectives: To analyze the association between obesity and adverse outcomes in patients undergoing laryngectomy for laryngeal cancer. Study Design: Retrospective database review. Methods: This retrospective cohort analysis utilized the 2003-2014 National Inpatient Sample. ICD-9 codes were used to identify cases with a primary diagnosis code of laryngeal neoplasm (161.0, 161.1, 161.2, 161.3, 161.8, 161.9, 146.4, 146.5) and a primary procedure code for laryngectomy (30.1, 30.29, 30.3, 30.4). High total charges and prolonged length of stay (LOS) were indicated by values greater than the 75th percentile of the sample. Demographics, hospital characteristics, comorbidities, and complication rates were compared between obese and non-obese patients using chi square analyses and independent samples t-test. The independent effect of obesity on adverse outcomes was analyzed using binary logistic regression. Results: 24,537 non-obese and 967 obese patients undergoing laryngectomy for laryngeal cancer were identified from 2003 to 2014. Chi square analysis indicated obese patients had higher incidences of pulmonary complications (18.2% vs. 11.9%; p=0.008) and urinary/renal complications (8.0% vs. 3.6%; p<0.001). Additionally, obese patients experienced longer LOS (13.70 vs. 11.54 days; p=0.015) and greater total charges ($115,200 vs. $93,823; p=0.016) compared to non-obese patients. After adjusting for confounders using a multivariate analysis, we found obesity was an independent risk factor for urinary/renal complications (OR 1.911; 95% CI 1.098 - 3.325; p=0.022) and prolonged LOS (OR 1.666; 95% CI 1.221 - 2.271; p=0.001). Conclusions: Obesity is an important factor associated with increased likelihood of complications and prolonged LOS in patients undergoing laryngectomy for laryngeal cancer.

109. Impact of Diabetes on Length of Stay and Total Hospital Charges following Sialoadenectomy for Benign Salivary Gland Tumors

Karandeep Singh Randhawa, BS, Newark, NJ; Avneet Randhawa, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Maria Manuela Chemas-Velez, MD, Bogota, Colombia; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of diabetes and its effect on length of stay and hospital charges following sialoadenectomy for benign salivary gland tumor.

Objectives: To analyze the effect of diabetes mellitus (DM) on length of stay (LOS) and hospital charges following sialoadenectomy for benign salivary gland tumor. Study Design: Retrospective database review. Methods: This retrospective cohort analysis utilized the 2003-2014 National Inpatient Sample. ICD-9 codes were used to identify cases with a primary diagnosis code of benign neoplasm of major salivary glands and a primary procedure code for total or partial sialoadenectomy. Prolonged LOS and high total charges were indicated by values greater than the 75th percentile of the sample. Demographics, hospital characteristics, comorbidities, mean hospital charges and LOS values were compared using chi square analyses, independent samples t-tests, and binary logistic regression. Results: A total of 4,074 diabetic and 23,731 non-diabetic cases of benign salivary gland tumor resection were identified. Independent t-test and chi square analysis indicated no significant difference in the incidences of complications (5.4% vs. 4.0%; p=0.088) or hospital charges ($20,473 vs. $19,478; p=0.079) between diabetic and non-diabetic patients. However, diabetic patients had a greater average LOS (1.49 vs. 1.40 days; p=0.024). After adjusting for patient demographics, hospital characteristics, and significantly differing comorbidities, DM was found to be a predictive factor for prolonged LOS (OR 1.315; 95% CI 1.057-1.637; p=0.014). However, diabetic patients did not have increased odds of high total charges (OR 1.324; 95% CI 0.895-1.957; p=0.160) or any complications (OR 0.947; 95% CI 0.595-1.507; p=0.819). Conclusions: DM is an important factor associated with prolonged LOS in patients undergoing benign salivary gland tumor resection.

110. The Impact of Facility Type on Treatment Outcomes in Head and Neck Mucosal Melanoma

Kelsey M. Román, BS, Irvine, CA; Sina J. Torabi, MD, Irvine, CA; Khodayar Goshtasbi, MD MS, Irvine, CA; Yarah M. Haidar, MD, Irvine, CA; Tjoson Tjoa, MD, Irvine, CA; Edward C. Kuan, MD MBA, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe how institution type influences treatment decisions, outcomes, and overall survival in patients with head and neck mucosal melanoma.

Objectives: To evaluate differences in treatment outcomes for head and neck mucosal melanoma (HNMM) patients seen at academic versus nonacademic centers. Study Design: Retrospective cohort study. Methods: The 2004-2017 National Cancer Database (NCDB) was queried for patients with HNMM. Facilities were classified by type (academic vs. nonacademic) and differences in treatment course, outcomes, and overall survival (OS) by facility type were assessed. Since melanoma clinical stage first appears within the NCDB in 2010, a subgroup analysis was performed with a smaller cohort containing staging data. Statistical analysis employed chi square, independent samples t-test, Kaplan-Meier, and Cox proportional hazards models. Results: A higher proportion of patients treated at academic centers within our main HNMM cohort waited longer for surgery after diagnosis (p<0.001), had negative surgical margins (p<0.001), and were more frequently readmitted to the hospital within 30 days of surgery (p=0.001). These relationships remained significant within our subgroup controlling for cancer stage. Univariate Kaplan-Meier log rank analysis demonstrated higher 5 year overall survival (OS) for patients treated at academic vs. nonacademic facilities within our main cohort (32.5% standard error (SE) 1.3% versus 27.3% SE 1.5%; p=0.006) and within our subgroup 34.8% SE 2.1% versus 27.2% SE 2.6%; p=0.003). Upon multivariate analysis controlling for demographic and oncologic factors, OS differences by facility type remained significant (p=0.029 for main cohort; p=0.024 for subgroup). Conclusions: Our results suggest that treatment at academic centers over nonacademic institutions is independently associated with improved OS for HNMM.

111. Social Vulnerability and Outcomes in Oral Cavity Cancer

Rahul K. Sharma, MD, Nashville, TN; Wenda Ye, MD, Nashville, TN; Sarah L. Rohde, MD, Nashville, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of a patient's social vulnerability on outcomes for oral cavity cancer.

Objectives: Neighborhood social environments are recognized as important factors that contribute to cancer outcomes. This study utilizes a population database to investigate how social environment impacts outcomes on the cancer continuum including stage at diagnosis, treatment, and survival for oral cavity cancer. Study Design: Retrospective cross-sectional analysis. Methods: Analysis of adults with oral cavity cancer between 2007-2016 from the Surveillance, Epidemiology, End Results (SEER) registry was performed. The Center for Disease Control's social vulnerability index (SVI), an index that ranks regions based on 15 social factors including poverty, lack of vehicle access, and crowded housing was used to characterize a patient's social vulnerability at the county level. Kaplan-Meier analysis and Cox regression models for disease

specific survival (DSS) were stratified by social vulnerability quartiles. Multivariable logistic regression was conducted to identify predictors of advanced cancer stage at the time of diagnosis and receiving multimodal therapy. Results: Our analysis included 17,043 patients. DSS was significantly different across SVI quartiles (log rank, p<0.001). On multivariable Cox regression models, patients with the most social vulnerability exhibited significantly worse DSS compared to those with the least vulnerability (HR 1.24, 95% CI 1.12-1.37, p<0.001) after controlling for demographics and tumor characteristics. Patients with the most social vulnerability were more likely to be diagnosed at later stages (OR 1.24, 1.11-1.38, p<0.001) and less likely to receive multimodal therapy (OR 0.84, 0.77-0.99, p=0.037) in adjusted models compared to those of lower social vulnerability. Conclusions: Social vulnerability significantly impacts DSS for patients with oral cavity cancer. Inequalities in access to care and treatment likely contribute to these disparities.

112. An Examination of Head and Neck Cancer Patients' Communication Style Preferences with Their Surgeon During the Treatment Process

Joshua B. Smith, MD, St. Louis, MO; Crystal E. Weaver, LPC CRC MT-BC, St. Louis, MO; Sean T. Massa, MD, St. Louis, MO; Gregory M. Ward, MD, St. Louis, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to understand patients' preferred communication style with their surgeon when discussing prognosis, treatment options, and side effects related to a head and neck cancer diagnosis and incorporate these preferences into their clinical interactions with patients.

Objectives: Communication is a cornerstone of the patient-physician relationship. This study investigates patients' preferred communication style with their surgeon when discussing prognosis, treatment options, and side effects related to a head and neck cancer diagnosis. Study Design: We performed a qualitative study including adult patients who were diagnosed with cancer of the oral cavity, oropharynx, or larynx. Twenty interviews were completed using a semistructured interview questionnaire. Methods: We utilized Colaizzi's Method of Phenomenological Enquiry to analyze responses from the questionnaires. Responses were coded and categorized into broad themes. Study team members independently conducted data coding and theme formulations and compared responses for accuracy. Following this, study team members met to reach consensus regarding final themes. Results: 28.57% of participants preferred the surgeon express empathy (i.e., understanding patients' thoughts and feelings), 22.62% preferred the surgeon express congruence (i.e., being genuine), and 8.33% preferred the surgeon express unconditional positive regard (i.e., accepting patients without criticism or judgement) during conversations regarding prognosis, treatment options, and side effects related to their head and neck cancer diagnosis. Conclusions: Head and neck cancer patients prefer communication which utilizes the Person Centered Approach. This approach, originated by American psychologist Carl Rogers, emphasizes tenets of empathy, congruence, and unconditional positive regard to build proactive, trusting relationships with patients. Through these tenets, surgeons who utilize this approach also focus on the patient as a person, not solely the cancer diagnosis. The goal is for the patient to achieve greater independence while also appropriately coping with any current or future problems related to the cancer diagnosis.

113. Optimizing the Success of the Supraclavicular Flap in Head and Neck Cancer Reconstruction through Flap Design and Planning

Patrick Terradot Spiller, MD, Shreveport, LA; Abhijit Gundale, MD, Boston, MA; Peter Horwich, MD, Charleston, SC; Brent Chang, MD, Scottsdale, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the importance of measuring the supraclavicular flap pedicle length before induction of general anesthesia to determine if the supraclavicular flap is an appropriate choice for reconstruction of an ablative defect.

Objectives: The supraclavicular flap is an increasingly popular flap for reconstruction of head and neck ablative defects. A potential complication of this flap is distal tip necrosis, causing some surgeons to avoid it. We wanted to standardize a protocol that could allow more surgeons to safely use this flap with appropriate planning. Study Design: Single institution prospective study with IRB approval. We offered enrollment to any patient undergoing a planned reconstructive surgery regardless of the actual reconstruction. Methods: While patients were in holding, immediately before surgery and induction of anesthesia, one of the surgeons used a doppler ultrasound to measure the length of the supraclavicular flap pedicle. The length of this pedicle was tracked until the doppler signal was lost. The length was recorded, and once the patient was placed under general anesthesia a different surgeon measured the length of the same flap pedicle. The two lengths were compared postoperatively using a paired t-test. Results: Thirty patients were enrolled in the study. The mean pre-anesthesia pedicle length was 21.4 centimeters, and the mean post-anesthesia pedicle length was 11.5 centimeters. There was a statistically significant difference between the two groups, with a p-value of <0.001. Conclusions: There is a statistically significant difference in pre- and post-anesthesia supraclavicular flap pedicle lengths. Pre-anesthesia doppler is a low risk method that has the potential to improve flap reliability and efficiency. Further study is required.

114. Risk of Chyle Leak after Therapeutic Neck Dissection: Squamous Cell vs. Papillary Thyroid Carcinoma

Patrick Tassone, MD, Columbia, MO; Austin T. Baker, DO, Columbia, MO (Presenter); Andrew Clark, MD, Columbia, MO; Laura Dooley, MD, Columbia, MO; Tabitha Galloway, MD, Columbia, MO; Robert P. Zitsch, MD, Columbia, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss, understand, and properly educate their patients regarding the risks of chyle leak in neck dissections for metastatic mucosal squamous cell carcinoma and papillary thyroid cancer.

Objectives: Chyle leak is an uncommon but potentially troublesome complication following neck dissection. Conventional wisdom suggests a higher risk among patients undergoing neck dissection for papillary thyroid carcinoma. Our aim was to determine incidence, severity, and risk factors for chyle leak after therapeutic neck dissection for mucosal squamous cell vs. papillary thyroid carcinoma. Study Design: Retrospective cohort study. Methods: The records of 226 consecutive therapeutic neck dissections performed for clinically positive regional metastasis were reviewed. Patients considered to be traditionally at risk for level 4 metastasis were included. Complications were identified and risk factors for chyle leak were examined by Fisher exact test and logistic regression analysis. Results: There were 226 neck dissections (ND) performed on 202 patients. 65 NDs were performed for papillary thyroid carcinoma (PTC) and 161 for squamous cell carcinoma (SCCa). Chyle leak occurred in 15 (6.6%) necks: eight with PTC and seven with SCCa. High volume chyle leak and need for operative intervention were associated only with PTC patients. PTC was significantly associated with chyle leak of any severity on univariable analysis (OR 3.08, p=0.037), but not on multivariable analysis (OR 1.35, p=0.711). Median duration of chyle leak was 10 days among patients with SCCa and 20 days among patients with PTC. Conclusions: Among 202 patients undergoing therapeutic neck dissection, chyle leak was associated with PTC pathology on univariable but not multivariable analysis. However, high volume leaks and leaks requiring operative intervention only occurred among patients with PTC.

115. A Workforce Analysis of Fellowship Trained Head and Neck Surgeons

Raisa Tikhtman, MD, Cincinnati, OH; Kyle Singerman, BS, Cincinnati, OH; Charles Steward, Cincinnati, OH; Scott Langevin, PhD MHA, Cincinnati, OH; Chad Zender, MD, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the current geographic distribution of fellowship trained head and neck surgeons in the United States with respect to hospital referral region (HRR) and address relationships between surgeon density and the incidence of head and neck cancer.

Objectives: To explore the current geographic distribution of fellowship trained head and neck surgeons in the United States and examine relationships between surgeon density and the incidence of head and neck cancer. Study Design: Retrospective analysis of membership data from the American Head & Neck Society (AHNS), research databases, and public use files. Methods: The locations of otolaryngologists who have completed a fellowship in head and neck surgical oncology were identified using 2019 membership data from the AHNS and then stratified by county, hospital referral region (HRR), and population using data from the 2020 United States Census Bureau. Head and neck cancer epidemiologic data was derived from the National Institutes of Health Surveillance, Epidemiology, and End Results (SEER) cancer database. Results: Approximately 537 head and neck surgical oncology trained otolaryngologists are practicing in the United States as of 2019. Of the 306 total HRRs in the United States, 120 have at least one practicing head and neck surgeon. The number of surgeons within each HRR ranges from one to 38, and the distribution of specialists correlates closely with state population. The ratio of surgeons to HRR/regional population ranges from 1:34,621 persons (Iowa City, IA) to 1:2,636,833 persons (Charlotte, NC). Among the SEER reporting states, the incidence of head and neck cancers (oral cavity, oropharynx, hypopharynx, and larynx) between 2014 and 2016 does correlate with the distribution of surgeons by state. At the HRR and county level, the distribution of surgeons does not closely reflect the incidence of head and neck cancers. Conclusions: The distribution of otolaryngologists trained in head and neck surgical oncology varies widely by state and HRR throughout the United States. Although surgeon density assessed on a state level and in regions with a high volume of academic medical centers may suggest a satisfactory supply of providers, a closer assessment of surgeon distribution by HRR reveals regions that are likely underserved when considered in terms of head and neck cancer incidence. In this way, using populational and cancer epidemiologic data on the HRR level may aid in identifying opportunities for future head and neck surgeon deployment based on patient need.

116. Extramedullary Plasmacytoma of the Head and Neck: A National Cancer Database Review

Monica S. Trent, MD, Irvine, CA; Kelsey Roman, BS, Irvine, CA; Edward Kuan, MD MPH, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the effective treatment options for head and neck extramedullary plasmacytoma (HN-EMP) as well as relationships between overall survival and its comparison with multiple myeloma (MM)

Objectives: To evaluate whether treatment type or tumor location affect outcomes for head and neck extramedullary plasmacytoma (HN-EMP) and to compare overall survival (OS) for HN-EMP and multiple myeloma (MM). Study Design: Retrospective cohort study. Methods: HN-EMP and MM data was extracted from the 2004-2017 National Cancer Database (NCDB). Statistical analysis was performed using SPSS version 27.0. Results: 1290 patients with HN-EMP were included in our analysis. Tumors were most commonly located within the nasal cavity, nasopharynx, and paranasal sinus (45.6% of all cases). 38.4% of patients underwent surgery and radiation (SR), 38.3% underwent radiotherapy alone (R), 16.1% received only surgery (S), and 7.1% received neither treatment (N). The estimated OS at 5 years was highest for SR patients (86.8%; standard error [SE]: 1.6%), followed by S patients (82.0%; SE: 2.9%), R patients (75.1%; SE: 2.1%), and N patients (40.8%; SE: 5.9%). Differences in OS by treatment received were significant on both univariate and multivariate analysis ($p<0.001$). Other factors associated with better OS for HN EMP patients included age under 65 (HR= 3.41, $p<0.001$), median household income of at least $46,000/year (HR= 1.34, $p=0.012$), lack of medical comorbidities (HR=1.38, $p=0.016$), and presence of a single versus multiple lesions (HR= 2.19, $p=0.003$). Univariate analysis demonstrated superior OS for HN-EMP patients (5-year OS 78.5%; SE: 1.2%) compared to MM (46.2%; SE: 0.01%), which remained significant on multivariate regression controlling for confounders (HR= 2.95, $p<0.001$). Conclusions: Treatment consisting of surgery and radiotherapy predicts improved OS for HN-EMP compared to either treatment modality alone.

117. Head and Neck Hodgkin's Lymphoma in a Patient with Lynch Syndrome - A Case Report and Literature Review

Sarah Van der Elst, BA, Hempstead, NY; Barak Ringel, MD, New York, NY; Ansley Roche, MD, New York, NY; Seth Kaplan, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the clinical manifestations and treatment of lymphoma in the head and neck of a Lynch syndrome patient. They should also be able to discuss the current knowledge of the role of Lynch syndrome in the development of head and neck cancer.

Objectives: To present a unique case of Hodgkin's lymphoma in the neck of a Lynch syndrome patient and review documented cases of head and neck cancer affecting patients with Lynch syndrome. Study Design: Case report. Methods: Case report and literature review. Results: A 49 year old male with a history of Lynch syndrome (MSH6 mutation) presented with a two week history of a non-tender, non-mobile, neck mass. CT demonstrated a conglomeration of enlarged cervical chain lymph nodes measuring 6 cm x 3.7 cm x 2.7 cm and spanning levels II-IV. FNA of the level II region showed large lymphoid cells with prominent nucleoli in the background of a mixed population of lymphocytes, concerning for lymphoma with a differential, including possible viral infection. Excisional lymph node biopsy of right level II/III neck mass was then performed, and final histology demonstrated CD30+/CD15+ Reed-Sternberg cells and Hodgkin's cells in appropriate background of small lymphocyte and eosinophils, consistent with nodular sclerosing Hodgkin's lymphoma. The patient is doing well three months postoperatively and is undergoing chemotherapy. Including our patient, we have identified 13 cases of head and neck cancer in 11 patients with Lynch syndrome. We found 20 cases in patients with Muir Torre syndrome, and 11 in patients with Turcot syndrome type 1. The majority of cases in Lynch syndrome patients were squamous cell carcinomas or thyroid carcinomas. There were no cases of lymphoma. Conclusions: While there are 12 documented cases of head and neck cancer in patients with Lynch syndrome, this is the first case of Hodgkin's lymphoma affecting the head and neck.

118. Association between Metabolic Syndrome and Outcomes in Complex Head and Neck Surgery

Milind Vasudev, BS, Irvine, CA; Khodayar Goshtasbi, MD, Irvine, CA; Edward Kuan, MD, Irvine, CA; Tjoson Tjoa, MD, Irvine, CA; Yarah Haidar, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should understand the impact of metabolic syndrome on postoperative outcomes of complex head and neck surgery patients.

Objectives: Metabolic syndrome (MetS), defined as the cluster of hypertension, diabetes, and obesity, has been linked to postoperative morbidity and mortality in several surgical cohorts. We aim to evaluate the impact of MetS on the short term postoperative outcomes of complex head and neck surgery patients. Study Design: Cross-sectional database analysis. Methods: The 2005-2017 National Surgical Quality Improvement Program database was queried for 30 day outcomes of patients undergoing complex head and neck surgeries, defined as laryngectomy or composite resection followed by free tissue transfer. Patients with hypertension, diabetes, and body mass index (BMI) greater than 30 kg/m2 were defined as having MetS. Adverse events were defined as experiencing readmission, reoperation, surgical/medical complications, or mortality. Results: A total of 2764 patients (27.0% female) with a mean age of 62.0 ± 11.7 years were included. Patients

with MetS (n=108, 3.9%) were more likely to be female (p=0.017) and have high ASA classification (p=0.030). On univariate analysis, patients with MetS were more likely to require reoperation (25.9% vs. 16.7%, p=0.013) and experience medical complications (26.9% vs. 15.4% p=0.001) or any adverse events (61.1% vs. 48.7%, p=0.011) compared to patients without MetS. On multivariate logistic regression after adjusting for age, sex, race, ASA classification, and complex head and neck surgery type, MetS was an independent predictor of medical complications (odds ratio 2.34, 95% CI 1.28-4.27, p=0.006). Conclusions: Patients with MetS undergoing complex head and neck surgery are at increased risk of experiencing medical complications. Identifying patients with MetS can therefore aid surgeons in preoperative risk assessment and help improve postoperative management.

119. Transcervical and Robotic Assisted Thoracoscopic Resection of a Substernal Goiter

Neha Wadhavkar, BS, New Brunswick, NJ; Ioannis Kontopidis, MD, New Brunswick, NJ; Craig Bollig, MD, New Brunswick, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand anatomical features of multinodular thyroid goiters that warrant a more invasive thoracic approach and the advantages of robotic assisted techniques.

Objectives: Several genetic and environmental factors contribute to the development of multinodular goiter. A transcervical surgical resection is recommended for larger goiters, though a minority of cases may require sternotomy or thoracotomy. We present a case of a posterior substernal goiter that was resected with combined transcervical and robotically assisted thoracic approaches. Study Design: Case report. Methods: Case report. Results: A 31 year old female with an enlarging thyroid goiter elected to proceed with surgical resection. Computed tomography (CT) imaging demonstrated significant extension of the goiter into the posterior mediastinum and a staged approach was decided upon. Both the initial transcervical thyroidectomy and the subsequent robotically assisted resection of the mediastinal portion were successful, without major complications. Conclusions: The majority of substernal goiters can be resected transcervically. However, certain rare anatomic features, such as extension into the posterior mediastinum, warrant consideration of a thoracic approach. Specifically, a robotic assisted resection poses several advantages over traditional, more invasive approaches.

120. Functional Outcomes after Salvage Oropharyngeal Resection with Free Tissue Transfer

Margaret Elizabeth Wieser, BA, Columbia, MO; Laura M. Dooley, MD, Columbia, MO; Tabitha L. Galloway, MD, Columbia, MO; Robert P. Zitsch III, MD, Columbia, MO; Patrick T. Tassone, MD, Columbia, MO

Educational Objective: Patients with locally advanced recurrent oropharyngeal cancer can achieve long term survival with salvage resection and free flap reconstruction. However, functional outcomes in this patient population are not well studied. Rates of tracheostomy or gastrostomy tube dependence, as well as associated factors, among long term survivors are not well described. At the conclusion of this presentation, the participants should be able to consider and discuss functional outcomes and tube dependence rates of patients after salvage oropharyngeal resection.

Objectives: To determine rates of and factors associated with tracheostomy and gastrostomy tube dependence 12 months after salvage oropharyngeal resection and free flap reconstruction. Study Design: Retrospective cohort study at tertiary care referral center. Methods: Patients underwent oropharyngeal resection with free tissue transfer for cancer recurrence or secondary primary after prior head and neck irradiation. A consecutive sample of 23 patients was identified. Patients with prior total laryngectomy or known distant metastasis at the time of surgery were excluded. Average followup was 23 months. Main outcome measures were presence of tracheostomy or gastrostomy tube at 12 months after surgery. Fisher exact testing was done to determine associations between patient factors and outcome measures. Results: Twenty-three consecutive patients were identified between January 2005 and April 2020. After resection with free tissue transfer, median overall survival was 12.3 months, with 12 patients (52%) still alive at 12 months. Among the 12 living patients, four (33%) were tracheostomy dependent, and five (42%) were gastrostomy dependent at 12 months. Long term gastrostomy dependence was significantly associated with having undergone mandibulotomy as part of tumor resection (p=0.02). Presence of long term tracheostomy or gastrostomy was not significantly associated with preoperative tracheostomy or gastrostomy, advanced age, smoking status, advanced T stage, presence of cervical node metastasis, or postoperative re-irradiation. Conclusions: Patients undergoing salvage oropharyngeal resection requiring free flap reconstruction have a guarded overall cancer prognosis. Even among long term survivors, rates of tube dependence are significant. This small series investigates those rates and may help inform patient discussions prior to salvage surgical therapy.

121. Speech and Swallowing Outcomes following Surgical Resection of Cervical Chordoma

Alice C. Yu, BA, Los Angeles, CA; Myungjun Ko, PhD, Los Angeles, CA; Albert Y. Han, MD PhD, Los Angeles, CA; Dinesh K. Chhetri, MD, Los Angeles, CA; Maie A. St. John, MD PhD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand risk factors contributing to poor speech and swallowing outcomes following cervical chordoma resection.

Objectives: To characterize speech and swallowing outcomes for patients requiring surgical resection of cervical chordoma. Study Design: Retrospective case series. Methods: Eleven patients with histologically confirmed cervical chordoma treated between 1993 and 2020 were included. Clinical information regarding clinical course and management were collected. Outcomes measured included overall survival, need for enteral feeds, as well as results of modified barium swallow study. Results: The mean age at diagnosis was 55.9 years. The patient population was 81.8% male. Mean survival after diagnosis was 96 months. The most common location for cervical chordomas was the superior cervical spine, with 8 of 12 (75%) tumors occurring at C1 or C2. Four (36.4%) patients demonstrated aspiration on postoperative modified barium swallow study. Of the four, 2 required enteral feeds long term; both presented with tumors in C1 or C2. The other 2 patients saw resolution of dysphagia after swallowing therapy or type I thyroplasty. Both presented with tumors in the inferior cervical spine. All four patients with evidence of aspiration received surgeries utilizing anterior approaches. Four (36.4%) patients experienced dysphonia. One patient developed postoperative right vocal fold paresis. The remaining three patients endorsed stable dysphonia pre and postoperatively. Dysphonia was significantly associated with worse overall survival ($p = 0.017$). Conclusions: Dysphagia is a common side effect of cervical chordoma resection. It is associated with the use of an anterior approach during resection and with tumors located in the superior cervical spine. Patients with postoperative dysphagia should receive early multidisciplinary swallow rehabilitation. Dysphonia also occurs frequently and is associated with poorer survival outcomes.

122. Insurance Status as a Predictor of Survival in Spindle Cell Carcinoma of the Head and Neck

Laura Yuan, BS, Newark, NJ; Kelyn X. Chen, BS, Newark, NJ; Amar D. Desai, MPH, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the relationship between insurance coverage and outcomes of spindle cell carcinoma of the head and neck.

Objectives: Lack of insurance coverage is a well known strong predictor of poor cancer survival in head and neck cancer. The relationship between spindle cell carcinoma of the head and neck (SpCCHN) and insurance status has yet to be analyzed on a national cohort. Study Design: Retrospective database study. Methods: 864 cases of SpCCHN were identified in the National Cancer Database (2004-2016). Chi square, Kaplan-Meier, and multivariable Cox analyses were performed to identify demographic and survival differences associated with SpCCHN and insurance status. Results: 779 (90.2%) patients had non-Medicaid insurance, 52 (6.0%) patients had Medicaid, and 33 (3.8%) were noninsured. Majority were male (74.0%) and White (87.7%), averaging 67.9 years. Non-Medicaid insurance correlated with greater proportions of Whites ($p<0.001$), higher incomes ($p=0.001$), age greater than 60 ($p<0.001$), and stage I tumors ($p<0.001$). Kaplan-Meier survival analysis showed the lowest 5 year overall survival in the noninsured group (33.1%, $p=0.002$; non-Medicaid:65.3%; Medicaid:82.7%). On Cox multivariable regression, insurance status was associated with decreased mortality for non-Medicaid insurance (hazard ratio (HR):0.505, $p=0.028$) but not for Medicaid (HR:0.467, $p=0.083$) compared to the noninsured group. Age 40-59 (HR:0.078, $p=0.015$) or greater than 60 (HR:0.067, $p=0.010$) years and living in an area where only 6.3-17.5% of people did not have high school diplomas (HR:0.559, $p =0.015$) were associated with better survival outcomes. Female (HR:1.396, $p=0.040$) had worse mortality outcomes. Conclusions: Insurance status was an individual predictor of overall survival for SpCCHN patients on both Kaplan-Meier analysis and multivariable Cox analysis suggesting that insurance coverage and access to healthcare has the potential to significantly improve cancer outcomes.

Laryngology/Bronchoesophagology

123. Impact of Body Mass Index on Surgical Outcomes following Laryngectomy

Salma Ahsanuddin, BS, Newark, NJ; Joshua Blaine Cadwell, MS, Newark, NJ; Kirolos Georges, BA, Newark, NJ; Boris Paskhover, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of body mass index on patient outcomes and complications following laryngectomy.

Objectives: Surgical resection of the larynx is associated with several complications, warranting thorough preoperative evaluation of patients. This study assesses the impact of increasing body mass index (BMI) on surgical outcomes and complications following laryngectomy. Study Design: Retrospective analysis of national registry. Methods: The 2013-2018 National Surgical Quality Improvement Program database was queried for all laryngectomies and cases were categorized by BMI category. Demographics and comorbidities were compared between all groups and post-surgical, medical, and wound complications within 30 days of surgery were determined. Univariate and multivariable logistic analyses were performed to determine risk of complications. Results: Altogether, 1263 laryngectomies were included for analysis, of which

158 (12.5%) were underweight, 601 (47.6%) were normal, 322 (25.5%) were overweight, and 182 (14.4%) were obese. 566 (44.8%) complications were identified. Complications were greatest among underweight patients with significantly higher levels of medical complications (underweight: 41.1%, normal: 28.6%, overweight: 20.8%, and obese: 18.1%, p<0.001). In comparison to being underweight, having a normal BMI or being overweight or obese was protective against medical and bleeding complications, which continued to be protective for the overweight category even after adjustment for confounding factors (OR: 0.56, p=0.003; adjusted OR: 0.63, p=0.041). Other factors significantly associated with complications included black race, ASA score of 3-4, diabetes, recent weight loss, and longer operations. Conclusions: On this large retrospective analysis of a national database, advanced age was associated with an increased frequency of postoperative complications particularly medical complications in a stepwise manner. Appropriate preoperative evaluations are necessary to mitigate complications following laryngectomy.

124. Robotic and Endoscopic Approaches in the Management of Late Stage Laryngeal Cancer

Salma Ahsanuddin, BS, Newark, NJ; Ryan Jin, BS, Newark, NJ; Kirolos Georges, BS, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the outcomes associated with use of transoral robotic surgery in late stage laryngeal cancer.

Objectives: Transoral robotic surgery (TORS) and endoscopy are alternative approaches to open surgery in the management of laryngeal cancer. The utility of these procedures in late stage malignancies compared to open resection has not yet been studied. Study Design: Retrospective study of a national cancer registry. Methods: The 2010-2016 National Cancer Database was queried for cases of T3/T4 laryngeal cancer. TORS and endoscopic cases were analyzed collectively and compared to open laryngectomy. Demographic characteristics, Kaplan-Meier, and Cox multivariable survival analyses were performed to determine differences in clinicopathologic characteristics and outcomes between the two groups. Results: 510 cases of T3/T4 laryngeal cancer were identified of which 174 (34.1%) received TORS/endoscopy and 336 (65.9%) received open laryngectomy. T stage and primary site were not significantly associated with receipt of TORS/endoscopy. A significantly higher portion of patients had positive margins following TORS/endoscopy compared to those receiving open resection (p<0.001). Additionally, patients receiving TORS/endoscopy were more likely to receive chemotherapy and less likely to receive a neck dissection (p<0.001). TORS/endoscopy collectively resulted in a 4 year overall survival (OS) of 43.5% as compared to open laryngectomy which had an OS of 61.9% (p=0.006). On Cox multivariable survival analysis, positive margins resulted in a significantly higher hazard of death (HR: 1.73, p=0.005) while receipt of neck dissections was protective (HR: 0.58, p=0.032). Conclusions: TORS/endoscopy was associated with significantly lower overall survival than open surgery in patients with T3/T4 laryngeal cancer. Accurate staging and proper patient selection need to be considered if a non-open approach is used for late stage laryngeal cancer.

125. Provider Specialties and the Impact of Posterior Glottic Stenosis on Endotracheal Tube Size Selection

Steven Minh Chau, MD, Madison, WI; Stephen Schoeff, MD, Madison, WI; Seth H. Dailey, MD, Madison, WI; Sunil P. Verma, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the correlations between provider specialties, familiarity with posterior glottic stenosis, and endotracheal tube size preferences.

Objectives: To further evaluate the link between provider specialties and endotracheal tube selection practices across two academic medical centers, building upon a prior general study of selection habits. Study Design: An IRB exempt survey was distributed to otolaryngology, emergency medicine, anesthesiology, and ICU departments of two academic medical centers. Methods: The 187 responses were stratified by responder specialties and tube selection criteria were compared. Results: With regards to familiarity with posterior glottic stenosis and its link to larger tube sizes, ENT providers were the most familiar (60/100 on a visual analogue scale) while EM providers were the least familiar (31/100). ENT providers prefer smaller tubes for the average patient (size 7.0 for males and 6.5 for females) and critical care providers prefer larger (7.6 and 7.3). All four specialties prefer the same or larger tube size for taller and heavier patients. Interestingly, ENT providers were far more likely to use a smaller tube for prolonged intubation than any other specialty, with anesthesia even preferring larger tubes. Conclusions: The decision to use larger or smaller endotracheal tubes is strongly correlated with the specialty of the provider. This may be related to the provider's familiarity with and awareness of posterior glottic stenosis.

126. Propofol Infusion Syndrome following Endoscopic Tracheoplasty and Jet Ventilation: A Case Report and Review of Literature

Bonnie Chen, MD, Columbia, MO; Rodger E. Wilhite, DO, Columbia, MO; Andrew Tran, MD, Columbia, MO; Mohammed Alnijoumi, MD, Columbia, MO; Mark R. Gilbert, MD, Columbia, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to identify risk factors and associated symptoms for propofol related infusion syndrome and its importance during and after jet ventilation cases.

Objectives: Propofol related infusion syndrome (PRIS) is a rare and often fatal outcome of propofol use. This case describes the first involving infusion during jet ventilation and implicates mitochondrial disorders as a contributing factor in developing PRIS. Study Design: Case report. Methods: Retrospective chart review. Results: This patient is a 70 year old man with four years of progressively enlarging macroglossia. He had an unusual distribution of subcutaneous fat around his trunk and neck with a past medical history notable for alcoholism. Due to symptomatic dysphagia, he required partial glossectomy with a tracheotomy and was decannulated uneventfully. Three months later, the patient required reoperation for tracheal and subglottic stenosis. Jet ventilation was utilized for CO2 laser endoscopic tracheoplasty. He received 1211 mg of propofol during the case. Postoperatively, the patient developed respiratory distress requiring reintubation. Over the next 48 hours, he developed AKI, elevated liver enzymes and cardiac markers, worsening lactic acidosis, rhabdomyolysis and DIC. He became hypotensive and unresponsive, at which point family withdrew care. Total propofol dose in the ICU was 1921 mg. Due to the history of alcoholism combined with symptomatic lipomatosis disorder, it is thought that he may have had multiple symmetric lipomatosis (Madelung disease). This is a disease related to mitochondrial dysfunction that may affect propofol metabolism. Conclusions: PRIS is characterized by metabolic acidosis, ECG changes, end organ damage, and elevated lactate. Our case suggests that propofol should be used judiciously for jet ventilation cases in patients with a history of mitochondrial disorders as they may have a heightened sensitivity to propofol.

127. Impact of Facility Volume on Patient Safety Indicator Events and Outcome after Laryngectomy

Hannaan S. Choudhry, BA, Newark, NJ; Mehdi S. Lemdani, BA, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Christina H. Fang, MD, Bronx, NY; Jordon G. Grube, MD, Albany, NY; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of facility volume on patient safety indicator (PSI) events and outcomes following laryngectomy.

Objectives: To investigate the impact of facility volume on patient safety indicator (PSI) events and outcomes following laryngectomy. Study Design: Retrospective database review. Methods: The National Inpatient Sample was queried for patients undergoing laryngectomy between 2003-2011. Facility volume was defined by tertile of average annual number of laryngectomies performed. PSI events were selected using ICD-9 codes of in-hospital complications defined by the Agency of Healthcare Research and Quality. Univariate and multivariate analyses were performed. Results: 8,267 cases were included: 1,381 cases experienced ≥1 PSI event and 6,886 experienced no PSI events. On univariate analysis, a greater proportion of Black compared to white patients experienced PSI events (21.1% vs 16.3%, $p<0.001$). Respiratory failure was the most common PSI event (6.11%). There was increased likelihood of poor outcome (OR 2.2, 95% CI 2.0-2.5, $p<0.001$) and mortality (OR 10.5, 95% CI 7.2-15.5, $p<0.001$) with ≥1 PSI event. Odds of PSI events were lower at high (OR 0.8, 95% CI 0.7-0.9, $p=0.005$) but not at intermediate (OR 0.9, 95% CI 0.8-1.1, $p=0.275$) compared to low volume facilities. Odds of poor outcome were lower at intermediate (OR 0.8, 95% CI 0.7-0.9, $p=0.005$) but not at high (OR 1.0, 95% CI 0.9-1.1, $p=0.842$) compared to low volume facilities. There was no statistically significant difference in likelihood of in-hospital mortality between facility volume tertiles (p greater than 0.05). Conclusions: Patients who underwent laryngectomy at high volume facilities had lower risk of PSI events. There was a lower risk of poor outcomes at intermediate volume compared to low volume facilities. There were no differences in mortality risk dependent on facility volume.

128. A National Inpatient Analysis of Factors Effecting Outcomes following Laryngeal Trauma

Aatin K. Dhanda, BA, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; David A. Cohen, BA, Newark, NJ; Kirolos M. Georges, BA, Newark, NJ; Rachel Kaye, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the factors which may play a role in outcomes for patients admitted with a diagnosis involving laryngeal trauma.

Objectives: Laryngeal trauma requiring inpatient admission is a relatively uncommon phenomenon which requires specialized care. We sought out to evaluate factors affecting outcomes for such laryngeal trauma. Study Design: Retrospective database analysis. Methods: The National Inpatient Sample was used to identify 1796 patients with laryngeal fractures, open neck wounds, or neck crush injuries admitted from 2003-2014. Studied variables included patient and hospital demographics. Kaplan-Meier and Cox hazards regression analysis were performed. Results: The majority of patients were male (83.2%) and the most common age range was 31-50 (41.2%). Most admissions were classified as emergent (45.1%) or urgent (5.3%). Diagnoses included closed laryngeal/tracheal fracture (77.4%), open laryngeal/tracheal fracture (13.11%), neck crushing injury (8.4%), and open laryngeal/tracheal wounds (1.2%). Most survived admission (95.3%) and were discharged to home or a short term care facility (78.4%). The mean length of stay was 9.68 ± 13.3 days.

The mean total hospital charges were $101,836 ± $148,106. On multivariate analysis, age > 91 (HR: 9.28 95% CI: 1.469 - 58.65, p=0.018), and self-paying status (HR: 2.504, 95% CI: 1.02 - 6.14, p=0.045) were associated with worse survival outcomes when compared to age < 90 and Medicare, respectively. Coagulopathy as a comorbidity was also independently associated with decreased survival (HR: 2.44, 95% CI:1.25 - 4.79, p=0.009). Conclusions: Patients requiring inpatient admission for laryngeal trauma generally have a good survival prognosis and are likely to be discharged to home or short term care facilities. Self-paying status, older age, and presence of coagulopathy are associated with worse survival.

129. Socioeconomic Status as a Predictor of Treatment in Advanced Stage Laryngeal Cancer

Ryan Jin, BS, Newark, NJ; Megh Shah, BS, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Dylan F. Roden, MD, Newark, NJ; Richard Chan Woo Park, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to determine if insurance status and other socioeconomic factors are predictive of treatment modality selection for advanced stage laryngeal cancer patients.

Objectives: To determine if insurance status and other socioeconomic factors are predictive of treatment modality selection for advanced stage laryngeal cancer patients. Study Design: Retrospective database review. Methods: The National Cancer Database (NCDB) was used to identify patients with primary, invasive T3 and T4 cancers of the larynx between 2004-2016. Univariate and multivariate analyses were performed to investigate patient demographics, tumor characteristics, and treatment modalities. Results: There were 41,118 cases included in our study cohort. Laryngeal cancer patients who were Black (OR 1.18, 95% CI 1.09-1.29, p<0.001) and in the highest income quartile (OR 1.30, 95% CI 1.16-1.45, p<0.001) had increased likelihood of receiving primary radiotherapy +/- chemotherapy compared to primary surgery +/- radiotherapy, while having government insurance (OR 0.93, 95% CI 0.86-0.99, p=0.043) reduced odds. 5 year overall survival was improved for patients with private insurance (53.2%) versus uninsured (44.4%) and government insurance (34.7%) (p<0.001). Moreover, White patients had the highest 5 year overall survival (42.0%) while Black patients (37.0%) and patients of other races (41.3%) experienced lower survival (p<0.001). After accounting for clinicopathologic characteristics, having government insurance (HR 1.41, 95% CI 1.37-1.46, p<0.001), no insurance (HR 1.27, 95% CI 1.20-1.34, p<0.001), being Black (HR 1.07, 95% CI 1.03-1.11, p<0.001), and receiving primary radiotherapy +/- chemotherapy (HR 1.10, 95% CI 1.05-1.14, p<0.001) were significantly associated with increased mortality. Conclusions: Advanced stage laryngeal cancer patients who were Black were more likely to be treated with primary radiotherapy +/- chemotherapy. Furthermore, Black patients who were uninsured or on government insurance experienced worse survival.

130. Risk Factors Associated with Intubation and Ventilation following Laryngectomy

Pablo Llerena, BA, Newark, NJ; Samer T. Elsamna, BA, Newark, NJ; Prayag S. Patel, MD, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify risk factors associated with intubation and ventilation following laryngectomy procedure.

Objectives: Laryngectomy is a complex procedure, with several potential postoperative complications. Intubation and ventilation (I/V) are among these and associated with further morbidity and mortality. We sought to investigate risk factors associated with I/V following laryngectomy. Study Design: Retrospective study of a national outcomes based surgical database. Methods: Cases of total and subtotal laryngectomy from 2005-2018 were obtained from the National Surgical Quality Improvement Program using CPT codes. Demographics and comorbidities were assessed between I/V and no I/V cohorts using chi square and logistic regression to determine odds ratios (OR). Results: 2889 cases of laryngectomy were identified. 4.6% of cases had postoperative I/V (n = 133). Variables predictive of undergoing I/V after laryngectomy were age as a continuous variable (OR:1.05, 95% CI: 1.01-1.08, p = 0.005) and patients who had prior chemotherapy (OR: 5.66, 95% CI: 1.94-16.6, p = 0.002) on multivariate analysis. Laryngectomy type, American Society of Anesthesiologists physical classification, smoking, and other common comorbidities were not associated with an increased risk for I/V following laryngectomy. Conclusions: Intubation and ventilation can occur in the postoperative setting following laryngectomy (4.6%). Increased age and history of chemotherapy were both associated with I/V. Smoking and extent of laryngectomy were not associated with I/V.

131. Imaging Findings in Laryngeal Amyloidosis: A Case Series and Literature Review

Edouard Marc Oudin, MD, Columbia, MO; Mark Gilbert, MD, Columbia, MO; Joseph Cousins, MD, Columbia, MO

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the presentation of patients with laryngeal amyloidosis and be familiar with common imaging findings in this patient population.

Objectives: 1. Describe presentation and clinical course of our laryngeal amyloidosis patients; 2) describe imaging characteristics seen in laryngeal amyloidosis; and 3) review literature for imaging characteristics associated with laryngeal amyloidosis. Study Design: Case series. Methods: We identified three patients in our laryngology practice over three years with laryngeal amyloidosis. We retrospectively reviewed records to summarize clinical courses and reviewed imaging for distinguishing features. We performed a literature review using PubMed with terms "laryngeal amyloid" and "laryngeal amyloid imaging" and reviewed relevant literature for imaging findings. Results: Three patients presented as referrals to our practice for dysphonia. Each underwent flexible laryngoscopy demonstrating nonspecific findings of the false vocal fold. They underwent CT and MRI imaging and direct laryngoscopy with biopsy indicating amyloid deposits. CT findings were nonspecific with focal bulge in the area of interest and mild contrast enhancement. MRI findings included mild enhancement on contrasted T1 imaging. T2 findings differed in that two of our patients demonstrated hypointensity in the area of interest, whereas one demonstrated hyperintense T2 signal. Literature review yielded multiple papers discussing presentation, treatment, and outcomes. However only one study could be found specifically describing imaging characteristics, reporting nonspecific CT findings. Two case series mention that CT and MRI were useful and helped rule out more extensive involvement, but do not comment on imaging characteristics. Conclusions: Laryngeal amyloidosis remains a rare and challenging diagnosis. Certain imaging characteristics may help guide the clinician to making this diagnosis, however there is a paucity of data to fully describe the exact imaging characteristics to be expected.

132. High Flow Nasal Oxygen Versus Standard Oxygenation during Bronchoscopy: A Systematic Review and Meta-Analysis

Caitlin Woulfe Pacheco, MD, Oakland, CA; Lydia M. Briggs, BA MS, Philadelphia, PA; Quincy D. McCrary, BA MA MLS, Oakland, CA; Nancy Jiang, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the pros and cons of oxygenation with high flow nasal cannula compared to other means during bronchoscopic procedures.

Objectives: Studies across multiple subspecialties indicate that high flow nasal cannula may be a safe option for airway procedures. A systematic review was designed to assess whether high flow nasal cannula (HFNC) was a viable option for oxygenation in adult patients undergoing flexible bronchoscopy and related procedures. Study Design: Systematic review and meta-analysis. Methods: A systematic review was designed in accordance with the published PRISMA 2021 guidelines. Searches were conducted in PubMed, Embase, and Web of Science with terms derived from bronchoscopy, high flow nasal cannula, oxygenation, and hypercarbia. Papers were included if reporting patient outcomes of flexible bronchoscopy in spontaneously breathing sedated patients with HFNC and excluded if performed in a pediatric population or for endotracheal intubation. Titles were reviewed by 3 authors. Full manuscript review was conducted with further exclusion and addition of papers found in the references of included papers. Meta-analyses were performed with RevMan 5. Results: Initial search yielded 77 references after duplicate removal. These were reduced to 19 after title review. Seven were then excluded during manuscript review. One paper was found through review of references. The resulting 13 papers represented 569 patients. Commonly measured outcomes were oxygenation, adverse events, and patient tolerance. HFNC was found to provide slightly lower oxygenation levels than noninvasive ventilation with possible lower risk of post-procedural intubation. HFNC was found to have fewer desaturations than low flow nasal cannula, with an odds ratio of 0.12 (95% CI 0.07-0.22) on meta-analysis. Conclusions: HFNC is a safe and effective method of oxygenation for patients undergoing airway procedures, even in certain cases of reduced pulmonary function. It may be helpful in endoscopically treated head and neck conditions such as subglottic stenosis, certain flexible laser procedures, and biopsies for patients with poor procedural tolerance.

133. Association between Congestive Heart Failure and Adverse Outcomes in Patients Undergoing Laryngectomy for Laryngeal Cancer

Avneet Randhawa, BS, Newark, NJ; Karandeep Singh Randhawa, BS, Newark, NJ; Christina H. Fang, MD FACS, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of congestive heart failure in patient outcomes following laryngectomy.

Objectives: To analyze the association between congestive heart failure (CHF) and adverse outcomes in hospitalized laryngeal cancer patients undergoing laryngectomy. Study Design: Retrospective database review. Methods: This retrospective cohort analysis utilized the 2003-2014 National Inpatient Sample. ICD-9 codes were used to identify cases with a primary diagnosis of malignant laryngeal neoplasm, who underwent total or partial laryngectomy. Higher total charges and prolonged length of stay were indicated by values greater than the 75th percentile. Demographics, hospital characteristics, and complications were compared amongst hospitalized patients with CHF and without CHF (non-CHF) using chi square analysis and one way ANOVA. The independent effect of CHF on adverse outcomes was analyzed using logistic regression while adjusting for the aforementioned variables. Results: Of the 25,504 cases included, 5.4% (n=1375) had a diagnosis of CHF. CHF patients had increased odds of cardiac complications (OR 2.827, 95% CI 1.879-4.253, $p<0.001$), such as acute myocardial infarction (OR 4.668, 95% CI 2.272-9.592, $p<0.001$) and acute venous embolism (OR

2.258, 95% CI 1.054-4.837, p=0.036). CHF patients had increased odds of pulmonary complications (OR 1.949, 95% CI 1.435-2.647, p<0.001), urinary/renal complications (OR 2.889, 95% CI 1.924-4.367, p<0.001), and operative complications (OR 1.526, 95% CI 1.166-1.996, p=0.002). CHF patients had increased odds of experiencing higher total charges (OR 1.771, 95% CI 1.366-2.297, p<0.001) and prolonged length of stay (OR 1.722, 95% CI 1.329-2.231, p<0.001). Conclusions: Congestive heart failure is an important factor associated with increased incidence of complications in hospitalized laryngeal cancer patients undergoing laryngectomy.

134. Association between Race and Adverse Outcomes in Patients Undergoing Laryngectomy for Laryngeal Cancer

Avneet Randhawa, BS, Newark, NJ; Karandeep Singh Randhawa, BS, Newark, NJ; Christina H. Fang, MD FACS, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of racial disparities in patient outcomes following laryngeal cancer treatment.

Objectives: To analyze the association between race and adverse outcomes in laryngeal cancer patients undergoing partial or total laryngectomy. Study Design: Retrospective database review. Methods: This retrospective database analysis utilized the 2003-2014 National Inpatient Sample. ICD-9 codes were used to identify patients with a diagnosis of malignant laryngeal neoplasm, who underwent total laryngectomy or partial laryngectomy. Excessive total charges and prolonged length of stay (LOS) were indicated by values greater than the 75th percentile of the sample. Comparisons were made amongst race cohorts using chi square analysis and a one way ANOVA. The effect of race on adverse outcomes was analyzed using logistic regression. Results: Of the 26,798 cases included, 79.0% were White, 14.4% were Black, and 6.6% were Hispanic. 22,130 underwent total laryngectomy and 4,668 underwent partial laryngectomy. Black patients had increased odds of urinary/renal complications (OR 1.825, 95% 1.217-2.738, p=0.004), operative complications (OR 1.285, 95% CI 1.062-1.556, p=0.010) and prolonged LOS (OR 1.325, 95% CI 1.096-1.601, p=0.004) after total laryngectomy. Black patients had increased odds of experiencing higher total charges after total laryngectomy (OR 1.327, 95% CI 1.045-1.685, p=0.020) and partial laryngectomy (OR 1.957, 95% CI 1.298-2.949, p=0.001). Hispanics were more likely to experience cardiovascular complications (OR 3.977, 95% CI 1.24-12.756, p=0.020) after partial laryngectomy and higher total charges after total laryngectomy (OR 1.813, 95%CI 1.303-2.523, p<0.001) and partial laryngectomy (OR 2.479, 95% CI 1.352-4.546, p=0.003). Conclusions: Race is an important factor associated with increased incidence of complications in patients with laryngeal cancer undergoing laryngectomy. Future studies are needed to explore this association.

135. Rhinoscleroma of the Airway: A Systematic Review

Guy Talmor, MD, Newark, NJ; Arron Gravina, DO, Newark, NJ; Samantha Shave, BS, Newark, NJ; Olivia Van Osch, BS, Newark, NJ; Rachel Kaye, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to identify clinical signs of airway rhinoscleroma, as well as develop an understanding of available treatment modalities and long term patient outcomes.

Objectives: Rhinoscleroma is a chronic granulomatous infection of the upper respiratory tract caused by klebsiella rhinoscleromatis. The objective of this study is to characterize the clinical presentation, treatment response and outcomes of laryngotracheal rhinoscleroma. Study Design: Systematic review. Methods: The Preferred Reporting Systems for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed for this systematic review. A literature search of laryngeal and tracheal rhinoscleroma was performed by searching PubMed, Cochrane Library, and Embase. Articles presenting cases of laryngeal or tracheal rhinoscleroma were included. Review articles, animal studies, non-English language articles, and abstracts were excluded. Results: We identified 96 studies and 1,039 cases of laryngotracheal rhinoscleroma. The average patient age was 36.0 years old, with 412 (44.1%) males and 522 (55.9%) females. Location was described in 730 lesions (70.3%), including the trachea (n=267, 36.6%), larynx (unspecified, n=274, 26.4%), subglottis (n=154, 21.1%), glottis (n=22, 3.1%) and supraglottis (n=13, 1.8%). 536 patients (51.9%) co-presented with nasal lesions. 142 patients (13.7%) required surgical excision, and 79 patients (7.6%) underwent tracheostomy. Outcomes were reported in 215 patients, including 196 (85.8%) with no evidence of disease, 14 (6.1%) with persistent disease, 3 (1.3%) who died due to disease and 2 (0.9%) who died of other causes. Conclusions: Rhinoscleroma of the upper airway may involve both the larynx and trachea. The most frequently involved subsite of the larynx is the subglottis. Approximately half of patients present without nasal lesions. Most patients were managed medically and a minority of patients required tracheostomy. Most patients were free of disease at long term followup.

136. Unilateral Cordotomy: An Analysis of Efficacy and Outcomes

Guy Talmor, MD, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Corina Din Lovinescu, DO, New York, NY; Rachel Kaye, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the efficacy, adverse event profile and long term outcomes, including need for tracheostomy, in patients undergoing unilateral cordotomy.

Objectives: Glottic obstruction may arise secondary to bilateral vocal fold paralysis (BVFP) or posterior glottic stenosis (PGS). Treatment includes a tracheostomy to bypass the site of obstruction or transverse unilateral cordotomy (UC) to alleviate obstruction. The objective of this review is to determine the efficacy, adverse event profile and long term outcomes, including need for tracheostomy, in patients undergoing UC. Study Design: Preferred Reporting Systems for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed for this systematic review. A literature search of UC was performed by searching PubMed, Cochrane Library, and Embase. Articles presenting cases of PGS or BVFP treated with UC were included. Review articles, animal studies, non-English-language articles, and abstracts were excluded. Articles presenting cases of bilateral cordotomy or cordotomy with arytenoidectomy were excluded. Methods: Preferred Reporting Systems for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed for this systematic review. A literature search of UC was performed by searching PubMed, Cochrane Library, and Embase. Articles presenting cases of PGS or BVFP treated with UC were included. Review articles, animal studies, non-English-language articles, and abstracts were excluded. Articles presenting cases of bilateral cordotomy or arytenoidectomy were excluded. Results: We identified 17 studies and 305 patients undergoing UC. The average patient age was 44.8 years old, with 213 (74.2%) females and 74 (25.8%) males. 285 patients had BVFP (93.4%), and 20 patients had PGS (6.6%). Postoperatively, 37 patients (12.1%) developed glottic edema, 39 (12.8%) had granulation tissue on laryngoscopy, 9 (3.0%) required a tracheostomy for worsening obstruction and 6 (2.0%) required contralateral cordotomy. Mean followup was 26.3 months. 6 patients (2.0%) required long term tracheostomy, and 81 patients (26.6%) with a prior tracheostomy were successfully decannulated. Conclusions: UC is an effective treatment for glottic obstruction due to bilateral vocal fold immobility, with low rates of long term tracheostomy dependence. Adverse events are uncommon, although edema and granulation tissue may develop and necessitate close postoperative monitoring.

137. A Novel Tracheostomy Support System to Prevent Pressure Ulcers

Andrew M. Vahabzadeh-Hagh, MD, La Jolla, CA; Ryan Yamamoto, BSE, San Diego, CA; Philip Lin, BSE, San Diego, CA; Karie Madrid, BSE, San Diego, CA; Udai Kandah, BSE, San Diego, CA; Shiv H. Patel, BS, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how tracheostomy related pressure ulcers occur and can be prevented in patients.

Objectives: We developed a novel closed loop tracheostomy support system (TSS) capable of providing dynamic support to the tracheostomy tube and connected ventilator circuit to eliminate pressure on the neck skin. Here we provide pilot testing of its efficacy and discuss anticipated broad clinical benefits. Study Design: Pilot study with a mannequin simulator and human cadaver. Methods: Tracheostomy was performed on a simulator and a force sensing resistor (FSR) was placed between the tracheostomy flange/faceplate and the neck skin. The inner cannula connector was attached to ventilator tubing and baseline force was recorded. We then used a closed loop pressure feedback system which works autonomously to inflate a support pad placed under the ventilator tubing until the force measured by the FSR was near zero. We performed the same trial test in a fresh human cadaver. Results: Automatic inflation of the balloon reduced the FSR voltage reading from ~2.7 V to ~1.3V which was calibrated to be 0N force. A small leak was introduced in the support pad which was overcome by the pump to maintain net zero force. Conclusions: We demonstrate a novel closed loop pressure feedback system that can work autonomously to reduce the force on the neck skin from a tracheostomy flange to near zero. This technique provides an easy, cost effective, safe and easily standardized method to prevent tracheostomy related pressure ulcers.

138. Endotracheal Tube Support Device

Andrew M. Vahabzadeh-Hagh, MD, La Jolla, CA; James Knights, BSE, San Diego, CA; Shanlin Chen, BSE, San Diego, CA; Rufu Gong, BSE, San Diego, CA; Shiv H. Patel, BS, San Diego, CA; Dylan Haselton, BSE, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe laryngotracheal complications resulting from endotracheal tube intubation including posterior glottic stenosis while understanding possible methods of prevention.

Objectives: We developed a novel clip that can easily be attached to an endotracheal tube prior to or after intubation that creates an anterior bend in the endotracheal tube to offload pressure on the posterior glottis and cricoarytenoid units. Here we provide pilot testing of its efficacy and discuss anticipated broad clinical benefits. Study Design: Pilot study with a mannequin simulator and human cadaver. Methods: Endotracheal intubation was performed on a mannequin and human cadaver. Endotracheal tube clip was applied transoral and anterior bend of the tube observed. A simulator was built to test the impact on posterior glottic pressures using a force sensing resistor (FSR). Results: Transoral application of clip onto

the endotracheal tube was feasible and reproducible in a mannequin simulator and human cadaver. Contact force on the posterior glottis was reduced by 50% with clip application. Conclusions: We demonstrate a novel device that can easily clip onto an endotracheal tube creating an anterior bend in the tube that results in a dramatic reduction of pressures on the posterior glottis and cricoarytenoid units. This technique provides an easy, cost effective, and safe method to prevent intubation related laryngotracheal complications.

139. User Controllable Endotracheal Tube Stylet

Andrew M. Vahabzadeh-Hagh, MD, La Jolla, CA; David Bracken, MD, San Francisco, CA; Alexander Coleman, BSE, San Diego, CA; Win-ying Zhao, BSE, San Diego, CA; Bethania Perez, BSE, San Diego, CA; Catlynn Nguyen, BSE, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the anesthesia airway management ladder and approach to intubation of complex airways.

Objectives: We developed a user controllable endotracheal tube stylet. Here we provide pilot testing of its efficacy and discuss anticipated broad clinical benefits. Study Design: Pilot study with a mannequin simulator and human cadaver. User performance testing and difficulty was assessed. Methods: Endotracheal intubation was performed on a mannequin and human cadaver using traditional metal stylet and our novel user controllable stylet. Ease of use and performance data was gathered. Results: User controllable endotracheal tube stylet is intuitive and easily adapted to. It provides greater control of the distal tip of the endotracheal tube to permit more refined targeted intubation that does not complicate or lengthen the intubation process. Conclusions: We demonstrate a novel user controlled endotracheal tube stylet which is simple and as cheap as a traditional malleable metal stylet but provides for far greater control of the endotracheal tube's trajectory. It is easy and intuitive to use. There are no barriers to this device becoming the new standard for endotracheal intubation.

Otology/Neurotology

140. Migraine Features in Patients with Sudden Sensorineural Hearing Loss

Meleeka Akbarpour, MS, Irvine, CA; Adwight Risbud, BS, Irvine, CA; Ariel Lee, BS, Irvine, CA; Mehdi Abouzari, MD PhD, Irvine, CA; Hamid R. Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to better understand the association between migraine and sudden sensorineural hearing loss.

Objectives: To evaluate the presence of migraine features in a cohort of patients with sudden sensorineural hearing loss (SSNHL). Study Design: Retrospective survey study. Methods: Patients presenting to a tertiary care academic center's neurotology clinic during an 18 month period with a chief concern of sudden hearing loss were instructed to complete detailed questionnaires about migraine symptoms and SSNHL. Patients were classified as having SSNHL based on their survey responses, history and physical exam. The prevalence of migraine headache and characteristics were evaluated based on classification published by the International Headache Society (IHS). Results: In total, 60 patients with SSNHL were included in the study. The mean age of the patients was 48 ± 18 years with a female (78%) predominance. A total of 23 (38%) patients met the IHS criteria for migraine headache (MH), which was significantly higher than the prevalence of MH in the general population (15.3%). Of the patients who did not meet full migraine headache criteria, 3 (8%) patients met 4/5 criteria, and 5 (14%) patients met 3/5 criteria. There was a significant difference between SSNHL patients who fulfilled full migraine headache criteria and those who did not in sensitivity to light ($p<0.001$), sound ($p<0.001$), nausea ($p<0.001$), vomiting ($p<0.001$), motion sickness ($p=0.006$), recurrent sinus pressure ($p=0.02$), otalgia ($p=0.02$), history of migraine medications ($p<0.001$), headache location ($p<0.001$), side ($p<0.001$), and frequency ($p<0.001$). Conclusions: The high prevalence of MH among this cohort could suggest a pathologic association between SSNHL and MH. Sudden hearing loss may be part of the spectrum of otologic migraine, where migraine manifests as otologic symptoms.

141. Operational Design of an AMTAS Power Clinic for Hearing Loss to Improve Access to Care in a Pilot Study

Kenneth W. Altman, MD PhD, Danville, PA; Cesar A. Allen, PA-C, Wilkes-Barre, PA; Barbara J. Kreel, MD, Wilkes-Barre, PA; Christie A. Lambert, AuD, Wilkes-Barre, PA; Kevin P. Burkhardt, AuD, Wilkes-Barre, PA; Alysha M. Beck, PA-C, Wilkes-Barre, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate the potential role of portable self-reported audiometry for targeted patients with hearing loss.

Objectives: Patient access to care is particularly challenging in rural healthcare environments, leading to long work queues and delay of care. We sought to determine the utility of a self-reported audiometry tool for routine adult hearing loss to

improve access. Study Design: Prospective quality improvement initiative. Methods: AMTAS (automated method for testing auditory sensitivity) was employed for this prospective quality improvement initiative. Operational design involved selecting adult patients with new complaints of hearing loss with exclusion criteria that would require comprehensive audiologic assessment, determining failure rates requiring formal audiometry, process flow and patient throughput, and evaluating personnel needed to optimize the clinic. Results: Thirty-seven patients were scheduled for the clinic, with 6 no-shows and 3 deemed inappropriate for selection at time of arrival. Of the 28 completed exams, 12 were found to require formal audiometry, of which 5 required otolaryngology referral. The average time to complete the exam was 15 minutes. The clinic was determined to be overstaffed at 3 audiologists, 2 physician assistants, 1 nurse, and 1 patient access representative. Conclusions: This power clinic demonstrated promise at improving throughput for routine hearing loss. Opportunities from the pilot study include improving patient selection, confirming AMTAS failure criteria, and optimizing support personnel.

142. Effectiveness of Hearing Aids on Music Enjoyment in Individuals with Hearing Loss: A Systematic Review

Alexander Chern, MD, New York, NY; Irene W. Su, BS, New York, NY; Anil K. Lalwani, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how hearing aids can affect music appreciation in individuals with hearing loss.

Objectives: Hearing aids (HAs) were originally designed for speech, not music listening. The impact of HAs on music enjoyment is not well studied. Our objective was to assess effectiveness of HAs on music enjoyment in individuals with hearing loss (HL). Study Design: Systematic review. Methods: PubMed, Scopus, EMBASE, Cochrane Library, and Web of Science were reviewed following PRISMA guidelines by two independent reviewers. English language studies examining music enjoyment among HA users were included. Cochlear implant and nonconventional HA (e.g., BAHA) users were excluded. Risk of bias was assessed using the Cochrane risk of bias tool. Results: Of 2,743 studies screened, 53 full text articles were evaluated; 7 articles met inclusion criteria. 948 unique patients (age range 12-92 years, 49.6% female, 73.7% bilateral/26.3% unilateral HA users) with a wide range of HL and musical experience were included. Three studies performed within subject comparisons of music enjoyment using aided and unaided conditions. Four studies employed cross-sectional surveys examining benefits of HAs for music enjoyment. Studies reported HAs provided improved sound quality, music listening, and overall music enjoyment. However, there was large variability in music enjoyment ratings and reported difficulties with HA music listening. Conclusions: Despite the overall positive effect of HAs on music appreciation, subjects still reported difficulties with HA music listening. There was heterogeneity in sample populations (HL severity, musical experience), interventions (HA type), and music enjoyment outcomes. Higher powered studies comparing music enjoyment with and without HAs and development of a validated test battery assessing music enjoyment in HA users are warranted.

143. Serious Mental Illness May Be Associated with Audiometric Hearing Loss in a National Cohort

Jacqueline M. Dragon, BA, New York, NY; Maeher R. Grewal, BS, New York, NY; Alice M. Saperstein, PhD, New York, NY; T. Scott Stroup, MD MPH, New York, NY; Alice A. Medalia, PhD, New York, NY; Justin S. Golub, MD MS, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to characterize the association between serious mental illness (SMI) as measured by specific types of antipsychotic medications, and hearing loss (HL) among U.S. Hispanic adults, as well as potential implications.

Objectives: To explore whether there is an association between serious mental illness (SMI), as measured by specific types of antipsychotic medications, and hearing loss (HL) among U.S. Hispanic adults. Study Design: Cross-sectional multicentered epidemiological study (Hispanic community health study). Methods: Multivariable linear regressions were conducted to study the association between HL and SMI. SMI was defined by the use of at least 1 antipsychotic medication specifically used to treat SMI. Only those antipsychotics used for treating SMI and without other medical indications were included for study. HL was measured by pure tone audiometry, and adjustments were made for potential confounders including age, sex, education, and vascular disease (hypertension or diabetes mellitus). Results: 7581 subjects had complete data. The mean age was 55.2 years (SD=7.5 years) and the mean pure tone average in the better ear was 16.8 dB (SD=10.7 dB). 98 (1.3%) subjects were taking at least 1 antipsychotic specifically used to treat SMI. Hearing was significantly different between those taking and those not taking antipsychotics specific for treating SMI (16.7 dB versus 21.3 dB, $p<0.001$ on Mann-Whitney U Test). On multivariable regression controlling for confounders, use of antipsychotics specific for SMI was associated with 4.8 dB worse hearing (95% CI = 2.86, 6.73; $p<0.001$). Conclusions: The presence of SMI, as indicated by use of antipsychotic medication specific for SMI, is associated with worse hearing, controlling for potential confounders. Whether SMI causes HL, antipsychotic medication (through ototoxicity) causes HL, or whether HL causes SMI is unknown and warrants further investigation.

144. Feasibility of In-Vivo Human Perilymph microRNA Sampling Using Next Generation Sequencing

Michael Ghiam, MD, Miami, FL; Kristen L. Zayan, BS, Miami, FL; Monica L. Bodenstab, BS, Miami, FL; Derek M. Dykxhoorn, PhD, Miami, FL; Xue-Zhong Liu, MD PhD, Miami, FL; Simon Angeli, MD, Miami, FL

Educational Objective: At the conclusion of this presentation, the readers should be able to recognize the role and feasibility of next generation sequencing techniques in identifying in-vivo.

Objectives: To determine the feasibility of in-vivo miRNA sampling using next generation sequencing in human perilymph. Study Design: Feasibility. Methods: Perilymph was collected intraoperatively from two cochlear implant candidates at the time of inner ear surgery. Once the cochleostomy was created, a 10 ml sterile glass capillary tube was used to collect 5-10 ml of perilymph via capillary action. The samples underwent an extraction process to isolate purified miRNA using the Qiagen miRNeasy Serum/Plasma Advanced Kit (QIAGEN┬«; Hilden, Germany). Both samples were quantified using Qubit 2.0 Flurometer (Life Technologies, Carlsbad, CA, USA) and RNA integrity were checked using Agilent Tape Station (Agilent Technologies, Palo Alto, CA, USA). Small RNA sequencing library was prepared by using Illumina TruSeq Small RNA Library Prep Kit (Illumina, San Diego, CA). The library was validated and quantified. The libraries where then sequenced using HiSeq Control Software. Known and unknown small RNAs were then returned. The results were then analyzed for the presence of previously identified and published miRNA in the inner ear. Results: Two samples successfully completed miRNA sequencing of in vivo human perilymph. Sample A was from a 30 year old female with prelingual congenital deafness and bilateral profound SNHL from suspected viral etiology. Sample B was from 12 year old male with postlingual progressive bilateral profound SNHL and bilateral vestibulopathy of unknown etiology. A total of 1002 miRNAs were identified between the two samples. 913 in sample A, and 712 Sample 2. 27 of the miRNAs identified have been previously reported to play a role in the inner ear and SNHL. miRNA identified included proapoptotic miRNAs in presbycusis (mir-34a, mir-29b, mir-141, mir-203, mir 429, and mir-181), antiapoptotic miRNA in presbycusis (mir-181, mir 183, mir-96), antiautophagy miRNA in presbycusis (mir-34a), and miRNA differentially expressed in the cochlear duct or stria vascularis (mir-203). Other miRNA identified included mir-182, mir-200a, mir-200b, mir-15a1, mir-18a, mir-30b, mir-99-1/99-2, mir-199-1/199-2, mir-135b, mir-21-1, mir-9, & mir-224. Conclusions: Next generation sequencing is a feasible technique to identify in vivo active gene expression in human perilymph. In the future, this technique can be used to identify and characterize miRNA mediated pathways in SNHL and open novel pathways for both diagnostic and therapeutic interventions in hearing loss.

145. Age Related Disparities in Hearing Aid Use for Mild Hearing Loss in the United States Population

Maeher Rai Grewal, BS, New York, NY; Jacqueline M. Dragon, BA, New York, NY; Justin S. Golub, MD MS, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to identify age related disparities in the use of hearing aids as treatment for mild hearing loss in the United States population.

Objectives: Hearing aids (HAs) may be better accepted in children than in older adults, particularly for milder levels of hearing loss (HL). We aimed to quantitatively explore this disparity in care using a nationally representative cohort. Study Design: Cross-sectional epidemiological study in the National Health and Nutrition Examination Survey (NHANES). Methods: Multivariable logistic regressions controlling for hearing level were conducted to analyze the association between HA use and age in subjects with mild HL. Age was grouped into quartiles. HL was defined as better ear pure tone average. Results: 1,458 participants had mild HL and possessed HA usage data. 19 (1.3%) were <25 years old, 123 (8.4%) were 25-49 years, 942 (64.6%) were 50-74 years, and 374 (25.7%) were 75+ years. Average hearing was 31.8 dB, 30.8 dB, 31.1 dB, and 32.7 dB for each age quartile, respectively. 5 (26.3%), 9 (7.3%), 71 (7.5%), and 29 (7.8%) subjects in each age quartile used HAs, respectively. Compared to subjects <25 years old and controlling for hearing level, those aged 25-49 years were 4.22 times less likely to use HAs (p=0.03), those aged 50-74 were 4.18 times less likely (p=0.01), and those aged ≥ 75 were 5.41 times less likely (p=0.004). Conclusions: Among those with mild HL, there was a striking disparity in HA use by age. The upper three age quartiles were 4 to 5 times less likely to wear HAs for mild HL compared to those <25 years old. Efforts should focus on equity of treatment for adults with HL.

146. Association of Passive Exposure to e-Cigarette Emissions with Pediatric Otitis Media

Tina Lam, BS, Wauwatosa, WI; Ke Yan, PhD, Wauwatosa, WI; Tina Samuels, MS, Wauwatosa, WI; Joseph Kerschner, MD, Wauwatosa, WI; Nikki Johnston, PhD, Wauwatosa, WI

Educational Objective: At the conclusion of this presentation, the participants should better understand the contribution of exposure to electronic cigarette emissions to poorer pediatric otitis media outcomes.

Objectives: Otitis media (OM) is a common inflammatory disease spectrum. Tobacco smoke exposure has been shown to increase bacteria adherence in respiratory epithelium and suppress local immune function and mucociliary action. Accordingly, parental smoking is associated with pediatric OM. Since prior analyses, the proportion of U.S. adults who smoke tobacco has generally declined. Disparities exist amongst certain sexes, ages and education levels, however, and tobacco use amongst most young adult demographics has increased since the introduction of electronic cigarettes (e-cigarettes) in 2005. Research is lacking regarding the potential health risks of passive exposure to e-cigarette emissions (EE) in children. Herein, data from a national health survey was used to examine the association of exposure to traditional cigarette smoke (TCS) and EE with pediatric OM. Study Design: Cross-sectional. Methods: Participants were respondents of survey questions regarding ear infections in the National Health and Nutrition Examination Survey 2017-2018 (n=2022; ages 6-17). Results: Exposure to TCS, combined TCS and EE, and EE was observed in 36%, 42%, and 9% of children, respectively; only EE significantly contributed to the likelihood of having ≥ 3 ear infections (p=0.047; OR=1.61, 95% CI 1.01 - 2.58). After adjustment for other significant predictors, race and asthma, the effect of EE on having ≥ 3 or more ear infections was marginally significant (p=0.081). Conclusions: These data suggest that EE may be more harmful than TCS with regards to risk of pediatric OM. Further work regarding EE and its health implications in children are warranted.

147. Characterization of Otologic Symptoms Appearing after COVID-19 Vaccination

Stephen Leong, BA, New York, NY; Bing M. Teh, MBBS, New York, NY; Ana Hae-Ok Kim, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the spectrum of otologic symptoms that appear following COVID-19 vaccination.

Objectives: Anecdotal reports of sudden sensorineural hearing loss (SSNHL) following COVID-19 vaccination have emerged in the otolaryngology community. Early studies have demonstrated no association between COVID-19 vaccination and SSNHL. We aim to characterize the spectrum of otologic symptoms following COVID-19 vaccination. Study Design: Cross-sectional study of patients seen in the otology clinic at an academic center. Methods: Patients completed a questionnaire on the development of new otologic symptoms within 4 weeks of COVID-19 vaccination. Demographic and audiometric data were collected retrospectively for patients reporting otologic symptoms. Results: Between May-July 2021, 349 patients were screened. Median age was 56 years old, with 59.9% female and 39.5% male. 278 patients (79.7%) were vaccinated, with 54.3% receiving Pfizer, 30.6% receiving Moderna, and 4.7% receiving Johnson & Johnson. 47 patients (16.9%) reported one or more otologic symptoms within 4 weeks of vaccination, including 18 (6.5%) with hearing loss, 19 (6.8%) with tinnitus, 26 (9.4%) with dizziness, and 15 (5.4%) with vertigo. Of the 11 patients (4.0%) reporting tinnitus with no associated hearing loss, 5 were diagnosed with idiopathic tinnitus and 3 were diagnosed with temporomandibular joint syndrome. Of the 18 patients reporting hearing loss, 6 had exacerbations of underlying intracochlear pathologies (e.g. Meniere's disease, presbycusis) and 7 were newly diagnosed with SSNHL (2.5%). Conclusions: Patients reporting otologic symptoms following COVID-19 vaccination received diagnoses associated with physical or emotional stress. The incidence of SSNHL in these patients is comparable to the general otology patient population. Additional studies are required to determine the incidence of these diagnoses following vaccination.

148. The Effect of Gender and Ethnicity on Health Related Quality of Life among Otolaryngology Patients with Hearing Loss

Harrison Joseph Ma, BA, Los Angeles, CA; Ian Kim, MFA MS, Los Angeles, CA; Kevin Herrera, BS, Los Angeles, CA; Christine Raj, BA, Los Angeles, CA; Francis Reyes, BA, Los Angeles, CA; Kevin Hur, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how gender and ethnicity affect health related quality of life in patients with hearing loss.

Objectives: Hearing loss is associated with decreased health related quality of life (HRQoL), but the effect of gender and ethnicity on this relationship is unknown. This study aimed to investigate how gender and ethnicity affect the association between hearing loss and HRQoL among otolaryngology patients. Study Design: Cross-sectional study. Methods: Cross-sectional analyses of demographics, medical records and HRQoL data were performed on adult patients seen at a general otolaryngology clinic with hearing loss confirmed on audiogram. HRQoL was measured using SF-6D scores. Multivariable linear regression analyses were conducted with HRQoL as the primary outcome. Gender and ethnicity differences were estimated with adjustment for age, race, hearing loss laterality and number of otolaryngology complaints. Results: The study included 155 patients (mean age 56 years; 54% female; 21% Hispanic/Latino). Bilateral hearing loss was associated with significantly lower HRQoL ($p < .05$) while there was no significant difference between unilateral hearing loss and normal hearing. Women generally reported higher HRQoL than men. However, women reported significantly decreased HRQoL than men with increasing age ($p < .05$). Increased complaint count in both women and men was associated with significantly lower HRQoL ($p < .01$). Younger patients with increased complaint count reported significantly lower HRQoL than older patients with increased complaint count ($p < .05$). Hispanic/Latino patients reported significantly lower HRQoL compared to

non-Hispanic/Latino patients ($p < .05$). Conclusions: Among otolaryngology patients with hearing loss, women with increasing age had lower HRQoL than men. Hispanic/Latino patients had significantly lower HRQoL regardless of their laterality of hearing loss.

149. Association between Payer Status and Adverse Outcomes in Patients Undergoing Excision of Vestibular Schwannoma

Avneet Randhawa, BS, Newark, NJ; Karandeep Singh Randhawa, BS, Newark, NJ; Christina H. Fang, MD FACS, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the affects payer status may have on postoperative outcomes.

Objectives: To analyze the association between payer status and adverse outcomes in patients undergoing excision of vestibular schwannoma (VS). Study Design: Retrospective database review. Methods: The 2003-2014 National Inpatient Sample was used to identify patients with a primary diagnosis code of neurofibromatosis and a primary procedure code for excision of VS. Higher total charges and prolonged length of stay (LOS) were indicated by values greater than the 75th percentile of the sample. Chi square analysis, ANOVA, and binary logistic regression were used to analyze the effects of payer status (Medicare, Medicaid, and private insurance) on outcomes. Results: Exclusion criteria yielded a cohort of 18,673 patients undergoing excision of VS. Of these, 2,840 patients had Medicare, 1,034 had Medicaid, and 13,625 had private insurance. Medicare patients experienced prolonged LOS (OR 1.710, 95% CI 1.283-2.280 P<0.001). Medicaid patients experienced higher total charges (OR 1.824, 95% CI 1.272-2.617 P=0.001) and prolonged length of stay (OR 2.482, 95% CI 1.851-3.328 P<0.001) compared to privately insured patients. Medicaid patients had increased odds of any complication (OR 1.884, 95% CI 1.354-2.622, P<0.001), cardiovascular complications (OR 3.794, 95% CI 1.699-8.469 P<0.001), and pulmonary complications (OR 3.728, 95% CI 2.112-6.580 P<0.001). Medicare (OR 5.936, 95% CI 1.400-25.172 P<0.016) and Medicaid (OR 3.490, 95% CI 1.184-10.288 P<0.016) patients had increased odds of urinary/renal complications compared to privately insured patients. Conclusions: Medicare and Medicaid insurance statuses are associated with poorer clinical and economic outcomes in patients undergoing surgery for VS.

150. An Analysis of Cochlear Implantation Costs and Cost Containment Strategies

William Reed, MD MPH, Durham, NC; Ariel Hayden, PA-C, Durham, NC; David Kaylie, MD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to better understand the cost composition of cochlear implantation including its fixed and variable costs as well as understand potential cost containment strategies.

Objectives: National Healthcare Expenditure (NHE) rose 4.6% in 2019, with hospital expenditures outpacing NHE growth at 6.2% 1,2. The global cochlear implant market was valued at USD 1.8 and is expected to grow at 10.5% through 20283 with expanding candidate populations to those with single sided deafness (SSD) and asymmetric hearing loss. Value based reimbursement mechanisms introduce growing pressures for cost containment. While much of the cost of the CI is fixed, costs consumables and additional processors are potentially modifiable. Study Design: Retrospective cohort study utilizing EMR charge capture system. Methods: Surgical charge capture data was retrospectively collected between July 2020 and July 2021 of all CIs determined by CPT coding. Cost breakdown and variability between surgeons was analyzed. Results: There were 94 CIs performed by four surgeons during this 12 month period, 30 were excluded due to incomplete information. 10 surgeries were sequential implants and 11 were for SSD. The costs of the implant and its associated processor (1) account for 82.6% of total cost. The remaining variable costs (17.4%) were further analyzed. The elimination of 1 burr per case projected in an estimated annual reduction of 3.2% of the variable cost (0.56% of total costs). Utilization of a single processor for indications of SSD and second side surgery would reduce case costs by 69.6% (15.5% of all implants). Conclusions: Most surgical cost associated with CIs result from the implant and associated processor. Variable costs include consumables and drill burs. Although two processor systems are standard for all cochlear implants at our institution, purchasing a second processor in certain indications could be considered a variable cost.

151. Healthcare Disparities in Neurotology and Otology: A Systematic Review

Nasim Shakibai, DO, Houston, TX; Seilesh C. Babu, MD, Farmington Hills, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to have an understanding of the disparities in the subspecialties of otology and neurotology.

Objectives: This review aims to analyze the existing literature on disparities within neurotology and otology and guide future research. Study Design: Systematic review (PRISMA guidelines). Methods: A review of PubMed, Ovid Embase, CINAHL,

and PsychINFO was conducted for articles analyzing race/ethnicity, sex/gender/LGBTQIA identification, insurance, and socioeconomic status, education, parental influence, and geographic disparities in patients with conditions under the realm of otology and neurotology. Original research conducted in the United States and published in the English language were reviewed. Results: Of the 5709 articles identified 29 were included. The conditions examined included: hearing loss (11 of 29); conditions of the middle ear (10 of 29); tumors (5 of 29); vertigo (1 of 29). Zero articles discussed facial nerve disorders. The most common disparities noted in the selected articles were insurance status (17 of 29), race and ethnicity (15 of 29), socioeconomic status (13 of 29), sex/gender/LGBTQIA (8 of 29), geography (6 of 29), age (6 of 29), parental influence (pediatric population) (4 of 29) and education (1 of 29). Based on these studies, patients were more likely to face inequity if they had public/no insurance, were of low socioeconomic status, or identified as African American, Hispanic or Native American. Conclusions: This review portrays the common disparities that exist in most aspects of the subspecialty of otology and neurotology. Additionally, this review highlights the lack of disparity research in conditions affecting the facial nerve and vertigo related diseases such as Meniere's disease and benign paroxysmal positional vertigo. Insurance status, race/ethnicity, and socioeconomic status were the most commonly discussed disparities.

152. Referral Patterns from Primary Care to Otolaryngology for Patients with Conditions Mimicking Eustachian Tube Dysfunction

Blaine D. Smith, MD, Durham, NC; Dennis Onyeka Frank-Ito, PhD, Durham, NC; Hannah Martin, MD, Durham, NC; Nathaniel Neptune, MD, Atlanta, GA; David Kaylie, MD, Durham, NC; Theresa Coles, PhD, Durham, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to describe referral patterns, accuracy of referral diagnoses, and appropriateness of treatments rendered by primary care physicians prior to referral to an otolaryngology clinic at a single institution for conditions mimicking eustachian tube dysfunction.

Objectives: Eustachian tube dysfunction (ETD) is a syndrome caused by pressure dysequilibrium in the ear. Key symptoms include ear pressure, discomfort, and hearing loss. These symptoms are shared by other otologic conditions, causing clinicians difficulty discriminating ETD from similarly presenting conditions that mimic ETD. The objective of this study is to evaluate referral patterns from a network of primary care physicians (PCPs) to otolaryngology clinics at a single institution. Referrals for conditions mimicking ETD were evaluated to determine the accuracy of the referral diagnoses compared to final diagnoses by an otolaryngologist. In addition, preliminary treatment rendered by PCPs prior to referral were evaluated for appropriateness based on the final diagnosis. Study Design: Retrospective. Methods: Patients referred to an otolaryngology clinic for conditions with symptoms mimicking ETD between were selected. Referral diagnosis, otolaryngologist diagnosis, treatments prescribed prior to referral, and number of visits to primary care prior to referral were extracted. Results: There were 340 patients represented in the study. Of referral diagnoses classified as ETD, most (92.9%; n = 26) were upgraded to a more serious condition by the otolaryngologist. Nasal and oral steroids were inappropriately prescribed for 13.5% and 1.2% of cases, respectively. Oral antibiotics were inappropriately prescribed in 11.8% of cases. Conclusions: For patients with a referral diagnosis of ETD, the otolaryngology diagnosis was upgraded to a more serious condition in 92.9% of cases, and medications prescribed prior to referral were found to be mostly appropriate based on chart review.

153. Anatomic Section in a Plane Approximating the Lumina of the Right and Left Eustachian Tubes

Norman Wendell Todd Jr., MD MPH, Atlanta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to identify in sawed section the anatomic structures inferior and superior to the lines of the eustachian tubes.

Objectives: To present rectilinear color images of views perpendicularly onto the cut surfaces of cranial specimen sectioned in the approximate lines of both right and left cartilaginous and bony eustachian tubes. The rationale for this work is that eustachian tube differences predispose to otitis media. Since eustachian tubes are rarely dissected even by otolaryngologists and are poorly visualized with clinical imaging techniques, working knowledge of human eustachian anatomy is limited. Study Design: Anatomic demonstration. Methods: Bequeathed adult cranial base specimen saw sectioned in a plane approximating the lines defined by the right and left eustachian tubes: through the right and left processus tubarius, and through the junction of each petrotympanic fissure at the tympanic annulus. With the specimen in a transparent holder device referencing the Frankfort horizontal plane, the line to be sawed was marked circumferentially, guided by a laser pointer. The kerf was 1mm. Results: The architecture viewed onto the lower cut surface contrasts with that viewed onto the corresponding upper cut surface. Identifying anatomic features is challenging. Conclusions: Photographs onto the eustachian tubes in the approximate plane of their lines bilaterally exhibit disparate structures superior versus inferior. Studying these views not only challenges one's knowledge of the anatomy but reminds that the masticatory muscles are much more prominent than are eustachian tissues.

154. OtoHistoSelector: A Computational Platform for Segmentation and Identification of Otosclerosis on Temporal Bone Histology Slides

Christopher C. Tseng, BS, Newark, NJ; Robert W. Jyung, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss how the OtoHistoSelector software tool can segment whole slide images and facilitate user selection of regions of interest for the purpose of training machine learning algorithms to differentiate normal versus otosclerotic temporal bone histology.

Objectives: Temporal bone histology offers rich visual detail for studying the features of otosclerosis. To facilitate training machine learning algorithms to differentiate normal versus otosclerotic temporal bone histology, this study developed the OtoHistoSelector software tool for segmenting whole slide images and facilitating user selection of regions of interest. Study Design: Software development. Methods: The OtoHistoSelector computational platform was developed using the Python programming language. SVS whole slide images were first segmented into multiple 512 pixel x 512 pixel tiles. A graphical user interface was then programmed to organize included histology slides and reassemble each slide into four cartesian plane quadrants of its respective tiles. This interface allowed the user to visualize and select individual tiles that contained pathologies of interest. An autofill function was also implemented to more rapidly highlight whole regions simultaneously to facilitate faster tile selection. After closing the program, user selected tiles and remaining non-selected tiles were grouped into separate folders for their respective slides. Results: A 45,816 pixel x 30,743 pixel SVS image of temporal bone with otosclerosis histology was analyzed using OtoHistoSelector. Following segmentation, 5,340 individual tiles were generated. Otosclerotic lesions were then highlighted through manual user selection and autofill. Following program closure, 185 otosclerosis histology images and 5,155 normal temporal bone histology images were identified. Conclusions: Rapid, accurate identification and selection of significant pathologic tiles from a whole slide image can be achieved through OtoHistoSelector. The purpose of generating these tiles is to augment training data and improve machine learning algorithm performance in differentiating otosclerosis from normal temporal bone histology.

155. Congenital Isolated Discontinuity of the Incudostapedial Joint: A Case Report

Mayand Vakil, MD, Newark, NJ; Christopher C. Tseng, BS, Newark, NJ; Guy Talmor, MD, Newark, NJ; Sujana Chandrasekhar, MD, New York, NY

Educational Objective: Present a rare case of an adult patient with lifelong right sided hearing loss, found to have isolated incudostapedial joint (ISJ) discontinuity.

Objectives: Present a rare case of an adult patient with lifelong right sided hearing loss, found to have isolated incudostapedial joint (ISJ) discontinuity. Study Design: Case report. Methods: A 49 year old man presented with lifelong hearing loss primarily in the right ear with no other associated otologic symptoms. He reported having been hypoxic at birth (no other details were available) and denies other medical, surgical, or family history. Audiogram showed maximal conductive hearing loss. Temporal bone CT scan was read as normal, but on review by the senior surgeon, an ISJ discontinuity was suspected. The patient underwent a right transcanal middle ear exploration. While the ossicles were present and separately mobile, there was a significant gap between the stapes capitulum and lenticular process of the incus. OtoMimix bone cement was used to bridge the gap. The patient's hearing loss resolved with full closure of the air bone gap at 3 months postoperatively. Results: Ossicular discontinuity is often seen secondary to head trauma; however, it can occur due to embryologic malformation and a diverse range of abnormalities have been reported. The absence of other malformations makes this particular ISJ separation exceedingly rare. Amplification devices can be offered; however, the definitive treatment of ossicular discontinuity is surgical repair with prostheses, grafts, and bone cement. This should result in good recovery of hearing postoperatively. Conclusions: Ossicular chain abnormalities should be part of the differential in any age patients with conductive hearing loss and normal otoscopic examination. We recommend that otolaryngologists review all patient scans for optimal preoperative diagnosis and preparation.

156. Patterns of Preoperative Laboratory Testing in Patients Undergoing Outpatient Tympanoplasty

Kevin Wang, BS, Newark, NJ; Samantha M. Shave, BS, New Brunswick, NJ; Sudeepti Vedula, BS, Newark, NJ; Ariel Omiunu, BS, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the utility of preoperative laboratory testing in patients undergoing outpatient tympanoplasty.

Objectives: Preoperative laboratory tests (PLTs) are frequently done preceding outpatient surgical procedures. The purpose of this study is to analyze the patterns of routine PLTs in patients undergoing outpatient tympanoplasty and examine their potential impact on patient outcomes. Study Design: Retrospective database study. Methods: Patients undergoing

outpatient tympanoplasty were identified using the 2005-2018 National Surgical Quality Improvement Program (NSQIP) database. The PLTs included were complete blood count (CBC), chemistry panel, liver function test panel, and coagulation studies. Chi square analyses and unpaired t-tests were formed to compare categoric and continuous variables, respectively. Results: A total of 5,433 patients undergoing outpatient tympanoplasty were identified, of which 39.2% received PLTs. Of these, the most frequent PLT was a CBC (33.8%) and 27% of those patients had abnormal results. There were no statistically significant differences in overall postoperative complications between those with and without PLTs ($p = 0.719$). Additionally, no significant differences were seen in any of the analyzed postoperative outcomes including wound complication ($p = 0.964$), superficial surgical site infection ($p = 0.693$), deep surgical site infection ($p = 0.712$), organ surgical site infection ($p = 0.346$), wound disruption ($p = 0.561$), urinary tract infection ($p = 0.494$), unplanned reoperation ($p = 0.958$), and unplanned readmission ($p = 0.497$). Conclusions: Our analysis demonstrated that obtaining routine PLTs does not predict postoperative complications. This supports recommending against the use of routine PLTs, due to lack of clinical benefit.

Pediatric Otolaryngology

157. Pediatric Suprasellar Epidermoid Cyst: Case Report and Review of Literature

Ghedak N. Ansari, MD MPH MSEd, Oakland, CA; Peter M. Debbaneh, MD, Oakland, CA; Jonathan Liang, MD MPH FACS, Oakland, CA; Mark Fedor, MD, Oakland, CA; Huy T. Duong, MD, Sacramento, CA; David Pincus, MD PhD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to list a differential for pediatric suprasellar masses and lesions, including imaging findings and surgical treatment and reconstructive options.

Objectives: To describe a case of a pediatric patient with a suprasellar epidermoid cyst that was removed through a transnasal, transsphenoidal approach without damage to nearby pituitary stalk, optic nerve or vessels, in addition to reporting on the limited literature for pediatric suprasellar masses. Study Design: Case report. Methods: We discuss the case of a 6 year old male with a 1 year history of headaches lasting for an hour associated with occasional vomiting but no visual complaints and an otherwise normal physical exam. Ophthalmology exam revealed a normal exam and no endocrine abnormalities were noted. Imaging revealed a 1.6 cm nonenhancing, cystic suprasellar lesion isointense to the brain parenchyma, with internal heterogeneous signal. Results: The patient underwent surgical resection via a transnasal, transsphenoidal approach. A total gross resection of the tumor was performed with a nasoseptal flap for reconstruction. Postoperatively, the patient had transient diabetes insipidus which resolved by postoperative day 3. Histopathological exam confirmed a non-malignant epidermoid cyst. Our literature search revealed that epidermoid cysts in the pediatric population are rare, with a total of less than 50 cases of pediatric epidermoid cysts reported, only 14 suprasellar cases, and no reported cases of resection via a purely endoscopic transnasal, transsphenoidal approach. Conclusions: Suprasellar epidermoid cysts in the pediatric population are rare and require complete resection to avoid neurologic deficits. We describe a case to demonstrate how the transnasal, transsphenoidal approach with nasoseptal flap can provide good exposure for these lesions in the pediatric population, with limited complications, to avoid further neurologic deficits.

158. Predictors of Frequent Emergency Visits and Hospital Stay among Pediatric Tracheostomy Patients

Dylan Beams, BA, Dallas, TX; Stephen R. Chorney, MD MPH, Dallas, TX; Erin Wynings, MD, Dallas, TX; Taylor Teplitzky, MD, Dallas, TX; Romaine F. Johnson, MD MPH, Dallas, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to determine factors associated with frequent emergency department (ED) visits and hospitalizations among pediatric tracheostomy patients.

Objectives: To determine factors associated with frequent emergency department (ED) visits and hospitalizations among pediatric tracheostomy patients. Study Design: Prospective longitudinal cohort study. Methods: A longitudinal cohort of children with tracheostomies was followed for the first 36 months after index discharge. Multiple logistic regression analysis identified associated factors for frequent utilization (> 4 visits in 36 months). Results: The cohort included 239 children requiring 1285 total visits to the ED or hospital after index discharge, with 112 children (46.7%) having four or more visits. Respiratory related illness was the most common indication (N=614 visits, 47.8%), followed by gastrostomy tube issues (N = 119, 9.3%). Variables predicting frequent utilization on regression analysis included Black race (OR: 2.37, 95% CI: 1.23 - 4.54), Hispanic ethnicity (OR: 1.98, 95% CI: 1.01 - 3.86), mechanical ventilation (OR: 2.57, 95% CI: 1.23 - 5.39), complex patient designation - history of sepsis, total parental nutrition, or major cardiac surgery during index admission (OR: 2.05, 95% CI: 1.17 - 3.58), and readmission history within 30 days after index discharge (OR: 2.72, 95% CI: 1.29 - 5.73). There were no predictors of visits for tracheostomy related complications, which accounted for 4.8% of all encounters. A subanalysis showed that mechanical ventilation, younger age, complex patient designation, and preferred Spanish language predicted visits for respiratory failure. Conclusions: Nearly half of the pediatric tracheostomy patients necessitate

frequent ED and hospital admissions in the first three years after placement. Although events related to the tracheostomy are uncommon, strategies to anticipate and decrease respiratory related admissions may have the most impact.

159. Pneumatized Incus in a Child

Ryan Bishop, BS, Columbus, OH; Rishabh Sethia, MD, Columbus, OH; Edward Dodson, MD, Columbus, OH; Mai-Lan Ho, MD, Columbus, OH; Prashant Malhotra, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the imaging findings associated with pneumatized incus and differentiate this condition from other middle ear pathology.

Objectives: To describe a case of a child presenting with bilateral hearing loss found to have pneumatization of the right incus. Study Design: Case report. Methods: Using an illustrative case report, we describe the epidemiology, pathophysiology, diagnosis, and clinical implications of a pneumatized ossicle. Results: Pneumatization of the ossicles is a rare anatomic variant that is thought to arise during development of the middle ear bones. The diagnosis is typically revealed on computed tomography scan of the temporal bone, which demonstrates air space within the involved ossicle. Awareness of this normal anatomic variant may prevent misdiagnosis of pathological changes of the middle ear bones, including congenital malformation of the ossicles or acquired ossicular chain erosions. The diagnosis may also become relevant when considering ossicular reconstruction, as the involved bone may show a greater propensity for fracture. In patients that demonstrate a pneumatized ossicle during evaluation of hearing loss, further evaluation is indicated to determine the true cause of hearing loss and to guide continued management. Conclusions: While considered a normal anatomic variant, the diagnosis of ossicular pneumatization carries some clinical significance. In children presenting with hearing loss, a pneumatized ossicle should be differentiated from middle ear disease. This finding should prompt further testing to identify the true cause of hearing loss and prevent impairments in speech and language development, cognition, and learning.

160. Role of Hospital Case Volume in the Management of Pediatric Laryngomalacia

Kelyn X. Chen, BS, Newark, NJ; Laura Yuan, BS, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Amar D. Desai, MPH, Newark, NJ; Prayag Patel, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of hospital volume on the management of pediatric patients with laryngomalacia in the context of a database study.

Objectives: To investigate the outcomes of inpatient management of pediatric patients with laryngomalacia based on hospital case volume status. Study Design: Retrospective database study. Methods: The 2016 Kid's Inpatient Database was queried for pediatric inpatients undergoing laryngomalacia (ICD-10: Q315). Hospital case volume was categorized by cases per year as high (HVC; 113+), intermediate (IVC; 21-112), and low (LVC; 1-20) volume centers. Statistical associations were determined via univariate and multivariable analyses. Results: A total of 9,726 cases were included: 2457 were treated at HVCs, 4828 at IVCs, and 2441 at LVCs. Patients at HVCs were older than those at LVCs (1.5 vs. 0.6 years, $p<0.001$). Patients at LVCs had lower total charges than those at HVCs (mean $108,182 vs. $162,338, $p<0.001$), but similar length of stays (LOS) (13.8 vs. 13.6 days, $p=0.451$). Patients at LVCs underwent fewer procedures during their inpatient stay (2.0 vs. 3.2 procedures, $p<0.001$) but had to wait longer to undergo their first procedure after admission (4.9 vs. 3.9 days, $p=0.017$) compared with patients at HVCs. Mortality was similar at LVCs and HVCs (OR 1.238, 95% CI 0.478ΓÇô3.210, $p=0.660$). Conclusions: Patients treated at LVCs have lower total charges despite having a similar LOS compared to HVCs. Our study suggests that management of inpatient pediatric patients with laryngomalacia varies by hospital volume, as indicated by differences in number of procedures undergone, time until first procedure.

161. Systematic Review of the Utility of CT Angiography in Guiding Management Decisions in Pediatric Oropharyngeal Trauma

Steven D. Curry, MD, Omaha, NE; Dallin N. Christensen, MD, Omaha, NE; Pooja M. Varman, MS, Omaha, NE; Kimberly A. Harp, MLS, Omaha, NE; Dwight T. Jones, MD, Omaha, NE

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the evidence for obtaining CT angiography and the risk of cerebrovascular complications in pediatric patients presenting with oropharyngeal trauma.

Objectives: Pediatric oropharyngeal trauma is common. Although most cases resolve uneventfully, there have been reports of internal carotid artery injury leading to devastating neurovascular sequelae. There is significant controversy regarding the utility of CT angiography (CTA) in children with seemingly minor oropharyngeal trauma. The goal of this study was to appraise changes in diagnosis and treatment based on CTA results. Study Design: Systematic review. Methods: A

comprehensive search of PubMed, Embase, CINAHL, Scopus, the Cochrane Ear, Nose and Throat Disorders Group Trials Register, and the ClinicalTrials.gov database was performed following PRISMA guidelines. Results: The search yielded 4,707 unique abstracts, of which 8 articles were included. A total of 662 patients were included, with 293 having any CT head/neck imaging, and 255 with CTA. Injuries/abnormalities of the carotid were found in 4.3% (n=11) of CTAs, comprising edema around the carotid (n=8), potential intimal tear (n=1), carotid spasm (n=1), and carotid compression (n=1). Conventional angiography was obtained in 3.9% (n=10), with 2.4% (n=6) ordered due to abnormal CTA. Conventional angiography identified 1 patient with vessel spasm and 2 patients with carotid intima disruption without thrombus. The patients with carotid intima disruption were the only patients treated with aspirin. No patient underwent vascular repair or suffered cerebrovascular injury. Conclusions: Imaging with CTA yielded radiological abnormalities in 4.3%, with 0.8% treated with antiplatelet or anticoagulant medications. These results do not support the routine use of CTA in pediatric oropharyngeal trauma as it rarely resulted in management changes and was not shown to improve outcomes.

162. Pediatric Subcutaneous Scalp Mass

Peter M. Debbaneh, MD, Oakland, CA; Youran Zou, MD, Oakland, CA; Shane Zim, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should understand the evaluation, diagnosis, and management of a patient presenting with infantile myofibroma.

Objectives: To understand the unique evaluation and management of patients presenting with infantile myofibroma. While the majority of cases are solitary nodules that require only conservative management, awareness of the possibility of multicentric disease is important considering its significant morbidity. Study Design: Case report and literature review. Methods: A 3 month old girl presenting with an enlarging 2.5 cm firm, mobile, nontender subcutaneous scalp mass was evaluated with MRI and biopsy revealing a diagnosis of infantile myofibroma. The literature was reviewed for supporting evidence of recommended management in a disease with no official treatment guidelines. Results: Histological, genetic, and imaging characteristics are reviewed. While biopsy is mandatory, conservative management can be employed for cases without multicentric involvement. Although there are no official guidelines for the evaluation of visceral involvement, skeletal radiograph and abdominal ultrasound are recommended. Conclusions: IM is a distinct clinical entity with predilection for the head and neck. Its unique immunohistopathology and clinical course should be well understood and should be included in the differential diagnosis of infantile skin and subcutaneous masses.

163. Imaging Characteristic Patterns on Ultrasound Versus CT in Pediatric Patients Diagnosed with Cervicofacial Nontuberculous Mycobacterial Lymphadenitis

Andrew Christopher Elton, BS, Minneapolis, MN; Andrew R. Scott, MD, Boston, MA; Brianne Barnett Roby, MD, Minneapolis, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize common radiologic findings seen on US and CT in the workup of NTM cervicofacial lymphadenitis.

Objectives: Identify frequencies of imaging characteristics found on ultrasound (US) and computed tomography (CT) among a cohort of children diagnosed with cervicofacial nontuberculous mycobacteria (NTM) lymphadenitis. Study Design: Case series with chart review. Methods: A patient database was used to identify patients with cervicofacial NTML. Imaging characteristics on US and CT were reviewed as well as other pertinent clinical variables. Results: There were 96 patients with NTML who met inclusion criteria, 46.9% (n=45) underwent US and 56.3% (n=56) were imaged with CT. Common imaging findings included: hypoechogenicity/hypodensity of nodes (69.3%, n=70), abscess/necrosis (60.4%, n=61), rim enhancement of nodes or abscess (CT only) (38.9%, n=21), signs of inflammation (37.6%, n=38); cutaneous involvement (23.8%, n=24), and calcifications (10.9%, n=11). Among those who were evaluated with US, 73.9% (n=34) demonstrated areas of hypoechogenicity, 58.7% (n=27) abscess/necrosis, 37% (n=17) inflammation, 8.7% (n=4) calcifications, and 6.5% (n=3) cutaneous involvement. Of those who underwent CT, 66.7% (n=36) showed hypodensity of nodes, 62.9% (n=34) abscess/necrosis, 38.9% (n=21) signs of inflammation, 38.9% (n=21) cutaneous involvement, 38.9% (n=21) rim enhancement, and 12.9% (n=7) calcifications. Conclusions: While common radiographic findings have been described for other lesions, descriptions of the US and CT characteristics of NTML are lacking in the literature. The most common imaging findings (areas of hypodensity/hypoechogenicity or abscess) may be identified on US, which may facilitate prompt diagnosis and treatment.

164. Effects of Non-Pharmacuetical Interventions on the Incidence of Peritonsillar Abscess

Fady Guiguis, BA, Dallas, TX; Christopher Liu, MD, Dallas, TX; Gopi B. Shah, MD MPH, Dallas, TX; Stephen R. Chorney, MD MPH, Dallas, TX; Romaine F. Johnson, MD MPH, Dallas, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the effects of non-pharmaceutical interventions (NPI) (physical distancing, masks, lockdowns) on the incidence of peritonsillar abscess (PTA) infections.

Objectives: Understand the effects of non-pharmaceutical interventions (NPI) (physical distancing, masks, lockdowns) on the incidence of peritonsillar abscess (PTA) infections among pediatric patients. Study Design: Cross-sectional analysis of pediatric emergency department visits. Methods: The Pediatric Health Information System was queried for the incidence of ED visits for PTA, tonsillitis, common colds, and otitis media from January 2019 to June 2021. The five quarters before and after March 2020, the beginning of widespread NPIs in the United States, were compared with equality of proportions using large sample statistics. P < .05 was significant. Results: 386,063 visits occurred before March 2020, followed by 86,809 visits afterward (78% decrease). There were total of 1433 (0.4%) PTA, 150,929 (39%) tonsillitis, 14 447 (3.7%) common cold, and 219,254 (57%) otitis media visits before March 2020. There were decreases in visits for tonsillitis (N=42 483), 71% decrease, P< .001), common colds (N=2237, 55% decrease, P=.045), and otitis media (N=41 294, 81% decrease, P< .001) after March 2020. PTA visits decreased 45% (N=795), but the proportion of cases was similar to before the pandemic (P=.10). Conclusions: NPI's like physical distancing and masks did not impact the incidence of PTA visits when compared to other common ENT conditions.

165. Impact of Asthma Status on Outcomes and Cost in Pediatric Adenoidectomy

Sean Z. Haimowitz, BS, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Amar D. Desai, MPH, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Christen Caloway, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand differences in costs and outcomes between pediatric patients undergoing adenoidectomy with and without asthma in the context of a database study.

Objectives: Adenoidectomy is a common procedure performed in pediatric patients. This study investigates differences in costs and outcomes between pediatric patients undergoing adenoidectomy with and without asthma. Study Design: Retrospective database study. Methods: In a retrospective database review, the 2016 Kid's Inpatient Database was used to identify pediatric patients undergoing adenoidectomy (ICD-10-PCS: 0CTQXZZ) and their asthma status (ICD-10: J45). Postoperative respiratory complications were identified via ICD-10 codes. Univariate and multivariate analyses were used to determine statistical associations. Results: Of the 4,000 identified patients undergoing adenoidectomy, 765 had asthma. Patients with asthma were older than those without (mean 5.9 vs. 4.7 years, p<0.001) and less likely to be white (28.0% vs. 40.8%, p<0.001). Multivariate analysis indicated that patients with and without asthma had similar total charges ($37,860.05 vs. $36,669.31, p=0.621) and length of stays (LOS) (3.1 vs. 2.5 days, p=0.825). Those with and without asthma had no significant difference in the number of procedures undergone (3.5 vs. 3.4, p=0.951) and time from admission until their first procedure (0.5 vs. 0.4 days, p=0.677). Patients with asthma were more likely to have postoperative respiratory complications following adenoidectomy on univariate analysis (7.6% vs. 5.7%, p=0.034), though not on multivariate analysis (p=0.068). Conclusions: Asthma is a common comorbidity in patients undergoing adenoidectomy. Patients with and without asthma have similar total charges, LOS, number of procedures undergone, time until their first procedure, and odds for developing postoperative respiratory complications.

166. Impact of Concomitant Adenoidectomy on Management and Complications in Pediatric Tonsillectomy

Sean Z. Haimowitz, BS, Newark, NJ; Kendyl A. Barron, BA, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Christen Caloway, MD, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand differences in management and outcomes of pediatric patients undergoing tonsillectomy with and without adenoidectomy in the context of a database study.

Objectives: Tonsillectomy is a common procedure that is often performed in conjunction with adenoidectomy. This study investigates differences in outcomes of pediatric patients undergoing tonsillectomy with and without adenoidectomy. Study Design: Retrospective database study. Methods: The 2016 Kid's Inpatient Database was used to identify pediatric patients undergoing tonsillectomy (ICD-10: 0CTP, 0CBP) with and without adenoidectomy (0CTQ, 0CBQ). Postoperative respiratory complications were identified via ICD-10 codes. Univariate and multivariate analyses were used to determine statistical associations. Results: Of the 6184 identified patients undergoing tonsillectomy, 4415 underwent concurrent adenoidectomy (T&A). Those who underwent tonsillectomy alone were older than those who underwent T&A (mean 7.9 vs. 5.1 years, p<0.001) and were more likely to be female (44.3% vs. 39.3%, p<0.001), and White (46.3% vs. 37.6%, p=0.002). Upon multivariate analysis, those who underwent tonsillectomy had similar total charges to those who underwent T&A ($36,503.17

vs. $35,495.25, p=0.640) as well as length of stay (mean 2.5 vs. 2.4 days, p=0.789). While patients undergoing tonsillectomy alone had lower incidences of respiratory complications (4.5% vs. 5.8%, p=0.034) and hypoxemia (4.5% vs. 6.2%, p=0.008) and a higher incidence of dehydration (4.1% vs. 3.0%, p=0.027) on univariate analysis, these results were not significant on multivariate analysis. When controlling for confounding factors, patients undergoing T&A had a higher risk of postoperative hemorrhage (OR 2.19, 95% CI 1.26-3.80, p=0.005). Conclusions: Tonsillectomy is frequently performed in conjunction with adenoidectomy in pediatric patients. There were similar charges and lengths of stay between the two cohorts. Those undergoing T&A were more likely to have postoperative hemorrhage.

167. Impact of Gastroesophageal Reflux on Management and Outcomes in Pediatric Laryngotracheal Stenosis

Sean Z. Haimowitz, BS, Newark, NJ; Kendyl A. Barron, BA, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Christen Caloway, MD, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand differences in comorbidities, management, and outcomes of pediatric patients with laryngotracheal stenosis based on gastroesophageal reflux status in the context of a database study.

Objectives: Gastroesophageal reflux (GERD) has been shown to play a role in the pathophysiology and progression of laryngotracheal stenosis (LTS). This study investigates differences in comorbidities, management, and outcomes of pediatric patients with LTS based on GERD status. Study Design: Retrospective database study. Methods: The 2016 Kid's Inpatient Database was used to identify pediatric patients with LTS (ICD-10: J386) and GERD (K21). Comorbidities, management, and outcomes were obtained using appropriate ICD-10 codes. Univariate and multivariate analyses were used to determine statistical associations. Results: Of the 2827 identified patients with LTS, 1070 (37.8%) had GERD. Those with GERD were slightly younger (mean, 3.0 vs. 3.6 years, p=0.002). Multiple comorbid diagnoses were more common in patients with GERD including: bronchopulmonary dysplasia (18.0% vs. 12.4%, p<0.001), laryngomalacia (15.8% vs. 11.8%, p=0.002), asthma (19.3%, vs. 14.8%, p=0.002), obstructive sleep apnea (10.7% vs. 8.4%, p=0.039), and developmental delay (27.3% vs. 18.6%, p<0.001). Patients with GERD were less likely to be diagnosed with neonatal respiratory distress syndrome (0.2% vs. 2.7%, <0.001). Patients with GERD were more likely to undergo laryngotracheal reconstruction surgery (OR 1.39, 95% CI 1.05-1.84, p=0.022). There were no differences in complications, including respiratory complications (p=0.512) between patients with and without GERD. There were no significant differences in total charges (p=0.659), length of stay (p=0.215), and number of procedures (p=0.699) between the two cohorts. Conclusions: Among pediatric patients with LTS, a diagnosis of GERD increased the likelihood of laryngotracheal reconstruction. There was no difference in the incidence of tracheotomy, complications, or total charges or length of stay.

168. Impact of Gastroesophageal Reflux on Pediatric Adenoidectomy Management and Outcomes

Sean Z. Haimowitz, BS, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Amar D. Desai, MPH, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Christen Caloway, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand differences in costs and outcomes between pediatric patients undergoing adenoidectomy with and without gastroesophageal reflux disease in the context of a database study.

Objectives: Adenoidectomy is a common procedure performed in pediatric patients. This study investigates differences in charges and outcomes between pediatric patients undergoing adenoidectomy with and without gastroesophageal reflux disease (GERD). Study Design: Retrospective database study. Methods: The 2016 Kid's Inpatient Database was used to identify pediatric patients undergoing adenoidectomy (ICD-10-PCS: 0CTQXZZ) and GERD status (ICD-10: K21). Postoperative respiratory complications were identified via ICD-10 codes. Univariate and multivariate analyses were used to determine statistical associations. Results: Of the 4,000 identified patients undergoing adenoidectomy, 424 had GERD. Patients with GERD were younger than those without (mean 3.8 vs. 5.1 years, p<0.001) and more likely to be white (48.1% vs. 37.3%, p<0.001). Multivariate analysis indicated that patients with GERD had greater total charges ($68,027.24 vs. $33,208.78, p=0.002), longer length of stays (LOS) (5.7 vs. 2.3 days, p<0.001), and underwent more procedures (4.7 vs. 3.2, p<0.001). Those with GERD less frequently had concurrent tonsillectomies (76.4% vs. 90.4%, p<0.01). Patients with GERD were at a higher risk for postoperative respiratory complications (OR 1.81, 95% CI 1.21ΓÇô2.70, p<0.001), hypoxemia (OR 1.62, 95% CI 1.08-2.42, p=0.019), and requiring ventilation (OR 2.65, 95% CI 1.79-3.91, p<0.001). Conclusions: In pediatric patients undergoing adenoidectomy, GERD was associated with higher charges, LOS, and number of procedures. Patients with GERD less commonly had concurrent tonsillectomies and had increased odds for developing postoperative respiratory complications, hypoxemia, and ventilation requirement.

169. Impact of Otitis Media Status on Outcomes and Cost in Pediatric Adenoidectomy

Sean Z. Haimowitz, BS, Newark, NJ; Vraj P. Shah, BS, Newark, NJ; Kendyl A. Barron, BA, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Christen Caloway, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand differences in costs and outcomes between pediatric patients undergoing adenoidectomy with and without otitis media in the context of a database study.

Objectives: Adenoidectomy has been a procedure commonly performed in pediatric patients suffering from otitis media (OM). This study investigates the associations between OM and costs and outcomes in pediatric patients undergoing adenoidectomy. Study Design: Retrospective database study. Methods: The 2016 Kid's Inpatient Database was used to identify pediatric patients undergoing adenoidectomy (ICD-10-PCS: 0CTQXZZ) with or without OM (ICD-10: H65 and H66). Postoperative respiratory complications were identified using ICD-10 codes. Univariate and multivariate analyses were used to determine statistical associations across OM status. Results: Of the 4,000 identified patients undergoing adenoidectomy, 917 had OM. Patients with OM were younger than those without (mean 3.1 vs. 5.5 years, $p<0.001$) and more likely to be male (65.4% vs. 59.3%, $p<0.001$). There were significant differences in the racial distribution of patients with and without OM ($p=0.045$). On multivariate analysis, patients with OM underwent more procedures (4.6 vs. 3.0, $p <0.001$) and were less likely to undergo concurrent tonsillectomy (84.1% vs. 90.4%, $p=0.011$). There were no significant differences for patients with OM in total charges ($34,308.67 vs. $37,684.08, $p=0.445$) and length of stay (2.9 vs. 2.6 days, $p=0.674$). While there was a higher percentage of patients with OM and postoperative respiratory complications (7.7% vs. 5.6%, $p=0.016$), this difference was not significant on multivariate analysis ($p=0.083$). Conclusions: Adenoidectomy has been performed as a treatment strategy for children with OM. Although pediatric patients undergoing adenoidectomy with OM are more likely to undergo additional procedures, there is no significant difference in the incidence of respiratory complications, total charges, or length of stay.

170. Long Term Hearing Outcomes in Children with Isolated Robin Sequence (RS) vs Syndromic Robin Sequence

Simisola Odusanya, BS, Minneapolis, MN; Grace Tan, MD, Beaverton, OR; Brianne Barnett Roby, MD, Minneapolis, MN

Educational Objective: At the end of this presentation, participants should be able to determine whether hearing loss outcomes are worse in children with syndromic Robin sequence compared to isolated Robin sequence.

Objectives: To determine whether hearing loss outcomes are worse in children with syndromic Robin sequence compared to isolated Robin sequence. Study Design: Retrospective chart review of all patients diagnosed with Robin sequence at a tertiary children's hospital with review of all audiologic data. Methods: The charts of all patients diagnosed with RS were reviewed for presence of genetic disorders, medical comorbidities, type of hearing loss, otologic surgeries and interventions. Descriptive statistics were used to summarize the data, overall and by group. Logistic regression models were used to assess the association between hearing loss and RS groups. P values less than 0.05 were considered statistically significant. Results: 1,100 charts were reviewed and 111 patients with a diagnosis of RS were identified, with 107 meeting inclusion criteria. Of the 107 patients with RS, 35 (32.7%) had associated genetic disorders. 20 (57.1%) had Stickler syndrome, 1 (2.9%) had DiGeorge syndrome, and 13 (37.1%) had other genetic abnormalities. Comorbid medical conditions were in 43 (40%), with 17 (15.3%) having a cardiopulmonary diagnosis, 23 (20.9%) a neurological diagnosis, and 20 (18%) an ophthalmologic diagnosis. Hearing loss in RS patients was found to be significantly higher in patients with syndromic RS with an odds of 3.4 times higher than non-syndromic RS (odds ratio 3.4, confidence interval 1.47-7.91, $p=0.0043$). Conclusions: This study shows that children with syndromic Robin sequence have worse hearing outcomes compared to children with isolated Robin sequence.

171. Pediatric Extracorporeal Septoplasty for Severe Deformity and Obstruction: Early Results

Kavita Prasad, MD MPH, Boston, MA; Genevieve Spagnuolo, MD, Boston, MA; Andrew R. Scott, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the technique and utilization of extracorporeal septoplasty and to evaluate the safety and benefits of performing this procedure in children.

Objectives: Among adult patients with severe septal deformities, extracorporeal septoplasty has been shown to improve aesthetic and functional outcomes. It is unclear if this technique can be performed in children with similar deviations. We present three cases where this technique was used in the pediatric population and highlight potential benefits of intervening early for patients with moderate to severe septal deviation. Study Design: Small case series with chart review. Methods: A departmental database was used to identify patients under 18 yo with severe septal deformities who underwent either endonasal or open extracorporeal septoplasty over a 3 year time period. Serial office visits and photographs were reviewed.

Results: 3 patients were identified ranging in age from 2-16 years old. All patients had a history of trauma with subsequent development of near complete bilateral nasal obstruction. Two adolescents had concurrent severe asymmetry and the 2 yo had witnessed apnea at night. All patients were managed with extracorporeal septoplasty with replacement of the L strut with autologous septal cartilage. A PDS plate was used in the youngest case. All patients experienced significant improvements in nasal obstructive symptoms and external symmetry. Conclusions: Recently there has been increased acceptance of pediatric septoplasty procedures with the understanding that all efforts should be made to preserve the spheno-septal junction which is the center of midfacial growth. In cases of severe nasal obstruction extracorporeal septoplasty is feasible in children and may offer dramatic improvement in symptoms, however long term followup studies will be necessary to determine if and how facial growth is affected by these procedures.

172. Multiple Feathers Removed from Neck of Infant

Rishabh Sethia, MD, Columbus, OH; Monica I. Ardura, DO, Columbus, OH; Prasanth Pattisapu, MD MPH, Columbus, OH; Charles A. Elmaraghy, MD, Columbus, OH; Ethan C. Bassett, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize and treat the unique presentation of left neck infection caused by feather foreign body.

Objectives: To describe a unique case of left neck infection caused by feather foreign body requiring operative removal. Study Design: Case report. Methods: A 9 month female presented with 4 days of left submandibular swelling with overlying erythematous and slightly violaceous hue, unresponsive to oral amoxicillin/clavulanate. She had no systemic symptoms or known preceding trauma. Two neck ultrasounds over 4 days showed left submandibular cellulitis and phlegmon. She was admitted for intravenous antibiotics and discharged after 1 day with treatment for presumed atypical infection. One week later, the mother removed a 3 cm extruding linear dark foreign body. On followup 6 days later, ultrasound revealed a small persistent fluid collection with linear foreign body. Operative exploration yielded a 2.5 cm dark linear foreign body from the left submandibular region. Gross pathology confirmed diagnosis of feather, suspected to be from household couch pillows containing down feathers. The patient had resolution of swelling two weeks later. Results: There are limited reports of infants developing foreign body reactions requiring drainage from down feathers in household cushions. Reports of intraoral ingestion and migration as well as cutaneous introduction have been proposed. Although the exact mechanism is unclear in this case, the unique nature of two feather foreign bodies requiring two separate removals from the area of concern has not been reported in the literature. Conclusions: Although rare, providers must keep in mind the possibility of feathers or similar foreign bodies as a potential source of neck swelling and perform a thorough history. Operative exploration and removal are recommended.

173. Does Hospital Surgical Volume Impact Management, Outcomes, and Charges of Pediatric Tonsillectomy?

Vraj P. Shah, BS, Newark, NJ; Amar D. Desai, MPH, Newark, NJ; Sean Z. Haimowitz, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ; Christen Caloway, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of hospital volume on the management of pediatric patients undergoing tonsillectomy in the context of a database study.

Objectives: To investigate the associations between hospital surgical volume and the management of inpatient pediatric patients undergoing tonsillectomy. Study Design: Retrospective database study. Methods: The 2016 Kid's Inpatient Database was queried for pediatric patients undergoing tonsillectomy (ICD-10: 0CTPXZZ). Hospital surgical volume was categorized by cases per year as high volume center (HVC; 67+), intermediate (IVC; 12-66), and low (LVC; 1-11). Statistical associations were determined using univariate and multivariate analyses. Results: A total of 5,604 cases were included: 1417 were treated at HVCs, 2792 at IVCs, and 1395 at LVCs. Patients at HVCs were younger than those at LVCs (5.66 vs. 7.12 years, $p<0.001$) and more likely to be obese (20.4% vs. 6.7%, $p<0.001$). Patients at LVCs and HVCs had similar total charges (mean $29,507.40 vs. $32,153.32, $p=0.680$). Patients at LVCs had a longer length of stay (LOS) than at HVCs (2.37 vs. 1.91 days, $p<0.001$) and underwent fewer procedures (2.81 vs. 3.11 procedures, $p=0.018$). Those at LVCs had an elevated risk for dehydration (OR 4.827, 95% CI 2.734-8.523, $p<0.001$) and respiratory complications compared to HVCs (OR 1.499, 95% CI 1.078-2.084, $p=0.016$). There was no significant difference in risk for postoperative hemorrhage ($p=0.070$). Overall, patients at LVCs were at greater risk for developing complications than at HVCs (OR 2.100, 95% CI 1.582-2.787, $p<0.001$). Conclusions: Patients treated at LVCs have a greater LOS and increased risk of complications than at HVCs. Our study suggests that outcomes for inpatient pediatric tonsillectomy patients are better at HVCs than LVCs.

174. Does Insurance Type Impact Outcomes and Cost in the Management of Pediatric Tonsillectomy?

Vraj P. Shah, BS, Newark, NJ; Amar D. Desai, MPH, Newark, NJ; Sean Z. Haimowitz, BS, Newark, NJ; Christina H. Fang, MD, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ; Christen Caloway, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the impact of insurance type on the management of pediatric patients undergoing tonsillectomy in the context of a database study.

Objectives: To investigate the associations between insurance type and the management of inpatient pediatric patients undergoing tonsillectomy. Study Design: Retrospective database study. Methods: The 2016 Kid's Inpatient Database was used to identify pediatric patients undergoing tonsillectomy (ICD-10: 0CTPXZZ). Complications were identified via ICD-10 codes. Univariate and multivariate analyses were performed to determine statistical associations. Results: Of the 5,600 patients in our cohort, 2008 had private insurance, 3295 had Medicaid, and 297 were remaining payers (Medicare, self-pay, "other"). Patients with private insurance were older than Medicaid patients (6.09 vs. 5.63 years, p=0.001), but similar in age to remaining payers (6.09 vs. 6.13 years, p=0.902). Medicaid patients were more likely to be obese than those with private insurance or remaining payers (15.8% vs. 6.2% vs. 6.4% respectively, p<0.001). Multivariate analysis indicated that patients with private insurance had lower total charges than remaining payers (mean $32,149.38 vs. $39,279.41, p=0.041) and similar charges to Medicaid patients ($32,149.38 vs. $34,661.66, p=0.454). Patients with private insurance had shorter length of stay (LOS) than Medicaid patients (2.23 vs. 2.53 days, p=0.010) and remaining payers (2.23 vs. 2.63 days, p=0.015). Patients with Medicaid and private insurance had similar risks for respiratory complications (p=0.244); however, remaining payers had an elevated risk for developing respiratory complications compared to those with private insurance (OR 1.593, 95% CI 1.022-2.484, p=0.040). Conclusions: Our study suggests that the management of pediatric tonsillectomy patients varies by insurance type, as highlighted by differences in charges, length of stay, and respiratory complication risk.