

Message from the Vice Presidents

Welcome to Scottsdale and our Triological Combined Sections Meeting. It has been a pleasure to serve the membership as the Section Vice Presidents and we are very proud of the outstanding program that has been assembled by our Program Chair, Dr. Paul Willging, and our Program Committee members. The **Schedule at a Glance** will give you an idea of the wide range of presentations and activities available to attendees. Concurrent sessions will maximize our attendees' educational experience. Be sure to join us for our Vice President's Welcome Reception on Thursday evening, a fun networking and social event, and our poster reception and party in the desert on Saturday evening. We would appreciate it if you would visit with the exhibitors who help support our meeting. Refreshments and lunch will be available in the exhibit hall throughout the meeting. Many activities are available on Friday afternoon at the conclusion of the morning's concurrent sessions, including our Triological Society Thesis Seminar for candidates, the annual golf outing, and our ever popular Resident Bowl, which is approved for CME credit. Attendees may also register for the American Society of Geriatric Otolaryngology's scientific session to be held on Friday afternoon.

For those of you who are not Triological Society members or Fellows, we welcome the opportunity to answer your questions regarding how you can become part of this noble organization. The Society awards nearly \$500,000 per year in support of research efforts of otolaryngologist-head and neck surgeons, disseminates the latest basic science and clinical information in *The Laryngoscope*, and our Open Access journal, *Laryngoscope Investigative Otolaryngology* as well as sharing important and timely otolaryngology updates in *ENTtoday*. The Society continues to support resident, medical student and Fellow presenters through institutional travel awards. Nearly \$200,00 was awarded in 2017.

We hope you enjoy all the educational and social aspects of our meeting. Thank you for attending.



Gady Har-El, MD
Eastern Section Vice President



Carol R. Bradford, MD
Middle Section Vice President



Hassan H. Ramadan, MD
Southern Section Vice President



Clough Shelton, MD
Western Section Vice President

THURSDAY AT A GLANCE

7:30 Breakfast with Exhibitors

Morning Session - Kierland Ballroom 1 & 2

8:00 - 9:10 Welcome and Introduction of Special Guests

9:10 Presidential Address

9:35 - 10:00 Break with Exhibitors/View Posters

10:05 - 11:00 Triological Society Best Practices (TRIO BP) Session

11:05 - 11:55 How I Do It Video Session

12:00 - 1:00 Lunch/Visit Exhibits/View Posters

THURSDAY AT A GLANCE (cont'd)

Concurrent Sessions 1A & 2A - Kierland 1

- 1:10 - 3:05 Head & Neck Papers and Panel
 PANEL - Controversies in Transoral Endoscopic Head and Neck Surgery, Robot vs. Laser?
- 3:05 - 3:30 Break with Exhibitors/View Posters
- 3:30 - 5:15 Rhinology/Allergy Papers and Panel
 PANEL - When is Surgery Indicated for Chronic Rhinosinusitis? How Extensive Should the Surgery Be?
- 5:15 Adjourn
- 5:30 - 7:00 Vice President's Welcome Reception - Northern Sky Terrace

Concurrent Sessions 1B & 2B - Kierland 2

- 1:10 - 3:10 Otology/Neurotology Papers and Panel
 PANEL - Otology/Neurotology: Past, Present and Future
- 3:10 - 3:30 Break with Exhibitors/View Posters
- 3:30 - 5:20 Laryngology/Bronchoesophagology Papers and Panel
 PANEL - Cancer of the Larynx: Choice of Treatment and Impact on Outcome
- 5:15 Adjourn
- 5:30 - 7:00 Vice President's Welcome Reception - Northern Sky Terrace

FRIDAY AT A GLANCE

7:30 Breakfast with Exhibitors

Triological Business Meetings (Fellows Only)

- 7:00 - 7:50 Southern Section - Powell AB
- 7:00 - 7:50 Western Section - Merriam AB

Concurrent Sessions 3A & 4A - Kierland 1

- 8:05 - 10:00 Facial Plastic/Reconstructive Surgery Papers and Panel
 PANEL - Facial Nerve Paralysis Rehabilitation
- 10:00 - 10:30 Break with Exhibitors/View Posters
- 10:30 - 12:30 General and Rhinology/Allergy/Sinus
 PANEL - Clinical Practice Guidelines: Are They Authoritative?
- 12:30 Adjourn

FRIDAY AT A GLANCE (cont'd)

Concurrent Sessions 3B & 4B - Kierland 2

- 8:05 - 10:05 General/Sleep Medicine Papers and Panel
PANEL - Physician Wellness and Burnout
- 10:00 - 10:30 Break with Exhibitors/View Posters
- 10:30 - 12:30 Laryngology/Bronchoesophagology and Pediatric Otolaryngology Papers and Panel
PANEL - Management of Dysplastic and Premalignant Lesions in the Head and Neck
- 12:30 Adjourn

Afternoon Activities (registration or invitation required)

- 12:30 Golf Outing
- 12:45 - 1:30 Triological Thesis Seminar - Powell AB
- 1:00 - 2:15 Resident Bowl - Kierland 2
- 12:45 - 2:45 Physician/Scientist Meeting - Merriam AB
- 2:30 - 6:00 ASGO Scientific Session - Kierland 1

SATURDAY AT A GLANCE

- 7:30 Breakfast with Exhibitors

Triological Business Meetings (Fellows Only)

- 7:00 - 7:50 Eastern Section - Merriam AB
- 7:00 - 7:50 Middle Section - Powell AB

General Session - Kierland 1 & 2

- 8:05 - 9:25 The Latest and the Greatest
- 9:30 - 10:00 Break with Exhibitors/View Posters
- 10:00 - 12:00 Concurrent Sessions (see next page)

Concurrent Sessions 5A & 6A - Kierland 1

- 10:00 - 12:00 General and Head and Neck Papers and Panel
PANEL - Point/Counterpoint: What Is the Best Way to Reconstruct this Defect?
- 12:00 - 1:00 Lunch/Visit Exhibits/View Posters
- 1:10 - 3:05 Pediatric Otolaryngology Papers and Panel
PANEL - Frenotomy for Tongue and Lip ties - Exploding Diagnoses - What's Going on?
- 3:05 - 3:30 Break/View Posters - Trailblazers

SATURDAY AT A GLANCE (cont'd)

Concurrent Sessions 5B & 6B - Kierland 2

- 10:00 - 12:00 Otolaryngology/Neurotology Papers and Panel
PANEL - What Otolaryngologists Need to Know About CMV
- 12:00 - 1:00 Lunch/Visit Exhibits/View Posters
- 1:10 - 3:05 General and Sleep Medicine Papers and Panel
PANEL - What You Need to Know About Genetic Testing in Otolaryngology
- 3:05 - 3:30 Break/View Posters - Trailblazers

General Session - Kierland 1 & 2

- 3:30 - 4:40 General Panels
PANEL - Challenges in Contemporary, Efficient Practice Environments
PANEL - Controversies in Otolaryngology
- 5:45 Adjourn

Evening Activities

- 5:45 - 7:00 Meet the Authors Poster Reception - Trailblazers
- 7:00 Party in the Desert - Northern Sky Terrace

2018 COMBINED SECTIONS MEETING

JANUARY 18-20 • WESTIN KIERLAND • SCOTTSDALE, ARIZONA

About the Triological Society

The American Laryngological, Rhinological and Otolological Society, Inc., aka The Triological Society, was founded in 1895 in New York, NY. Since its founding, the Triological Society has attracted the best and brightest in academic and clinical otolaryngology. Membership in the Triological Society brings the distinction of being elected to the most prestigious society in otolaryngology. Active Fellowship is achieved by presenting a thesis in the field of otolaryngology considered acceptable to a panel of peers. For those entering the field of otolaryngology, the Society provides role models. For those who are committed to research and related scholarly activity, the Society offers fellowship with like-minded peers who share common values, interests, and concerns.

The Society disseminates scientific information by presenting the latest basic science and clinical information at scientific meetings and through publication of its scientific journals, *The Laryngoscope* and *Laryngoscope Investigative Otolaryngology*. The Society promotes research into the causes of and treatments for otolaryngic diseases by attracting promising physicians to scholarly otolaryngology research and supporting their development, providing financial support for the research efforts of young scientists, and promoting the highest standards in the field of otolaryngology-head and neck surgery.

Mission Statement

The mission of the Triological Society is to assist physicians and other health care professionals in maintaining and enhancing their knowledge of and skills in otolaryngology-head and neck surgery in pursuit of improved patient care.

Learning Objectives for This Activity

This activity is designed for otolaryngologists-head and neck surgeons and other health professionals. Upon completion of this course, participants will be able to:

- Manage patients within the scope of Practice Guidelines and apply their general knowledge to the management of patients outside the defined patient population for a specific guideline.
- Identify factors leading to physician burnout and analyze their current practice such that a plan can be developed to minimize those factors identified in their practice that could be classified as maladaptive to general wellness.
- Describe the factors associated with the appropriate adoption of new technology into clinical practice, and recognize when traditional techniques should not be abandoned.
- Genetic testing is a rapidly developing field with wide ranging implications for Otolaryngology. The participant will be able to recognize the utility of these new tests and the value they directly provide to their patients. They will know when to apply tests to specific patient populations within their practice.
- The participants will be able to identify the Changes in the Health Care Environment that affect their ability to practice medicine. They will be able to assess their current situation with respect to their ability to provide access to care while maintaining a successful practice. They will be able to identify concrete changes that could be made to positively position their practice for the future.

Exhibits

Exhibitors will include representatives of pharmaceutical companies, instrument companies, diagnostic equipment companies, publishers, and others. We encourage attendees to visit the exhibit hall for information that may assist in their pursuit of improved patient care. Exhibitor arrangements are in compliance with the Accreditation Council for Continuing Medical Education (ACCME) Standards for Commercial Support.

Information presented by exhibitors and oral and poster presenters does not represent an endorsement by the Triological Society.

Disclosure Information

In compliance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. All reported conflicts are managed by a designated official to ensure a bias-free presentation. Please see the insert to this program for the complete disclosure list.

Program Evaluation and CME Certificates

Participant comments on program evaluation forms assist Program Advisory Committees in determining the direction of future educational activities. We appreciate your input and request that you complete a program evaluation in exchange for a CME certificate of attendance. Records are maintained in the Administrative Office of the Society and maintained by the American College of Surgeons for Fellows of the College. Requests may be made by sending a self-addressed envelope to: Triological Society • 13930 Gold Circle, Suite 103 • Omaha, NE 68144 • 531-355-8900.

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.

AMA PRA Category 1 Credits™

The American College of Surgeons designates this live activity for a maximum of **19.50 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



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Program Chair
J. Paul Willging, MD FACS
 Cincinnati, OH

Vice President, Eastern Section
Gady Har-El, MD FACS
 New York, NY

Vice President, Middle Section
Carol R. Bradford, MD FACS
 Ann Arbor, MI

Vice President, Southern Section
Hassan H. Ramadan, MD FACS
 Morgantown, WV

Vice President, Western Section
Clough Shelton, MD FACS
 Salt Lake City, UT

Justin L. Antisdell, MD FACS
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M. Jennifer Derebery, MD FACS
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Stacey L. Ishman, MD MPH
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Robert M. Kellman, MD FACS
 Syracuse, NY

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 Salt Lake City, UT

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Albert L. Merati, MD FACS
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Alan G. Micco, MD FACS
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 Rochester, MN

Albert H. Park, MD
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 Gonda 12-ENT
 200 1st St SW
 Rochester, MN 55905

Executive Vice President

Myles L. Pensak, MD FACS
 University of Cincinnati
 231 Albert Sabin Way Rm MSB 6507
 PO Box 670528
 Cincinnati, OH 45267-0528

Assistant Executive Vice President

Harold C. Pillsbury, MD FACS
 Univ of NC--Otolaryngology-HNS
 CB# 7070 G-125 Physicians' Office Bldg
 170 Manning Dr
 Chapel Hill, NC 27599-7070

Assistant Executive Vice President

Gerald B. Healy, MD FACS
 Boston, MA 02114

Treasurer

Andrew H. Murr, MD FACS
 University of California
 Dept of Otolaryngology-HNS
 2233 Post St 3rd Floor Box 1225
 San Francisco, CA 94115

CME Coordinator

Stephen S. Park, MD
 Univ of Virginia Med Ctr
 Dept of OTO-HNS
 PO Box 800713
 Charlottesville, VA 22908-0713

Research Liaison

Gerald S. Berke, MD FACS
 UCLA Medical Center
 Div of Head & Neck Surgery
 10833 Le Conte Ave 62-132 CHS
 Los Angeles, CA 90095

Social Media & Culture Coordinator

Michael M. Johns III, MD
 University of Southern California
 Div of Laryngology
 1540 Alcazar St Ste 204M
 Los Angeles, CA 90033

Members of the Council

Vice President, Eastern Section

Gady Har-El, MD FACS
 Lenox Hill Hospital
 Dept of Otolaryngology-HNS
 186 E 76th St 2nd Floor
 New York, NY 10021

Vice President, Middle Section

Carol R. Bradford, MD FACS
 University of Michigan Medical School
 1301 Catherine St
 4101 Medical Science Bldg 1
 Ann Arbor, MI 48109-5624

Vice President, Southern Section

Hassan H. Ramadan, MD FACS
 West Virginia University
 Dept of Otolaryngology
 Room 2222 HSS, PO Box 9200
 Morgantown, WV 26506-9200

Vice President, Western Section

Clough Shelton, MD FACS
 University of Utah
 50 N Medical Dr 3C120 SOM
 Salt Lake City, UT 84132

Secretary, Eastern Section

Robert M. Kellman, MD FACS
 SUNY Upstate Medical University
 Dept of Otolaryngology
 750 E Adams St
 Syracuse, NY 13210

Secretary, Middle Section

Alan G. Micco, MD FACS
 Northwestern University School of Medicine
 Dept. of Otolaryngology-HNS
 675 North St. Clair 15-200
 Chicago, IL 60611

Secretary, Southern Section

Donald T. Donovan, MD FACS
 Baylor College
 Dept of Otolaryngology
 1 Baylor Plaza NA 102
 Houston, TX 77030

Secretary, Western Section

Albert L. Merati, MD FACS
 University of WA School of Medicine
 Dept Otolaryngology-HNS
 1959 NE Pacific Box 356515
 Seattle, WA 98195

Members of the Council

Thesis Chair

Dana M. Thompson, MD FACS

Ann & Robert H. Lurie Children's Hospital of Chicago
Dept of Otolaryngology Box 25
225 E Chicago Ave
Chicago, IL 60611

Laryngoscope Editor-in-Chief

Michael G. Stewart, MD MPH FACS

Weill Medical College of Cornell University
Dept of Otolaryngology-HNS
1305 York Ave 5th Floor
New York, NY 10021

Laryngoscope Investigative Otolaryngology

Editor-in-Chief

D. Bradley Welling, MD PhD FACS

Massachusetts Eye and Ear
243 Charles St Ste 815
Boston, MA 02114

The Laryngoscope

Editor

Michael G. Stewart, MD MPH FACS

Weill Medical College of Cornell University
Dept of Otolaryngology-HNS
1305 York Ave 5th Floor
New York, NY 10021

Questions should be referred to Mary Clements
Email: thelaryngoscope@gmail.com
Phone: 919-267-6831

Website: www.laryngoscope.com

Member Subscriptions Email: beth@triological.org
All Other Subscriptions Email: subinfo@wiley.com

ENTtoday

Physician Editor

Alexander G. Chiu, MD
University of Kansas
Dept of Otolaryngology-HNS
3901 Rainbow Blvd MS 3010
Kansas City, KS 66160

Editor

Samara E. Kuehne

Wiley Blackwell
111 River St
Hoboken, NJ 07030
Email: enttoday@wiley.com

Website: www.enttoday.org

Subscriptions
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ENTtoday Physician Editor

Alexander G. Chiu, MD
University of Kansas
Dept of Otolaryngology-HNS
3901 Rainbow Blvd MS 3010
Kansas City, KS 66160

Military Liaison

Michael E. Hoffer, MD FACS

University of Miami
Dept of Otolaryngology
1120 NW 14th St
Miami, FL 33136

Laryngoscope Investigative Otolaryngology

Editor

D. Bradley Welling, MD PhD FACS

Massachusetts Eye and Ear
243 Charles St Ste 815
Boston, MA 02114

Questions should be referred to Mary Clements
Email: thelaryngoscope@gmail.com
Phone: 919-267-6831

Website: www.investigativeoto.com

Society Contacts

Gail Binderup - Administrator
Marsha Holbert
Beth Slovinski
13930 Gold Circle Suite 103
Omaha, NE 68144
Phone: 531-355-8900
Fax: 531-355-8905
Email: info@triological.org

Website: www.triological.org

Guests of Honor

Eastern Section	Frank E. Lucente, MD FACS
Middle Section	Gregory T. Wolf, MD FACS
Southern Section	Stephen J. Wetmore, MD FACS
Western Section	Robert H. Miller, MD MBA FACS

Citation Awardees

Eastern Section	Southern Section
Yosef P. Krespi, MD FACS	Stanley M. Blaugrund, MD
Jessica W. Lim, MD	Joseph G. Feghali, MD FACS
The New York Head & Neck Society	Robert M. Naclerio, MD FACS
Middle Section	Western Section
Thomas E. Carey, PhD	Derald E. Brackmann, MD
Cherie Ann Nathan, MD FACS	Bruce J. Gantz, MD FACS
J. Gail Neely, MD FACS (posthumously)	Richard R. Orlandi, MD FACS

Middle Section George Adams Young Faculty Awardee
 Lamont R. Jones, MD, MBA, Henry Ford Hospital, Detroit, MI

Sixth Annual Patrick E. Brookhouser MD Award of Excellence

Roger L. Crumley, MD MBA FACS, University of California, Irvine, CA

Guests of Honor

Honored by Eastern Section -- Frank E. Lucente, MD FACS



Dr. Lucente is a graduate of Yale University School of Medicine and residency at Washington University. In 1990 he became Chairman at SUNY–Downstate and LICH. He was President of the Triological Society in 2010. He has been Vice President and Coordinator for Instruction Courses for the AAOHNSF. He has served as president of the Triological Society and the SUO-HNS. He has been Guest of Honor for the American Bronchoesophagological Association, American Laryngological Association and the American Society of Geriatric Otolaryngology. He has been on the Executive Editorial Board of *The Laryngoscope*. He is the author, coauthor or editor of 17 books and over 200 scientific publications and chapters. Dr. Lucente served on the ACGME RRC Otolaryngology and has been Chair of the AMA's CME Advisory Committee. Dr. Lucente served as Vice Dean for Graduate Medical Education and Director of the Medical Student Career Advisement Office at SUNY. He has also received the SUNY Chancellor's Award for Distinction in Teaching and in 2001, was honored with the Teacher of the Decade Award from the Department of Otolaryngology. In 2008 he received the Graymoor Award from

the Franciscan Friars of the Atonement for his service to that organization. On May 25, 2017, Dr. Lucente, one of the Tribute Honorees, was presented SUNY's Gold Medal for Excellence in Medical Leadership by President Wayne Riley at the event honoring graduating residents and fellows at the Brooklyn Marriott.

Honored by Middle Section -- Gregory T. Wolf, MD FACS



Dr. Wolf is Professor of Otolaryngology-Head and Neck Surgery and Chair Emeritus, Department of Otolaryngology for the University of Michigan Health System and Medical School. He obtained his B.S. from the University of Notre Dame and his M.D. from the University of Michigan School of Medicine, subsequently training in general surgery at Georgetown and in otorhinolaryngology at Upstate Medical Center. He completed a fellowship in tumor immunology at the NIH and became Assistant Professor of Otolaryngology at UM where he spent the next 37 years of his professional career. Dr. Wolf is Board certified in Otolaryngology and Facial Plastic Surgery. He was promoted to Associate Professor in 1985 and Professor in 1990. He served in numerous leadership positions in the University and nationally, including as Chair of the Department of Otolaryngology-Head and Neck Surgery from 1992-2009, Service Chief for Otolaryngology at the Ann Arbor Veterans Affairs Medical Center, Councilor for the Advisory Council of the NIH NIDCD, President of the AHNS, and principal investigator for numerous research grants including the landmark national Veteran's Affairs Cooperative Study for organ

preservation in patients with advanced laryngeal cancer which created a revolutionary change in the management of these cancers. The VA study led a global revolution in organ preservation in head and neck cancer so that the current standard for most advanced head and neck cancers is chemotherapy and radiation.

Dr. Wolf has been the recipient of numerous national and international honors and awards including being the first surgeon ever recognized with the University of Michigan Distinguished Lectureship Award in Biomedical Research, also the Hayes Martin Lectureship, Albert C. Muse Prize in Medicine, Garnett Passe and Rodney Williams Memorial Foundation Award, and the League of Research Excellence (UM) for leading grant awards including the highly competitive NIH Specialized Program of Research Excellence in Head and Neck Cancer. He has authored over 300 original research articles and book chapters, edited two textbooks and has been an invited speaker at countless regional, national, and international symposiums.

He has focused his current research efforts on translational clinical trials and on advancing our understanding of the complex interplay between tumor stem cells, supporting stroma and adaptive host immunity in order to develop more effective therapeutics for systemic disease. Dr. Wolf has dedicated his life to the care of patients and has been one of the most influential physician scientists in head and neck cancer surgery.

Guests of Honor

Honored by Southern Section -- Stephen J. Wetmore, MD FACS

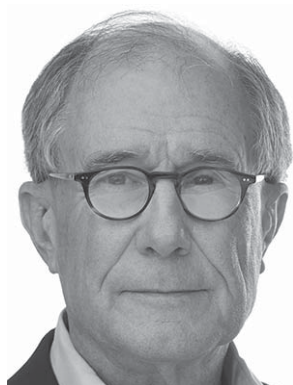


Upon completing his residency at the University of Iowa under Dr. Brian McCabe he joined the faculty at the University of Arkansas under the guidance of Dr. James Suen. Dr. Wetmore arrived at Arkansas one month after the delivery of the first CO2 laser in the state of Arkansas and he rapidly learned to become the laser expert, publishing his experience using the laser for treatment of T1 carcinoma of the larynx and also his experience treating hundreds of cases of laryngeal papillomatosis.

Dr. Wetmore's true love was otology. In 1985 he took a sabbatical and spent time in Nashville with Drs. Glasscock and Jackson, and in Zurich, Switzerland, under the tutelage of Dr. Ugo Fisch. After cochlear implants were approved by the FDA, he began implanting patients at the University of Arkansas, and continued that practice after he moved to West Virginia University as Chairman in 1988.

After 27 years as department chair, he stepped down in the summer of 2015, but continues to work part-time as an otologist. He feels that the greatest accomplishment of his career was his role in training more than 90 young men and women to become otolaryngologists.

Honored by Western Section -- Robert H. Miller, MD MBA FACS



Robert Miller grew up in New Orleans and received both BS and MD degrees from Tulane. Following residency at UCLA, he served on the faculty at Baylor College of Medicine for nine years after which he was appointed Chairman at Tulane. While in this role, Dr. Miller obtained an MBA degree from Tulane and did a one-year Robert Wood Johnson Health Policy fellowship in Washington, DC where he worked on health policy issues in the office of Senator John Breaux. Upon his return, Dr. Miller was appointed Vice-Chancellor for Clinical affairs for the Tulane Medical Center, a position he held until he became Dean of the University of Nevada School of Medicine. He has served as the Executive Director of the American Board of Otolaryngology since 2004.

Dr. Miller's major research efforts have been in diseases of the larynx, as well as education, workforce and leadership issues.

Dr. Miller has been very active in numerous organizations having served in leadership positions in the Accreditation Council for Graduate Medical Education, the Society of University Otolaryngologists, the American Board of Medical Specialties, the Robert Wood Johnson Foundation, and Boys Town. Dr. Miller has served the Triological Society in many roles including Executive Secretary, Treasurer, Liaison to the Publisher, and founding editor of *ENTtoday*.

Citation Awardees

Eastern Section -- Yosef P. Krespi, MD FACS



Dr. Yosef Krespi is Director of the Center for Sleep Disorders at NYHNI and Professor of Clinical Otolaryngology at Hofstra - Northwell School of Medicine NY since 2011. Dr. Krespi graduated from medical school at Technion, Israel and completed his Otolaryngology training at Mount Sinai Medical Center in New York. After completing his fellowship in Head and Neck Surgery at Mount Sinai under Professors Biller and Som he became Associate Professor at Northwestern University under Professor Sisson. In the late 1980s he was appointed Professor and Chairman of Otolaryngology at SUNY-Brooklyn and later became Chairman at St. Luke's Roosevelt Hospitals and Professor of Otolaryngology at Columbia University, holding this position for almost twenty years.

Dr. Krespi has published over 170 scientific medical articles and has served as editor on four text books, written over 55 book chapters and holds over 20 patents. He is one of the world's leading experts in laser surgery, surgery to relieve snoring and sleep apnea and treatment of halitosis. Dr. Krespi is widely recognized around the world and respected by his peers. Over the last three decades he has received numerous awards and honors.

Eastern Section -- Jessica W. Lim, MD



Jessica W. Lim, MD treats patients of all ages and has a particular interest in endocrine surgery, sinus disease, airway disorders and head and neck tumors. She joined the Department of Otolaryngology-Head and Neck Surgery at Lenox Hill Hospital in 2007 to help expand the previously established Center of Excellence. She is the Program Site Director for Otolaryngology residents from New York University and SUNY-Downstate. In 2016, she was appointed as Director of the Division of Otolaryngology at Wyckoff Heights Medical Center in Brooklyn, NY. She has a very active office and surgical practice, in which patient/family education and minimally invasive techniques are emphasized. She is a member of the New York Head and Neck institute and involved with the Endocrine and Sinus Disease Best Practices Working Groups of the Northwell Health System.

Dr. Lim is proud to be recognized by her peers for her excellence in otolaryngology, as listed by Castle Connolly, Best Doctors and Super Doctors.

After obtaining a B.A. at Duke University, Dr. Lim graduated from the West Virginia University School of Medicine. She is a member of the Alpha Omega Alpha medical honor society. She performed her preliminary general surgery training and completed otolaryngology residency at New York University Medical Center in 1997, followed by a head and neck/sinus surgery fellowship at Rush Presbyterian St. Luke's Medical Center in Chicago. In 1998, Dr. Lim joined the academic faculty as assistant professor at SUNY-Downstate Medical Center in Brooklyn, where she taught residents and students while also caring for patients. In the past, she has served as Director of Otolaryngology at Kings County Hospital Center and at Kingsbrook Jewish Medical Center and has been Director of Otolaryngology Residency Training at SUNY-Downstate. She is the author or co-author of numerous journal articles and book chapters, and she has presented original research at national and local meetings. She has memberships in the Academy of Otolaryngology-Head and Neck Surgery, as well as the New York Head and Neck Society.

Eastern Section -- New York Head and Neck Society

Founded in 1979, the New York Head and Neck Society has been a major professional, clinical, and academic organization devoted to patient care, education and research in the field of head and neck surgery and oncology. From the time of the very first meeting until now, the NYHNS has emphasized an all-inclusive, multidisciplinary membership roster and a multidisciplinary educational agenda. Otolaryngologists, head and neck surgeons, radiation oncologists, medical oncologists and allied non-MD professionals play an important educational role in this organization. The NYHNS is being recognized for its major contribution to the education of our physicians, fellows, residents and students.

Citation Awardees

Middle Section -- Thomas E. Carey, PhD



Dr. Thomas E. Carey is a Professor of Otolaryngology at the University of Michigan. He earned his Ph.D. in Biochemical Pharmacology from SUNY-Buffalo, and completed a postdoctoral fellowship in melanoma immunology at Sloan-Kettering Institute. He joined the UM Medical School faculty in 1978.

He was Co-director of the Head and Neck Cancer SPORE as well as the Head and Neck Oncology Program. He was Associate Chair and Director of Research in the Department of Otolaryngology, and the Donald A. Kerr Professor and Chair of the Department of Oral Medicine, Pathology and Oncology in the School of Dentistry.

His research interests are the molecular mechanisms of treatment resistance in head and neck cancer; epidemiology of oral HPV infection, and molecular mechanisms of tumor behavior in HPV+ oropharyngeal cancer. Dr. Carey also studies autoimmune hearing.

Dr. Carey has authored 260 peer reviewed articles, 22 book chapters, and one book. He holds the rights to several patents and inventions. He mentors undergraduate, graduate, and medical students in addition to residents, postdoctoral fellows, and junior faculty. He was designated a Distinguished Research Scientist by the UM and received the St. Lawrence University Distinguished Alumni Citation. He also received the UM Medical School League of Research Excellence Award, and the Michigan Institute for Clinical & Health Research Distinguished Clinical and Translational Research Mentor Award.

Middle Section -- Cherie Ann Nathan, MD FACS



Cherie-Ann Nathan, MD, FACS, is the Jack Pou Endowed Professor and Chairman of the Department of Otolaryngology/Head and Neck Surgery at LSU-Health in Shreveport. She is also Director of Head and Neck Oncologic Surgery and Research at the Feist-Weiller Cancer Center. She completed her Otolaryngology/Head and Neck Surgery residency and head and neck fellowship in 1995 at University of California, San Diego. She was a post-doctoral fellow at Johns Hopkins where she started her research career. Following her fellowship she began her academic career at LSU-Shreveport.

Her passion to improve outcomes for patients with HNSCC was the reason she moved from Mumbai India, where she went to TNMC medical school and began her ENT residency. She is a Surgeon-Scientist who maintains a busy practice treating head and neck cancer patients, thyroid, parathyroid diseases and voice disorders and leads an active research team. Her translational research program has been funded by the National Cancer Institute since 2000 and focuses on targeted therapy for head and neck patients. She is nationally and internationally recognized for her seminal work on molecular analysis of surgical margins and has pioneered multi-institutional clinical trials using mTOR inhibitors in HNSCC patients with Wyeth and most recently with Novartis. She is also NIH funded for chemoprevention of cancer with curcumin and has just been issued a patent for a curcumin gum. She is also a team member of the COBRE grant for viral oncogenesis. She has published extensively and has over 170 publications in peer reviewed journals and has authored textbooks and encyclopedia chapters.

Dr. Nathan has served on many National committees some of which include the NCI Steering committee and Task Force, the CDC-ACS HPV Task Force, board of directors for the Head and Neck Cancer Alliance, ASCO Program committee and Larynx Preservation Guideline Panel and the AAO-HNS Program and Nominating committee and Head & Neck CORE leader. She has served on many committees for the AHNS including chairing the research, prevention and finance committee and is currently the Vice-President of the American Head and Neck Society. She is also Associate editor for the open access journal, Laryngoscope Investigative Otolaryngology. At the local level she is active, having been on the board of directors for Shreveport Medical Society, Disaster Reform committee and the Science Museum.

The Shreveport-Bossier Commerce Department awarded her the Athena Award for community service and she received the Leonard Tow Humanism award from the Arnold Gold Foundation. The Board of Regents in Louisiana established the "Cherie-Ann Nathan Endowed Professorship in Otolaryngology/Head and Neck Surgery" initiated by grateful patients to honor her dedication and expertise.

Dr. Nathan is married to pulmonologist and critical care specialist Dr. Raghu Nathan and they have two boys. Her favorite hobby is performing with the "Nathan Family Trio" to raise money for the Arts and Cancer research in Shreveport.

Citation Awardees

Middle Section -- J. Gail Neely, MD FACS (Posthumous Award)



John Gail Henry Neely, MD, FACS, was Elected as a Fellow in the Triological Society in 1981. He continued to be active in the Society after becoming a Senior Fellow, and founded the Triological Society's Physician/Scientist Program, to which he was devoted until the time of his death this past August. Words from Craig Buchman, MD, Chair of the Department of Otolaryngology at Washington University, briefly summarize Dr. Neely's career and personal attributes: – "Gail retired last year after a sterling academic career that spanned 45 years. He is known to many as an icon in the field of Otology-Neurotology and in Otolaryngology in general. He was a master clinician, surgeon, educator, researcher and mentor to numerous individuals in our specialty. I know that we all will miss him dearly, but his legacy and good nature will live on forever."

Dr. Neely studied neurophysiology at Florida State University, funded by National Science Foundation (NSF). In medical school at the University of Oklahoma, he participated in neuropharmacology research and spent a summer in Washington D.C. in the Commissioned Officer Student Trainee and Extern Program (COSTEP) in the neurological and sensory disease service program. Following his internship at the University of Oregon, he spent two years in the uniformed service USPHS-Division of Indian Health, where he was commanding officer and developed a funded program for the alcoholic. He then completed a residency in General Surgery-Otolaryngology-Head and Neck Surgery at Baylor College of Medicine. Following his residency, he completed a fellowship with the House Ear Clinic and Institute in Los Angeles, CA.

He entered academic otolaryngology practice with a focus on ear and skull base surgery at Baylor College of Medicine. Later he served as chairperson of the department of otolaryngology-head and neck surgery at the University of Oklahoma. Thereafter, he took a year sabbatical at Yale University studying clinical epidemiology, then joined the Washington University School of Medicine faculty to continue his surgical practice and NIH funded training grant to teach surgical-scientists.

Taken from his obituary: Dr. Neely had an unquenchable curiosity and profound reverence for truth. He loved people and delighted in exciting others to maximize their talents toward excellence. This extended from young grade school children to advanced medical colleagues and postdoctoral trainees. He used his medical and surgical experience in otolaryngology-head and neck surgery as a stimulus for exploring the mechanisms of disease and the underlying pathophysiology of patient's symptoms. As he progressed through his medical education and practice, he took every opportunity to train and use scientific methods for problem solving.

Southern Section -- Stanley M. Blaugrund, MD



Stanley M. Blaugrund was born in El Paso, Texas and attended Texas Western College (UTEP) from which he graduated with a BA in 1951. He then attended The University of Texas-Southwestern Medical School, graduating with an MD in 1955. Following his internship at the District of Columbia General Hospital, Washington, D.C., he entered the United States Air Force where he served as Capt. MC, Flight Surgeon from July 1956 - July 1958. He did his residency in Otolaryngology-Head and Neck Surgery at The Mount Sinai Hospital, New York.

Dr. Blaugrund has been recognized for his outstanding national and international contributions to the field, his numerous publications, and for his chairmanship of the Department of Otolaryngology and Head and Neck Surgery at Lenox Hill Hospital, NY for twenty-five years. In 1998 he served as President of the Triological Society. Prior to that he served as Treasurer and council member.

Among his many honors and awards are: De Roaldes Medal, For Distinguished Service in Laryngology, American Laryngological Association, 1998; Emeritus Fellow, American Laryngological, Rhinological and Otological Society Inc., 2002; Guest of Honor, Eastern Section Meeting American Laryngological, Rhinological and Otological Society 2004; and the Lenox Hill Hospital, Distinguished Alumni Award, January 2005.

He is married to Dr. Annette Blaugrund, a renowned art historian, has three children and seven grandchildren.

Citation Awardees

Southern Section -- Joseph G. Feghali, MD FACS



Joseph G. Feghali, M.D. is a Clinical Professor of Otolaryngology and Neurological Surgery at the Albert Einstein College of Medicine, in the Bronx, NY.

He received his M.D. degree from the American University of Beirut in 1978. His Internship in General Surgery was completed at Memorial Sloan Kettering Cancer Center in NY. He completed two Residencies in Otolaryngology: The first, at the American University of Beirut and the second, at the Albert Einstein College of Medicine. He completed a Research Fellowship at the House Ear Institute followed by a Fellowship in Neurosurgery at Memorial Sloan Kettering Cancer Center.

He held academic ranks at the American University of Beirut and the University of California at Irvine prior to joining the Albert Einstein College of Medicine. He is a recipient of the Triological Society's Mosher Award for his thesis on Inner Ear Hair Cell Protection. He has authored many articles, book chapters, and was a member of several committees of the American Academy of Otolaryngology-Head and Neck surgery. He is a former member of the Executive Council of the American Neurotology Society. He has lectured and taught extensively in NY and other parts of the United States. He has also lectured overseas, in English, French and Spanish. He continues to be active in teaching Otolaryngology Residents on a regular basis.

Dr. Feghali has enjoyed the support of his wonderful family. He and Nora, his wife of more than 35 years, are the proud parents of two grown children. Their son Gabriel works in Finance and their daughter Andrea is a Nurse Practitioner in Otolaryngology.

Southern Section -- Robert M. Naclerio, MD FACS



Dr. Robert M. Naclerio is a Professor in the Department of Surgery, Section of Otolaryngology-Head and Neck Surgery at The University of Chicago. He is a fellow of the American Academy of Otolaryngology-Head and Neck Surgery, American Academy of Allergy, Asthma and Immunology, the American College of Surgeons, and the Triological Society. He wrote his Triological Thesis on the role of mediators and cells in understanding the pathophysiology of allergic rhinitis, a research pathway he has pursued to the present. Dr. Naclerio has authored more than 237 peer-reviewed articles, 110 review articles and 86 book chapters. He has made more than 500 presentations, discussing such topics as the management of acute and chronic rhinosinusitis and allergic inflammation of the upper and lower respiratory tract. A reviewer for several journals, Dr. Naclerio is on the editorial board for *JACI: In Practice*. He was on the editorial board of the *Laryngoscope* from 1990 to 2011.

Dr. Naclerio received his medical degree from Baylor College of Medicine in Houston, Texas. After completing an internship and a surgery residency at The Johns Hopkins Hospital in Baltimore, Maryland, he completed an otolaryngology residency at Baylor College of Medicine. Dr. Naclerio also earned a fellowship in clinical immunology from The Johns Hopkins University School of Medicine.

Citation Awardees

Western Section -- Derald E. Brackmann, MD



Dr. Brackmann was raised in a small village in Central Illinois. He attended high school and did undergraduate work at the University of Illinois in Champaign and then graduated from the University of Illinois College of Medicine in Chicago. After a year of internship and residency in Chicago, he served in the United States Air Force as a flight surgeon.

After completing military duty, he completed a residency in otolaryngology-head and neck surgery at the University of Southern California in Los Angeles. He then completed a Fellowship in Neurotology at the House Clinic and joined that practice where he has spent his entire career in the practice of Otolaryngology and Neurotology.

In addition to his clinical work Dr. Brackmann has been active in clinical research. He is the author or co-author of more than 300 publications and is the editor of 5 text books. He remains clinically active and plans to practice for the foreseeable future.

His wife Charlotte and he have been married for more than fifty years and have four sons and daughters-in-law and seven grandchildren who they enjoy greatly.

Western Section -- Bruce J. Gantz, MD FACS



Bruce J. Gantz, MD is Professor and Chair of the Department of Otolaryngology-Head and Neck Surgery and Professor of Neurosurgery at the University of Iowa Carver College of Medicine. He received his Bachelor of Science and Masters degree in Otolaryngology from the University of Iowa, where he completed medical school. A surgical internship was served at the University of Utah College of Medicine. He returned to the University of Iowa for his Otolaryngology residency.

Upon completing a Neurotology Clinical Fellowship with Dr. Ugo Fisch at the Universitätsspital Zürich, Otorhinolaryngologische Klinik und Poliklinik, in Zürich, Switzerland, he joined the faculty at the University of Iowa Department of Otolaryngology-Head and Neck Surgery.

Dr Gantz's research interests include: cochlear implants, management of facial paralysis, hearing preservation in acoustic tumor and skull-base surgery, and management of cholesteatoma.

He is the principal investigator of the Iowa Cochlear Implant Clinical Research Center, funded by the NIH since 1985. In 2017 the Center was awarded their seventh five-year NIH renewal. He has led the Iowa CI Team in the development of the Hybrid Cochlear Implant. He is a member of many otolaryngology professional societies and has been a Fellow in the Triological Society since 1999. He has Board Certification from the American Board of Otolaryngology, as well as subspecialty certification in Neurotology from the ABOto.

Some of his honors include being named the Brian F. McCabe Distinguished Chair in Otolaryngology-Head and Neck Surgery by The University of Iowa Carver College of Medicine; The University of Iowa Carver College of Medicine Distinguished Alumnus Award for Achievement in 2005; University of Iowa Carver College of Medicine Distinguished Mentor Award 2010; being elected to the National Academy of Medicine in 2000; President of the American Neurotology Society; President of the American Otological Society; and President of the American Board of Otolaryngology. In 2016, he was awarded the Shambaugh Prize for life time achievement from the Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum. His publications include 240 peer-reviewed papers and he has contributed to over 58 books and chapters.

Citation Awardees

Western Section -- Richard R. Orlandi, MD FACS



Dr. Orlandi is the current President of the American Rhinologic Society and serves as the Chief Medical Officer for Ambulatory Health for the University of Utah. He is the principal author of the International Consensus Statement on Allergy and Rhinology: Rhinosinusitis and co-authored the AAO-HNS clinical practice guideline on adult sinusitis.

He reviews Career Scientist Awards for the Triological Society and previously chaired the general otolaryngology section of the AAO-HNS CORE program. He was a principal investigator on a grant from the NIH's NIBIB and has served as the associate director of the University of Utah's Center for Therapeutic Biomaterials.

Dr. Orlandi is the author of over 100 journal articles and book chapters and has lectured throughout North America, Europe, Africa, Asia and South America on a wide range of sinus and nasal topics. He has served on the AAOA's board of directors and received their collaboration award.

Dr. Orlandi completed college at the University of Utah, medical school at New York University, residency at UCLA, and fellowship at the University of Pennsylvania. He serves locally in his community and in national organizations. His most important accomplishment in his life is his family. He is the father of three children and a husband of over 25 years.

Middle Section George Adams, MD Young Faculty Award

Lamont R. Jones, MD MBA



Lamont R. Jones, MD MBA, received his medical degree from the University of Michigan, Ann Arbor, in 2002. He completed his residency and post-graduate training at the University of Michigan Medical School and fellowship in Facial Plastic and Craniofacial Reconstructive Surgery at SUNY Upstate Medical University. Dr. Jones also completed an executive MBA from the Eli Broad College of Business at Michigan State University in 2016. Dr. Jones is currently the Vice Chair of the Department of Otolaryngology at Henry Ford Hospital in Detroit, Michigan.

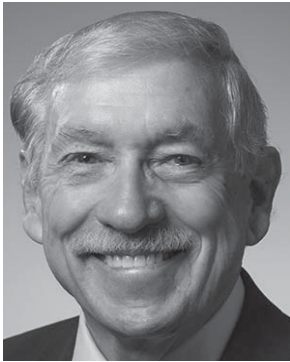
His special interests include surgical and non-surgical treatments for facial rejuvenation and the treatment of congenital anomalies of the face, head, and neck, such as cleft lip and palate and the treatment of keloids. Dr. Jones' interests also include translational keloid research.

A national and international speaker, he has published multiple journal articles and book chapters. He holds positions in local and national medical organizations, and is involved with "Face to Face" and Kenya Relief which support international medical mission trips to countries such as Vietnam and Kenya. His mission work has been featured in the Detroit Free Press, Detroit Hour Magazine and in an hour television special, "Care and Hope, Proud Detroit Exports", on Detroit WDIV Channel 4.

He is a board member and the 2016 president of the Michigan Otolaryngology Society. For his efforts, he has received numerous local and national accolades including being named Top Doc by Detroit Hour Magazine, Detroit Crain's Magazine top 40 under 40, Xavier University of Louisiana's Top 40 under 40, Research Scholar Award from the AAFPRS and honorable mention for his research thesis on the pathogenesis of keloids from the Triological Society.

Patrick E. Brookhouser Award of Excellence

Roger L. Crumley, MD MBA FACS



Dr. Crumley is the 6th recipient of the Patrick E. Brookhouser, MD Award for Excellence, to be awarded on January 18, 2018, which recognizes him as a Triological Society Fellow who has made significant scientific or service contributions to the Society and the specialty of Otolaryngology-Head and Neck Surgery. Dr. Crumley embodies and perpetuates the values and ideals of the Society and Dr. Brookhouser. This award is given in memory of Dr. Brookhouser's commitment to the Triological Society and his leadership, mentorship, scholarship and compassion.

Dr. Crumley, Professor Emeritus of Otolaryngology/Head and Neck Surgery, has served the University of California, Irvine for 30 years. He was Acting Chair then assumed the Chairmanship of the department from 1991-2007. In December, 2012 through April, 2015, Dr. Crumley served as Interim President of University Physicians and Surgeons and Senior Associate Dean for Clinical Affairs for the School of Medicine.

Dr. Crumley has given his time and talents to the Triological Society and many other otolaryngology organizations, and has held the position as President of the American Laryngological Association (2008) and the American Academy of Facial Plastic & Reconstructive Surgery (1995). He served as a Director of the American Board of Otolaryngology from 1992-2004. Dr. Crumley co-founded the Neurolaryngology Study Group with Gayle Woodson in 1989. He has been invited to lecture all over the world, including in China, Russia, Australia, Germany, New Zealand, Croatia, Taiwan, France, Italy, Scotland, Ireland, and Britain.

Dr. Crumley's service and devotion to the Triological Society began in 1982 when he was awarded the Harris P. Mosher Award for his thesis "Experiments in Laryngeal Reinnervation". He has been a long-standing member of the membership committee, bringing candidates, including department chairs and residency training program directors, into the fellowship of the Society. Roger was Vice President of the Western Section in 2001 and President of the Triological Society in 2003. One of his favorite memories is from the 2003 meeting of the Middle Section in Indianapolis. As a musician (piano, trumpet, and vocal music) his talents were greatly appreciated by attendees when, together with Dr. Bryan Neel, an impromptu piano duet was performed when the banquet entertainment cancelled due to a snowstorm.

Most important to Dr. Crumley is his family - his wife, Janet, and daughters Danielle and Erin.

Resident Research Awardees

Eastern Section

Jennifer C. Fuller, MD - John J. Conley, MD Resident Research Award - Massachusetts Eye and Ear Infirmary
Mingyang L. Gray, MD MPH - Richard J. Bellucci, MD Resident Research Award - Icahn School of Medicine at Mount Sinai
Allen L. Feng, MD - William W. Montgomery, MD Resident Research Award - Massachusetts Eye and Ear Infirmary

Middle Section

John D. Gettelfinger, MD - Henry Williams, MD Resident Research Award - Indiana University
David R. Lee, MD - Lawrence R. Boies, MD Resident Research Award - University of Cincinnati
Douglas Von Allmen, MD - Paul H. Holinger, MD Resident Research Award - University of Cincinnati College of Medicine/Cincinnati Children's Hospital Medical Center

Southern Section

Habib G. Zalzal, MD - G. Slaughter Fitz-Hugh, MD Resident Research Award - West Virginia University
Lindsay C. Boven, MD - James Harrill, MD Resident Research Award - Louisiana State University Health Sciences Center Shreveport
Tyler R. Halle, MD - Francis E. LeJeune Sr., MD Resident Research Award - Emory

Triological Society Research Grant Programs

The Society promotes research into the causes of and treatments for otolaryngic diseases by providing financial support for the research efforts of young otolaryngologists-head and neck surgeons. The Society has awarded nearly \$5 million to otolaryngologists-head and neck surgeons in support of clinical and basic research, clinical trials, translational research, outcomes research, and health services research. These competitive research grant programs include funding for career development grants and clinical scientist awards. \$500,000 was awarded to grant recipients in 2017.

CAREER DEVELOPMENT AWARDS

The purpose of the Career Development awards is to provide support for the research career development of otolaryngologists-head and neck surgeons whose projects have specific application in the field of otolaryngology-head and neck surgery. Funding is \$40,000 (non-renewable). Categories of projects that qualify for submission are:

1. Clinical Research - Prospective or retrospective clinical data collection with direct clinical application
2. Basic Research - Laboratory studies, in vivo, in vitro; animal studies, genetic studies
3. Health Services and Outcomes Research - Patient outcomes, health related QOL; epidemiology, diversity, population statistics; cost analysis, modeling, decision analysis, etc.
4. Technology/Procedure Development - Development, standardization, beta testing of new technology; equivalency studies
5. Otolaryngology Status and Trends - Resident and medical education; impact of health care delivery systems in society
6. Historical Perspectives - Medical history as it has influenced contemporary otolaryngology knowledge and practice

Letters of Intent were due December 1, 2017, and applications are due January 29, 2018. Call for proposals will be available later in 2018.

Guidelines and additional information are available at the Triological website - www.triological.com/researchgrants.html.

CLINICAL SCIENTIST DEVELOPMENT AWARDS

The Triological Society and the American College of Surgeons combined competitive grant program provides supplemental funding to otolaryngologists-head and neck surgeons who have received a new NIH Mentored Clinical Scientist Development Award (K08/K23) or have an existing award with a minimum of 3 years remaining in the funding period. This award is a means to facilitate the research career development of otolaryngologists with the expectation that the awardee will have sufficient pilot data to submit a competitive R01 proposal prior to the conclusion of the K award. This award provides financial support in the amount of \$80,000 per year for up to five years, or for the remainder of the term of existing grants, to supplement the K08/K23 award.

Applications are due May 21, 2018.

Guidelines and additional information are available at the Triological website - www.triological.com/researchgrants.html.

Grant Awardees

THE 2017-2018 TRIOLOGICAL SOCIETY CAREER DEVELOPMENT AWARDEES AND THE FUNDED PROJECTS ARE:

- Clint T. Allen, MD - Johns Hopkins Outpatient Center - Selective Lysis of Tumor Infiltrating Immunosuppressive Cells to Enhance Anti-Tumor Immunity in Head and Neck Cancer
- Tendy Chiang, MD - Nationwide Children's Hospital - Mechanisms of Regeneration of Tissue Engineered Tracheal Grafts
- Raj C. Dedhia, MD - Emory University - Surgical Therapy for Obstructive Sleep Apnea on Blood Pressure and Peripheral Arterial Tonometry
- Justin S. Golub, MD - Columbia University College of Physicians & Surgeons - Age Related Hearing Loss and Mechanisms of Dementia
- Mihir R. Patel, MD - Emory University - PD-1 / PD-L1 Expression in Nonsmokers with Oral Cavity and p16+ HPV Oropharyngeal Carcinoma
- David F. Smith, MD PhD - Cincinnati Children's Hospital - Circadian Dysregulation in Pediatric Obstructive Sleep Apnea

THE 2017-2018 TRIOLOGICAL SOCIETY CLINICAL SCIENTIST AWARDEE AND THE FUNDED PROJECT IS:

- Steven J. Eliades, MD PhD - University of Pennsylvania Perelman School of Medicine - Cortical Mechanisms of Auditory-Vocal Interaction

THE 2017-2018 TRIOLOGICAL/AMERICAN COLLEGE OF SURGEONS CLINICAL SCIENTIST DEVELOPMENT AWARDEES (TRIO/ACS) AND THE FUNDED PROJECTS ARE:

New grant:

- Rick F. Nelson, MD PhD - Indiana University Health - Genetically Mediated Hair Cell Degeneration in 3D Inner Ear Organoids

Renewals:

- Bradley J. Goldstein, MD PhD - University of Miami Miller School of Medicine - Nasal Progenitor Cells and Olfactory Neurogenesis
- Akihiro J. Matsuoka, MD PhD - Northwestern University - Nanotechnological Regeneration of Spiral Ganglion Neurons with Human Stem Cells
- Alexander Tell Hillel, MD - Johns Hopkins University School of Medicine - Immune Cell Modulation in Laryngotracheal Fibrosis

THANK YOU

The Society extends a special thank you to the following for their contributions to the 2018 Combined Sections Meeting

Paul Willging, MD - Dr. Willging continues to give of his time and expertise in planning the Combined Sections Meeting Program. This is Dr. Willging's second year of a 3 year term as Program Director.

Dana M. Thompson, MD - Dr. Thompson, as Thesis Chair, conducts the Thesis Seminar each January which is open to all candidates for Fellowship as well as potential candidates.

Drs. David Barrs, Michael Hoffer and Al Merati - As founders and coordinators of the Resident Bowl, they have been instrumental in planning and executing the Resident Bowl every year. Dr. Stacey Gray will join the Bowl faculty in 2018.



National Spasmodic Dysphonia Association - The Association has underwritten two travel grants to the presenters of "Vocal Fold Pyogenic Granuloma: A 20 Year Retrospective Review" and "Dynamics of Intrinsic Laryngeal Muscle Contraction".

Exhibitors - The support of our exhibitors is vital to the meeting. Please visit the exhibitors in Trailblazers Ballroom and thank them for their support.

Corporate Partners - We gratefully acknowledge our Corporate Partners for their Generous Marketing Support (as of December 20, 2017): **Silver Level - Grace Medical**

2018 TRIOLOGICAL SOCIETY COMBINED SECTIONS MEETING
WESTIN KIERLAND, SCOTTSDALE, ARIZONA
JANUARY 18 - 20, 2018

THURSDAY, JANUARY 18
KIERLAND BALLROOMS 1 & 2

- 7:30** **Attendee Breakfast with Exhibitors - Trailblazers**
- 8:00** **Welcome on behalf of the Vice Presidents**
Gary Har-El, MD FACS, Eastern Section Vice President
- 8:05** **Eastern Section Guest Introductions by Gady Har-El, MD FACS, New York, NY, Eastern Section Vice President**
Citation Awardees: Yosef P. Krespi, MD FACS, New York, NY
 The New York Head & Neck Society
 Jessica W. Lim, MD, New York, NY
Guest of Honor: Frank E. Lucente, MD FACS, Brooklyn NY
 "Small"
- 8:20** **Southern Section Guest Introductions by Hassan Ramadan, MD MSc FACS, Morgantown, WV, Southern Section Vice President**
Citation Awardees: Stanley M. Blaugrund, MD, New York, NY
 Joseph G. Feghali, MD FACS, Bronx, NY
 Robert M. Naclerio, MD FACS, Chicago, IL
Guest of Honor: Stephen J. Wetmore, MD FACS, Morgantown, WV
- 8:35** **Western Section Guest Introductions by Clough Shelton, MD FACS, Salt Lake City, UT, Western Section Vice President**
Citation Awardees: Derald E. Brackmann, MD, Los Angeles, CA
 Bruce J. Gantz, MD FACS, Iowa City, IA
 Richard R. Orlandi, MD FACS, Salt Lake City, UT
Guest of Honor: Robert H. Miller, MD MBA FACS, Houston, TX
 "Professional Self-Regulation"
- 8:50** **Middle Section Guest Introductions by Carol Bradford, MD MS, Ann Arbor, MI, Middle Section Vice President**
Citation Awardees: Thomas E. Carey, PhD, Ann Arbor, MI
 Cherie Ann Nathan, MD FACS, Shreveport, LA
 J. Gail Neely, MD FACS, St. Louis, MO (posthumously)
Guest of Honor: Gregory T. Wolf, MD FACS, Ann Arbor, MI
 "Mentorship, Its Own Reward"
- PRESENTATION OF MIDDLE SECTION GEORGE ADAMS, MD YOUNG FACULTY AWARD to Lamont R. Jones, MD, MBA, Detroit, MI**
Introduction by Carol Bradford, MD, Middle Section Vice President
- 9:10** **PRESIDENTIAL ADDRESS - Mark S. Persky, MD FACS, New York, NY Mentoring - An Obligation?**
Introduction by Gary Har-El, MD FACS, Eastern Section Vice President
- 9:25** **PRESENTATION OF SIXTH ANNUAL PATRICK E. BROOKHOUSER, MD AWARD OF EXCELLENCE to Roger L. Crumley, MD MBA FACS, Orange, CA**
Introduction by Mark S. Persky, MD FACS, President

Thursday

9:30 RECOGNITION OF ROBERT H. MILLER, MD MBA FACS

Introduction by Mark S. Persky, MD FACS, President

9:35 - 10:00 Break with Exhibitors/View Posters - Napoleon CD

10:05 - 11:00 TRIOLOGICAL SOCIETY BEST PRACTICES (TRIO BP)

Moderator: Anil K. Lalwani, MD FACS, New York, NY

Panelists: **Which Inferior Turbinate Reduction Technique Best Decreases Nasal Obstruction?**

Ashutosh Kacker, MD FACS, New York, NY

Does the Frontal Sinus Need to Be Obliterated Following Fracture with Frontal Sinus Outflow Tract Injury?

Alexander G. Chiu, MD, Kansas City, KS

Is Dexamethasone Effective in Preventing Nausea and Vomiting after Common Otolaryngology Procedures?

Parwane P. Pagano, MD, New York, NY

Are Water Precautions Necessary after Tympanostomy Tube Placement?

Richard L. Goode, MD FACS, Stanford, CA

Is Surgery Necessary for Vocal Fold Polyps?

David O. Francis, MD MS, Madison, WI

11:00 Q&A

11:05 - 11:55 HOW I DO IT: NOT WHEN AND WHY, JUST HOW VIDEO SESSION

Moderator: William W. Shockley, MD FACS, Chapel Hill, NC

Panelists: **Ossicular Chain Reconstruction**

John W. House, MD, Los Angeles, CA

Management of Zenker's Diverticulum

Paul W. Flint, MD, Portland, OR

Minimally Invasive Pituitary Surgery

Brent A. Senior, MD FACS, Chapel Hill, NC

Central Neck Dissection: The Five Essential Steps

David J. Terris, MD FACS, Augusta, GA

11:55 Q&A

12:00 - 1:00 Lunch/Visit Exhibits/View Posters - Trailblazers

**1:10 - 3:05 CONCURRENT SESSION 1A
HEAD AND NECK - KIERLAND 1**

Moderator: Carole Fakhry, MD MPH, Baltimore, MD

1:10 2017 THESIS AWARD - DR. MAUREEN HANNLEY AWARD, ALTERNATIVE SCIENCE

Free Functional Transfer of the Omohyoid Muscle Tendon Unit: Flap Dissection, Biomechanical Modeling, Excursion and Potential Application in Facial Paralysis

Kofi D. Boahene, MD FACS, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) outline the surgical anatomy and functional parameters of the omohyoid muscle free flap; and 2) outline the indications and potential clinical application of the omohyoid free flap in reanimating the paralyzed face.

Objectives: To delineate the functional architecture and biomechanical parameters of the omohyoid muscle and to determine the feasibility and technical steps for harvesting the omohyoid muscle as a novel muscle tendon unit for free functional transfer in facial reanimation. **Study Design:** This is a two-phase study: fresh cadaver anatomic dissection was performed first, followed by in vivo flap analysis for the development of the new procedure. **Methods:** In phase one of this study, four fresh cadaver head specimens were dissected to define the surgical anatomy and technical steps for

harvesting the omohyoid muscle as a free functional muscle tendon unit flap with an intact neurovascular bundle for revascularization and innervation. In phase two of the study, the omohyoid muscle tendon unit flap was elevated in 10 patients undergoing therapeutic neck dissection and real-time perfusion of the flap was determined by active muscle bleeding and with intraoperative laser angiography using indocyanine green. Preserved muscle contraction and excursion was determined by direct stimulation of the isolated nerve to the omohyoid at 0.8 mAmps. Using published data of architectural parameters, the force-generating capacity of the omohyoid muscle was calculated and compared to that of the levator anguli oris and the zygomaticus major muscle. The potential excursion of the omohyoid MTU was directly measured from video recordings. Simulated omohyoid MTU reanimation with substitution of the orbicularis oculi muscle and zygomaticus major muscles were performed to determine muscle size match and adequacy of the neurovascular pedicle for vascular anastomosis to the facial and superficial temporal artery and vein and nerve coaptation to the facial and masseteric nerve branches. **Results:** The superior belly of the omohyoid muscle was reliably harvested as a neurovascular muscle flap suitable for transfer as a functional muscle tendon unit. Vascularity of the flap was confirmed through the superior thyroid artery and vein using laser angiography. In vivo, muscle contraction was preserved in all 10 harvested flaps with an excursion of 10- to 12-mm recorded at slack length in one flap. Gross size comparison showed good match between the omohyoid muscle and the zygomaticus major and the orbicularis oculi muscles. Functional modeling of the omohyoid muscle showed a potential force generation of 7 N, which compares favorably with an isometric force generation of 3.5 N in the zygomaticus major and 3.5 N in the levator anguli oris muscles. Simulated reanimation of the orbicularis oris and the zygomaticus major muscles were feasible with vascular anastomosis to the facial and superficial temporal vessels and nerve coaptation to the facial and masseteric nerves. **Conclusions:** The omohyoid muscle can be reliably harvested as a free muscle tendon unit for functional reanimation of the paralyzed face. It possesses the architectural and biomechanical features similar to those of oral commissure and lip elevators necessary for restoring facial tone and smile. Its flat configuration is distinctively suited for use in the dynamic reanimation of the paralyzed eyelid. This small size of the omohyoid muscle may allow for its versatile application in facial reanimation when compared to bulkier donors muscles currently in clinical use.

1:17 Validation of the Eighth Edition American Joint Committee on Oral Cavity Cancer Staging System

John D. Cramer, MD, Pittsburgh, PA; Abhita T. Reddy, MD, Chicago, IL; Robert L. Ferris, MD PhD, Pittsburgh, PA; Umameheswar Duvvuri, MD PhD, Pittsburgh, PA; Sandeep Samant, MD, Chicago, IL

Educational Objective: At the conclusion of this presentation, the participants should be informed about updates to the Eighth Edition Staging System for Oral Cavity Cancer and how these changes impact clinical and pathological stage distribution and prognosis.

Objectives: For the first time in nearly 30 years, the Eighth Edition American Joint Committee on Cancer (AJCC) Staging Manual provides major changes in the staging of oral cavity cancer. We evaluated the predictive ability of the new staging system for oral cavity cancer in a national cohort in order to validate these changes. **Study Design:** Cohort study from the National Cancer Database. **Methods:** We selected patients with oral cavity squamous cell carcinoma from 2009-2013. We restaged all patients by AJCC Eighth Edition guidelines and compared this with the Seventh Edition guidelines. We calculated stage specific overall survival by the Kaplan-Meier method and concordance indices to measure the prognostic accuracy of the staging system. **Results:** We identified 39,361 patients with a median followup of 27.1 months (range 0.1-80.4 months). In the Seventh Edition pathological staging 43.0%, 15.9%, 10.6% and 25.7% had stage I, II, III, and IV disease respectively. After restaging using Eighth Edition pathological guidelines 9.4% of patients were upstaged to a higher stage group (38.1%, 17.9%, 13.9% and 25.8% with stage I, II, III and IV disease respectively). The survival concordance index improved from the Seventh to Eighth Edition for pathological staging (concordance index 0.699 and 0.704 respectively) and more mildly for clinical staging (concordance index 0.714 and 0.715 respectively). **Conclusions:** This is the first validation of the new AJCC Staging System for Oral Cavity Cancer. Eighth Edition AJCC Staging guidelines upstage patients with greater depth of invasion or extracapsular extension and resulted in modestly improved prognostication.

1:24 The Impact of Duty Hour Restrictions on Complication Rates Following Major Head and Neck Procedures

Meghan M. Crippen, MS, Newark, NJ; Gregory L. Barinsky, PharmD, Newark, NJ; Renuka K. Reddy, BS, Newark, NJ; Rahul Gulati, BS, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard Chan Woo Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, participants should be able to discuss the impact of ACGME duty hour restrictions as assessed by complication rates before and after implementation between teaching and non-teaching hospitals. Participants should be able to compare these findings from the Nationwide Inpatient Sample to their own institutional experience.

Objectives: To assess the impact of resident duty hour restrictions in otolaryngology via a comparison of postoperative outcomes between teaching (TH) and non-teaching hospitals (NTH) before and after complete implementation. **Study Design:** Retrospective database review. **Methods:** The Nationwide Inpatient Sample was queried for all major head and

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neck cases between 2000-2002 (n=54,394) and 2008-2010 (n=62,766). Cases were stratified into TH (n=68,257) and NTH (n=37,679) groups and assessed for procedure type, patient comorbidities, and complications using ICD-9 codes. Groups were compared using chi-square and multivariate logistic regression analyses. **Results:** After restrictions, the overall complication rate rose from 11.1% to 15.9% (p<0.001) in TH and 10.2% to 11.1% (p<0.001) in NTH. Regression analyses were used to assess risk associated with TH vs. NTH after accounting for significantly higher rates of patient comorbidities and increased procedure complexity in the TH group. TH status was significantly protective for total medical complications both before (OR=0.860, p<0.001) and after (OR=0.885, p=0.002) hour restrictions. In contrast, the risk for overall surgical complications increased to an insignificant degree between the early years (OR=0.975, p=0.585) and later years (OR=1.036, p=0.427). Prior to duty hour restrictions, TH status significantly reduced the risk for total complications (OR=0.893, p=0.001), but this significance was lost in the years after implementation (OR=0.943, p=0.096). **Conclusions:** Though no significant increase in risk has been observed, complication rates in TH may be trending upward in the years since resident duty hour restrictions. This rise is more pronounced in surgical complications and may therefore be a consequence of limited resident operative time.

1:31 Outpatient versus Inpatient Parotidectomy: Comparison of Postoperative Complication Rates

Sana H. Siddiqui, BA, Newark, NJ; Eric Zhao, BS, Newark, NJ; Jean A. Eloy, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard C. Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to compare differences in outcomes for parotidectomies that are performed as an outpatient procedure as opposed to an inpatient procedure.

Objectives: Parotidectomies have become a common outpatient procedure, but their impact on postoperative complications as compared to inpatient procedures has not been evaluated in a multi-institutional study. **Study Design:** The aim of this retrospective analysis was to evaluate the differences in outcomes using a standardized cohort of patients undergoing outpatient or inpatient parotidectomies. **Methods:** The National Surgical Quality Improvement Program database was queried for all parotidectomies between 2005-2014. Univariate analyses were conducted to compare the outpatient and inpatient cohorts. A propensity matching algorithm was used to ensure equal distribution of demographics and pre-operative comorbidities. **Results:** Among the 7,129 parotidectomies examined, 4043 (56.7%) were outpatient and 3086 (42.6%) were inpatient. In the unmatched analysis, the inpatient group had higher rates of males (p<0.001), diabetes (p=0.014), hypertension (p<0.001), and disseminated cancer (p<0.001). The outpatient group had higher rates of females (p<0.001), smoking (p<0.001), and ASA class 1/2 (p<0.001). The total work RVUs were 34.302 ± 30.39 for the inpatient cohort and 22.155 ± 11.67 for the outpatient cohort (p<0.001). Following propensity matching, 2080 cases were selected for each cohort with no significant differences in comorbidities. Total work RVU after matching was 22.155 ± 11.666 for the inpatient group and 21.797 ± 10.669 for the outpatient group (p=.303). The matched inpatient cohort had increased rates of superficial surgical site infection (2.0% vs 1.1%, p=0.024), wound disruption (0.4% vs 0.0%, p=0.004), pneumonia (0.4% vs 0.0%, p=0.039), and overall complications (4.3% vs 2.2%, p<0.001). **Conclusions:** Outpatient parotidectomies are associated with similar, as well as decreased, complication rates as compared to inpatient parotidectomies.

1:38 The National Landscape of Unplanned 30 Day Readmissions after Total Laryngectomy

Rocco M. Ferrandino, BS, New York, NY; Jonathan Garneau, MD, New York, NY; Scott Roof, MD, New York, NY; Brett Miles, MD DDS, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to identify reasons and risk factors for readmission after total laryngectomy.

Objectives: Examine rates of readmission after total laryngectomy and determine primary etiologies, timing, and risk factors for unplanned readmission. **Study Design:** Retrospective cohort study. **Methods:** The Nationwide Readmissions Database (NRD) was queried for patients who underwent total laryngectomy between 1/2013 - 11/2013. Patient, procedure, admission, and hospital level characteristics were compared for patients with and without unplanned thirty day readmission. Outcomes of interest included rates, etiology, and timing of readmission. Multivariate logistic regression was used to identify predictors of thirty day readmission. **Results:** There were 2931 total laryngectomies performed in 2013 with an unplanned readmission rate of 17.5%. Persistent postoperative fistula accounted for 13.7% of readmissions. The odds of readmission were elevated for patients with comorbid coagulopathy (adjusted odds ratio (aOR) 3.04, 95% CI 1.13-8.22, P = 0.03), liver disease (aOR 2.48, 95% CI 1.08-5.71, P = 0.03), and valvular heart disease (aOR 3.18, 95% CI 1.20-8.41, P = 0.02). Additionally, surgeries involving tracheoesophageal fistulization (aOR 2.44, 95% CI 1.15-5.18, P = 0.02) and/or pedicle graft or flap procedures (aOR 1.73, 95% CI 1.13-2.66, P = 0.01) had increased risk for unplanned thirty day readmission. Private insurance and longer lengths of stay were associated with decreased odds of readmission. **Conclusions:** Nearly one-fifth of total laryngectomy patients are readmitted to the hospital within 30 days of discharge. Risk factors identified in this nationally representative cohort should be carefully considered during the postoperative period to reduce preventable readmissions after total laryngectomy.

1:45 Muscle Invasion Is not a Predictor of Recurrence in p16+ Oropharyngeal Squamous Cell Carcinoma

Zainab Farzal, MD, Chapel Hill, NC; Eugenie Du, MD, Chapel Hill, NC; Eunice Yim, BA, Chapel Hill, NC; Jose P. Zevallos, MD MPH, St. Louis, MO; Benjamin Y. Huang, MD, Chapel Hill, NC; Trevor G. Hackman, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the correlation between muscle invasion as seen on pretreatment imaging and local and nodal recurrence following treatment in patients with p16+ oropharyngeal squamous cell carcinoma.

Objectives: The objective of this study was to determine whether muscle invasion on pretreatment imaging in p16+ oropharyngeal (OP) squamous cell carcinoma (SCC) correlated with local and nodal recurrence. **Study Design:** Retrospective review. **Methods:** 276 patients with p16+ OP SCC treated at a tertiary referral center from 2003 to 2015 were analyzed. All scans were reviewed by a board certified neuroradiologist with over 10 years of head and neck imaging expertise. Muscle invasion was stratified as definite, likely, and no invasion to the genioglossus, hyoglossus, medial pterygoid, and prevertebral muscles. Local and regional recurrence rates were compared between the groups. **Results:** 227 patients met inclusion criteria with followup data and accessible, quality pretreatment imaging. Patients were predominantly male (197 males, 30 females) and smokers (149 smokers, 78 non-smokers) with mean age 56.9. Most common primary subsites included tonsil (45.8%), base of tongue (52.0%), lateral and posterior oropharynx (1.8%), soft palate (1.3%), and others (1.8%). Most commonly invaded muscles in the likely and definite muscle invasion groups were genioglossus: 35.4% and 91.7% and hyoglossus: 54.1% and 58.3%, respectively. There was no statistically significant difference in primary site recurrence in the likely, definite, and no muscle invasion groups: 12.5%, 12.5%, and 14.8%, respectively ($p>0.05$). Similarly, no statistically significant difference was appreciated in nodal recurrence: 2.1%, 0.0%, and 4.5%, respectively ($p>0.05$). **Conclusions:** Muscle invasion does not correlate with local or nodal recurrence in p16+ OP SCC. This finding suggests that unlike oral cavity SCC, depth of invasion is a less likely predictor of OP SCC recurrence.

1:52 Survival Rates of Patients with Malignant Melanoma of Unknown Primary and Known Primary in the Head and Neck

Carmen K. Chan, BS, Los Angeles, CA; Albert Y. Han, MD PHD, Los Angeles, CA; Suraj A. Dhanjani, BA, Los Angeles, CA; Kelly J. Pettijohn, MD, Los Angeles, CA; Pratik B. Patel, 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 compare the survival rates of MUP and MKP in the head and neck. One should be able to explain the difference in survival. Participants should also be able to discuss and characterize the demographics of these 2 cohorts.

Objectives: The aim of this study was to compare the survival of patients with melanoma of unknown primary (MUP) with melanoma of known primary (MKP) at an academic tertiary medical center. **Study Design:** Retrospective review of patients who had MUP and stage matched MKP between 2002 and 2013. **Methods:** Clinicopathologic information was gathered for patients who met this search criteria. Demographic information was characterized. Overall survival (OS) between MUP and MKP patients was then compared. **Results:** Thirty-one (7 MUP and 24 MKP) patients were identified with complete followup information. Of the seven MUP patients, two were found to have parotid involvement. The remaining five had cervical lymph node disease. MUP was more prevalent in the male population and the mean age at presentation was 54 years. Although more lymph nodes were removed in patients with MUP stage III (mean=26.4) versus stage matched MKP (mean=16.8), MKP (37.5%) had a higher percentage of total nodes positive for disease compared to MUP (10.0%). MUP stage III patients were more likely to undergo a neck dissection ($p=0.026$), whereas most stage matched MKP patients received sentinel lymph node biopsy. The median overall survival of patients with MUP and stage matched MKP was 38.73 months and 9.95 months, respectively. **Conclusions:** Patients with stage III MUP have a better overall survival compared to stage matched MKP patients in the head and neck. Fewer lymph nodes had disease involvement in MUP compared to stage matched MKP. Neck dissection should be considered in all patients with stage III MKP to direct adjuvant therapy and improve survival.

1:59 Sentinel Lymph Node Biopsy in Cutaneous Melanoma of the Head and Neck Using the Indocyanine Green SPY Elite System

Andrew M. Vahabzadeh-Hagh, MD, Los Angeles, CA; Keith E. Blackwell, MD, Los Angeles, CA; Elliot Abemayor, MD PhD, 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 discuss the importance of and indications for sentinel lymph node biopsy in cutaneous melanoma of the head and neck. They should also be able to discuss the novel use of indocyanine green and the SPY Elite near infrared imaging system to visually localize sentinel lymph nodes in conjunction with traditional technetium lymphoscintigraphy. They should also be able to compare this novel technique with the traditional use of blue dyes.

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Objectives: Lymph node status is the single most important prognostic factor for patients with early stage cutaneous melanoma. Sentinel lymph node biopsy (SLNB) has become the standard of care for intermediate depth melanomas. Modern SLNB implementation includes technetium-99 lymphoscintigraphy combined with local administration of a blue dye. Yet sentinel lymph nodes may fail to be identified in up to 5% of cases and false negative rates range from 0-34%. Here we describe our experience with a new sentinel lymph node biopsy technique using the fluorescein dye indocyanine green (ICG) and the SPY Elite near infrared imaging system. **Study Design:** Prospective cohort study. **Methods:** Cases of primary cutaneous melanoma of the head and neck without locoregional metastasis underwent SLNB at a single quaternary care institution between May 2016 and June 2017. Intraoperatively, 0.25 cc of ICG was injected intradermal in 4 quadrants around the primary lesion. 10-15 minute circulation time was permitted. SPY Elite identified the sentinel lymph node within the nodal basin marked by lymphoscintigraphy. Target first echelon lymph nodes were confirmed with a gamma probe and ICG fluorescence. **Results:** 14 patients were included with T1a to T4b cutaneous melanomas. Success rates for sentinel lymph node identification using lymphoscintigraphy and the SPY Elite system were 80 and 87% respectively. Zero false negatives occurred. Length of followup was 110 days on average. **Conclusions:** Indocyanine green near infrared fluorescence provides a feasible, safe, and perhaps improved method for sentinel lymph node biopsy for cutaneous melanoma of the head and neck compared with lymphoscintigraphy and blue dyes.

2:06 Q&A

2:10 - 3:00 **CONTROVERSIES IN TRANSORAL ENDOSCOPIC HEAD AND NECK SURGERY: ROBOT vs. LASER?**

Moderator: Albert L. Merati, MD FACS, Seattle, WA
Panelists: Michael L. Hinni, MD FACS, Phoenix, AZ
F. Christopher Holsinger, MD FACS, Palo Alto, CA
Jeremy David Richmon, MD FACS, Concord, MA
Lisa Shnyder, MD FACS, Kansas City, KS

3:00 Q&A

3:05 - 3:30 *Break with Exhibitors/View Posters - Trailblazers*

1:10 - 3:10 CONCURRENT SESSION 1B
OTOLOGY/NEUROTOLOGY - KIERLAND 2

1:10 - 2:05 **OTOLOGY/NEUROTOLOGY: PAST, PRESENT AND FUTURE**

Moderator: Bruce J. Gantz, MD FACS, Iowa City, IA
Panelists: Derald E. Brackmann, MD, Los Angeles, CA
Manuela Fina, MD, Minneapolis, MN
Lawrence R. Lustig, MD, FACS, New York, NY
Alejandro Rivas, MD, Nashville, TN
J. Thomas Roland Jr., MD, New York, NY
Erika A. Woodson, MD FACS, Cleveland, OH

2:05 Q&A

Moderator: Rick A. Friedman, MD PhD, Los Angeles, CA

2:10 **2017 THESIS AWARD - HONORABLE MENTION, CLINICAL RESEARCH**
MRI Surveillance of Vestibular Schwannomas without Contrast Enhancement: Clinical and Economic Evaluation

Daniel H. Coelho, MD FACS, Richmond, VA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) compare and contrast T1 contrast enhanced MRI and high resolution T2 MRI in the evaluation of vestibular schwannomas; 2) understand the added risks and costs of contrast administration; and 3) consider the benefits of non-contrasted MRI for the surveillance of observed vestibular schwannomas.

Objectives: To determine if high resolution T2 weighted (HRT2) magnetic resonance imaging (MRI) is a comparably accurate and economical alternative to the gold standard of contrast enhanced T1 weighted (T1C) MRI for surveillance of known vestibular schwannomas (VSs). **Study Design:** Retrospective case control analysis, systematic review, and eco-

conomic evaluation. **Methods:** Vestibular schwannoma size in anteroposterior, mediolateral, and superoinferior axes were measured by two neuroradiologists, both blinded to previous measurements, for 50 randomized patients with T1C and HRT2 on two separate occasions. Measurements were assessed by Pearson product-moment correlation coefficients, and differences were analyzed by Student t test. Once the data were analyzed, appropriate economic evaluation was performed utilizing institutional, federal, and literature based estimates of cost and incidence/prevalence. **Results:** Pearson correlations (r) between T1C and HRT2 were 0.991 and 0.973 for radiologists 1 and 2, respectively, with no statistically significant differences ($P \leq 0.05$) between imaging techniques. Intraobserver and interobserver reliability estimates (κ) were 0.88 to 1 for both T1C and HRT2, indicating very high reliability. Cost-minimization analysis demonstrated cost and charge differences of \$148.02 and \$1,284 per patient per scan, respectively. This represents an overall cost and charge savings for this 50 patient cohort of \$7,401 and \$64,200, respectively. **Conclusions:** HRT2 imaging is a highly reliable and lower cost alternative to T1C for followup surveillance scans in patients with VS.

2:17 The Membranous Hypermobile Stapes Footplate Syndrome--A New Etiology for Persistent Post-Traumatic Vertigo Following Head Injury

Arun K. Gadre, MD FACS, San Diego, CA; Ingrid R. Edwards, AuD, Louisville, KY; Casey R. Roof, AuD, Louisville, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to identify a new etiology for patients with persistent and delayed vertigo following head trauma. 'Invert Function' on high resolution computerized tomography (HRCT) of the temporal bone can help make the diagnoses of membranous and hypermobile stapes footplates. Participants should be able explain its pathophysiology and methods to surgically correct the condition.

Objectives: To alert otolaryngologists to the presence of a new etiology for post-traumatic persistent intractable vertigo. **Study Design:** Retrospective chart review at a tertiary care medical center. **Methods:** Patients suffering persistent vertigo following head trauma and demonstrating Tullio phenomena are included. All patients had normal otic capsules on HRCT scans. The invert function was used to visualize the stapes footplate. Intraoperative Valsalva maneuvers and stapes ballottement with video documentation was performed in every case. Fat grafting of round and oval windows was performed. **Results:** Between January 2009 and December 2016 thirty-one patients (36 ears) were treated. One patient was lost to followup. Followup with VNG and audiograms were performed 6 weeks following surgery. Followup ranged from 6 months to 7 years. Prior to surgery all patients reported dizziness to loud sounds and to barometric pressure changes. At surgery only two patients had demonstrable perilymph fistulae; the rest appeared to have membranous and hypermobile footplates. Membranous stapes footplates can be visualized using the invert function on HRCT. Twenty-six patients had unilateral pathology while 5 had bilateral lesions. Twenty-seven of the 30 patients (90%) showed subjective and objective improvement and hearing did not drop in any case. **Conclusions:** A previously undescribed membranous or hypermobile stapes footplate can occur following head trauma and can cause intractable vertigo. Durable long term successful results can be achieved utilizing fat graft patching of the round and oval windows without adversely affecting hearing. HRCT scans using the "invert function" can assist diagnosis.

2:24 Oral and Intratympanic Steroid Therapy for Idiopathic Sudden Sensorineural Hearing Loss

Jared Hara, BS, Honolulu, HI; Julia A. Zhang, BS, Honolulu, HI; Krupa R. Gandhi, MPH, Honolulu, HI; Anna Flaherty, MD, Springfield, IL; Wayne Barber, MD, Honolulu, HI; Lawrence P. Burgess, MD, Honolulu, HI

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) demonstrate awareness of the current understandings of idiopathic sudden sensorineural hearing loss; 2) discuss the importance of corticosteroid therapy in the treatment of idiopathic sudden sensorineural hearing loss; and 3) compare the effects of corticosteroid therapy between different age groups, in early versus delayed treatment, and route of drug administration.

Objectives: To investigate the role of intratympanic (IT) therapy in the treatment of idiopathic sudden sensorineural hearing loss (ISSNHL). **Study Design:** Retrospective review. **Methods:** Patients treated in a private practice for ISSNHL from 01/01/2011 to 04/12/2015 with the following: pre/post-treatment audios, treatment initiated <90 days, and idiopathic etiology. Fifty-three ISSNHL patients were analyzed in the following intervention subgroups: oral steroids (n=8), combination oral+IT (n=39), and IT (n=6). Main outcomes measured were pre/post-treatment pure tone average (PTA) scores. **Results:** The PTA changes for all treatment groups improved by 8.0+19.5dB ($p=0.004$); for thirty-one patients treated <2 weeks after onset, PTA improved by 13.8+16.6 dB ($p<0.001$). Multivariate analysis was conducted to investigate the association between PTA changes for all treatment groups adjusted for age, gender, time to treatment, and vertigo. Earlier time to treatment and older age were statistically correlated towards improved outcomes. As time to treatment increased by each day, change in PTA decreased by 0.324 [95% CI (0.12, 0.52), $p=0.002$]. As age increased by each year, change in PTA increased by 0.802 [95% CI (0.36, 1.24), $p<0.001$]. For the oral+IT group alone, PTA changes for concurrent oral+IT (n=20, 7.10dB) and delayed/salvage oral+IT (n=19, 5.43dB) were not statistically different ($p=0.79$); earlier time to treatment ($p=0.001$) and older age ($p=0.006$) remained statistically correlated towards improved outcomes. **Conclusions:** Results suggest outcomes can be improved with early identification and oral steroid therapy by primary care providers. Poorer prognosis for younger patients potentially suggests a need for more aggressive diagnostic and therapeutic management for this subgroup.

Thursday

2:31 Microbiome Analysis of Cholesteatoma by Gene Pyrosequencing

Joshua P. Weiss, MD, Gainesville, FL; Patrick J. Antonelli, MD, Gainesville, FL; Carolyn O. Dirain, PhD, Gainesville, FL

Educational Objective: At the conclusion of this presentation, the participants will learn the differences in microbial flora of cholesteatoma, its adjacent mucosa, and normal middle ear mucosa using gene pyrosequencing, and compare the differences in microbial yield between various sampling techniques.

Objectives: 1) To compare the microbial flora of cholesteatoma and normal middle ears using gene based pyrosequencing analysis; and 2) to assess efficiency of different sampling techniques: swab, brush or tissue. **Study Design:** Prospective IRB approved study collecting specimens from patients undergoing middle ear surgery between May 2015 and September 2016. **Methods:** Brush, swab, and tissue samples were each taken from: cholesteatoma matrix and uninvolved tissue in patients with previously untreated, acquired cholesteatoma (n=19) or middle ear mucosa from patients undergoing cochlear implantation with no history of cholesteatoma or prior middle ear surgery (control; n=12). DNA was isolated from specimens then 16s DNA 454 pyrosequencing was performed. **Results:** Cholesteatoma specimens had higher relative abundance of *Acinetobacter* sp., *S. aureus*, *T. otitidis*, *Peptoniphilus* sp., *T. denticola*, *P. aeruginosa*, and *P. endodontalis* compared to controls (all p<0.05). There were no significant differences in microbiome between the cholesteatoma matrix and uninvolved middle ear mucosa. *Alternaria* sp. was present on nearly all the specimens. There was no difference in microbial yield between the sampling methods. **Conclusions:** Microbiome of cholesteatoma matrix is similar to adjacent mucosa. This differs from controls. Further study is needed to understand if middle ear microbiome may impact cholesteatoma pathogenesis or treatment.

2:38 Surgical Management of Aggressive Petrous Apex Epidermoid Cysts with Skull Base Erosion

Geoffrey C. Casazza, MD, Salt Lake City, UT; Clough Shelton, MD, Salt Lake City, UT; Richard K. Gurgel, MD, Salt Lake City, UT

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the clinical presentation, surgical management, and outcomes of patients presenting with aggressive petrous apex epidermoid cysts with skull base erosion.

Objectives: Describe the clinical course and treatment outcomes for patients with aggressive petrous apex epidermoid cysts with skull base erosion. **Study Design:** Retrospective case series. **Methods:** A retrospective chart review was performed to identify all patients surgically managed for aggressive petrous apex epidermoid cysts at a single tertiary care institution from 2001 to 2017. The presenting symptoms, imaging, pre and postoperative clinical course, and complications were reviewed. **Results:** Ten patients were identified. The most common presenting symptoms included: sudden hearing loss (n =3), headaches (n =2), vertigo (n =3), and facial paralysis (n =4). An epidermoid cyst was discovered in two patients as an incidental finding after a head trauma and one patient after admission for altered mental status and meningitis. Three patients presented with complete facial paralysis (House-Brackmann 6/6). Preoperative normal hearing (pure tone average <25 db) was identified in 3 patients and serviceable hearing (pure tone average 25 to 60 dB) in 2 patients. Four patients underwent a transcochlear approach and two underwent a transtemporal approach. The remaining four patients underwent an extended middle fossa, retrolabyrinthine, infratemporal fossa, and peripetrosal approaches respectively. Postoperatively, 2 patients developed delayed facial paralysis, improving to normal within 3 months. Other postoperative complications included: diplopia, CSF leak, and stroke. Hearing was preserved in 2 patients. Two patients developed recurrence of disease within 1 and 7 years respectively. **Conclusions:** Surgical management of aggressive petrous apex epidermoid cysts is effective to preserve facial function and prevent recurrence. In our series different surgical approaches were used with variable outcomes.

2:45 Canal Reconstruction Tympanomastoidectomy for Cholesteatoma: A Comparison of Outcomes Following Primary vs. Revision Surgery

Shawn M. Stevens, MD, Phoenix, AZ; Kara R. Babo, BS, Cincinnati, OH; Zoe A. Walters, BS, Cincinnati, OH; Kareem O. Tawfik, MD, Cincinnati, OH; Ravi N. Samy, MD, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to describe surgical and audiometric outcomes associated with the canal reconstruction technique when utilized as the initial approach for primary acquired cholesteatoma and then compare these outcomes with use of the technique as a revision procedure for treating recidivistic disease in ears previously undergoing canal wall-up and canal wall-down tympanomastoidectomy.

Objectives: 1) Describe surgical and audiometric outcomes following canal-wall reconstruction tympanomastoidectomy (CWR) for primary cholesteatoma in surgically naïve ears; and 2) compare these outcomes to those following CWR used in revision of prior canal wall-up (CWU) and -down (CWD) approaches complicated by recidivistic cholesteatoma. **Study Design:** Retrospective chart review. **Methods:** Patients treated for primary cholesteatoma from 2006-2017 via CWR (primary or revision) were included if they had: pre and postoperative audiograms, detailed operative note(s), and >6 months followup. Patients were stratified by previous surgical history into surgically naïve (SN), prior CWU, and prior CWD

groups. The primary outcome measures were surgical revision rates (post CWR) for recidivistic cholesteatoma and canal stenosis. Patients who underwent second look tympanoplasty/ossiculoplasty were assessed for audiometric outcomes including pure tone average (PTA) and prevalence of ABG closure to <20 decibel (dB). **Results:** 43, 23, and 16 patients stratified into the SN, CWU, and CWD groups. Group specific outcomes are described in this order. The groups didn't significantly differ in age (overall mean 40.9+/-14.9 years), gender, or smoking status. Median followup ranged from 23.5-35.0 months. The rates of post CWR revision for recidivism were 12%, 4%, and 31% (p=0.03). Revision rates for canal stenosis were 9%, 4%, and 8% (p=0.76). Mean postoperative PTAs were 48.1 +/-19.9, 52.6 +/- 16.6, and 56.4 +/- 18.0 dB (p=0.11). The prevalence of ABG closure to <20db was 53%, 31%, and 25% (p=0.08). **Conclusions:** CWR was effective for treating cholesteatoma in SN and revision ears. Patients undergoing CWR in revision of a prior CWD experienced relatively high recidivism rates. Audiometric outcomes didn't differ significantly between groups.

2:52 Intratympanic Steroid Dosage in Sudden Sensorineural Hearing Loss

Aarti M. Agarwal, BS, Buffalo, NY; Adrian A. Ong, MD, Buffalo, NY; Samuel A. Reyes, MD PhD, Buffalo, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss whether a higher concentration of intratympanic steroids results in better hearing outcomes for sudden sensorineural hearing loss patients.

Objectives: Idiopathic sudden sensorineural hearing loss (ISSNHL) can be concerning to patients and significantly impact quality of life. The treatment of ISSNHL can be difficult to determine as the etiology of the disease is often unknown and there is no standardized treatment protocol. The most commonly used treatment is corticosteroids, which can be administered orally or via intratympanic injections. The advantage of intratympanic steroids (ITS) is that they provide a higher inner ear delivery concentration and lower systemic load. The purpose of the current study is to establish whether higher concentration of ITS results in better outcomes. **Study Design:** Case series with chart review. **Methods:** Forty-three patients with a diagnosis of ISSNHL were recruited for this study. Patients received IT dexamethasone injections with either 10 mg/mL or 24 mg/mL. Outcomes were measured as improvements in pure tone average (PTA) and speech discrimination score (SDS) after injection. **Results:** The average age was 60.6 ± 13.7 years and 60.5 ± 15.9 in the 24 mg/mL and 10 mg/mL, respectively. The majority of patients in both groups were male. ITS significantly improves measured outcomes, PTA and SDS, regardless of dosage. There was no statistically significant difference in the improvement in PTA between 10mg/mL (u = 13.4 dB) and 24mg/mL (u = 14.0 dB) treatment groups; p = 0.918. Additionally, there was no statistically significant difference in SDS improvement between 10mg/mL (u = 14.7 dB) and 24mg/mL (u = 23.8 dB) treatment groups p = 0.306. One patient in the 24 mg/mL group sustained a persistent tympanic membrane perforation requiring paper patch myringoplasty. **Conclusions:** Treatment with ITS is effective for ISSNHL at both 10 mg/ml and 24 mg/ml. Given that the 10 mg/mL dosage is more readily available, it should be the preferred treatment option to prevent treatment delay.

2:59 Cognitive Impairment Is Predictive of Post-Cochlear Implant Performance

Maya A. Kuroiwa, MD, Toronto, ON Canada; David B. Shipp, MA FAAA, Toronto, ON Canada; Nils Gritters, BSC, Toronto, ON Canada; Trung N. Le, MD PhD FRCSC, Toronto, ON Canada; Joseph M. Cheng, MD FRCSC, Toronto, ON Canada; Vincent Y. Lin, MD FRCSC, Toronto, ON Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss factors that influence outcomes of cochlear implantation and recognize cognitive decline as a predictor of speech perception performance after surgery.

Objectives: To determine the relationship between cognitive status and speech performance in a group of adult patients with cochlear implants (CI), using the Montreal Cognitive Assessment (MoCA). **Study Design:** Retrospective study in tertiary academic otologic center. **Methods:** Sixty-nine patients aged 24 to 92 years (62.1y [SD=14.5y]) who have a CI from the adult cochlear implant program at a tertiary academic otologic center were included in the study. The MoCA was performed in the initial preoperative assessment and speech perception testing included Hearing in Noise Test (HINT) sentences in quiet and noise and consonant-nucleus-consonant (CNC) words were performed 1 year post-implantation. **Results:** Overall speech perception was improved after cochlear implantation, with a mean increase of 43.7% in the HINT in quiet scores. The average MoCA score was 24 (SD=3.8), with 39 patients scoring under 26. Linear regression was used to model the association between preoperative MoCA scores and the speech perception outcomes. There was a positive correlation with postoperative HINT sentences in quiet (r=0.38; p<0.01), HINT sentences in noise (r=0.33; p<0.01), CNC words (r=0.4; p<0.01) compared to preoperative MoCA scores. We also analyzed age as an independent variable and a significant negative relation was observed with MoCA and speech perception scores. **Conclusions:** Hearing loss is now considered an independent risk factor for cognitive decline; but how this affects speech perception is not well understood. We found a direct correlation between preoperatively MoCA scores and speech perception after cochlear implantation. Therefore we suggest that cognitive assessment should be performed in all adult cochlear implant candidates, as it may be a very effective predictor of postoperative cochlear implant performance.

3:06 Q&A

Thursday

3:10 - 3:30 *Break with Exhibitors/View Posters - Trailblazers*

3:30 - 5:15 CONCURRENT SESSION 2A
RHINOLOGY/ALLERGY - KIERLAND 1

Moderator: Subinoy Das, MD FACS, Columbus, OH

3:30 Industry Influence in Sinus Balloon Dilation

Shekhar K. Gadkaree, MD, Boston, MA; Vinay K. Rathi, MD, Boston, MA; Esther Gottshalk, MD, Frankfurt, Hesse Germany; Allen L. Feng, MD, Boston, MA; George A. Scangas, MD, Boston, MA; Ralph Metson, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the potential role of industry influence in the form of payments on rates of sinus balloon dilation procedures and compare the positive association between industry payments and balloon sinuplasty with other surgical subspecialties.

Objectives: To determine whether industry payments from manufacturers of sinus balloon devices to otolaryngologists influences SBP practice patterns. **Study Design:** Retrospective cohort study. **Methods:** 294 otolaryngologists who performed SBD from January 1, 2014, to December 31, 2014, were identified in the Medicare provider utilization and payment (PUP) data and the Center for Medicare and cross-identified in the Medicaid services open payments general payment (OP) dataset. Main outcome measure included payments to surgeons performing SBD stratified by type and number of procedures performed. **Results:** 223 (76%) surgeons in the study population received payments from a company that manufactures balloon sinuplasty devices. Food and beverage payments were the most frequent SBD payment category. Consulting fees were the largest SBD payment category and the one most positively associated with performing additional SBD procedures ($p=0.006$). A higher number of procedures performed was significantly associated with higher reimbursements on linear regression ($p<0.001$). Multivariate analysis demonstrated that for every \$2500 increase in SBD payment amount, one extra SBD procedure was performed during the one year study period ($p<0.001$). **Conclusions:** Payments from the manufacturers of SBD devices are associated with the performance of an increased number of these procedures by the consultant surgeons. The reasoning for this association requires further study and may include increased training and familiarity with these devices.

3:37 Patient Reported Outcomes of Balloon Dilation for Eustachian Tube Dysfunction Using the SNOT-22 Survey

Zahrah M. Taufique, MD MBA, New York, NY; Steven A. Gordon, MD MPH, New York, NY (Presenter); Jamie R. Oliver, BA, New York, NY; Lisa A. Liberatore, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the patient reported outcomes of balloon dilation for eustachian tube dysfunction.

Objectives: Eustachian tube dysfunction is a common medical condition affecting approximately 1% of the adult population. Previous studies have evaluated eustachian balloon tuboplasty using tympanometry, ability to perform a Valsalva maneuver and subjective improvement in symptoms to measure effectiveness. In this study, we propose using the Sinus Nasal Outcome Test (SNOT-22) to measure outcomes following eustachian tube balloon dilation, with a focus on ear specific symptoms within the survey to determine the effectiveness of the procedure. **Study Design:** Literature review and retrospective case control series. **Methods:** A retrospective chart review was performed on all patients who underwent eustachian tube balloon dilation using the Acclarent balloon. We surveyed patients using the SNOT-22 survey before and after undergoing elective eustachian tube balloon dilation between February 2015 and June 2017. We compared the mean difference of total scores as well as ear specific scores and used paired T-tests to evaluate whether there was a significant improvement in symptoms in this group of patients. Ear specific scores included ear fullness/popping, ear pain, and dizziness. **Results:** 17 patients completed preoperative and postoperative SNOT-22 surveys. The mean preoperative score of ear specific SNOT-22 symptoms was 6.94, postop score was 3.47 with a mean diff 3.47 95CI (1.90-5.05) $p=0.0001$. Preoperative total SNOT-22 mean score was 35, postop score was 15.35, mean diff 19.65 95CI (10.97-28.33) $p=0.0001$. **Conclusions:** Patients have significant improvement in ear specific symptoms in a SNOT-22 survey after eustachian tube dilation.

3:44 **Hospital Charge Variability: The Influence of Sociodemographic Factors in Transsphenoidal Pituitary Surgery**

Sarah M. Kidwai, MD, New York, NY; Anthony Yang, BS, New York, NY; Sean P. McKee, BS, New York, NY; Raj K. Shrivastava, MD, New York, NY; Satish Govindaraj, MD, New York, NY; Alfred M.C. Illoreta, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) recognize the differences in hospital charges for pituitary surgery that exist throughout our state; and 2) identify factors related to increased hospital charges to patients undergoing pituitary surgery.

Objectives: 1) Correlate hospital charges for pituitary surgery with socioeconomic and demographic factors; and 2) identify patients at greater risk for increased hospital charges and thereby provide insight into cost effective practices. **Study Design:** Retrospective cohort study. **Methods:** Statewide Planning and Research Cooperative System (SPARCS) database was reviewed to identify patients who underwent transsphenoidal pituitary surgery from 1995 to 2015. Income and urban status were referenced from US Census Data. Linear regression was performed to analyze the effect of socio-demographic factors, comorbidities and complications on hospital charges while controlling for length of stay. **Results:** 9373 patients were identified. Black (10.8%, $p<0.001$), Asian (14.5%, $p<0.001$), and Medicaid (13.8%, $p<0.001$) patients had higher hospital charges. Patients from nonurban cities (13.4%, $p<0.001$), and those from the 0-25th (9.1%, $p<0.001$) and 25-50th (11.7%, $p<0.001$) income quartile had lower hospital charges. Patients with postoperative cerebrospinal fluid leak (24.0%, $p<0.001$), diabetes insipidus (22.1%, $p<0.001$), smoking history (11.8%, $p<0.001$), hypertension (7.4%, $p<0.001$), and hypothyroidism (6.9%, $p<0.001$) had higher hospital charges. **Conclusions:** Significant charge disparities exist across our state. Insurance and race are associated with increased charges. There are increased charges associated with urban and higher income populations. Patients incurring higher charges were more likely to have a smoking history, hypertension, and hypothyroidism. The determinants of this analysis may provide insight into barriers to patient access and cost improvement strategies.

3:51 **Skull Base Surgery Outcomes in the Elderly Population in the Era of the Endoscope**

Elizabeth D. Stephenson, BA, Chapel Hill, NC; Saangyoung E. Lee, BS, Chapel Hill, NC; Katherine N. Adams, BS, Chapel Hill, NC; Douglas R. Farquhar, MD MPH, Chapel Hill, NC; Adam M. Zanation, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the outcomes, feasibility and safety of skull base surgery in the elderly population above 70 years of age, as well as compare intraoperative and postoperative complication rates across elderly age groups, endoscopic versus traditional skull base approaches, and benign versus malignant underlying pathology.

Objectives: The use of skull base surgery in elderly patients is increasing but its safety in the elderly has not been evaluated. This study's aims are to 1) describe outcomes in an elderly cohort undergoing skull base surgery; and 2) evaluate if age, pathology and approach (endoscopic vs. traditional) are associated with increased intraoperative and postoperative complications in this population. **Study Design:** Retrospective cohort. **Methods:** A database of 1639 patients undergoing skull base surgery from 2000 to 2015 at a tertiary referral center was analyzed. 210 patients (118 males, 92 females) met inclusion criteria of age >70 . Data included demographics, surgical approach, pathology, intraoperative findings and postoperative complications. **Results:** 157 patients age 70-79.9 years and 53 patients age >80 were analyzed (mean 76.6). The most common pathologies were non-sellar malignant (37.1%), non-sellar benign (23.8%) and pituitary (21.0%) tumors. The most common intraoperative and postoperative complications were major bleeding (4/210, 1.9%) and postoperative bleed (7/210, 3.3%), respectively. There was no statistically significant difference in complications in age 70-79.9 vs. >80 years, endoscopic vs. traditional, or benign vs. malignant pathology. Specifically, between endoscopic and traditional groups there was no difference in systemic complications (0.67% vs. 3.7% respectively, $p=0.172$), postoperative CSF leak (0.67% vs. 0%, $p=1.000$), or postoperative bleed (2.67% vs. 5.56%, $p=0.384$). There was a statistical trend toward increased intraoperative bleeding in the traditional (3/54, 5.56%) versus endoscopic group (1/150, 0.67%) ($p=0.058$). **Conclusions:** Skull base surgery is a safe option in the elderly, with similar outcomes across elderly ages, surgical approaches and pathologies.

3:58 **The Dairy Milk Mucus Study: A Randomized Controlled Double Blind Trial Comparing the Effects of Dairy and Non-dairy Diets on Reported Levels of Nasopharyngeal Secretions in Rhinitis**

Adam C. Frosh, FRCS, Stevenage, Herts UK; Joanna Stephens, FRCS, Stevenage, Herts UK; Carina C. Cruz, BSc, Stevenage, Herts UK

Educational Objective: At the conclusion of this presentation, the participants should be able to see that our pilot study has shown that the 'milk mucus effect' may actually exist as a physiological entity.

Objectives: To establish whether ingestion of dairy products increase the subjective awareness of nasopharyngeal

Thursday

mucus secretion. **Study Design:** A randomized controlled double blind trial. **Methods:** Participants included 108 consenting, consecutive, rhinitic patients over the age of 16 at our hospital between January 2009 to December 2013. (power 80%, sd 27.59 with a 15% difference between the group means). All study patients were commenced on a 6 day dairy free diet after counselling by a dietician. All patients were reassessed on study day 3 for dietary compliance, and then randomized into 2 groups: group A (non-dairy) subjects given a daily dietary supplement of disguised soya milk for 4 days. Group B (dairy) subjects given a daily dietary supplement of disguised cow's milk for 4 days. T test comparison of subjective recorded levels of nasopharyngeal secretions between each group on each day of study. Daily subjective nasopharyngeal mucus secretion scores on a 4 point scale (minimal=1, mild=2, moderate=3, severe=4). The study endpoint was a final check of compliance with dietician on study day 7. **Results:** Both the dairy arm ($t(53)=2.754$, $p<.01$) and the non-dairy arm ($t(53)=5.52$, $p<.00$) scores significantly decreased from day 1 to 4. There was a significant decrease in mucus scores from days 1 to 7 in the non-dairy group ($t(53)=5.12$, $p<.00$). **Conclusions:** This study is the first to demonstrate a significant reduction of subjective awareness of nasopharyngeal secretion with dairy free diet. We believe this milk mucus effect may have important implications for the future treatments of rhinorrhea and nasopharyngeal mucus hyper secretion in selected patients.

4:05 Altered Membrane Associated MUC1 Mucin Expression in Nasal Mucosa of Chronic Rhinosinusitis

Kosuke Kato, PhD, Tucson, AZ; Kwang Chul Kim, PhD, Tucson, AZ; Eugene H. Chang, MD, Tucson, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the wide spectrum of mucin expression in nasal mucosa and unique characteristic of mucin expression patterns in chronic rhinosinusitis.

Objectives: Background: Mucins comprise the major protein component of mucus and exist as secreted and cell associated glycoproteins. Secreted, gel forming mucins are mainly responsible for the viscoelastic property of mucus, which is crucial for effective mucociliary clearance. Membrane associated mucins shield the epithelial surface from pathogens and regulate intracellular signaling. Because mucins provide mechanical, biological, and immunological protections in the airway mucosa, the fundamental knowledge of their expression patterns in nasal mucosa is likely to benefit development of novel therapeutic approach. Objective: This study aims to determine and compare mucin expression patterns between normal and chronic rhinosinusitis (CRS). **Study Design:** N/A **Methods:** 17 mucin gene expressions (MUC1, MUC2, MUC4, MUC5AC, MUC5B, MUC7, MUC8, MUC12, MUC13, MUC15, MUC16, MUC17, MUC18, MUC19, MUC20, MUC21, MUC22) were evaluated by RT-PCR. The expression levels and distribution of membrane associated MUC1 mucin and secreted gel forming MUC5AC mucin were further determined by Western blotting, immunohistochemistry and immunofluorescence microscopy. **Results:** Three membrane tethered mucins (MUC1, MUC20, MUC21) were highly expressed in nasal mucosa regardless of normal or upper airway pathologies. In normal nasal mucosa, MUC1 was mainly expressed at the luminal cell surface of epithelium. In the pathologic lesion of CRS nasal mucosa, MUC1 expression was highly detected in the cytoplasm of hyperplastic basal cells and early progenitor cells, where MUC5AC producing goblet cell hyperplasia and squamous cell metaplasia were prominent. **Conclusions:** These results suggest that MUC1 is highly expressed in both normal and CRS nasal mucosa; however distribution of MUC1 is altered and associated with pathologic airway remodeling in CRS.

4:12 Trends in Turbinate Surgery: Analysis of Patients Using Medicare Database

Mitchell P. Anderson, BS MS, Boston, MA; Johnathan Liang, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss trends in inferior turbinate reduction procedures with a focus on utilization, payment, and charges. The participants should also be able to explain changes in the location and provider types for these procedures between 2012-2015. Understanding common and practical trends for inferior turbinate procedures will help otolaryngologists in the ever changing healthcare environment.

Objectives: To describe trends in turbinate reduction procedures from 2000-2015. **Study Design:** Analysis of Medicare data. **Methods:** Annual procedure data was obtained from 2000-2015 and detailed Medicare provider and payment data was obtained from 2012-2015. Turbinate procedures analyzed included turbinate soft tissue mucosal ablation (TMA), turbinate soft tissue submucosal ablation (TSMA), turbinate excision (TE), turbinate submucous resection (TSR). TMA and TSMA were grouped as turbinate soft tissue ablation (TA) for analysis. From 2012-2015, the type and location--facility (F) or non-facility (NF)--of the providers performing the procedures were assessed. **Results:** From 2000-2015, the total number of turbinate reduction procedures increased by an average of 3.8% annually. TSR has the highest annual increase of 5.4%. TE is the only procedure to decrease by an average of -2.3% annually. From 2012-2015, the number of turbinate reduction procedures changed by -1.6% and 107.6% at F and NF locations, respectively. NF TSMA and TSR had the largest increase at 121.6% and 260.1%, respectively. Of NF TA procedures, there was an average annual increase of 50% by non-otolaryngologists. For TA, the average F charge is 78.0% more than the NF charge, and the average NF otolaryngologist charge is 11.5% more than the non-otolaryngologist charge. **Conclusions:** The number of turbinate reduction procedures has steadily increased between 2000-2015, with the majority being TSR. This is consistent with literature

demonstrating that TSR leads to better outcomes. There has been a significant increase in turbinate reduction procedures performed in outpatient/ambulatory settings by otolaryngologists, non-otolaryngologists, and mid-level providers.

4:19 Q&A

4:25 - 5:10 **WHEN IS SURGERY INDICATED FOR CHRONIC RHINOSINUSITIS? HOW EXTENSIVE SHOULD THE SURGERY BE?**

Moderator: Stilianos E. Kountakis, MD PhD FACS, Augusta, GA

Panelists: Alexander G. Chiu, MD, Kansas City, KS
Andrew N. Goldberg, MD MSCE FACS, San Francisco, CA
Michael G. Stewart, MD MPH FACS, New York, NY

5:10 Q&A

5:15 **ADJOURN SESSION**

5:30 - 7:00 **VICE PRESIDENT'S WELCOME RECEPTION (for all attendees) - Northern Sky Terrace (Culture Keepers rain backup)**

3:30 - 5:20 **CONCURRENT SESSION 2B
LARYNGOLOGY/BRONCHOSOPHAGOLOGY - KIERLAND 2**

3:30 - 4:15 **CANCER OF THE LARYNX: CHOICE OF TREATMENT AND IMPACT ON OUTCOME**

Moderator: Gady Har-El, MD FACS, New York, NY

Panelists: C. Gaelyn Garrett, MD MMHC, Nashville, TN
Henry T. Hoffman, MD FACS, Iowa City, IA
Richard V. Smith, MD FACS, Bronx, NY

4:15 Q&A

Moderator: Katherine Ann Kendall, MD FACS, Salt Lake City, UT

4:20 **Complications of In-office Laryngologic Procedures in Patients on Antithrombotic Therapy**

Jeffrey M. Straub, MD, Columbus, OH; Timothy J. Shin, BS, Columbus, OH; Brad W. deSilva, MD, Columbus, OH; L. Arick Forrest, MD, Columbus, OH; Laura A. Matrka, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to explain that in-office laryngologic procedures--namely vocal cord injection augmentation, laser excision, and bronchoscopy--are safe to perform and equally efficacious in patients on active antithrombotic therapy.

Objectives: 1) Validate previous reports that patients undergoing in-office laryngologic procedures are at no increased risk for treatment related complications while on antithrombotic therapy; and 2) clarify whether subjective voice outcomes are affected by concurrent usage of antithrombotic agents. **Study Design:** Retrospective chart review was performed on a cohort of patients who underwent in-office laryngologic procedures with any of three fellowship trained laryngology attendings from January 2012 to December 2016. **Methods:** Patients were divided into two groups based on the use of antithrombotic therapy at the time of their procedure. Procedures were identified by CPT code, including steroid injection to tracheal stenosis (11900 with 31575), injection augmentation or vocal fold steroid injection (31571), laser excision (31541), and bronchoscopy (31622). Chart review was performed to identify any complications through first followup appointment (average 80 days). Subjective voice outcomes were explored as a secondary variable of interest utilizing the Voice Handicap Index (VHI). **Results:** 573 procedures were performed in total, 255 of which were performed on patients taking some form of antithrombotic therapy. We identified 18 complications overall for a rate of 3.1%, 10 of which were in patients on anticoagulation therapy and 8 of which were not, with no significant difference in relative complication rate (3.9% vs. 2.5%, $p = 0.17$). Subjective voice outcomes were unaffected as measured by decrease in VHI scores (14% vs. 18%, $p = 0.52$). **Conclusions:** In spite of known risks in other settings, antithrombotic agents do not confer increased risk of treatment related complications during typical in-office laryngologic procedures and do not impact subjective voice outcomes.

Thursday

4:27 Dynamics of Intrinsic Laryngeal Muscle Contraction

Andrew M. Vahabzadeh-Hagh, MD, Los Angeles, CA; Pranati Pillutla, BS, Lubbock, TX; Zhaoyan Zhang, PhD, Los Angeles, CA; Dinesh K. Chhetri, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the temporal dynamics of the intrinsic laryngeal muscles; namely the onset time and duration of their maximal contraction and posture changes. In so doing they will have a better understanding of the limits of laryngeal contraction frequency in physiological and pathological laryngeal conditions.

Objectives: Laryngeal function requires neuromuscular contraction of the intrinsic laryngeal muscles (ILMs). Rapid activation of the ILMs occurs in cough, laughter, and voice-unvoiced-voiced segments in speech and singing. Abnormal rapid activation is observed in hyperfunctional disorders such as vocal tremor and dystonia. In this study we evaluated the dynamics of ILM contraction. **Study Design:** Basic science study in an in vivo canine model. **Methods:** The following ILMs were stimulated: thyroarytenoid (TA), lateral cricoarytenoid (LCA), cricothyroid (CT), all laryngeal adductors (LCA/IA/TA), and posterior cricoarytenoid (PCA). Neuromuscular stimulation was performed via respective nerves at current levels needed to achieve complete vocal fold posture change. Muscle contraction and posture changes were recorded with high speed video, which were then manually analyzed to measure activation times to achieve posture changes. **Results:** In all muscles the onset of posture change occurred within 9-12 milliseconds after activation. The average times (\pm standard deviations) to achieving final posture were as follows: TA 39 ± 7.1 ms (N = 15), LCA 58 ± 14.8 ms (N = 14), LCA/TA/IA 47 ± 10.5 ms (N = 20), CT 105 ± 16.7 ms (N = 26), PCA 102 ± 16.9 ms (N = 3). Data distribution appeared normal. **Conclusions:** Inter-laryngeal differences in ILM activation are presented and improve our understanding of the limits of laryngeal contraction frequency in physiologic and pathologic laryngeal function.

4:34 Invasive Treatments for Sialorrhea in Patients with Amyotrophic Lateral Sclerosis: A Systematic Review

Lindsey L. Shehee, BS, Charleston, SC; Ashli K. O'Rourke, MD, Charleston, SC; Kendrea L. Garand, PhD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the invasive options that exist for the management of sialorrhea in patients with ALS. Participants should understand the efficacy, benefits, and risks of each therapy.

Objectives: Estimated half of patients with amyotrophic lateral sclerosis (pALS) experience sialorrhea resulting from facial weakness and inability to maintain adequate oral seal. While anticholinergic medications are the first line therapy, they frequently lead to unacceptable side effects at higher doses. Invasive treatments for sialorrhea in pALS include radiation and botulinum toxin. In this systematic review, we investigated the effectiveness of invasive treatments for the management of sialorrhea in pALS. **Study Design:** Systematic review of the literature. **Methods:** Eligible studies were retrieved from PubMed and Scopus databases with hand searching of references from primary articles. **Results:** Ten studies (N = 171) examined the benefits of radiation. Nine studies were case series while one was a randomized controlled trial (RCT). Of these, 85% participants reported subjective benefit from treatment. Treatment duration lasted approximately six months, with mild adverse effects reported. Fourteen studies (N = 142) examined the benefits of botulinum toxin. Twelve studies were case series while two were RCTs. Majority of participants (80%) experienced symptom improvement with effect duration lasting approximately three months. While most studies reported only mild adverse effects, two case studies revealed severe complications from botulinum toxin such as recurrent TMJ dislocations and rapid deterioration in bulbar function. **Conclusions:** Both radiation and botulinum toxin are effective invasive treatments for sialorrhea in pALS. However, radiation may offer longer duration of symptom improvement with fewer complications. Though not yet explored, surgical therapies remain an option for patients with debilitating sialorrhea.

4:41 Airway Evaluation in Children with Single Ventricle Cardiac Physiology

Jose H. Ting, BS, Houston, TX; Soham Roy, MD, Houston, TX; Lauren Mulcahy, MD, Houston, TX; Zhen Huang, MD, Houston, TX; Sancak Yuksel, MD, Houston, TX; Zi Yang Jiang, MD, Houston, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to understand and describe the airway interventions required in children with single ventricle cardiac physiology.

Objectives: Children with single ventricle cardiac physiology (SVC) often require airway procedures as an adjunct to their care. Descriptive analysis with a focus on outcomes of airway procedures in SVC patients have not been fully described in the literature. **Study Design:** Retrospective, single center cohort review. **Methods:** 270 patients born between August 2007 and January 2017 were identified by cardiac diagnosis for single ventricle palliation. A subset of these patients was identified to have been evaluated by otolaryngology with airway evaluations and/or interventions. **Results:** 88/270 patients (32.6%) required investigation or intervention for airway pathology, the most frequent procedure being flexible fiberoptic laryngoscopy (58/88 patients). FFL was the only procedure performed in 40 patients. Seventeen patients required tracheostomies with an associated increased length of stay ($p < 0.001$). Patients with cardiac procedures involving dissection

around the aortic arch were considered higher airway risk due to the threat of recurrent laryngeal nerve injury, and were more likely to have vocal cord paralysis (52%) compared to patients with lower risk procedures (26%; $p=0.019$). However, on multivariate logistic regression, vocal cord paralysis did not statistically impact the odds for tracheostomy placement, although the presence of subglottic stenosis increased the odds ratio of tracheostomy by 11 ($p=0.02$). **Conclusions:** Children with SVC often require airway evaluation and intervention. Patients with high risk cardiac procedures had a higher risk of RLN injury but the presence of subglottic stenosis was the best predictor for a tracheostomy. This study represents one of the largest series of SVC children evaluated for airway pathology.

4:48 **Vocal Fold Pyogenic Granuloma: A 10 Year Retrospective Review**

Courtney B. Tipton, BS, Columbus, OH; Paul E. Wakely, MD, Columbus, OH; Brad W. deSilva, MD, Columbus, OH; Laura A. Matrka, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to define pyogenic granuloma and understand the significance of a vocal fold pyogenic granuloma compared to other granuloma of the vocal fold.

Objectives: The primary objective is to assess the histopathology and clinical course of vocal fold pyogenic granuloma. The secondary objective is to compare differences in clinical course and disease recurrence rates between pyogenic granuloma and other vocal fold granuloma. **Study Design:** Retrospective chart review. **Methods:** Patients evaluated at our institution from July 2008 to May 2017 were screened for histopathologic diagnosis of granuloma of the vocal fold, including pyogenic granuloma. Patient demographics, pathologic diagnosis and histopathologic details, and clinical course, including Voice Handicap Index (VHI) scores and recurrence rates, were assessed. **Results:** 9 patients (2.6%) had a diagnosis of pyogenic granuloma of the vocal fold. Pathology reports identified the specimens as pyogenic granuloma, superficially ulcerated pyogenic granuloma [polypoid granulation tissue], and contact ulcer [pyogenic granuloma]. 3 patients had previous vocal fold biopsies, and the location of pyogenic granuloma was preceded by squamous mucosa with acanthosis, vocal fold polyp, or dysplasia with acute and chronic inflammation. The average preoperative VHI score was 16.5, which decreased to 9.67 (-41.4%) postoperatively. 44.4% of cases were treated with additional surgery. Overall, there was no statistically significant difference in recurrence rate or VHI scores between pyogenic granuloma and other granuloma of the vocal fold. **Conclusions:** Although limited by small sample size and retrospective design, the data support a high recurrence rate for pyogenic granuloma, and patients with this diagnosis may endure multiple surgical procedures. Large scale retrospective studies and/or prospective cohorts are needed to better understand the etiology and clinical course of the disease.

4:55 **Using Nd:YAG Photocoagulation for Treatment of a Postcricoid Venous Malformation in a Young Pediatric Patient**

Sarah A. Lookabaugh, MD, Rochester, NY; John J. Faria, MD, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the problems caused by a laryngeal venous malformation, and discuss the utility of a Nd:YAG laser in treating such conditions.

Objectives: To report a case of a pediatric postcricoid venous malformation successfully treated with Nd:YAG laser. **Study Design:** Case report from a tertiary academic children's center. **Methods:** Chart review of a 3 month old female referred by the emergency department (ED). Her record was reviewed for presenting symptoms, area of involvement, imaging, operative management, and clinic visits. **Results:** The patient presented at 9 weeks of age with intermittent stridor and increased work of breathing that had been initially noticed soon after birth. She had multiple prior ED visits for these complaints, with limited symptom relief from nebulized racemic epinephrine and oral steroids. She also experienced difficulty feeding and weight loss. Subsequent outpatient flexible laryngoscopy revealed a large, erythematous mass extending from the interarytenoid area and posterior arytenoid mucosa into the esophageal inlet. One month after initial presentation to our institution, she underwent operative Nd:YAG photocoagulation of the laryngeal mass. On postoperative flexible laryngoscopy, the mass was approximately 75% smaller without erythematous discoloration, and her parents reported a significant improvement in her feeding and weight gain. She continues to have episodic stridor, but it is softer and occurs only when agitated. **Conclusions:** Although rare, laryngeal postcricoid venous malformations can cause significant problems for the pediatric patient, including stridor, difficulty breathing, difficulty feeding, and failure to thrive. This case demonstrates that the Nd:YAG laser is an option to successfully and safely treat laryngeal postcricoid venous malformations in young pediatric patients.

5:02 **Atypical Vascular Proliferation 30 Years after Radiation for Nasopharyngeal Cancer**

Andrew Q. Ta, BA, Chicago, IL; Christopher G. Tang, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the details of a unique case of nasopharyngeal vascular proliferation 30 years after radiation therapy.

Objectives: To discuss a unique case of vascular proliferation 30 years after completion of radiation therapy for nasopharyngeal cancer. **Study Design:** A case report with review of literature. **Methods:** A 91 year old female presents to

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head and neck surgery clinic with a large fungating nasopharyngeal mass growing into the oropharynx. Patient had a history of radiation therapy 30 years ago along with bilateral neck dissections in Burma with resultant choanal stenosis and osteoradionecrosis. A computed tomography scan was performed which showed an enhancing 2.6cm nasopharyngeal mass. **Results:** A biopsy of the mass was performed which showed an atypical vascular proliferation with anastomosing channels lined by spindled plump cells with vesicular chromatin and occasionally prominent nucleoli with eosinophilic to clear and vacuolated cytoplasm. **Conclusions:** Although post-radiation atypical vascular proliferation has been described in the breast and scalp, this is the first case report of it developing in the nasopharynx. Moreover, it is rare to have such high density of endothelial proliferation develop 30 years after radiation therapy.

5:09 **Q&A**

5:15 **ADJOURN SESSION**

5:30 - 7:00 **VICE PRESIDENT'S WELCOME RECEPTION (for all attendees) - Northern Sky Terrace (Culture Keepers rain backup)**

FRIDAY, JANUARY 19, 2018

7:00 - 7:50 **Business Meetings (Fellows Only)**
Southern Section - Powell AB
Western Section - Merriam AB

7:30 **Attendee Breakfast with Exhibitors - Trailblazers**

8:00 - 10:00 CONCURRENT SESSION 3A FACIAL PLASTIC/RECONSTRUCTIVE SURGERY - KIERLAND 1

8:00 **Announcements - Carol R. Bradford, MD FACS, Middle Section Vice President**

Moderator: Robert M. Kellman, MD FACS, Syracuse, NY

8:05 **Functional Septorhinoplasty in the Pediatric Patient**
Jennifer C. Fuller, MD, Boston, MA; Patricia A. Levesque, BS, Boston, MA;
Robin W. Lindsay, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the efficacy and safety of functional septorhinoplasty in the pediatric patient.

Objectives: To describe pediatric patients undergoing functional septorhinoplasty and to analyze outcomes. **Study Design:** Retrospective analysis of a prospective cohort. **Methods:** Patients <18 years undergoing functional septorhinoplasty between 2013 and 2016 at a tertiary care center were included. Patient demographics, nasal exam, procedure, and pre and postoperative nasal obstruction symptom evaluation (NOSE) score, EuroQOL 5 dimension (EQ5D), and peak nasal inspiratory flow (PNIF) scores were analyzed. **Results:** 39 patients, 48.7% male, mean age 15.9 years (range 7-18), with nasal obstruction underwent functional septorhinoplasty with mean followup of 8.5 months. Patients reported a history of allergies (46.5%), nasal fracture (59.0%), and nasal surgery (25.6%). Most common exam findings included internal nasal valve narrowing (92.3%), superior/dorsal septal deviation (74.4%), external nasal valve narrowing (43.6%), caudal septal deviation (35.9%), and a narrow middle vault (33.3%). Septal cartilage grafts were placed in 79.5% of patients and PDS plate was used in 28.2%. Most common procedures included spreader grafts (84.6%), columellar strut graft (30.8%), and swinging door (23.1%). Of patients with both baseline and postoperative scores, at last followup NOSE scores (SD) decreased from 59.0 (23.7) to 8.2 (6.9) (n=26, p<0.01), EQ5D VAS scores increased from 76.2 (17.7) to 85.8 (13.5), (n=19, p=0.056), and PNIF scores increased from 66.2 (25.3) to 90.8 (46) L/min, (n=13, p<0.01); all mean differences met the minimal clinically important difference for each score. 2 patients underwent revision surgery and there was one complication of a nasal abscess. **Conclusions:** Functional septorhinoplasty is safe and effective in select pediatric patients with significant nasal obstruction.

8:12 **The Medial Sural Artery Perforator Flap: Is this a Better Option than the Radial Forearm Free Flap in Complex Head and Neck Reconstruction?**
Zahrah M. Taufique, MD MBA, New York, NY; David Daar, MD MBA, New York, NY;
Leslie E. Cohen, MD, New York, NY; Jamie P. Levine, MD, New York, NY;
Adam S. Jacobson, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the characteristics of the medial sural artery perforator flap and compare it to other commonly used free flaps in head and neck reconstruction.

Objectives: The medial sural artery perforator (MSAP) free flap is an uncommonly utilized soft tissue flap in head and neck reconstruction. It is a thin, pliable, fasciocutaneous flap that provides significant pedicle length. The donor site can be closed primarily and its location is more aesthetically pleasing to patients. In this study, we aim to describe the medial sural artery perforator flap and compare it to other commonly used free flaps. **Study Design:** Retrospective case series. **Methods:** A retrospective review of all MSAP flap cases performed in our medical center was performed from July 2016 to August 2017. We examined the patients' age, diagnosis, history of prior XRT, and comorbidities as well as flap specific information (i.e., thickness, length, and width of flap) and site to be reconstructed. **Results:** 16 patients underwent a variety of different head and neck procedures which were closed with the MSAP flap. The areas reconstructed included tongue, cheek, soft and hard palate, and pharynx. The skin paddle harvested ranged from 6-17 cm

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in length and 3-8 cm in length. Mean pedicle length was 10.6 cm and arterial diameter ranged from 1.5-3.0 mm. Flap thickness ranged from 5-12 mm with an average thickness of 8 mm. Venous coupler size ranged from 2.0 to 3.5 mm. Primary closure of the donor site was achieved in 14/16 flaps. 15/16 flaps were successfully transferred. **Conclusions:** The MSAP flap is a highly versatile and reliable option for a thin, pliable soft tissue flap with a donor site that remains preferable over the radial forearm flap.

8:19 Comparison of Modern Rigid Fixation Plating Outcomes for Segmental Mandibular Microvascular Reconstruction

Adam C. McCann, BS, Kansas City, KS; Brian T. Andrews, MD, Kansas City, KS (Presenter); Wojciech H. Przylecki, MD, Kansas City, KS; Kiran Kakarala, MD, Kansas City, KS; Yelizaveta L. Shnyder, MD, Kansas City, KS; Douglas A. Girod, MD, Kansas City, KS

Educational Objective: After this presentation, the audience should be able to describe the various types of plating modalities for mandibular reconstruction. They should also be able to compare perioperative complications for patients receiving different types of mandibular plates, and discuss the impacts of those outcomes in the context of morbidity and cost of treating prolonged disease.

Objectives: New advances in osseous microvascular mandibular rigid fixation such as computer aided design/computer aided manufacturing (CAD/CAM) custom plates and standardized prebent smart plates have replaced traditional hand bent reconstruction plates at many institutions. Our goal is to assess and compare the outcomes of these newer technologies when utilized for mandibular microvascular reconstruction. **Study Design:** A retrospective chart review from January 2011 to December 2016 was performed at a tertiary academic medical center. **Methods:** Subjects were categorized into two groups according to their mandibular rigid fixation technique: group 1= CAD/CAM custom plates and group 2= prebent smart plates. Primary outcome measures were 1) perioperative complications (defined as infection, wound dehiscence, and/or plate exposure) and 2) reoperation rates for mandibular hardware failure/explantation. Statistical analysis was done with a chi-square and Fisher's exact test. **Results:** A total of 142 subjects underwent microvascular mandibular reconstruction in a six year period. Eighty-nine subjects utilized prebent smart plates and 53 employed CAD/CAM custom plates. Perioperative complications occurred in 32 of 89 (35.9%) subjects with prebent smart plates and 11 of 53 (20.7%) subjects using CAD/CAM custom plates. Reoperation requiring hardware explantation occurred in 18 of 89 (20.2%) subjects and 3 of 53 (5.6%) using CAD/CAM custom plates. Statistical comparison of perioperative complications between the two groups strongly trended toward significance ($p=.0556$), and the rate of reoperation was significant favoring CAD/CAM implants ($p=.0180$). **Conclusions:** In our experience, CAD/CAM custom plates utilized for rigid fixation during microvascular mandibular reconstruction demonstrated less complications and statistically fewer reoperations when compared with prebent smart plates.

8:26 Supraclavicular Flap Practice Patterns and Perception of Outcomes: A Survey of 221 AHNS Surgeons

Andrew T. Day, MD MPH, Dallas, TX; Liyang Tang, MD, Los Angeles, CA; Kevin S. Emerick, MD, Boston, MA; Urjeet A. Patel, MD, Chicago, IL; Daniel G. Deschler, MD, Boston, MA; Jeremy D. Richmon, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the supraclavicular flap practice patterns and perceived outcomes of AHNS surgeons.

Objectives: To describe American Head and Neck Society (AHNS) surgeon supraclavicular flap (SCF) practice patterns and to identify variables associated with frequency of SCF complications. **Study Design:** Cross-sectional. **Methods:** An online survey was distributed to 782 AHNS surgeons between 11/11/16 and 12/31/16. The primary outcome was surgeon frequency of SCF complications. Independent variables included demographics, training, practice patterns, and techniques. **Results:** Adequate survey responses were obtained from 221 AHNS surgeons and 54.3% ($n=120$) performed supraclavicular flaps (SCFs). Most surgeons used the SCF for cutaneous ($n=85$; 78.7%) or parotid-temporal bone ($n=59$; 54.6%) defects. Thirty percent of surgeons experienced more than a "few" SCF complications. More surgeons experienced SCF complications compared to pectoralis major ($p\leq 0.001$) and radial forearm free flap ($p\leq 0.001$) complications. Univariate analysis demonstrated no association between surgeons with few complications and Doppler use in SCF design ($p=0.90$), harvest location ($p=0.51$), and pedicle skeletonization (0.25). Multivariable logistic regression showed surgeons performing more than 30 SCFs compared to less than or equal to 30 SCFs had a greater odds of experiencing few SCF complications (odds ratio [OR] 7.1, 95% confidence interval [1.1-43.9], $p=0.04$). **Conclusions:** A majority of surgeons performing SCFs use the flap to reconstruct cutaneous and parotid-temporal bone defects. The significance of the higher frequency of SCF complications compared to other routine flaps should be explored further. SCF success may be uniquely linked to surgeon experience with the SCF -- not training characteristics, practice patterns, or variations in technique.

8:33 Dog Bite Injuries to the Face: Is there Risk with Breed Ownership?

Garth F. Essig, MD, Columbus, OH; Cameron C. Sheehan, BS, Columbus, OH (Presenter);
Shefali R. Rikhi, BS, Charlottesville, VA; Charles A. Elmaraghy, MD, Columbus, OH;
Jared J. Christophel, MD, Charlottesville, VA

Educational Objective: At the conclusion of this presentation, the participants should be able to determine the relative risk and severity of dog bite injuries to the face by breed.

Objectives: To determine the relative risk and severity of dog bite injuries to the face by breed. **Study Design:** Retrospective chart review of facial dog bite injuries presenting to two different tertiary medical centers. **Methods:** Descriptive data about each case was collected from the two institutions over the last 15 years. Bite risk by breed was assessed by a literature search for studies looking at dog bites that reported breed from 1970 to current. Using the composite measure of cost, wound size, and tissue avulsion to determine the severity of injury, we characterized each dog bite patient into an ordinal scale of bite severity. Thirty-five studies were found that reported dog bite data and breed. The top two dogs reported in each study were then recorded in a list. This list was then divided into a three tiered ordinal measure of bite risk. **Results:** Two hundred and forty cases were reviewed. Facial trauma injuries from Rottweilers and Pitbulls were more likely to result in severe facial injuries that often required extensive surgical intervention. This data is well suited for a bubble plot showing bite risk on the x-axis, bite severity on the y axis, and size of the bubble by number of cases. This creates a risk to own graphic for potential dog owners. **Conclusions:** Dogs with high bite rates, such as Pitbulls and Rottweilers, also cause more severe facial trauma per incident than other breeds.

8:40 Microsurgical Reconstruction of Parotidectomy Defects: When Is Microsurgical Reconstruction a Better Option?

Lindsey Moses, MD, New York, NY; Zahrah M. Taufique, MD MBA, New York, NY; Jamie P. Levine, MD, New York, NY; Adam S. Jacobson, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss microvascular free flap options for parotidectomy defects.

Objectives: Partial and total parotidectomy defects can lead to significant cosmetic deformities as well as long term issues such as Frey's syndrome. Local and regional tissue transfers have been described and can provide excellent outcomes for small parotidectomy defects. We evaluated the role of free tissue transfer for reconstruction of large parotidectomy defects. **Study Design:** Retrospective case series. **Methods:** A retrospective review of all cases from June 2016 to August 2016 was performed at our medical center **Results:** A total of 11 microsurgical reconstructions for parotidectomy were performed in 10 patients. Total parotidectomy with facial nerve preservation was performed in 3/10 patients. Superficial parotidectomy with facial nerve preservation was performed in 3/10 patients. A radical parotidectomy was performed in 2/10 patients and revision parotidectomy was performed in 2/10 patients. 3/10 patients had a branch of the facial nerve sacrificed and reconstructed with a nerve graft or an immediate nerve transfers (masseteric, hypoglossal, cross face). The medial sural artery perforator flap was utilized in 6/10 patients. The anterolateral thigh flap was utilized in 5/10 patients. Average total operative time was 10 hours and 54 minutes. Average length of stay was 4.6 days. To date no patients have experienced postoperative gustatory sweating or tearing. 3/10 patients have undergone minor flap debulking procedures to improve their cosmetic outcome--in all cases the external skin paddle was removed entirely. **Conclusions:** Free flap reconstruction of parotidectomy defects provides a safe and reliable way to minimize cosmetic deformities and minimize the likelihood of a patient developing Frey's syndrome.

8:47 Disparity in Surgical Approaches and Outcomes of Functional Rhinoplasty

Collin A. Rozanski, BA, New York, NY; Mingyang L. Gray, MD MPH, New York, NY;
Joshua D. Rosenberg, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to identify factors associated with different surgical approaches and patient outcomes for functional rhinoplasty.

Objectives: Highlight disparities in surgical approaches and patient outcomes for patients undergoing functional rhinoplasty. **Study Design:** Retrospective cohort study of all functional rhinoplasty performed by three facial plastic surgeons within a single health system from 2013-2016. **Methods:** Demographics, pre and postoperative Nasal Obstruction Symptom Evaluation (NOSE) scores and surgical approaches were collected for all patients who underwent functional rhinoplasty. Surgical approaches analyzed include external (open), closed delivery with intercartilaginous incisions, and closed cartilage splitting with intracartilaginous incisions. Standard t-tests and chi-square tests were used to determine predictors of surgical approaches and outcomes. **Results:** A total of 117 patients were identified. The mean age was 34.7 (SD=16.2). Twenty-one patients (18%) had public insurance (Medicare or Medicaid) and 95 (82%) had private insurance. The mean NOSE score improvement was 49.2 (SD=24.4). There were no significant difference in preoperative NOSE scores based on insurance status. However, patients with public insurance were associated with greater improvement in NOSE scores ($p<0.05$) and greater odds of receiving an open approach ($p<0.05$). Male patients had greater odds

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of undergoing caudal septum repositioning ($p < 0.05$). Female patients had greater odds of undergoing closed delivery approach with intercartilaginous incisions ($p < 0.05$). Negative results included no significant difference in NOSE score improvements based on age, sex, history of trauma or type of surgical approach. **Conclusions:** This study highlights the disparities in surgical approaches and outcomes based on demographics and insurance status. This illustrates potential biases in the management of functional rhinoplasty.

8:54 Analysis of Risk Factors Associated with Unplanned Reoperation Following Free Flap Surgery of the Head and Neck

Eric H. Zhao, BS, Newark, NJ; Kalin K. Nishimori, MBS, Newark, NJ; Jacob Brady, BA, Newark, NJ; Jean A. Eloy, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard C. Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the risk factors and predictors for unplanned reoperation following free flap surgery of the head and neck.

Objectives: Evaluate risk factors for unplanned reoperation following free flap surgery of the head and neck. **Study Design:** Retrospective database review. **Methods:** The National Surgical Quality Improvement Program database was queried for free flap surgeries of the head and neck between 2005 and 2014. Univariate and multivariate analyses were performed to compare patients with unplanned reoperation and those without. **Results:** A total of 1789 patients were identified, with an overall unplanned reoperation rate of 19.7% ($n=353$) within 30 days after surgery. Upon multivariate analysis, independent risk factors for unplanned reoperation include smoking within one year prior to surgery (OR=1.399, 95% CI [1.046-1.871]), hypertension requiring medication (OR=1.461, 95% CI [1.105-1.932]), prior open wound/wound infection (OR=1.815, 95% CI [1.212-2.718]), and prolonged operative time (OR=1.002, 95% CI [1.001-1.002]). Postoperative surgical (OR=3.109, 95% CI [2.308-4.188]) and medical complications (OR=2.678, 95% CI [1.956-3.669]) were significant predictors of unplanned reoperation. Among the 353 unplanned reoperation patients, 265 (75.1%) underwent reoperation during their initial hospital admission and 88 (24.9%) after readmission. Average number of days from principal operative procedure to unplanned reoperation was 5.80 for initial admission reoperations and 13.57 for readmission reoperations. Most common unplanned reoperation procedures overall were exploration for postoperative hemorrhage, thrombosis or infection (13.3%); incision and drainage of deep abscesses or hematomas (7.6%); and incision and drainage of hematomas, seromas or fluid collections (5.7%). **Conclusions:** Smoking within one year prior to surgery, hypertension requiring medication, prior open wound/wound infection, and prolonged operative time are risk factors for unplanned reoperation. Postoperative surgical and medical complications are predictors of unplanned reoperation.

9:01 Q&A

9:05 - 9:55 FACIAL NERVE PARALYSIS REHABILITATION

Moderator: Theresa M. Hadlock, MD, Boston, MA

Panelists: William H. Slattery, MD, Los Angeles, CA
Kofi Derek Boahene, MD FACS, Baltimore, MD
Travis T. Tollefson, MD MPH FACS, Sacramento, CA
Daniel McDonnall, PhD, Salt Lake City, UT

9:55 Q&A

10:00 - 10:30 Break with Exhibitors/View Posters - Trailblazers

8:00 - 10:00 CONCURRENT SESSION 3B GENERAL/SLEEP MEDICINE - KIERLAND 2

8:00 Announcements - Gary Har-EI, MD FACS, Eastern Section Vice President

8:05 - 8:55 PHYSICIAN WELLNESS AND BURNOUT

Moderator: Myles L. Pensak, MD FACS, Cincinnati, OH

Panelists: Julie L. Wei, MD, Orlando, FL
Michael M. Johns III, MD, Los Angeles, CA
Dana M. Thompson, MD FACS, Chicago, IL
Peak Woo, MD FACS, New York, NY

8:55 Q&A

Moderator: Sally R. Shott, MD FACS, Cincinnati, OH

9:00 Patterns of Co-Use of Cigarettes, Alcohol, and e-Cigarettes: Evidence from the National Health Interview Survey

Anuraag S. Parikh, MD, Boston, MA; Neil Bhattacharyya, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the concurrent use of alcohol, conventional cigarettes (Csig), and electronic cigarettes (Esig), risk factors for head and neck cancer.

Objectives: To understand nationwide concurrent use of e-cigarettes (Esig) with alcohol and conventional cigarettes (Csig), the major risk factors for head and neck cancer. **Study Design:** Cross-sectional analysis of nationally representative survey. **Methods:** The National Health Interview Surveys (NHIS) for 2014 and 2015 were analyzed for adult responses to specific questions regarding the daily frequency of alcohol, Csig, and Esig use. Statistical relationships between these social habits were determined. **Results:** 241.1 million adults (raw N=162,048) were surveyed (mean age 47.1 years, 51.8% female). 12.1% (29.2M) and 3.8% (9.08M) reported being everyday and some days Csig users, respectively. 2.3% (5.63M) and 1.1% (2.76M) reported being everyday and some days Esig users, respectively. 58.4% of everyday Esig users reported also being everyday Csig users. 25.6% (61.3M) and 8.3% (20.0M) of adults reported light drinking (1-3 drinks/week) and moderate/heavy drinking (4-7 drinks/week), respectively. 17.7% of moderate/heavy drinkers were everyday Csig users, while 12.2% of everyday Csig users were moderate/heavy drinkers ($p<0.001$). Among everyday Esig users, 34.6% and 11.2% were light drinkers and moderate/heavy drinkers, respectively ($p<0.001$). Users of Esig but not Csig were more likely to consume higher quantities of alcohol ($p<0.001$), as moderate/heavy drinkers comprised 8.9% of everyday Esig/non-Csig users. **Conclusions:** We demonstrate the substantial level of conventional cigarette use among moderate/heavy drinkers and e-cigarette users, as well as a novel association between e-cigarette and moderate/heavy alcohol use, independent of conventional cigarette use. These patterns of concurrent risk factor exposure should be considered when counseling patients who report e-cigarette use.

9:07 Safety of Ambulatory Surgery in Patients with Obstructive Sleep Apnea

Colin T. Huntley, MD, Philadelphia, PA; Patrick Hunt, MD, Philadelphia, PA; Michael B. Mullen, BS, Philadelphia, PA; Nicholas F. Taflin, BS, Philadelphia, PA; Maurits S. Boon, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) implement a successful post-anesthesia protocol for patients with OSA; 2) identify patients with comorbid OSA who should be monitored for 23 hours postoperatively; and 3) discuss the risk factors for postoperative complications in patients with comorbid OSA.

Objectives: 1) Assess the efficacy of our postoperative and discharge algorithms in patients with comorbid obstructive sleep apnea (OSA) undergoing ambulatory surgery; and 2) assess the safety of ambulatory surgery in patients with comorbid OSA. **Study Design:** Retrospective chart review. **Methods:** We reviewed the charts of all patients undergoing ambulatory surgery at our institution's outpatient surgery center over a 2 month time period. Patients with comorbid OSA follow a specific recovery room protocol and must meet criteria prior to discharge. We assessed anesthesia complications, hospital admission, and postoperative emergency department (ED) presentation of patients following this protocol. **Results:** Data was collected on 505 patients, including 207 men and 298 women. We compared a cohort of 99 patients with previously diagnosed OSA (OSA) to 406 patients with no prior history of OSA (no OSA). The OSA cohort consisted of 56 men and 43 women with a mean age of 52.37 years, 65 of which had an otolaryngologic procedure. 1 patient had an anesthesia complication, 2 were admitted, and 5 presented to the ED. The no OSA cohort consisted of 151 men and 255 women with mean age of 46.51 years, 186 of which had an otolaryngologic procedure. Zero patients had an anesthesia complication, 3 were admitted, and 8 presented to the ED. We found a significant difference in the mean age and gender breakdown between groups ($p=0.002$, $p<0.0001$). There was no difference in the rate of anesthesia complications, hospital admission, or ED presentation. **Conclusions:** Ambulatory surgery is safe to perform in patients with comorbid obstructive sleep apnea.

9:14 Socioeconomic and Racial Disparity in Outcomes of Epistaxis Management Using the SPARCS Database

Mingyang L. Gray, MD MPH, New York, NY; Anthony Yang, BS, New York, NY; Sean P. McKee, BS, New York, NY; Sarah M. Kidwai, MD, New York, NY; Satish Govindaraj, MD, New York, NY; Alfred M. Illoreta, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) identify socioeconomic factors associated with worse outcomes among patients admitted for epistaxis; and 2) identify areas of improvement in the management of epistaxis.

Objectives: Highlight demographics and socioeconomic factors associated with higher readmission rates and length of

stay. **Study Design:** Retrospective cohort study. **Methods:** The Statewide Planning and Research Cooperative System (SPARCS) database was used to identify patients admitted for epistaxis between 1995-2015. Outcomes were stratified by area deprivation index (ADI), which is a measure of socioeconomic deprivation based on geographic regions. Logistic regression analysis was used to determine predictors of prolonged length of stay and readmission within 90 days for epistaxis. **Results:** A total of 17,312 patients were admitted for epistaxis. Patients with a prolonged length of stay were more likely to be black (OR 1.12, p=0.0449) or have Medicare (OR 1.19, p=0.0008) or Medicaid (OR 1.20, p=0.0142). Patients who had readmission within 90 days were more likely to be black (OR 1.26, p=0.0298). Among the most deprived when stratified for ADI, those with a prolonged length of stay were more likely to have Medicare (OR 1.45, p=0.0010) or Medicaid (OR 1.56, p=0.0007). Those who were readmitted within 90 days were more likely to be black (OR 1.58, p=0.0264) or have Medicare (OR 1.88, p=0.0036). There was no significant difference among patients who were less deprived. **Conclusions:** In this study, we highlight outcome disparities based on race and socioeconomic status after admissions for epistaxis in a single state. This illustrates the need to improve access and quality of care for the most deprived.

9:21 Applicant Perception of the Use of Surgical Simulation for Otolaryngology Interviews
Maheer M. Masood, BA, Chapel Hill, NC; Adam M. Zanation, MD, Chapel Hill, NC (Presenter);
Elizabeth D. Stephenson, BA, Chapel Hill, NC; Douglas R. Farquhar, MD, Chapel Hill, NC;
Rupali N. Shah, MD, Chapel Hill, NC; Robert A. Buckmire, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance, low stress environment, and friendliness that surgical simulations for otolaryngology residency interviews provide.

Objectives: Traditional assessment of surgical residency interviewees involves multiple seated interviews. While an assessment of manual dexterity and teachability using surgical simulation may provide key data, there has been widespread concern that applicants would perceive these tasks negatively. We aimed to design surgical modules for otolaryngology applicants that would be relevant, interesting, and enjoyable for applicants while assessing their surgical skills.

Study Design: Descriptive survey. **Methods:** Six simulation modules were created; these reflected tasks used in six subspecialties within otolaryngology (rhinology, facial plastics, laryngology, pediatrics, otology, and head/neck). Applicants were guided in the procedures by an attending and resident. Afterwards, applicants were anonymously surveyed on their perception of the stressfulness, enjoyability, and educational value of the task, and their opinions on using them in the future, using a 5 point Likert scale. **Results:** A total of 41 applicants were interviewed; participation in the survey was 100%. Their perceptions of the simulation were as follows: 1) stressfulness -- 26 strongly disagree, 8 somewhat disagree, 7 neutral; 2) enjoyability -- 40 strongly agree, 1 somewhat agree; 3) educational -- 36 strongly agree, 5 somewhat agree; 4) opinion to use simulations in the future -- 38 strongly agree, 3 somewhat agree. **Conclusions:** The vast majority of applicants viewed the simulations as optimistic, enjoyable, and educational. No applicant marked the process as stressful. It is feasible to create a series of surgical simulation tasks that applicants find enjoyable and nonstressful. Surgical simulations may provide a useful holistic evaluation of an applicant in future interviews, especially if done in a setting that minimizes stress and maximizes the educational experience.

9:28 Henry Williams, MD Resident Research Award
Patient Safety and Quality Improvement Research in Otolaryngology-Head and Neck Surgery: A Systematic Review
John D. Gettelfinger, MD, Indianapolis, IN; Phillip B. Paulk, MD, Birmingham, AL;
Cecelia E. Schmalbach, MD, Indianapolis, IN

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the current state of Patient Safety and Quality Improvement (PS/QI) research in otolaryngology-head and neck surgery (OHNS). Participants should be able to discuss trends in PSQI research, common focus areas for PSQI research in OHNS, and knowledge gaps for future PSQI research.

Objectives: The current landscape of patient safety/quality improvement (PS/QI) research dedicated to otolaryngology-head and neck surgery (OHNS) has not been established. This systematic review aims to define the breadth and depth of PS/QI research dedicated to OHNS and to identify knowledge gaps as well as potential areas of future study.

Study Design: The study protocol was developed a priori using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) **Methods:** A computerized Ovid/Medline database search was conducted (January 1, 1965--July 1, 2017). Similar computerized searches were conducted using Cochrane Database, PubMed, and Google Scholar. Articles were classified by year, subspecialty, Institute of Medicine (IOM) Crossing the Chasm categories, and World Health Organization (WHO) subclass. **Results:** Computerized searches yielded 9873 eligible articles, 486 (4.9%) of which met otolaryngology PS/QI inclusion criteria; 147 (30.2%) were not specific to any one subspecialty. The most prevalent subspecialty foci were head and neck (26.1%), pediatric otolaryngology (16.7%), and rhinology (9.9%). Studies examining complications or risk factors (31.7%) and residency/education (13.6%) were the most common foci. Classification by the IOM included: effective care (33.1%), safety (30.9%), and safety/effective care (25.3%). Most research fell into the WHO categories of identifying solutions (31.1%) or understanding causes (28.4%). **Conclusions:** Most PS/QI projects (31.7%) focus on reporting complications or risk factors followed by PS/QI in residency (13.6%). Knowledge

gaps for future research include dedicated facial plastic surgery and laryngology PS/QI research, equitable care studies, and the WHO category of studies translating evidence into safer care.

9:35 **Richard J. Bellucci, MD Resident Research Award**
Using Lean to Improve Patient Safety and Resource Utilization after Adenotonsillectomy
 Mingyang L. Gray, MD MPH, New York, NY; Sida Chen, BA, New York, NY;
 Benjamin D. Malkin, MD FACS, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) explain the application of Lean to reducing postoperative complications after adenotonsillectomy; 2) apply basic quality improvement principles to their current practice.

Objectives: Although major complications are rare after pediatric adenotonsillectomy, over one-third of our patients were having postoperative complaints that were significant enough to cause their parents to bring them to the emergency department. The objective of this quality improvement initiative was to decrease the rate of these complications and resource utilization in children undergoing adenotonsillectomy at our institution. **Study Design:** The study was a quality improvement project using Lean. The target population was children younger than 18 years old undergoing tonsillectomy with or without adenoidectomy. **Methods:** Lean tools such as A3 thinking and value stream mapping were used to analyze the problem and identify potential interventions. **Results:** During a 6 month baseline period, 26 out of 71 (36.6%) children who had undergone adenotonsillectomy presented to the emergency department with postoperative complications. Of these patients, 17 (23.9%) presented with non-bleeding complaints such as dehydration or pain. The problem was analyzed and solution approaches including a checklist with preoperative, intraoperative and postoperative standard work and a new patient centered postoperative plan that were developed and implemented. In the initial 6 weeks following implementation, 1 of 6 patients (17%) presented emergently with non-bleeding complications. Intraoperative dexamethasone and acetaminophen administration increased from 87% to 100% and 75% to 100%, respectively. **Conclusions:** Post-adenotonsillectomy patients often utilize emergency resources better reserved for other patients. Lean can be used to improve care for these patients and decrease inappropriate utilization of resources.

9:42 **Assessing and Standardizing Informed Consent for Total Thyroidectomies**
 Stephanie J. Wong, MD, Rochester, NY; Matthew C. Miller, MD, Rochester, NY; Charles N. Babb, BM, Rochester, NY; Vishnu K. Kaiyala, BS, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the need for improving the informed consent process and learn of a novel solution to address it.

Objectives: The informed consent process is critical to the practice of ethical, legal, and patient centered medicine, allowing for the discussion of risks and benefits of procedures so patients can make informed decisions regarding their health. Improving this process, thus, has wide reaching impacts in multiple aspects of healthcare. This work aims to 1) demonstrate the need for improving the informed consent process; and 2) describe a novel solution to reduce informed consent variability and ultimately improve informed consent. **Study Design:** Retrospective chart review at a large academic institution. **Methods:** A retrospective chart review was performed analyzing the consent documentation of all patients who underwent a total thyroidectomy (identified by ICD-10 codes) from July 31, 2013, to September 28, 2016. A scoring system was used to assess the quality of the informed consent forms. **Results:** A total of 65 consent forms were reviewed. The mean score was 4.2 on a 9 point scale. Score did not correlate to level of training of the person completing the consent. **Conclusions:** Standardization and quality control of consent documents are sorely needed, particularly at teaching institutions which tend to have a larger turnover of trainees. Electronic tools can assist with this process and an example of a novel solution to consent variability is described. This model can be extrapolated to other procedures in both otolaryngology and other surgical fields.

9:49 **Resident Perceptions: Improving Communication with a Standardized Consult Tool**
 Joshua P. Wiedermann, MD, Washington, DC; Janine M. Rotsides, MD, Washington, DC (Presenter);
 Juliet Lee, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss ways to improve resident to resident communication through the use of a standardized CONSULT tool and how it can lead to improvements in patient care.

Objectives: To survey self-perception and the perception of others within the environment of a consult at an academic institution. We then aimed to improve this perception by implementing a standardization tool for calling and receiving consults. As a secondary endpoint, we aimed to analyze change in patient satisfaction before and after the tool's implementation and objective hospital data. **Study Design:** Prospective qualitative study. **Methods:** All residents at our academic institution were surveyed about their thoughts and attitudes towards consults. Then a standardized CONSULT tool was developed and adapted from a previous study. This was given to all residents and its use encouraged over a four month

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period. Outcomes included a similar post-tool survey of the residents, HCAHPS data and objective hospital outcomes data. **Results:** Residents' perceptions of others significantly improved for only those who used the CONSULT tool ($p = 0.00001-0.03$). In addition, there was a trend towards significant improvement in patient satisfaction surveys as well as reduced overall hospital complications and readmissions. **Conclusions:** Standardizing consults with the CONSULT tool improved residents' impressions of their colleagues and reduced resistance within resident to resident communication. This change in global resident attitude may have led to improvements in patient care.

9:56 Q&A

10:00 - 10:30 *Break with Exhibitors/View Posters - Trailblazers*

10:30 - 12:30 CONCURRENT SESSION 4A
GENERAL AND RHINOLOGY/ALLERGY/SINUS - KIERLAND 1

10:30 - 11:20 **CLINICAL PRACTICE GUIDELINES: ARE THEY AUTHORITATIVE?**

Moderator: Emily Frances Boss, MD, Baltimore, MD

Panelists: Ron B. Mitchell, MD, Dallas, TX
Spencer C. Payne, MD, Charlottesville, VA
David E. Tunkel, MD FACS, Baltimore, MD

11:20 Q&A

Moderator: Jastin L. Antidel, MD FACS, St. Louis, MO

11:25 **Surgical Simulation in Otolaryngology Residency Interviews: How We Did It**

Maheer M. Masood, BA, Chapel Hill, NC; Elizabeth D. Stephenson, BA, Chapel Hill, NC;
Douglas R. Farquhar, MD, Chapel Hill, NC; Robert A. Buckmire, MD, Chapel Hill, NC;
Adam M. Zanation, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance and feasibility of surgical simulations for residency interviews.

Objectives: The use of surgical simulations in the residency interview process has been utilized in various fields of surgery, including otolaryngology. The implementation of surgical simulations adds an additional dimension of assessment to the traditional oral interview. The purpose of this project is to describe the low fidelity simulations that were implemented for the 2016-2017 residency interviews. **Study Design:** Descriptive analysis. **Methods:** Six simulation modules were created; these reflected tasks used in six subspecialties within otolaryngology (rhinology, facial plastics, laryngology, otology, pediatrics, and head/neck). Each applicant was assigned a task at various stations that simulated surgical procedures and communication that would be experienced in the operating room including myringotomy with tube placement, microlaryngeal surgery, z-plasty closure, nasal endoscopy, and microvascular suturing. **Results:** The applicants had prior knowledge of each station and a detailed description of the interview times, simulation, process, and stations. The simulation process consisted of approximately half the interview day. The applicants interviewed with a resident and attending at each station. **Conclusions:** A major focus on simulations is feasible throughout the interview day. Utilization of simulation in the residency interview process may become more common as it provides a simple and effective way to simulate surgical experiences that an applicant will perform during residency training. A detailed description will be provided to all others to consider this novel approach to otolaryngology interviews.

11:32 **Are You Too Old for Sinus Surgery?**

Ashton E. Lehmann, MD, Boston, MA; George A. Scangas, MD, Boston, MA; Rosh K.V. Sethi, MD MPH, Boston, MA; Aaron K. Remenschneider, MD, Boston, MA; Edward El Rassi, MD, Boston, MA; Ralph B. Metson, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain how patient outcomes are assessed and the role of patient reported quality of life in evaluating patient outcomes. Participants will also be able to compare the relative strengths and weaknesses of sinonasal specific and general health related quality of life tools. Participants will further be able to discuss the factors that influence outcomes of sinus surgery, with specific focus on the impact of patient age on outcomes of elective sinus surgery in an aging population.

Objectives: To evaluate the impact of age on patient reported quality of life following endoscopic sinus surgery (ESS) for chronic rhinosinusitis (CRS). **Study Design:** Prospective cohort study. **Methods:** Six hundred thirty-six patients with CRS recruited from 11 otolaryngologic practices completed the sinonasal specific Sinonasal Outcome Test-22 (SNOT-22)

and general health related EuroQol 5 dimension (EQ-5D) questionnaires at baseline and 12 and 24 months after ESS. Patients were grouped by decade of life to determine whether age was associated with clinical outcomes. **Results:** Ages ranged from 18 to 80 years (mean \pm SD 48.5 \pm 14.4). Significant improvement was observed in postoperative SNOT-22 scores at 12 and 24 months for all decades of life ($P < 0.001$). Similar improvements were observed for EQ-5D scores in all age groups, except for the eldest cohort (age 71-80, N=28) at both time points ($p > 0.5$). Age was not associated with change in SNOT-22 score at 12 ($p = 0.507$) or 24 months ($p = 0.955$) after adjusting for patient demographics, co-morbidities, and surgical history. At 12 months, the youngest cohort (age 18-30, N=93) demonstrated a significantly greater improvement in mean SNOT-22 (-26.1 \pm 21.8 vs. -15.3 \pm 13.7; $p = 0.013$) and EQ-5D (0.068 \pm 0.107 vs. 0.012 \pm 0.132; $p = 0.019$) scores than the eldest cohort. At 24 months, there was no difference in improvement between these cohorts in SNOT-22 scores (-21.4 \pm 22.1 vs. -14.8 \pm 16.4, $p = 0.186$), but the difference in change in EQ-5D scores persisted (0.059 \pm 0.138 vs. -0.002 \pm 0.094; $p = 0.044$). **Conclusions:** This study demonstrates that ESS for adult CRS offers improved quality of life outcomes through the seventh decade of life. The impact of comorbidities needs to be carefully considered in quality of life assessments of older patients who undergo sinus surgery.

11:39 **Revascularization of AlloDerm Used during Endoscopic Skull Base Surgery**

Zahrah M. Taufique, MD MBA, New York, NY; Nupur Bhatt, BA, New York, NY; David Zagzag, MD PhD, New York, NY; Seth M. Lieberman, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate the neovascularization of AlloDerm when used in skull base reconstruction during endoscopic skull base surgery.

Objectives: AlloDerm is an acellular dermal matrix often used for reconstruction throughout the body. AlloDerm has been shown to undergo neovascularization when used to reconstruct soft tissue such as in abdominal wall reconstruction. In this study, the authors review the literature on neovascularization of AlloDerm and demonstrate the histologic findings of AlloDerm after implantation during skull base reconstruction. **Study Design:** Literature review and case report. **Methods:** The authors review a case of explanted AlloDerm that had been used for skull base reconstruction after transsphenoidal hypophysectomy. Histologic slides are evaluated and compared with non-implanted AlloDerm. **Results:** Upon reviewing the histologic slides of explanted AlloDerm to non-implanted AlloDerm, we demonstrate neovascularization off AlloDerm when used in skull base reconstruction. Representative slides will be included. **Conclusions:** AlloDerm undergoes neovascularization when used for skull base reconstruction.

11:46 **In Vitro Analysis of Growth Patterns of Invasive Fungal Species on Commonly Used Endonasal Hemostatic Agents**

Christopher J. Ito, MD, Augusta, GA; Daniel D. Sharbel, MD, Augusta, GA (Presenter); Allison R. McMullen, PhD, Augusta, GA; Stilianos E. Kountakis, MD PhD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the role of endonasal hemostatic agents in facilitating fungal growth.

Objectives: Previous studies have not examined the potential role of endonasal hemostatic agents in facilitating growth of fungal species. We aim to determine whether these agents can serve as a nutrient source for fungal growth. **Study Design:** Experimental basic science. **Methods:** Cultures of aspergillus, Fusarium, and mucor were harvested and placed in solution in sterile water at standardized high and low concentrations. FloSeal, Sinu-Foam, and NexFoam agents were prepared following manufacturer instructions and applied to two separate petri dishes per agent. Each substrate was then inoculated with either high or low concentration solutions of fungal species. A negative control agar plate without inoculum and positive control plates with each organism were included. Dishes were sealed, incubated, and examined daily for fourteen days for microscopic and macroscopic growth. **Results:** FloSeal and Sinu-Foam demonstrated microscopic and macroscopic growth of high concentration Fusarium on day 3. Sinu-Foam demonstrated microscopic growth of low concentration Fusarium and high concentration mucor on day 5. NexFoam demonstrated microscopic and macroscopic growth of high concentration aspergillus at day 3 and high concentration Fusarium at day 5. NexFoam also exhibited microscopic growth of low concentration aspergillus and Fusarium and high concentration mucor on day 5. There was microscopic growth of low concentration mucor on NexFoam at day 7. **Conclusions:** Endonasal hemostatic agents may be nutrient sources that facilitate growth of fungal species. This finding should be considered in a surgeon's decision to use a hemostatic agent. Prompt initial postoperative debridement may be warranted in select patients. Our findings serve as a model for further testing of fungal growth on other hemostatic materials.

11:53 **Contemporary Analysis of Practice Trends in Otolaryngology**

Willard C. Harrill, MD FACS, Hickory, NC; David E. Melon, MD FACS, Hickory, NC; Merritt J. Seshul, MD FACS, Hickory, NC; Adam M. Zanation, MD FACS, Chapel Hill, NC; Marc S. Katz, PA-C, Hickory, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand contemporary changes occurring within private practice and academic practice trends that include demographic makeup, integra-

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tion of ancillary services, and workforce strategies.

Objectives: To assess change in the structural practice patterns of U.S. otolaryngologists **Study Design:** A non-validated cross-sectional survey. **Methods:** Survey was emailed to 510 regional private practice and academic otolaryngologists. A 23.1% response rate was achieved. **Results:** Demographic data demonstrated 74% of respondents having more than 1 clinic location with 61% having offices in more than one city. Solo practitioners were 18% of respondents, while 25% had more than 16 ENT physicians in their practice. Reported use of physician extenders demonstrated 50% of all respondents employing at least 1 physician assistant and 32% at least 1 nurse practitioner. Twenty-four percent incorporated Ototechs to staff audiologic service lines. Analysis of ancillary ENT services confirmed in-office CT use by 63% of respondents and 49% utilized in-office ultrasounds. Allergy services were provided by 84% and of those, 91% prepared allergy vials in-house and 68% allow outpatient/home allergy shots. All physicians surveyed had certificate of need (CON) laws governing ambulatory surgery center (ASC) access. Sixty-two percent reported having access to an ASC. In terms of CON legislation, 68% of physicians favored reform of existing CON laws. Of those, only 35% favored full repeal. In terms of patient benefit, 93% of otolaryngologists with access to an ASC felt that the ASC reduced healthcare costs for their patients. **Conclusions:** Otolaryngology practice trends resulting from changes within healthcare deserve constant analysis. These trends are key to understand the evolving long range planning needs and future legislative agendas for otolaryngologists in both academic and private practices.

12:00 Utilizing a Perfect Care Metric to Measure Quality in Otolaryngology

Sonia N. Yuen, MD, Cincinnati, OH; Andrew Redmann, MD, Cincinnati, OH; Douglas Von Allmen, MD, Cincinnati, OH; Adam Rothstein, MHA CCRP, Cincinnati, OH; Ryan Collar, MD MBA, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss using a perfect care metric to measure quality.

Objectives: 1) To evaluate the proportion of patients undergoing inpatient otolaryngology procedures that met criteria for perfect care; and 2) to understand which quality domains most often cause a failure to meet perfect care. **Study Design:** Database query and analysis. **Methods:** The Vizient database, which collects both clinical and billing data, was queried for all patients admitted to one institution's otolaryngology service between July 2015 to March 2017. A combined metric termed perfect care was created from these collected quality indicators: no length of stay (LOS) longer than national averages, no safety events (defined as hospital acquired conditions or Agency for Healthcare Research and Quality (AHRQ) patient safety indicators), no unplanned 30 day readmissions, and a Hospital Consumer Assessment of Healthcare Providers and Systems (HCAPHS) score of 9 or 10. Failing to meet any of the four individual quality categories was termed a failure of perfect care. **Results:** 1166 patients met inclusion criteria. 983 (84%) of patients had perfect care during the study period. Monthly scores of perfect care ranged between 74% and 91%. The most common reason for failure was unplanned 30 day readmissions (47% of failures), followed by coded safety events (35%). 1% of failures were due to HCAPHS scores. **Conclusions:** Most otolaryngology admissions meet criteria for perfect care. Failure to meet this metric most often is caused by unplanned readmission and safety events, and much less likely from patient satisfaction scores. Further research is necessary to evaluate which specific patient factors lead to failure.

12:07 Resident Education and the Quality of Operative Notes and Documentation

Nicole J. Colgrove, MD, Lexington, KY; Rony K. Aouad, MD FACS, Lexington, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss resident attitudes and behaviors concerning operative dictation and surgical notation. In addition, participants should be able to discuss current otolaryngology resident education regarding operative dictations and identify areas for improvement.

Objectives: The medical record is a critical component of patient care and serves as an important means of communication for the entire healthcare team. In addition to providing operative details, the operative report is a crucial aspect of medicolegal conflicts and remuneration of surgeons for services provided. Despite its critical role, recent literature suggests that quality of resident dictations is poor and that there is a lack in formal education and training regarding surgical notation skills. This study aims to identify current attitudes and behaviors of otolaryngology residents and fellows towards operative dictations and to investigate potential areas of improvement in residency education. **Study Design:** Cross-sectional study. **Methods:** A 16 question survey was created in REDCap to investigate attitudes and behaviors surrounding operative dictations and surgical notation. The survey was distributed to all current U.S. otolaryngology residents and fellows via email. Participation was completely voluntary and anonymous. **Results:** 127 residents and fellows participated in the survey, and the results were analyzed: 71 juniors (56%) vs. 56 seniors or fellows (44%). 105 participants (82%) reported that they never received any training on operative dictation, and 98 (77%) participants felt that formal training should be an integral part of residency education. Junior residents were more likely to report feeling incompetent or under-qualified to dictate complex cases, 56%. Only 30% of participants felt that resident dictations were more likely to be incomplete or contain errors, but 67% thought that their own dictations needed improvement and 42% reported often finding errors in their reports. 65% of participants did not receive formal feedback on their dictations. Regardless of PGY level, the majority of respondents utilized templates when dictating complex procedures (78%). **Conclusions:** Formal education on surgical dictation skills are lacking in otolaryngology residency programs. The participants in this study reported that their

own dictations often had errors or missing information and needed improvement. Junior residents often felt unprepared to dictate complex procedures. The majority of all respondents, including senior residents and fellows, reported that they would like to receive formal training on operative dictation and surgical notation skills.

12:14 **Gamification as a Tool for Resident Education in Otolaryngology**

David K. Alexander, MD, Birmingham, AL; Michelle D. Thrasher, MS, Birmingham, AL;
Brian B. Hughley, MD, Birmingham, AL; Bradford A. Woodworth, MD, Birmingham, AL;
William R. Carroll, MD, Birmingham, AL; Do Yeon Cho, MD, Birmingham, AL

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the use of gamification to improve medical knowledge competency during a busy surgical residency training.

Objectives: Recent changes to graduate medical education have required programs to develop new ways to augment educational curriculums. Online question banks have grown in popularity, and the incorporation of game-like elements to these question banks can potentially increase participation and knowledge retention. We seek to examine the effects of a “gamification” study tool on the improvement of medical knowledge competency during residency training. **Study Design:** Retrospective review of otolaryngology training examination (OTE) scores at a single institution with and without gamification study tools available. **Methods:** An online question bank which utilized the principles of gamification was introduced as a study aid eight weeks prior to the OTE exam in 2016. This tool was not made available in 2017. OTE group Stanine rank scores were compared each year. Residents who did not take the OTE both years were excluded. **Results:** Ten out of twelve residents utilized the question bank. For those residents who participated in gamification, OTE group Stanine rank scores were significantly higher the year with the study aid than without (2016 = 5.75 versus 2017 = 4.9, $p = 0.024$). When comparing all residents, regardless of participation, there were no significant changes to scores from 2016 to 2017 (2016 = 5.75 versus 2017 = 4.92, $p = 0.087$). **Conclusions:** The addition of gamification study tools significantly improved resident OTE scores among those who participated. These study tools may represent a novel way to augment an otolaryngology program’s educational curriculum.

12:21 **Q&A**

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

10:30 - 12:30 CONCURRENT SESSION 4B
LARYNGOLOGY/BRONCHOSOPHAGOLOGY AND PEDIATRIC OTOLARYNGOLOGY
KIERLAND 2

Moderator: Michael J. Pitman, MD, New York, NY

10:30 **Paul H. Holinger, MD Resident Research Award**

Optimal Preoperative Evaluation of Pediatric Airway Reconstruction Patients

Douglas Von Allmen, MD, Cincinnati, OH; Catherine K. Hart, MD, Cincinnati, OH; Jareen Meinzen-Derr, PhD, Cincinnati, OH; Charles M. Myer IV, MD, Cincinnati, OH; Melissa Schopper, BS, 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 number of patients undergoing a complete preoperative evaluation prior to airway reconstruction.

Objectives: The essential components of the preoperative evaluation of pediatric airway reconstruction patients is not well defined. The goals of our study were to evaluate our practice patterns and to examine the role of each component of a complete evaluation in the preoperative management of pediatric airway reconstruction patients. **Study Design:** Retrospective review of all patients undergoing open airway reconstruction at a tertiary pediatric hospital from January 1, 2013–December 31, 2013. **Methods:** Records were reviewed for demographics, procedure performed and completion of each component of the preoperative evaluation including, screening for oxacillin resistant staphylococcus aureus (ORSA), impedance testing and/or treatment with antireflux medication, assessment of aspiration risk, flexible bronchoscopy, microlaryngoscopy and bronchoscopy and esophagogastroduodenoscopy (EGD). An evaluation was considered “complete” when a patient underwent all these components prior to surgery. **Results:** Sixty-five patients were included. Twenty-six patients (40%) underwent all components of the preoperative evaluation. ORSA screening had the highest compliance with 54 patients (83.1%) getting screened. Only 34 (52.3%) patients underwent impedance probe placement but 53 (82.8%) were on antireflux medications. Forty-eight (75.4%) had a flexible bronchoscopy and 40 (61.5%) had an EGD prior to surgery. Forty-two (64.6%) patients were evaluated through our multidisciplinary aerodigestive and esophageal center. Twenty-four (57.2%) of the aerodigestive patients had a complete evaluation. **Conclusions:** Fewer than half of all airway reconstruction patients underwent a complete evaluation prior to airway reconstruction. Further study

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is needed to explore the impact of each of these components on surgical outcome and to define the ideal preoperative evaluation.

10:37 Lawrence R. Boies, MD Resident Research Award

Bronchiectasis and Swallowing Dysfunction in Children with Laryngotracheoesophageal Clefts

David R. Lee, MD, Cincinnati, OH; Catherine K. Hart, MD, Cincinnati, OH; Meredith E. Tabangin, MPH, Cincinnati, OH; Charles M. Myer IV, MD, Cincinnati, OH; Eric B. Antonucci, BS, Cincinnati, OH; Alessandro de Alarcon, MD, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the presentation of bronchiectasis and swallowing dysfunction in children with laryngotracheoesophageal clefts.

Objectives: To examine the rates of bronchiectasis on computed tomography (CT) imaging and evaluate the relationship to swallowing dysfunction in patients with laryngotracheoesophageal (LTE) clefts prior to surgical repair. **Study Design:** Retrospective review of children with LTE clefts who underwent repair at a quaternary pediatric hospital between February 1, 2000, and December 31, 2013. **Methods:** Demographics, cleft grade, presence/absence of bronchiectasis, aspiration/penetration status from either video swallow study or fiberoptic endoscopic evaluation of swallowing and number of lipid laden macrophages in the bronchoalveolar lavage (BAL) were recorded. Patients without a preoperative CT scan were excluded. Patients with a deep notch or type I or II cleft were considered low grade clefts and patients with type III clefts were considered high grade clefts. **Results:** 91 of 128 patients with LTE clefts were included. Cleft grades were as follows 9 (10%) deep interarytenoid notch, 42 (46%) type I, 21 (23%) type II, 19 (21%) type III, and 0 type IV. Twenty-nine (32%) patients had bronchiectasis; 20 (28%) with low-grade clefts versus 9 (47%) with high-grade clefts ($p=0.10$). Forty-five (63%) patients demonstrated aspiration/penetration; 36 (58%) with low grade clefts versus 9 (90%) with high grade clefts ($p=0.08$). Seventy-one (92.2%) patients had <20 lipid laden macrophages on BAL. **Conclusions:** Preoperative bronchiectasis (32%) and aspiration/penetration (63%) were common in patients with LTE clefts. There was no significant difference in rates of either bronchiectasis or aspiration/penetration between low and high grade clefts. Both CT findings and swallowing studies are important to evaluate aspiration in LTE cleft patients.

10:44 Percutaneous versus Surgical Tracheostomy: Timing, Outcomes and Charges

Anthony Yang, BS, New York, NY; Mingyang L. Gray, MD, New York, NY; Sean P. McKee, BS, New York, NY; Sarah M. Kidwai, MD, New York, NY; Mike Yao, MD, New York, NY; Alfred M.C. Illoreta, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand differences in timing of procedure, patient outcomes and hospital charges between percutaneous and surgical tracheostomy; and 2) identify patient characteristics associated with the use of percutaneous tracheostomy compared to surgical tracheostomy.

Objectives: Compare timing of procedure, patient characteristics, outcomes and charges for patients who underwent percutaneous versus surgical tracheostomy. **Study Design:** Retrospective cohort study of the Statewide Planning and Research Cooperative System (SPARCS) database from the State Department of Health encompassing all surgical procedures in the state. **Methods:** The SPARCS database was used to identify all patients who underwent tracheostomy in 2015-2016 in our state. Patients were identified using ICD10 codes and stratified to the type of tracheostomy performed. Multivariate logistic regression was used to determine predictors of percutaneous tracheostomy use and mortality at index stay. Linear regression was performed to assess the timing of procedure, length of stay, and charges. **Results:** Of the 8682 patients, 2488 (28.7%) underwent percutaneous and 6194 (71.3%) underwent surgical tracheostomy. At hospitals where both procedures were performed, percutaneous tracheostomy patients were older, had more comorbidities and had lower income ($p<0.05$ for all). Timing of the tracheostomy relative to admission did not affect the type of tracheostomy. While controlling for patient characteristics and complications during the visit, percutaneous tracheostomy was associated with increased mortality (OR: 1.2, CI: 1.0-1.3, $p=0.015$) and increased hospital charges (+7.7%, CI: 5.4-10.1, $p<0.001$). Length of stay was not affected by procedure type. **Conclusions:** Surgical tracheostomies are more commonly performed than percutaneous tracheostomies across our state. Older, lower income and sicker patients have a higher chance of receiving percutaneous tracheostomies. Percutaneous approaches were associated with statistically significant increased mortality and higher charges despite no difference in length of stay.

10:51 Racial Differences in Respiratory Complications after Inpatient Tonsillectomy in the United States among Pediatric Patients

Yann-Fuu Kou, MD, Dallas, TX; Romaine F. Johnson, MD, Dallas, TX; Ron B. Mitchell, MD, Dallas, TX; Gopi B. Shah, MD, Dallas, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the incidence and risks of respiratory complications after inpatient tonsillectomy and difference among racial groups.

Objectives: To study rates of respiratory complications and racial disparities in hospitalized children undergoing tonsillectomy. **Study Design:** Cross-sectional survey of pediatric hospital admissions in the United States. **Methods:** Children (age < 18) undergoing tonsillectomy with or without adenoidectomy (T&A) in 2006, 2009, and 2012 were studied using the KID Inpatient Database (KID), Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality. Outcomes were analyzed for respiratory complications and racial disparities. Pearson chi-squared test was used to analyze categorical data and regression analysis for continuous variables. Regression models were also created to assess for confounders and odds ratios. **Results:** The study included 31,535 patients (42% female; 52% white, 23% African American, 22% Hispanic, 2.5% Asian). The mean age was 5.6 years and mean length of stay 2.3 days. The overall complication rate was 5.9% (highest for blacks at 6.6%). Respiratory complications were more common among black children: total, 1.7% vs. 1.2%; pneumonia, 1.6% vs. 1.2%, postop pulmonary edema, 1.2% vs 0.6% and postop intubations 3.4% vs. 1.7%. The mortality rate was 0.05% with no ethnic predilection. **Conclusions:** Respiratory complications after tonsillectomy were more common among black children. Further research is needed to understand the etiology of these differences.

10:58 Pattern of Otolaryngology Followup Care and Office Procedures in Tracheostomy Dependent Children

Heather A. Lesch, BS, Orlando, FL; Julie Wei, MD, Orlando, FL; Cynthia Chen, MD, Orlando, FL; Timothy Maul, PhD, Orlando, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to understand and discuss the deficits in current practice guidelines regarding followup care for tracheostomy dependent children and identify common outpatient needs of this unique population.

Objectives: Children who are tracheostomy dependent require routine followup by pediatric otolaryngology and other subspecialties, including outpatient clinic visits, office and hospital based procedures. There remains no specific best practice guidelines regarding interval clinic followup and office procedures for this population. This study reviewed frequency of routine otolaryngology office followup and associated office procedures in this population. **Study Design:** Retrospective summary. **Methods:** Retrospective summary of 985 patients in a prospective database at a tertiary children's hospital. **Results:** Eighty-five patients with complete followup data accounted for total of 310 otolaryngology office visits between October 2012 to June 2016. The median office visits were 5 per year associated with median of 3 office procedures, most commonly tracheobronchoscopy via tracheostomy, fiberoptic nasopharyngolaryngoscopy, and cerumen removal. No differences were observed between patients who were ventilator dependent (35% of cohort) versus not. Those who are ventilator dependent accounted for 28% of total office visits and 31% of associated procedures. Vocal cord movement assessment revealed 35% of this population with some degree of vocal cord paralysis. In addition, the most common airway diagnoses include laryngomalacia (16 children), subglottic stenosis (11 children), and tracheomalacia (11 children). Only 19 children were classified as having a normal airway upon evaluation. **Conclusions:** Children who are tracheostomy dependent, regardless of ventilator status, require frequent otolaryngology office followup and associated procedures. Identifying frequency and needs for ongoing outpatient support in this population will increase parent and physician awareness and planning.

11:05 Tracheostomy Associated Hospitalizations among Pediatric Patients, Ages 18 Years or Younger—United States 2012

Mark Sakai, BA, Dallas, TX; Romaine F. Johnson, MD, Dallas, TX; Yann-Fuu Kou, MD, Dallas, TX; Gopi B. Shah, MD, Dallas, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the demographics and outcomes of inpatient tracheostomy patients in the United States.

Objectives: To estimate the number, demographics, charges, and outcomes of pediatric patients who underwent tracheostomy and to contrast outcomes by age, gender, race, and socioeconomic status. **Study Design:** Cross-sectional analysis of pediatric hospital admission. **Methods:** Tracheostomy patients were identified using ICD-9-CM codes. All patients ≤ 18 years of age at the time of admission were included and categorized as neonates (≤ 28 days), infants > 28 days & ≤ 3 years), children (4 to 12 years), adolescents (13 to 17 years), and adults (18 years). We recorded age groups, gender, race, insurance status, and zip code of primary residence and used these variables to contrast the following outcomes: length of stay, total charges, complications of care, and mortality using multiple regression analysis. **Results:** An estimated 4424 pediatric tracheostomies occurred during 2012. The median age was 2 years and 62% were male. 48% were white followed by black (21%), Hispanic (20%) and Asian (3%). The median length of stay was 42 days, and median total charges were \$472,738. The complication rate was 28% and the mortality rate was 8.0%. The length of stay was predicted by age with neonates and infants having significantly longer hospitalizations. Total charges were largely predicted by length of stay. The complication rate was associated with longer lengths of stay and the mortality rate was associated with younger age. **Conclusions:** Pediatric tracheostomies are relatively uncommon but are associated with significant hospital utilizations, complications, and mortality. Adverse events are clustered among infants who undergo tracheostomy.

Friday

11:12

Hospital Based Procedures of Tracheostomy Dependent Children

Firas K. Sbeih, BS, Orlando, FL; Julie L. Wei, MD, Orlando, FL; Cynthia Chen, MD, Orlando, FL; Timothy Maul, PhD, Orlando, FL; Heather Lesch, BS, Orlando, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the frequency and types of hospital based procedures that are required by tracheostomy dependent pediatric patients.

Objectives: We reviewed utilization of all hospital based procedures to identify frequency, types of procedures, and subspecialties involved in a cohort of patients since opening of a new freestanding children's hospital. **Study Design:** Retrospective chart review. **Methods:** Retrospective analysis of a prospective database between October 2012 and June 2016 was performed to identify all procedures performed under sedation or anesthesia. **Results:** Sixty-three patients received a total of 542 procedures on 416 separate dates during the study period, from 13 different subspecialties. Of these, 274 were inpatient procedures with 255 as same day discharge procedures, and only 13 were performed in the emergency department. Most common procedures performed were otolaryngology (208, 38.4%), followed by interventional radiology (IR) (178, 32.8%), then gastroenterology (42, 7.7%). Surveillance interval microlaryngoscopy and bronchoscopy was the most common ENT procedure performed (53%). Tympanostomy tube placement was infrequent (6.7%) as was adenotonsillectomy (3.9%). Most common IR procedures were replacement of gastrojejunostomy tube under fluoroscopy (19.7%), Botox of parotid/submandibular glands (14%), and conversion of gastrostomy to gastrojejunostomy tube (11%). Esophagogastroduodenoscopy with biopsy (42%), gastrostomy tube placement (9.5%) were the most common procedures performed by gastroenterology service. **Conclusions:** Tracheostomy dependent children have complex aerodigestive disorders and most commonly require ongoing otolaryngology, IR, and GI procedures for airway, tracheostomy, and feeding tube related issues. Identifying their utilization pattern and procedural needs will support both physician and parental awareness and preparedness.

11:19

Comparison of Nasal Obstruction Symptom Evaluation Scale with a Septoplasty Deformity Grading System for the Evaluation of Nasal Obstruction

Jeffrey T. Gu, MS, Irvine, CA; Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the development and validation of a novel anatomic septal deformity classification system and compare with subjective tools for evaluation of nasal obstruction.

Objectives: This study seeks to develop and validate a septal deformity grading system (SDG) that accounts for anatomic location and grading of deformity severity. **Study Design:** Retrospective cohort study of patients with nasal obstruction presenting to our medical center. **Methods:** Subjects were given pre and postoperative NOSE questionnaires and were evaluated by a facial plastic surgeon using our SDG system. Validity and reliability analyses were conducted on the SDG results. Statistical analyses were conducted on SDG and NOSE data to assess and compare instruments. A composite SDG score was created by weighting each variable by its factor loading from PCA. SDG and NOSE scores were divided into high and low groups using the 75th and 25th percentiles respectively. **Results:** 95 patients met inclusion criteria. 52 patients had a complete set of pre and postoperative NOSE and SDG questionnaires. Four constructs were identified on the SDG questionnaire using principle components analysis. Cronbach's alpha coefficient was >0.7 for SDG and pre and postoperative NOSE scores within our study population. There was a significant difference in pre and postop NOSE scores (Z score -6.88, $p < 0.001$). Correlations between NOSE and SDG scores were not statistically significant and convergent construct validity was not achieved. Subgroup analyses determined a significant difference in primary vs revision operations ($p < 0.001$), history vs no history of nasal trauma and nasal/septal surgery ($p = 0.025$, and 0.003 respectively) between composite score groups. A series of univariate logistic regression models determined the odds of having revision operation to be 72.4% higher given a high composite SDG score than low composite SDG score ($p = 0.018$). The odds of having a history of nasal trauma were 8 times higher for high SDG scores than low SDG scores ($p = 0.014$), and odds of having a history of nasal/septal surgery were 94.4% higher for low composite SDG scores than high composite SDG scores. Comparisons between SDG, pre and postoperative NOSE scores determined significant differences between primary and revision operations, as well as between patients with and without a history of nasal trauma and prior nasal/septal surgery. **Conclusions:** We have developed a septal deformity grading system that improves upon currently available septal deformity classification systems by addressing the challenge of providing a reliable and consistent method for surgeons to characterize septal deviations for preoperative or postoperative evaluation. Our septal deformity grading scores provide anatomic information on the severity of nasal septal deformities and may be valuable when used in conjunction with subjective data gathered from the NOSE questionnaire.

11:26

Q&A

11:30 - 12:25 MANAGEMENT OF DYSPLASTIC AND PREMALIGNANT LESIONS IN THE HEAD AND NECK
Moderator: Jeffrey M. Bumpous, MD FACS, Louisville, KY
Panelists: **Review of the Clinical Presentation and Pathology in Dysplastic and Premalignant Lesions of the Head and Neck**
Jeffrey M. Bumpous, MD FACS, Louisville, KY
Optical Coherence Tomography and Other Clinically Useful Technologies in the Detection and Management of Oral and Laryngeal Dysplasia
William B. Armstrong, MD FACS, Irvine, CA
Can Biomarkers and Genetics Tell Us How to Manage Dysplastic and Premalignant Lesions Better
Jeffrey N. Myers, MD FACS, Houston, TX
The Role of Metformin in Preventing Progression of Dysplasia
Marshall Strome, MD MS, Scottsdale, AZ

12:25 Q&A

12:30 ADJOURN SESSIONS

AFTERNOON & EVENING - LEISURE OR ACTIVITIES

12:30 GOLF OUTING (pre-registration required) - Kierland Golf Club

12:45 - 1:30 TRIOLOGICAL THESIS SEMINAR (pre-registration required) - Powell AB

1:00 - 2:15 RESIDENT BOWL (pre-registration required) - Kierland 2

12:45 - 2:45 PHYSICIAN/SCIENTIST MEETING (by invitation) - Merriam AB

2:30 - 6:00 AMERICAN SOCIETY OF GERIATRIC OTOLARYNGOLOGY SCIENTIFIC SESSION (registration required with ASGO) - Kierland 1

Friday

SATURDAY, JANUARY 20, 2018

- 7:00 - 7:50 **Business Meetings (Fellows Only)**
Eastern Section - Merriam AB
Middle Section - Powell AB
- 7:30 **Attendee Breakfast with Exhibitors - Trailblazers**
- 7:55 - 9:45 GENERAL SESSION - KIERLAND 1 & 2
- 7:55 **Announcements - Hassan H. Ramadan, MD FACS, Southern Section Vice President**
- Introduction of Vice Presidents-Elect by Section Vice Presidents**
Peak Woo, MD - Vice President-Elect, Eastern Section
Brent Senior, MD - Vice President-Elect, Southern Section
Brian Wong, MD - Vice President-Elect, Western Section
Pierre Lavertu, MD - Vice President-Elect, Middle Section
- 8:05 - 9:25 **THE LATEST AND GREATEST**
Moderator: Stacey L. Ishman, MD MPH, Cincinnati, OH
Panelists: **Management of Spasmodic Dysphonia and Vocal Tremor**
Ted Mau, MD PhD, Dallas, TX
Drug Eluting Stents in Rhinology
Joseph K. Han, MD, Norfolk, VA
Management of Osteoradionecrosis of the Skull Base
Peter D. Costantino, MD FACS, New York, NY
Transgender Laryngeal Surgery
Sid M. Khosla, MD, Cincinnati, OH
Value Based Head and Neck Cancer Care
Randal S. Weber, MD FACS, Houston, TX
Global Surgery: Current Evidence for Improving Surgical Care
Susan R. Cordes, MD FACS, Ukiah, CA
- 9:25 **Q&A**
- 9:30 - 10:00 **Break with Exhibitors/View Posters - Trailblazers**
- 10:00 - 12:00 CONCURRENT SESSION 5A
GENERAL AND HEAD AND NECK - KIERLAND 1
- 10:00 - 11:00 **POINT/COUNTERPOINT: WHAT IS THE BEST WAY TO RECONSTRUCT THIS DEFECT?**
Moderator: Brett A. Miles, MD DDS FACS, New York, NY
Panelists: **Team Free Flap**
Matthew M. Hanasono, MD FACS, Houston, TX
Mark K. Wax, MD FACS, Portland, OR
Team Regional Flap
Daniel G. Deschler, MD FACS, Boston, MA
Samir Suresh Khariwala, MD, Minneapolis, MN
- 11:00 **Q&A**

Moderator: Bhuvanesh Singh, MD FACS, New York, NY

11:05 **2017 THESIS AWARD - HONORABLE MENTION, BASIC SCIENCE**
Genetic Determinants of PDX Growth in HPV+ Head and Neck Cancer
Devraj Basu, MD PhD FACS, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the utility of patient derived xenograft (PDX) models in translational and preclinical studies to advance head and neck cancer therapy.

Objectives: Delineate factors impacting application of patient derived xenografts (PDXs) of human papilloma virus related (HPV+) head and neck squamous cell carcinomas (HNSCCs). **Study Design:** Prospective cohort and laboratory based translational study. **Methods:** 51 surgically resected HNSCCs, including 31 HPV+ cancers, were implanted into NOD/SCID/IL-2R γ ^{-/-} (NSG) mice using standardized methodology. Clinical and pathologic factors were tested for association with engraftment. The gross, histologic, and molecular features of established HPV+ PDXs were analyzed relative to their tumors of origin. Growth potential of select HPV+PDXs was evaluated in primary culture. **Results:** HPV- status and perineural invasion (PNI) were independent, additive factors associated with increased PDX formation. Epstein-Barr virus positive (EBV+) human large B cell lymphomas grew from 32% of HPV+HNSCC cases that failed to engraft. Successfully established HPV+PDXs retained basaloid histology and often developed cystic growth patterns typical of HPV+ nodal metastases. They also maintained elevated p16^{INK4A} levels and expression of E6/E7 viral oncogene transcripts. The same molecular features were maintained during short term culture of HPV+PDX cells. **Conclusions:** Durable engraftment by a minority subset of HPV+HNSCCs and tumors lacking PNI likely produce selection biases in HNSCC PDX models. Formation of EBV+ lymphomas in NSG mice further limits creation of HPV+ models and must be ruled out before long term use of PDXs. Nevertheless, retention of distinctive pathologic traits and viral oncogene transcription by HPV+PDXs provides a viable platform for basic and translational studies. Their utility in this role is underscored by potential for *in vitro* growth.

11:12 **Understanding the Natural History of Papillary Thyroid Cancer: A Case Series**
Jonathan K. Lin, MD MBA, Oakland, CA; Whitney Chiao, BS, Oakland, CA; Nathaniel E. Calixto, BS, Oakland, CA; Megan L. Durr, MD, Oakland, CA; Jeanne Darbinian, MPH, Oakland, CA;
Lori C. Sakoda, MPH PhD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the demographic characteristics and natural history of subjects who do not undergo treatment for papillary thyroid cancer (PTC).

Objectives: Describe the demographic characteristics and natural history of subjects who do not undergo treatment for papillary thyroid cancer (PTC). **Study Design:** Retrospective case series of 31 untreated PTC patients categorized into low risk and high risk groups. **Methods:** High risk was defined as stage > T2N0M0, tumors > 4cm, regional/distant metastatic disease, or medical comorbidities preventing surgical intervention. We report the demographic data, tumor characteristics, rates of tumor growth and lymph node metastases, and disease specific survival. **Results:** We identified 3884 patients from the Cancer Registry with PTC from 1973 to 2010, and confirmed 31 (0.7%) to be untreated. There were 16 patients in the low risk group (mean followup: 11.4 +/- 7.2 years) and 15 patients in the high risk group (mean followup: 3.7 +/- 3.9 years). The high risk group was older (mean age: 66 vs. 49 years), 7 (47%) had cervical lymph node metastases, and 5 (33.3%) had distant metastases compared to the low risk group with no lymph node or distant metastases. The 5 year disease specific survival was 100% and 35% for the low and high risk groups, respectively. In the low risk group, 3 (18.8%) patients developed tumor growth >3mm which occurred an average of 5.7 years after diagnosis, one (6.3%) developed regional lymph node metastases, and none developed distant metastases during the followup period. **Conclusions:** Untreated patients with PTC represent a diverse patient population. Low risk PTC tumors show a relatively low rate of new regional or distant metastases and disease specific mortality, lending evidence that active surveillance may be a safe option.

11:19 **Transoral Thyroidectomy Using a Novel Flexible Robotic System: A Preclinical Cadaver Feasibility Study**
Elizabeth E. Cottrill, MD, Hershey, PA; Emily K. Funk, MD, Hershey, PA; David Goldenberg, MD FACS, Hershey, PA; Neerav Goyal, MD MPH, Hershey, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the transoral vestibular approach to thyroidectomy and understand the preliminary advantages and drawbacks to using the Flex Robotic System for this approach.

Objectives: Most thyroid surgery in North America is completed via a cervical incision with resulting permanent scar. Minimally invasive and remote access thyroid surgery continue to evolve. Transoral approaches through a vestibular incision have been developed at several centers throughout the world, circumventing cutaneous incisions and optimizing aesthetics. The goal of this study is to test the feasibility of a novel flexible robotic system to perform a transvestibular

thyroidectomy in a preclinical cadaver model. **Study Design:** This is a preclinical cadaver feasibility study. **Methods:** Right and left thyroid lobectomies were successfully performed via a transvestibular approach in 6 cadavers. **Results:** A single vestibular incision between bilateral mental nerves, allowed entrance of the flexible robot in a subplatysmal plane, without need for additional ports, in both male and female cadavers. The recurrent laryngeal nerves and parathyroids were identified and preserved. The flexible 3D camera allowed excellent visualization and could be easily repositioned for optimal visualization right and left structures. The flexible instruments enabled an atraumatic approach and allowed for precise surgical technique. **Conclusions:** The transoral vestibular approach to the central neck is a promising technique for thyroidectomy with optimal cosmesis and can be successfully accomplished using this novel flexible robotic system. Improvements in visualization and access offered by this system may improve application of this technique.

11:26 James Harrill, MD Resident Research Award
Efficacy of Curcumin Release in Novel Gum Formulation for Prevention of Oral Cavity Head and Neck Squamous Cell Carcinoma
 Lindsay C. Boven, MD, Shreveport, LA; Brian Latimer, BS, Shreveport, LA; Kenneth E. McMartin, PhD, Shreveport, LA; Tara Moore-Medlin, BS, Shreveport, LA; Cherie-Ann O. Nathan, MD, Shreveport, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of curcumin's anticancer properties and discuss the role of a curcumin gum formulation that increases bioavailability of curcumin for prevention of oral cavity head and neck squamous cell carcinoma.

Objectives: Head and neck squamous cell carcinoma (HNSCC) represents the sixth most common cancer with majority arising from the oral cavity and oropharynx. As a result of field cancerization from tobacco exposure, second primaries and recurrences are high. Hence, research has focused on chemoprevention. Curcumin, a polyphenol compound derived from turmeric spice with anticarcinogenic properties, is one such promising nutraceutical. **Study Design:** As poor bioavailability limits curcumin's use, a novel gum formulation is tested allowing for direct mucosal absorption into the bloodstream bypassing poor stomach absorption. This preliminary study validates curcumin gum efficacy by assessing release and transmucosal absorption. **Methods:** Among 9 volunteers, 3 were administered 2 chewing methods: initial chew (chewing gum for 30 minutes) and revised chew (alternating chewing and packing gum against buccal mucosa for 30 minutes). Subsequent subjects (6) used the revised method (emphasizing prolonged mucosal contact). High performance liquid chromatography measured remnant curcumin in chewed gum, serum and saliva. Serum and saliva levels were measured at 0, .5, 1, 2, and 4 hours after chewing. **Results:** Revised chew samples demonstrated significantly higher curcumin release ($p=.0078$). When initial saliva levels were higher, curcumin release decreased. Serum levels were sustained at 4 hours in samples with over 1.95g of curcumin release ($p=.04$). Additionally, the Asian population showed significantly lower curcumin release and serum levels ($p=.009$). **Conclusions:** Mucosal contact in the revised chew method appears critical in improving curcumin release which was also limited by saliva saturation. Curcumin gum formulation holds promise in improving bioavailability.

11:33 Telemedicine in the Otolaryngology Outpatient Setting -- The Head and Neck Surgery Experience
 Ryan A. Rimmer, MD, Philadelphia, PA; Ailsa A. Falck, BS, Philadelphia, PA; David M. Cognetti, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participant should be able to understand how telemedicine is used within our center for head and neck surgery, which patients are best suited for telemedicine visits, the benefits of this service, and how patients view the experience.

Objectives: We present our experience with telemedicine visits in an otolaryngology outpatient setting within our institution's center for head and neck surgery. **Study Design:** Retrospective chart review, patient survey, and literature review. **Methods:** Retrospective chart review of telemedicine outpatient encounters examining patient demographics, visit type, and wait times. Use of internet based navigation applications to calculate travel distance and estimate commute time to our clinic. Review of patient survey responses. **Results:** One hundred and fifty telemedicine encounters were reviewed between December 2015 and March 2017. Average age of patients was 53 (range 12-87). Patients waited an average of 10 minutes for their telemedicine appointments, and avoided an average estimated commute time of 87 minutes (76 miles). Visit types include postoperative encounters after: sialendoscopy (31%); minor neck surgery (e.g., styloidectomy, thyroglossal duct cyst excision) (19%); and biopsies requiring anesthesia (15%). Telemedicine was used for long term, but not initial postoperative visits for major surgery (e.g., thyroidectomy, parotidectomy, neck dissection) in 7% of encounters. Clinical followup of recent results or nonoperative complaints accounted for 29% of visits. All patients were offered a post-telemedicine survey and 42 (28%) completed the survey. Of respondents, 90% of patients reported that they were satisfied with their visit. Among patients who were dissatisfied, wait time and technical issues were cited as reasons. **Conclusions:** With appropriate patient selection, telemedicine is an effective way to safely conduct outpatient clinic visits while maintaining high patient satisfaction. It can be particularly useful for institutions with large catchment areas to minimize travel times and increase ease of communication.

Saturday

11:40 Does Postoperative Parathyroid Hormone Value Predict Hypocalcemia after Total Thyroidectomy in Patients with Parathyroid Tissue Removal?

Ramez H.W. Philips, BS, Columbus, OH; Phillip A. Nulty, BS, Columbus, OH; Nolan B. Seim, MD, Columbus, OH; Garth F. Essig, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the utility of postoperative parathyroid hormone (PTH) value as a predictor of hypocalcemia in patients with parathyroid tissue removal after total thyroidectomy. Additionally, participants should be able to understand the benefit of standardized calcium supplementation regardless of postoperative PTH value in these patients.

Objectives: To assess the utility of postoperative parathyroid hormone (PTH) value as a significant predictor of hypocalcemia in patients with parathyroid tissue removal after total thyroidectomy. **Study Design:** Retrospective chart review. **Methods:** A retrospective chart review of patients undergoing total thyroidectomy was performed at a tertiary center from January 2010 - 2015. Data collected includes demographics, clinical and surgical details, postoperative lab values, and comorbidities. Patients were divided into two cohorts based on parathyroid removal, defined as parathyroid autotransplantation or inadvertent parathyroid removal. A univariable and multivariable logistic analysis was conducted to assess predictors of hypocalcemia, defined as an ionized calcium <4.0 mg/dl or regular calcium <8.0 mg/dl. **Results:** We reviewed charts of 280 patients undergoing total thyroidectomy. Seventy-eight patients had parathyroid removal. Mean PTH value was 28.8 ± 23.8 and hypocalcemia occurred in 36/78 (46.2%) of patients in this cohort. In contrast, mean PTH value was lower, 18.1 ± 21.4 , in patients with intact parathyroid glands ($p = 0.004$). In this cohort, 54/202 (26.7%) of patients developed hypocalcemia. In patients with parathyroid removal, PTH value was not found to be an independent predictor of hypocalcemia on multivariable analysis ($p = 0.57$). However, in the matched cohort, PTH value and age were significant predictors ($p = 0.018$, $p = 0.045$ respectively). **Conclusions:** PTH is an independent predictor of hypocalcemia after total thyroidectomy. However, PTH did not significantly predict hypocalcemia if parathyroid tissue was removed. Patients with known parathyroid removal at the time of surgery may benefit from standardized calcium supplementation regardless of postoperative PTH value.

11:47 Perceptions of Electronic Health Records (EHR) within Otolaryngology Residents Compared to Practicing Otolaryngologists

Peter A. Harrill, BA, Chapel Hill, NC; David E. Melon, MD FACS, Hickory, NC; Merritt J. Seshul, MD FACS, Hickory, NC; Adam M. Zanation, MD FACS, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the perceived impact of EHR on resident and practicing physicians' perception of patient care, resident education and workflow.

Objectives: This study investigated the perceived impact of electronic health records (EHR) within otolaryngology residents on education, patient care and workflow, and compared these trends with practicing otolaryngologists. **Study Design:** A descriptive, cross-sectional survey was developed for each core study group: otolaryngology resident group (ORG) and practicing otolaryngologist group (POG). **Methods:** In total, 536 surveys were submitted: 33 from the ORG survey and 510 from the POG survey. Response rates were 51.5% and 21.3%, respectively. **Results:** Within the two study groups, ORG reported a predominately neutral response relating to the impact of EHR on their experience compared with the POG, who reported far more negative responses. The most negative reported change in the ORG related to feeling more like a passive observer and a scribe in terms of how EHR negatively impacted their role as a resident. Within the POG group, the majority of negative responses were recorded on the impact of EHR on practice efficiency, practice overhead, and number of employees required to maintain practice function. **Conclusions:** With otolaryngologists making up 1.1% of the U.S. physician workforce in 2015, it is likely that the software programming of EHR under-represents the workflow needs of otolaryngologists at this time. Virtually no data exists on the impact of EHR on resident education or practicing otolaryngologists. Future studies are needed to investigate how to optimize EHR as a more valuable part of otolaryngology patient care and resident education in the future.

11:54 Q&A

12:00 - 1:00 Lunch/Visit Exhibits/View Posters - Trailblazers

10:00 - 12:00 CONCURRENT SESSION 5B
OTOLOGY/NEUROTOLOGY - KIERLAND 2**Moderator: Soha N. Ghossaini, MD FACS, Auburndale, NY****10:00 Observed Otopathologic Changes Following Cochlear Implant Electrode Misplacement**

Danielle R. Trakimas, MSE, Boston, MA; Iman Ghanad, , Boston, MA; Elliott D. Kozin, MD, Boston, MA; Barbara Herrmann, PhD, Boston, MA; Joseph B. Nadol, MD, Boston, MA; Aaron K. Remenschneider, MD MPH, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to compare otopathologic changes observed with proper placement and misplacement of cochlear implant electrodes.**Objectives:** This study utilizes otopathologic techniques to evaluate intralabyrinthine changes following cochlear implant electrode misplacement in humans. **Study Design:** Otopathologic review. **Methods:** Specimens from a human temporal bone repository having undergone cochlear implantation were evaluated. Included cases exhibited electrode array folding (tip foldover or buckling) or vestibular misplacement. Age and electrode matched cases of proper electrode placement constituted controls. Cases were examined by light microscopy and histopathologically described. **Results:** Two cases of array buckling in the basal turn, one case of tip foldover with subsequent array buckling post-revision, and one case of intravestibular electrode placement were identified. Five control cases were also identified. While all cases demonstrated new bone formation and fibrosis at cochleostomy sites, those with array buckling additionally showed complete osseous obliteration of the scala tympani or entire cochlear lumen near array foldover. Spiral ganglion neurons (% of age matched controls) were decreased throughout cochleae of array buckling cases compared to controls, with the greatest difference observed in segment I (40% vs 57%), the location of array buckling. Available audiometric data showed that cases with array buckling tended to have lower monosyllabic word scores (NU-6 and CNC) than controls (36% vs 63%). A single case of intravestibular placement showed complete vestibular obliteration by fibroosseous tissue and coincident degeneration of vestibular organs. **Conclusions:** Initial placement of cochlear implant electrodes is critical to preservation of intracochlear structures, as severe, atypical fibroosseous changes, neuronal loss and degeneration of vestibular organs is observed in cases of electrode misplacement. Recognition of electrode misplacement at the time of surgery may prevent long term degenerative changes.**10:07 Predicting Postoperative Facial Function Using Motor Evoked Potential Monitoring during Lateral Skull Base Surgery**

Kareem O. Tawfik, MD, Cincinnati, OH; Zoe A. Walters, BS, Cincinnati, OH (Presenter); Gavriel D. Kohlberg, MD, Cincinnati, OH; Noga Lipschitz, MD, Cincinnati, OH; Joseph T. Breen, MD, Cincinnati, OH; Mario Zuccarello, MD, Cincinnati, OH; Ravi N. Samy, MD, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand the principles of intraoperative transcranial facial motor evoked potentials in skull base surgery; and 2) understand the advantages of this technique with respect to predicting postoperative facial function.**Objectives:** Assess the utility of intraoperative transcranial facial motor evoked potential (FMEP) monitoring in predicting facial function after neurotologic procedures. **Study Design:** Retrospective chart review. **Methods:** Data were obtained from 105 consecutive skull base tumor resections. Fifty-six cases were performed without FMEP and 49 with FMEP. For FMEP cases, transcranial electrical stimulation of the motor cortex was administered while measuring facial EMG responses to assess facial nerve integrity. Preoperative baseline responses were obtained. Degradation of FMEP response was defined as nonrecovering intraoperative amplitude decline to <50% of baseline. House-Brackmann (HB) grade was assessed preoperatively, postoperatively, at followup assessments, and compared between pre- and post-FMEP cohorts. Positive (PPV) and negative predictive value (NPV), sensitivity, and specificity of FMEP degradation in predicting facial weakness were calculated. **Results:** 77.8% (42/54) and 84.6% (22/26) of patients had HB1-2 at length of followup (LOF) \geq 6 months and \geq 12 months, respectively. There was no statistically significant difference in worsened facial function between pre- and post-FMEP groups immediately postoperatively (55.4%vs53.1%, $p=0.8143$) or at LOF \geq 6 months (47.5%vs35.7%, $p=0.4491$). Degraded FMEP had high PPV(88.2%), moderate NPV(65.6%), 57.7% sensitivity and 91.3% specificity for immediate postoperative weakness. FMEP decline had 100% PPV, 81.8% NPV, 60% sensitivity, and 100% specificity in predicting worsened facial function for those with LOF \geq 6 months. **Conclusions:** Intraoperative FMEP is highly specific and moderately sensitive in predicting postoperatively worsened facial function for patients undergoing lateral skull base surgery, but its use may not be associated with improved facial nerve outcomes.

Saturday

10:14 Association between Preoperative MRI Findings and Hearing Outcomes after Middle Fossa Craniotomy Approach for Vestibular Schwannomas

Nathan C. Tu, MD, Los Angeles, CA; Tymon Tai, MD, Los Angeles, CA; Laurel M. Fisher, PhD, Los Angeles, CA; Steven L. Giannotta, MD, Los Angeles, CA; Rick A. Friedman, MD PhD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss magnetic resonance imaging (MRI) findings of vestibular schwannomas (VS) and their association with hearing outcomes after resection via middle fossa craniotomy (MFC).

Objectives: To examine the association between normalized preoperative tumor MRI signal intensity of commonly acquired MR sequences, fundal fluid status, cochlear aperture involvement, and hearing outcomes in VS patients undergoing MFC. **Study Design:** Retrospective review. **Methods:** All VS patients undergoing surgical resection by MFC with preoperative MRI from September 2013 to January 2017 were identified. Normalized mean signal intensity of each tumor was evaluated by an operator determined region of interest technique for commonly acquired sequences (T1, T1 post-contrast, T2, T2 FLAIR, T2 3D), while fundal fluid status and cochlear aperture involvement were subjectively graded by a blinded neuroradiologist. Using the American Academy of Otolaryngology-Head and Neck Surgery hearing classification, patients were classified as either hearing preserved (class A or B) or not preserved. MRI signal intensity, fundal fluid status, and cochlear aperture involvement were compared between groups. **Results:** Thirty-five patients who underwent VS resection by MFC and met inclusion criteria were identified. 71% (25/35) demonstrated hearing preservation. The mean normalized T1 post-contrast signal intensity of the hearing preserved group was higher than that of the non-preserved group (4.31 vs 3.10, $p=0.02$). No differences between groups were detected for any of the other sequence signal intensities. Neither fundal fluid status nor cochlear aperture involvement were associated with hearing outcomes. **Conclusions:** In our study population, higher T1 post-contrast signal intensity was associated with improved hearing outcomes, while there was no association between fundal fluid status or cochlear aperture involvement and hearing outcomes. These findings may help guide clinicians when counseling patients regarding management options of VS.

10:21 Extrusion of Straight Cochlear Implant Electrodes May Be Diminished by Proximal Fixation

Faisal Zawawi, MD MSc FRCSC, Toronto, ON Canada; Sharon L. Cushing, MD, Toronto, ON Canada; Karen A. Gordon, PhD, Toronto, ON Canada; Adrian L. James, MD, Toronto, ON Canada; Blake C. Papsin, MD, Toronto, ON Canada

Educational Objective: At the conclusion of this presentation the participant should be able to determine the value of proximal fixation of straight electrode cochlear implants in preventing electrode migration.

Objectives: We asked if proximal fixation of the cochlear implant helps reduce the rate of straight electrode array extrusion/migration reported in recent studies. **Study Design:** Retrospective review. **Methods:** Records of 120 children implanted with a straight electrode at a tertiary pediatric hospital from 2007-2017 were reviewed. Demographics, operative reports, electrode type, radiological studies and audiological assessments including impedance and stimulation parameters were collected. Significant abnormalities were defined by >75% change in impedance re: 1 month post-implant values. **Results:** During this period, straight electrodes were chosen infrequently (130/1165 devices implanted (11.16%) in 120 children). Indications included hearing preservation (32/130), anomalous cochleae (33/130) and inclusion in a comparative study of bilateral electrodes in children receiving one perimodiolar and one straight array (65/130). All electrodes were proximally fixated with a suture around the incus buttress (Nedzelski's knot). None of the 130 electrodes were repositioned. Comparative radiographs after long duration of implant use were available in 26 of the 120 children (21.67%) revealing no changes in electrode position. Significant impedance changes (>75%) were noted in 4/120 children (3.3%), affecting ≤ 2 electrodes in each child at various positions along the array and consistent with open circuits. One case was thought to be due to repositioning of the receiver/stimulator possibly damaging the electrodes as they exited the device body. The remaining 3 children had stable stimulation levels. **Conclusions:** Extrusion of straight electrodes is a known complication of cochlear implant surgery but was not observed in our cohort with proximal electrode fixation.

10:28 Patterns of Hearing Loss among Children with GJB2 Sequencing: A Comparison between Wild Type and Mutated Genotypes

Heather K. Schopper, BS, Charleston, SC; Forest W. Weir, MD, Cincinnati, OH; Monique D. Courtenay, PhD, Charleston, SC; David R. White, MD, Charleston, SC; Ted A. Meyer, MD PhD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to compare hearing loss patterns of children with wild type GJB2 genes and those with heterozygous or homozygous mutations.

Objectives: Mutation of the gap junction protein beta 2 gene (GJB2), also known as connexin 26, is a genetic abnormality associated with DFNB1 nonsyndromic hearing loss in children. A wide variety of mutations have been described over the past several years. The focus of this study was to evaluate the audiologic presentation of children with GJB2

sequencing and evaluate relations between hearing loss and mutations. **Study Design:** Cross-sectional database study with selected followup information. **Methods:** A query for children with GJB2 sequencing was performed in the Audgen database. First available audiograms were analyzed for type and severity of hearing loss. For patients who had more than one audiogram available, the most recent audiogram was used to evaluate for change in hearing. **Results:** 489 children with hearing loss and sequencing of the GJB2 gene were identified. Genotyping showed 360 children had wild type GJB2 and 129 had either homozygous or heterozygous mutations (56 different mutation combinations). The children with wild type GJB2 were more likely to have SNHL compared to children with any GJB2 mutation (66.7% vs 58.0%, $p=0.012$) but were less likely to have severe or profound hearing loss (26.1% vs. 38.6%, $p<0.001$). On average, children in both groups showed clinically negligible worsening of hearing loss on repeat testing. **Conclusions:** Children with GJB2 mutations of any kind were more likely to have severe or profound hearing loss than those with wild type GJB2 despite lower rates of SNHL. It is important these children be identified early in life to allow for best treatment.

10:35 Subtle CT Findings Suggestive of Perilymphatic Gusher

Varun V. Varadarajan, MD, Gainesville, FL; Reordan O. Dejesus, MD, Gainesville, FL;
Patrick J. Antonelli, MD, Gainesville, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to critically review computerized tomography of the temporal bones using coronal and oblique reformatted images to identify areas of previously undetected subtle bony dehiscence that may predispose patients to a perilymphatic gusher. Obvious communications between the internal auditory canal and cochlea are easily identified with temporal bone computerized tomography. This study demonstrates novel focal communications between these structures that require careful inspection of coronal and oblique images and explain the development of a perilymphatic gusher.

Objectives: Perilymphatic gusher (PLG) is an uncommon complication of stapedectomy and cochlear implant placement. Computerized tomography (CT) may reveal congenital dysplasia responsible for PLG but may also be (incorrectly) interpreted as normal. The aim of this study was to review CT findings in patients with PLG reported to have normal temporal bones. **Study Design:** Case series. **Methods:** Setting: Tertiary medical center. Subjects: Patients in which a PLG was encountered and preoperative CT imaging had been interpreted as normal. Outcome: A neurotologist and neuroradiologist critically reviewed temporal bone imaging in collaboration to identify undetected inner ear anomalies that may predispose to PLG. **Results:** PLG was encountered during stapes surgery in two patients and cochlear implantation in one. A focal bony dehiscence between the basal turn of the cochlea and internal auditory canal was identified on a few coronal and oblique images in all patients. **Conclusions:** High resolution CT with coronal and oblique reformatting is essential to identify focal communication between the internal auditory canal and basal turn of the cochlea in ears with PLG.

10:42 Nonauditory Cognitive Ability in Cochlear Implant Users versus Normal Hearing Individuals

Scott T. Kramer, MD, Columbus, OH; Aaron C. Moberly, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss cognitive ability in cochlear implant users, normal hearing individuals and hearing impaired.

Objectives: To evaluate the effects of hearing loss and cochlear implantation on nonauditory cognitive abilities, by examining postlingually deafened cochlear implant (CI) users, normal hearing (NH) peers, and adult CI candidates. **Study Design:** Age and socioeconomic status (SES) matched cohort study. **Methods:** Twenty-one postlingually deafened adult experienced CI users and 21 age and SES matched NH subjects with no evidence of cognitive decline (on mini-mental state examination) completed a battery of nonauditory cognitive tasks: visual working memory (digit, object, and symbol span), nonverbal reasoning (Raven's progressive matrices), inhibitory control (Stroop), reading efficiency (Test of Word Reading Efficiency), and visually fragmented sentences. Additionally, 11 adult CI candidates were age and SES matched with 11 participants each from the previous two groups and compared for the same cognitive abilities. **Results:** CI users performed equivalently with NH peers on all cognitive measures except for symbol span, where they actually outperformed NH controls (12.6 points vs 6.9, $p=.019$). On the other hand, CI candidates performed worse than CI users on symbol span (11.8 points vs 4.5, $p=.019$), visually fragmented sentences (74% correct vs 61%, $p=.020$), and TOWRE words (68% correct vs 48%, $p=.020$). A similar trend towards worse performance was demonstrated by CI candidates on several additional measures. **Conclusions:** Postlingually deafened CI users demonstrated equivalent performance on measures of nonauditory cognitive abilities compared with NH peers. In contrast, CI candidates performed worse than experienced CI users on several tasks. These data corroborate findings linking hearing loss with cognitive declines, and suggest that cochlear implantation may improve cognition.

10:49 Q&A

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10:55 - 11:55 WHAT OTOLARYNGOLOGISTS NEED TO KNOW ABOUT CMV

Moderator: Albert H. Park, MD, Salt Lake City, UT
Panelists: Daniel I. Choo, MD FACS, Cincinnati, OH
Kenneth H. Lee, MD PhD, Plano, TX
James E. Saunders, MD, Lebanon, NH

11:55 Q&A

12:00 - 1:00 Lunch/Visit Exhibits/View Posters - Trailblazers

1:10 - 3:05 CONCURRENT SESSION 6A PEDIATRIC OTOLARYNGOLOGY - KIERLAND 1

Moderator: Laura J. Orvidas, MD FACS, Rochester, MN

1:10 The Accuracy of Chest X-Ray Measurements of Pediatric Ingested Foreign Bodies

Phillip A. Huyett, MD, Pittsburgh, PA; Amber D. Shaffer, PhD, Pittsburgh, PA; Lynda L. Flom, MD, Pittsburgh, PA; Jeffrey P. Simons, MD, Pittsburgh, PA; Noel Jabbour, MD, Pittsburgh, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand that measurements of ingested foreign bodies are not accurate, especially in younger children.

Objectives: To determine the accuracy of chest x-ray measurements in children using ingested radiopaque foreign bodies of known size. **Study Design:** Retrospective imaging review. **Methods:** A database of foreign body ingestions at a tertiary care children's hospital was queried from 2013-2016 for children who had ingested a US coin, had a preoperative chest x-ray and documentation of coin type at the time of endoscopic removal. Four research subjects measured the coin diameter on chest x-ray using ClinicView software and based on the measurement, predicted the coin type. Measurements were compared to the known coin diameters published by the US Mint. **Results:** Sixteen ingested quarters (diameter 24.26mm), fourteen nickels (21.21mm), fourteen pennies (19.05mm) and seven dimes (17.91mm) were included in the study. The four subjects had a mean accuracy of 60.3% (range 49.0%-72.5%) in predicting the correct coin type. Across all raters, there was poor agreement for pennies ($\kappa=0.161$) and dimes ($\kappa=0.131$), fair agreement for nickels ($\kappa=0.259$), good agreement for quarters ($\kappa=0.687$), and fair agreement overall ($\kappa=0.371$). The study measurements overestimated the coin size in 203 of the 204 measurements by a mean of 1.84mm (range -0.31 to 3.85mm). The mean size discrepancy was larger (2.40 vs. 1.30mm, $p<0.001$) and accuracy of coin type identification was worse (44.6% vs. 74.1%, $p=0.001$) in children <4 years old. **Conclusions:** Measurement of ingested coins on chest x-ray is not accurate and overestimates the size in the majority of cases. Clinicians should use caution when performing measurements on ingested foreign bodies, especially in children younger than 4 years old.

1:17 A NSQIP View of Rhinoplasty in Children: Patient Characteristics and Perioperative Outcomes

Rebecca J. Kamil, MD, Baltimore, MD; Christopher R. Roxbury, MD, Cleveland, OH;
Emily F. Boss, MD MPH, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the demographic characteristics for children undergoing rhinoplasty and understand risk factors for perioperative complications using data from the National Surgical Quality Improvement Program Pediatric Dataset.

Objectives: Rhinoplasty is commonly performed in children with congenital malformations and resultant nasal deformity causing airway obstruction. Little is known regarding patient factors or perioperative sequelae. We define the demographics and perioperative adverse events for children undergoing rhinoplasty. **Study Design:** Retrospective cohort study of children aged <18 years undergoing rhinoplasty utilizing data from the 2012-2015 American College of Surgeons National Surgery Quality Improvement Program-Pediatric public use file. **Methods:** All children who underwent rhinoplasty (CPT 30410, 30420, 30430, 30435, 30560, 30462) were included. Predictors included demographics, comorbidities, and surgical characteristics. Complications were defined as 30 day postoperative bleeding, infection, unplanned readmission and reoperation, and death. **Results:** Of 1378 children identified, 703 (51%) were male, 317 (23%) were age <5 , 458 (33%) were age 5-13, 603 (44%) were age ≥ 14 , and 786 (57%) had craniofacial abnormalities. Males were more likely to undergo rhinoplasty at younger ages compared to girls (56.2% age <5 male vs. 46.6% age ≥ 14 male; $p=0.01$). Indication of craniofacial abnormalities was more common in younger children (73.2% age <5 vs. 42.1% age ≥ 14 ; $p>0.001$). Complications were experienced by 21 (1.5%) children and were more common among younger patients (3.8% age <5 vs. 0.7% age ≥ 14 ; $p=0.001$). For each year older, a child is 14% (OR 0.86, 95%CI 0.79, 0.95; $p=0.002$) less likely to experience a complication in models adjusted for demographic characteristics and comorbidities. **Conclusions:** Children undergoing rhinoplasty experience few major complications. Younger children are at greater risk and are more likely to be male with

craniofacial abnormalities. Despite the perioperative safety of rhinoplasty in children, procedure specific functional and cosmetic outcomes of rhinoplasty cannot be obtained through NSQIP-P.

1:24 G. Slaughter Fitz-Hugh, MD Resident Research Award
Using Clinical Indicators to Reduce Peri-Anesthesia Recovery Time Following Outpatient Tonsillectomy

Habib G. Zalzal, MD, Morgantown, WV; Chadi A. Makary, MD, Martinsburg, WV;
 Hassan H. Ramadan, MD, Morgantown, WV

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate what constitutes the clinical indicators necessary to discharge patients after tonsillectomy, and discuss whether this should be used to dictate postoperative recovery times with regard to patient outcomes.

Objectives: To determine whether we could reduce the time that patients are observed postoperatively without decreasing the quality of care and eliminate the unnecessary use of resources to monitor those patients. **Study Design:** Prospective case control. **Methods:** Patients undergoing tonsillectomy were recruited for the study prior to their operation. Each patient was then monitored in peri-anesthesia recovery until clinical indicators for discharge were met (baseline respiratory function, afebrile, ambulation per age, adequate consciousness, absence of nausea/vomiting, adequate pain control, no active bleeding, fluid toleration). Patients were then contacted by phone approximately 24-72 hours after discharge to determine whether or not they experienced any postoperative complications. Data analyzed included general demographics and surgical case information such as surgical duration, medications, and timeframes during recovery. **Results:** Data from a total of 93 patients (ages 3-34 years) were analyzed. Total time in peri-anesthesia recovery combined mean of 346.63 minutes (SD+ 67.9 minutes). Time clinical indicators were met with a mean of 253.36 (SD + 79.0 minutes). Nine patients experienced minor complications overall (four in peri-anesthesia recovery, five at home). **Conclusions:** This study demonstrates that using clinical indicators as discharge criteria is both safe and efficient, with a low rate of postoperative complications.

1:31 Geographic Health Disparities in the Pediatric Head and Neck Abscess Population

Varun Angajala, MS, Los Angeles, CA; Kevin Hur, MD, Los Angeles, CA; Lia Jacobson, MD, Los Angeles, CA; Christian Hochstim, MD PhD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the sociodemographic and geographic disparities in the pediatric head and neck abscess population of a large metropolitan area.

Objectives: To assess geographical sociodemographic differences in the head and neck abscess population. **Study Design:** Retrospective review. **Methods:** We reviewed the medical records of 119 consecutive pediatric patients at a tertiary referral children's hospital from 2014-2017 with a diagnosis of a head and neck abscess that underwent incision and drainage by an otolaryngologist in the operating room. Sociodemographic information including zip code of residence was extracted and analyzed with chi-square, Fisher's exact test, and multivariate logistic regression. **Results:** The average age of pediatric patients with a head and neck abscess in this study was 3.4 years old, 53.8% were female, 54.6% were Hispanic, 82.5% had public health insurance, and 76.5% were transferred from an outside hospital. 79% of head and neck abscesses were located in the neck, 10.1% in the retropharyngeal space, and 3.4% in the parapharyngeal space. There were no differences in gender, race, insurance, or household income between patients that lived within 10 miles versus farther than 10 miles from the hospital. On multivariate analysis adjusting for age, gender, race, health insurance, and distance from the hospital, zip codes with a high volume of head and neck abscesses were more likely to be lower income neighborhoods (OR 2.96, p<0.05). **Conclusions:** Geographic areas with a high volume of head and neck abscesses requiring incision and drainage are associated with lower income neighborhoods. Further studies should be performed to better understand health disparities within the U.S. pediatric head and neck abscess population.

1:38 Lessons Learned from the Candidacy Assessment of Children with Single Sided Deafness Presenting for Unilateral Cochlear Implantation

Sharon L. Cushing, MD MSc, Toronto, ON Canada; Karen A. Gordon, PhD, Toronto, ON Canada;
 Meirav Sokolov, MD, Toronto, ON Canada; Melissa Polonenko, MScAud PhD, Toronto, ON Canada;
 Susan L. Blaser, MD, Toronto, ON Canada; Blake C. Papsin, MD MSc FRCSC, Toronto, ON Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to enumerate the most common etiologies of single sided deafness that can be aided with unilateral cochlear implants.

Objectives: We asked what were the characteristics of children presenting for inclusion in a prospective study of unilateral cochlear implantation (uCI) with single sided deafness (SSD). These characteristics were examined in the context of both candidacy and their impact on parental decision making. **Study Design:** Retrospective review. **Methods:** Records of 63 children with short duration (< 4years) SSD presenting for uCI candidacy assessment to a tertiary pediatric children's hospital from 2013-2017 were reviewed. Demographics, radiological studies, audiological data, hearing loss etiology and

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parental decision to proceed with implantation were examined. **Results:** 63 children with single sided deafness were reviewed. 51 children completed candidacy assessment. Many (17/51, 33%) did not meet candidacy criteria for implantation, most because of cochlear nerve aplasia/hypoplasia (14/51, 27%). In addition 17/51, 33% of families elected to withdraw from the evaluative process. The most common etiologies of SSD in the 17/51 (33%) children who both met candidacy and consented to implantation were congenital cytomegalovirus (cCMV) (7/17, 41%) and trauma (4/17, 24%). **Conclusions:** Many children with unilateral deafness who present for implant candidacy assessment do not go on to receive uCI due to anatomic contraindications or family's decision to withdraw. The incidence of cochlear nerve aplasia in our study was lower than previously reported. This study highlights for the first time the high prevalence of cCMV amongst children with single sided deafness presenting for uCI. The potential for eventual progression to bilateral hearing loss in cCMV may influence decision for implantation.

1:45 Three Dimensional Imaging and Printed Reconstruction for Difficult Airway Surgical Planning
Sara C. Gallant, MD, New York, NY; Zahrah M. Taufique, MD MBA, New York, NY; Clifford Chang, BA, New York, NY; Scott M. Rickert, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the options and steps needed for effective 3D surgical planning and printing for pediatric airway surgery.

Objectives: Over the past decade, there have been major advances in imaging as well as the computer and printing technologies. The fields of neurosurgery, oral and maxillofacial surgery, and plastic surgery have taken advantage of these advances in providing patient specific implants that promise single stage reconstruction of anatomically complex defects with relative ease compared to traditional strategies. There has been a relative paucity of otolaryngology literature reporting the use of patient specific 3D surgical planning in airway surgery. Recognition of the versatility of these techniques may help expand its use. **Study Design:** Case series. **Methods:** A retrospective chart review was performed on all patients who underwent airway reconstructions with patient specific 3D planning prior to airway intervention. Subjective and objective analysis of perioperative and postoperative outcomes were assessed. **Results:** Indications for use of a patient specific 3D surgical planning and printing include difficult airway identified by previous airway evaluation, craniofacial or airway anomalies identified by previous imaging. 3D reconstructed preoperative imaging was obtained and used for planning and guided reconstruction. Four patients underwent specific airway reconstruction tailored to their individual anatomy challenges. No major complications have been encountered with a median followup of 1 year. One planned surgery was required to further advance a successful first surgical reconstruction. Representative photographs are included. **Conclusions:** Patient specific 3D planning and printed models provide a new option for reconstruction of complex airway defects. They are advantageous in that reconstruction can occur in an individualized and planned manner. Surgery can be attempted on the models in a 'dry run' to help improve results. Due to their custom nature, the demonstration of their uses is particularly valuable in terms of patient selection, preoperative planning, and intraoperative modifications.

1:52 Effect of Changing Postoperative Management on Bleeding Rates in Tonsillectomy Patients: An Institutional Review
Alexandra C. Fonseca, BS, Houston, TX; Margaret I. Engelhardt, BS, Houston, TX; Soham Roy, MD, Houston, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the changes in postoperative bleed rates after tonsillectomy when altering pain management strategies to include nonsteroidal anti-inflammatory agents.

Objectives: To review rates of post-tonsillectomy hemorrhage (PTH) at a quaternary medical center, including the impact of narcotic versus nonsteroidal anti-inflammatory drug (NSAID) postoperative pain management. **Study Design:** Retrospective review. **Methods:** A retrospective review was performed of tonsillectomies conducted at a single institution between January 1, 2013, and January 1, 2017. The rates of PTH and subsequent intervention were calculated. These were categorized into patients having surgery pre and post July 1, 2015, the former group receiving narcotics and the latter ibuprofen with acetaminophen. **Results:** Of 1351 total tonsillectomies, 3.04% had PTH requiring return to the hospital. 0.74% required no further surgical intervention, whereas 2.30% required secondary surgical control. The bleed rate prior to July 2015 was 3.15%, with 1.05% nonsurgical bleeds and 2.10% requiring surgery. Post July 2015, the bleed rate was 2.92%, with 0.44% nonsurgical bleeds and 2.49% requiring surgery. There were no statistically significant differences between the two groups with respect to overall, nonsurgical, and surgical hemorrhage rates ($p>0.05$). Of the total bleeds, the need for secondary surgery in the narcotic group was 66.7% and 85% in the NSAID group ($p=0.18$). During the study period, 36 patients with PTH had their initial tonsillectomy performed at outside institutions; 53% required surgical intervention. **Conclusions:** Secondary hemorrhage remains a significant cause of morbidity in post-tonsillectomy patients, often requiring surgical intervention. This review found no increased bleeding risk associated with use of ibuprofen and acetaminophen as opposed to narcotic pain relief. A relatively high number of PTH presenting to this academic institution had their initial surgery performed by an outside surgeon.

1:59 Q&A

2:05 - 3:00 FRENOTOMY FOR TONGUE AND LIP TIES - EXPLODING DIAGNOSES - WHAT'S GOING ON?

Moderator: Diego Alfonso Preciado, MD PhD, Washington, DC
Panelists: Earl H. Harley, MD FACS, Washington, DC
 Anna H. Messner, MD, Stanford, CA
 Andrew R. Scott, MD FACS, Boston, MA

3:00 Q&A

3:05 - 3:30 Break/View Posters - Trailblazers

1:10 - 3:05 CONCURRENT SESSION 6B
 GENERAL AND SLEEP MEDICINE - KIERLAND 2

1:10 - 2:00 WHAT YOU NEED TO KNOW ABOUT GENETIC TESTING IN OTOLARYNGOLOGY

Moderator: Richard J. H. Smith, MD FACS, Iowa City, IA
Panelists: **Pharmacogenetic Testing in Medicine (and Otolaryngology)**
 Richard J. H. Smith, MD FACS, Iowa City, IA
Germ-Line Mutations and Genetic Testing: Hearing Loss
 Eliot Shearer, MD PhD, Iowa City, IA
Somatic Mutation and Genetic Testing: Its Transformative Role in Cancer
 Nishant Agrawal, MD FACS, Chicago, IL

2:00 Q&A

Moderator: Natasha Mirza, MD FACS, Philadelphia, PA

2:05 A Clinical Care Pathway to Provide Postoperative Risk Assessment for Patients Diagnosed with or at Risk for Obstructive Sleep Apnea

Katherine W. Chang, BS, Cincinnati, OH; Reena D. Patil, MD, Cincinnati, OH; David L. Steward, MD, Cincinnati, OH; Vidhata P. Malhotra, MD, Cincinnati, OH; Jareen K. Meinzen-Derr, PhD MPH, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the STOP-BANG tool and its role in the preoperative assessment of patients for obstructive sleep apnea (OSA); the participants should be able to understand the risk for immediate postoperative adverse events such as hypoxia and hypertension as related to various STOP-BANG scores in patients with and without a known history of obstructive sleep apnea.

Objectives: To determine whether higher STOP-BANG (snoring, tiredness, observed apnea, high blood pressure, body mass index, age, neck circumference, gender) scores are associated with risk for immediate postoperative adverse events in patients with and without history of obstructive sleep apnea (OSA). **Study Design:** IRB approved, prospective cohort study. **Methods:** During six months in 2016, patients presenting to the presurgical clinic at a Veterans Affairs Medical Center answered a STOP-BANG questionnaire, scored 0-8. Immediate postoperative respiratory and cardiovascular adverse events were recorded. **Results:** The patient population included 1086 veterans who were primarily older than 60 years (64.2%) and male (96.8%). Patients with history of OSA experienced a higher rate of any adverse event more often than patients without history of OSA (13.6% vs. 8.0%, $p < .05$), in particular hypoxia (13.1% vs. 5.2%, $p < .05$). Patients with STOP-BANG score 5-8 had an increased rate of any adverse event compared to those with 0-4 (14.7% vs 8.0%, $p < .05$) specifically hypoxia (12.8% vs 4.9%, $p < .05$). Of patients with history of OSA, those with STOP-BANG score 5-8 had an increased rate of any adverse event compared to 0-4 (16.4% vs 5.7%, $p < .05$), specifically hypoxia (18.7% vs 5.7%, $p < .05$). Of patients without a history of OSA, those with STOP-BANG score 5-8 did not demonstrate an increased rate of any adverse event compared to 0-4. **Conclusions:** Patients with a history of OSA and high preoperative STOP-BANG score had increased risk for immediate postoperative adverse events, in particular hypoxia. However, in veterans without a history of OSA, a higher score on the STOP-BANG screening tool was not predictive of postoperative events.

2:12 Chronic Cough: A Symptom of Obstructive Sleep Apnea?

Amulya Yalamanchili, BA, Chicago, IL; Christopher J. Gouveia, MD, Stanford, CA;
 Saied Ghadersohi, MD, Chicago, IL; Bruce K. Tan, MD, Chicago, IL

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the association between chronic cough and obstructive sleep apnea.

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Objectives: To assess whether there is a significant difference in complaints and impact of chronic cough amongst patients with obstructive sleep apnea (OSA) versus those without. **Study Design:** This is a prospective, case control study of patients referred to an academic medical sleep center for home sleep testing. **Methods:** Patients consenting for the study filled out Leicester cough questionnaire (LCQ)--a validated diagnostic tool for chronic cough and quality of life impact. Patient demographics and results of their sleep studies were then recorded. Statistical analysis was done to examine score differences between OSA positive and OSA negative patients and correlation of apnea hypopnea index (AHI) with LCQ score. **Results:** Of 52 patients, 19 had OSA and 33 did not have OSA. There was a significant difference in mean LCQ score in patients with OSA and patients without OSA (120 vs . 129.89), $P = < .02$). There was a correlation between lower LCQ score and AHI ($r = -.39$, $P = < .0061$). **Conclusions:** OSA patients demonstrate lower quality of life and higher rates of chronic cough versus non-OSA patients. Further, there is significant correlation between severity of OSA, by AHI, and poorer scores on LCQ. Chronic cough should warrant consideration of OSA as a diagnosis, and patients with OSA should be asked about complaints of chronic cough to improve symptomatic management.

2:19 Dysfunctional Internal Pulse Generator after Electrical Cardioversion in a Patient with Hypoglossal Nerve Stimulator

Adam P. Vasconcellos, MD, Philadelphia, PA; Colin T. Huntley, MD, Philadelphia, PA;
Maurits S. Boon, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, participants should be able to recognize electrical cardioversion as a potential cause of hypoglossal nerve stimulator dysfunction and understand the surgical approach to troubleshooting a dysfunctional device.

Objectives: 1) Describe the first case of hypoglossal nerve stimulator (HGNS) dysfunction after electrical cardioversion; and 2) detail the surgical approach to assessing and replacing a dysfunctional implantable pulse generator (IPG). **Study Design:** Clinical vignette. **Methods:** Case report from a tertiary care medical center. **Results:** A 65 year old male presented with severe obstructive sleep apnea (OSA) with apnea-hypopnea index (AHI) 53. He described persistent atrial fibrillation despite prior cardioversion. He could not tolerate continuous positive airway pressure (CPAP) and met clinical indications for HGNS, including drug induced sleep endoscopy findings. He underwent implantation of HGNS, and had successful postoperative titration of the device with AHI 13. Seven months later, routine electrical cardioversion was performed for atrial fibrillation. That evening, he reported an inability to activate his HGNS and device interrogation showed dysfunction of the IPG. Operative exploration via his chest wall incision revealed intact leads and a damaged IPG, which was replaced. Interrogation illustrated excellent respiratory sensing and nerve stimulation. **Conclusions:** Upper airway stimulation (UAS) has demonstrated marked improvements in AHI, oxygen desaturation index (ODI), and self-reported sleepiness in patients with moderate to severe OSA who cannot tolerate CPAP. Documented adverse events include tongue soreness, discomfort with stimulation, and device migration. Previous reports indicate that external electrical cardioversion risks damaging an indwelling cardiac pacemaker. Special precautions include electrode paddle placement away from the pacemaker's battery. As HGNS dysfunction has now been exhibited after electrical cardioversion, similar precautions must be considered, and patients should be informed of this risk. Surgical approach begins with IPG device interrogation and assessment of leads.

2:26 A Standardized Clinical Assessment and Management Plan (SCAMP) to Optimize Treatment for Infants with Obstructive Sleep Apnea

Hannah E. Qualls, MD, Cincinnati, OH; Nithin S. Peddireddy, BS, Cincinnati, OH;
Rahul N. Prasad, MBA, Cincinnati, OH; Angela L. Duggins, RN BSN, Cincinnati, OH;
Matthew T. Maksimoski, MD, Chicago, IL; Stacey L. Ishman, MD MPH, Cincinnati, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the characteristics of the infants whose care deviated from the standardized clinical assessment and management plan (SCAMP) for pediatric OSA.

Objectives: Standardized clinical assessment and management plans (SCAMPs) are quality improvement tools (algorithms) intended to increase practice standardization and improve patient outcomes. Our aim was to assess SCAMP deviations for infants with obstructive sleep apnea (OSA) in order to fine tune the SCAMP. **Study Design:** Single institution prospective study. **Methods:** After a literature review, physicians, nurses and a quality manager for a multidisciplinary upper airway center in a tertiary pediatric hospital created the SCAMP for children with OSA < age 2. Deviations were recorded and classified by algorithm step and reason for deviation. **Results:** We treated 117 infants (mean age=1.4, 39.3% female); 28 (24%) had severe OSA, 40 (34%) had moderate OSA, and 49 (42%) had mild OSA. Sixty-one (52%) had care plans that deviated from the SCAMP; 36 (59%) for those with moderate OSA, 14 (23%) for mild, 8 (13%) for severe, and 3 (5%) related to clinic intake. A decision was made for surgery (typically for laryngomalacia) in 24 (39%). The protocol steps where we most commonly deviated were 1) initiation of oxygen (33%) for those with moderate OSA, 2) performance of an oxygen titration sleep study for those with moderate OSA (13%), and 3) clinic followup time frame for those with mild OSA (11%). **Conclusions:** Care of infants with moderate OSA was the area with greatest deviation from the SCAMP and merits further refinement and study. In addition, this data suggests that a SCAMP specifically related to

the care of infants with laryngomalacia is warranted.

2:33 The Future of Obstructive Sleep Apnea: An Examination of Clinical Trials for OSA

Sameer K. Singh, BA, Chicago, IL; David Gu, BA, Chicago, IL; Stanley Y. Liu, MD, Stanford, CA; Robson Capasso, MD, Stanford, CA; Christopher J. Gouveia, MD, Stanford, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the landscape of clinical trials in OSA including researchers involved in the field, interventions being studied, and potential opportunities for future study.

Objectives: Examine U.S. and international clinical trials in obstructive sleep apnea (OSA) to characterize researchers involved in the field, interventions being studied, and potential opportunities for future study. **Study Design:** Retrospective analysis of OSA clinical trials. **Methods:** The information from ClinicalTrials.gov was used to assess OSA clinical trials between 1999 and 2017, specifically analyzing principle investigator (PI) demographics, interventions studied, study funding source, and regional distribution of research institutions. **Results:** There were 813 clinical trials studied. A large proportion explored continuous positive airway pressure (CPAP) interventions (43.7%), with pharmacotherapies being the second most commonly examined treatment class (19.2%). Surgical interventions made up 10.7% (n = 87) of clinical trials for OSA. Most studies were based internationally (56.7%). PIs were predominantly male (62.0%) and had an MD (72.7%). There were no differences in funding source (NIH vs industry, p = .14) or institution geography (international vs US, p = .73) between surgical and nonsurgical studies. Surgical trials were more likely to have a male PI and involve pediatric patients compared to nonsurgical trials (p < .001). Otolaryngologists represented 9.2% of all PIs and received equal NIH funding compared to other medical specialists (p = .22). **Conclusions:** This study provides a broad overview of past, current, and future treatment paradigms for OSA. Sleep surgery, specifically otolaryngology, is a small voice in the overall landscape of clinical trials for OSA. This information can help guide future research efforts and direct our specialty when setting priorities regarding research funding while encouraging a broad and interdisciplinary pursuit.

2:40 Diagnostic Techniques and Surgical Outcomes for Persistent Pediatric Obstructive Sleep Apnea: A Systematic Review and Meta-Analysis

Melissa A. Socarras, BS MA, Chicago, IL; Barcleigh P. Landau, MD, Oakland, CA; Megan L. Durr, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of cine MRI and drug induced sleep endoscopy in pediatric persistent obstructive sleep apnea after tonsillectomy and adenoidectomy as well as the surgical outcomes after drug induced sleep endoscopy or cine MRI directed surgeries.

Objectives: To evaluate the role of cine MRI and drug induced sleep endoscopy (DISE) in diagnosing the site of upper airway obstruction in pediatric patients with persistent obstructive sleep apnea (OSA) after tonsillectomy and adenoidectomy (T&A). **Study Design:** Systematic review and meta-analysis. **Methods:** Inclusion criteria was English language studies with original data and pediatric patients with persistent OSA. Exclusion criteria included case reports and lack of surgical outcome measures. All manuscripts were reviewed independently by two investigators. Systematic review and meta-analysis was performed. **Results:** Of the 1902 abstracts identified, 14 studies met inclusion criteria, 7 with DISE as the diagnostic technique, 6 with cine MRI, and one with MRI/CT. All studies were case series. Demographics data included subject age, gender, and comorbidities. Outcome measures were change in apnea-hypopnea index (AHI) and minimum oxygen saturation level (minSaO₂) after surgical intervention. Most subjects (53%) had syndromic comorbidities and/or obesity. Overall, there was a reduction in AHI from 22.0 to 5.9 and an increase in minSaO₂ from 81.1% to 83.4% after surgical intervention. There was no significant difference between DISE and cine MRI with respect to improvement in AHI and minSaO₂. **Conclusions:** DISE and cine MRI are safe and effective methods for diagnosing the cause of upper airway obstruction in pediatric patients with persistent OSA after T&A. Overall, surgeries directed through DISE or cine MRI diagnostic techniques improve AHI and minimum oxygen saturation. There is no significant difference in surgical outcome when comparing DISE and cine MRI as diagnostic techniques.

2:47 Nonparametric Regression Analysis of Pediatric Sleep Studies: An Alternative to Linear Analysis

Allison G. Ordemann, MD, Dallas, TX; Romaine F. Johnson, MD, Dallas, TX; Ron B. Mitchell, MD, Dallas, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the utility of nonparametric regression analysis for identifying clinical predictors of obstructive sleep apnea in children.

Objectives: To study a cohort of children referred for polysomnography with nonparametric regression. Nonparametric regression can automatically detect nonlinear relationships, and may provide a statistical alternative to linear regression for identifying clinical predictors of obstructive sleep apnea. **Study Design:** Retrospective analysis. **Methods:** We performed nonparametric regression (NPR) analysis on a sample of children, ages 2 to 17, referred for polysomnography due to sleep disordered breathing. We compared the results of the NPR analysis to linear regression. The dependent variable

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was the apnea hypopnea index (AHI) while the independent variables were age, BMI z-score, sex, tonsil hypertrophy, black race, and asthma. The primary outcome was the model's R²--a measure of goodness of fit. Secondary outcomes were the model's predicted marginal effects. **Results:** 504 children were included in the analysis. The median age was 10.7 years, interquartile range, 6.1 to 14.5. 52% were male; 49% were obese; 44% had tonsil hypertrophy, 25% were black, and 28% had asthma. The mean AHI of the sample was 11.8 (median = 3.1, interquartile range 0.9 to 11.2). The final NPR model's estimated effect on the AHI for each independent variable was age 0.69 (95% CI, 0.34 to 1.1, p=.002), BMI z-score 2.6 (95% CI, 0.49 to 4.3, p=.003), male sex 3.8 (95% CI, -0.13 to 7.5, p=.047), tonsil hypertrophy 9.6 (95% CI, 5.0 to 13.8, p<.001), and asthma -2.2 (95% CI, -6.3 to 1.5, p=.262). The R² for the NPR model was 0.26. This finding contrasted to the linear regression model's R² of 0.08. The predicted marginal effects of nonparametric regression showed an estimated AHI of 12.6 (95% CI, 10.3 to 14.7) which contrasted to the linear model's marginal effect of AHI of 11.8 (95% CI, 9.8 to 13.8). **Conclusions:** Nonparametric analysis provided a better goodness of fit in the analysis of sleep study data in a cohort of children. It appears to be a reasonable statistical approach to study predictors of obstructive sleep apnea in children.

2:54 Assessing Nasal Complaints in Obstructive Sleep Apnea Patients

Christopher J. Gouveia, MD, Stanford, CA; Amulya Yalamanchili, BA, Chicago, IL (Presenter); Saied Ghadersohi, MD, Chicago, IL; Bruce K. Tan, MD, Chicago, IL

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the associations between obstructive sleep apnea and complaints related to chronic rhinosinusitis and nasal obstruction.

Objectives: To assess whether there is a significant difference in complaints related to chronic rhinosinusitis and nasal obstruction amongst patients with obstructive sleep apnea (OSA) versus those without. **Study Design:** This is a prospective, case control study of patients referred to an academic medical sleep center for home sleep testing. **Methods:** Patients consenting for the study filled out sinonasal outcome test (SNOT-22) and nasal obstruction symptom evaluation (NOSE) questionnaires, validated diagnostic tools for chronic rhinosinusitis and nasal obstruction. Patient demographics and results of their sleep studies were then collected. Statistical analysis was done to examine score differences between OSA positive and OSA negative patients, and correlation of apnea hypopnea index (AHI) with SNOT22 and NOSE scores.

Results: Of 52 patients, 19 had OSA and 33 did not have OSA. There was no significant difference in SNOT22 in patients with OSA and patients without OSA (P= 0.16). There was also no significant difference in NOSE in patients with OSA and patients without OSA (P=0.11). There were no significant correlations between AHI and SNOT22 or NOSE. **Conclusions:** OSA patients do not demonstrate higher rates of chronic rhinosinusitis or nasal obstruction complaints versus non-OSA patients. Further, there is no significant correlations between severity of OSA, by AHI, and higher scores on the SNOT22 or NOSE. Both diagnoses remain important to rule out as contributing to patient sleep complaints and OSA treatment maintenance. However, there seems to be no independent association between OSA and nasal obstruction or CRS.

3:00 Q&A

3:05 - 3:30 Break/View Posters - Trailblazers

3:30 - 5:15 - GENERAL SESSION - KIERLAND 1 & 2

3:30 - 4:40 pm CHALLENGES IN CONTEMPORARY, EFFICIENT PRACTICE ENVIRONMENTS

Moderator: David W. Eisele, MD FACS, Baltimore, MD
Panelists: **Academic Activities in the World of Work RVU**
D. Bradley Welling, MD PhD FACS, Boston, MA
Cancer Care in the Community
Cherie-Ann Nathan, MD FACS, Shreveport, LA
Physician Extenders and Scribes (Community)
John T. McElveen Jr., MD, Raleigh, NC
Physician Extenders and Scribes (Academics)
Melissa A. Pynnonen, MD MS, Ann Arbor, MI
Effective Use of the EMR
Stephen J. Wetmore, MD FACS, Morgantown, WV

4:40 Q&A

4:45 - 5:40 pm CONTROVERSIES IN OTOLARYNGOLOGY

Moderator: Gerald B. Healy, MD FACS, Boston, MA

Panelists: **Management of Congenital Aural Atresia**

Bradley W. Kesser, MD, Charlottesville, VA

Management of the Middle Turbinate

Ashutosh Kacker, MD FACS, New York, NY

Management of Neck Melanoma: To Dissect or Not

Carol R. Bradford, MD FACS, Ann Arbor, MI

Parameters for Selection of Residents

Howard W. Francis, MD, Durham, NC

5:40 pm Q&A

5:45 pm ADJOURN SESSION

5:45 pm MEET THE AUTHORS POSTER RECEPTION - for all attendees - *Trailblazers*

7:00 pm PARTY IN THE DESERT - for all attendees - *Northern Sky Terrace*

Saturday

ALLERGY/RHINOLOGY

1. **Ayurvedic Medicine in the Treatment of Chronic Rhinosinusitis: A Systematic Review of Randomized and Nonrandomized Trials**

Charles N. Babb, BM, Rochester, NY; Isaac L. Schmale, MD, Rochester, NY;
Li-Xing Man, MSc MD MPA, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss different ayurvedic therapies for the treatment of chronic rhinosinusitis and explain current evidence for their use.

Objectives: Chronic rhinosinusitis (CRS) affects 4.5 to 12% of the population and has significant effects on quality of life, productivity, and healthcare costs. Complementary and alternative (CAM) therapies are commonly used to manage CRS. Ayurveda, an ancient medical system that originated on the Indian sub-continent, proposes several treatments for sinus disease. Our goal is to provide a comprehensive systematic review of ayurvedic approaches to the treatment of CRS. **Study Design:** N/A. **Methods:** A systematic review utilizing Medline, Embase, and Cochrane Library databases was performed. Articles published prior to August 2017, with at least 10 patients, which investigated ayurveda as the sole or adjunctive treatment for CRS in humans were included. **Results:** Our search identified 48 unique articles. Six articles met inclusion criteria. Three of these trials were randomized controlled trials (RCTs). Although specific ayurvedic treatments varied, 9 distinct therapies were identified. These include herbal preparations for oral consumption, alternate nasal breathing, steam inhalation, and nasal instillations. These were used alone or in combination with one another. Ayurvedic therapies studied in RCTs and uncontrolled trials show reduction in many CRS symptoms, decrease in radiographic and endoscopic evidence of disease, reduction in peripheral eosinophil count, and improved mucociliary clearance. **Conclusions:** Ayurvedic management may be useful in treating CRS in some patients. These results must be considered with caution as imprecise criteria for CRS and variable outcome measures were used in each study. Additionally, three trials were uncontrolled. Given these findings as well as a growing interest in CAM, ayurvedic treatments for CRS deserves further investigation.

2. **Giant and Macroadenomas: Sinonasal Outcomes of Infraselar Extension**

Karam W. Badran, MD, Los Angeles, CA; Edward C. Kuan, MD MBA, Los Angeles, CA;
Alex N. Goel, BA, Los Angeles, CA; Marvin Bergsneider, MD, Los Angeles, CA;
Marilene B. Wang, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to better understand the sinonasal correlates of pituitary adenomas, specifically 1) the impact of macro and giant pituitary adenomas on sinonasal outcome symptoms; and 2) characterize the clinical correlates of infraselar tumor extension.

Objectives: Infraselar extension of pituitary adenomas is uncommon. Giant pituitary adenomas (>4cm) often result in suprasellar expansion. The impact on sinonasal symptoms of large macroadenomas (>3cm) and giant pituitary adenomas has yet to be described. We investigate the extent of infraselar growth patterns of giant adenomas and their associated sinonasal clinical correlates. **Study Design:** Retrospective review. **Methods:** A retrospective analysis of all surgically excised pituitary adenomas from 2008-2016 was performed at a tertiary care academic medical center. The clinical manifestations, radiographic extent, and 22 item Sinonasal Outcome Tests (SNOT-22) of all adenomas greater than or equal to 3 cm were analyzed. **Results:** 118 of 415 patients who underwent resection of pituitary adenomas were found to have macroadenomas greater than or equal to 30 mm (mean 37.22 mm \pm 6.8 mm); 36 of which were giant. There were 26 tumors with infraselar extension (43.5 mm \pm 3.8 mm); size was significant factor in the presence of extension ($p < 0.001$). All tumors with infraselar extension occupied the sphenoid sinuses, and 4 occupied sphenoid and ethmoid sinuses. Of these, only 2 patients had sinonasal complaints (1.7% incidence). SNOT-22 scores did not correlate with pituitary tumor size ($R=0.014$, $p=0.39$). **Conclusions:** Sinonasal symptoms and SNOT-22 scores were not found to correlate with pituitary tumor size nor extension into the paranasal sinuses. Infraselar extension, however does correlate with adenoma size. Further investigation including serology, endocrinopathy, and associated comorbidities would aid in further clarifying the sinonasal impacts of pituitary processes.

Posters

3. Relationship between Allergic Rhinitis Control and Frequency of Sinus Infections

Raphael George Banoub, BS, Detroit, MI; Lloyd P. Hoehle, BA BS, Boston, MA; Katie M. Phillips, MD, Boston, MA; David S. Caradonna, MD DMD, Boston, MA; Stacey T. Gray, MD, Boston, MA; Ahmad R. Sedaghat, MD PhD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the association between allergic rhinitis control and the frequency with which allergic rhinitis patients have acute rhinosinusitis.

Objectives: Allergic rhinitis (AR) is reported to be associated with the development of acute rhinosinusitis (ARS). However, no prior study has shown whether the level of AR control is associated with the frequency of ARS. **Study Design:** Cross-sectional study of 200 individuals with persistent AR. Exclusion criteria included other inflammatory sinonasal conditions such as chronic rhinosinusitis. **Methods:** AR control level was quantified using the Rhinitis Control Assessment Test (RCAT). Participants were also asked to recall the number of ARS episodes experienced in the last 3 months. Regression, controlling for clinical and demographic characteristics, was performed to seek association between the number of ARS episodes experienced in the last 3 months and AR control. **Results:** Of all participants, 22.0% had a history of smoking, 13.0% had asthma, and 43% were using an antihistamine and/or intranasal corticosteroid. The mean RCAT score was 19.6 (SD: 4.5) with 66.0% having poorly controlled AR (defined as RCAT<22). A mean of 0.5 (SD: 0.7) ARS episodes was reported in the preceding 3 months. Of all participants, 41.0% reported having at least one ARS episode in the preceding 3 months. The number of ARS episodes in the preceding 3 months was associated with RCAT score (adjusted relative risk=0.92, 95% CI: 0.89 0.96, p<0.001) as well as having poor AR control (adjusted relative risk=1.70, 95% CI: 1.05 2.74, p=0.031). **Conclusions:** AR control is associated with the frequency with which AR patients experience ARS. AR control should be considered in the evaluation of AR patients with frequent ARS.

4. Early Intervention and Reduced Mortality in Acute Invasive Fungal Sinusitis: A Single Institution Experience

Samuel R. Barber, MD, Tucson, AZ; Tyson J. Nielsen, MD, Tucson, AZ; Saurabh Sharma, MD, Tucson, AZ; Eugene H. Chang, MD, Tucson, AZ; Stephen A. Goldstein, MD, Tucson, AZ; Christopher H. Le, MD, Tucson, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to compare populations at risk for AIFS, discuss how rapidly the disease process can progress, and explain how early medical and surgical intervention can potentially reduce mortality.

Objectives: Acute invasive fungal sinusitis (AIFS) affects immunocompromised hosts with devastating morbidity and reported mortality rates of 20-60%. Prognosis is poor despite aggressive medical and surgical interventions; particularly in cases with orbital and intracranial involvement. To date, reporting of outcomes from institutions with higher case volumes is limited. **Study Design:** Retrospective case review. **Methods:** Subjects included pediatric (n=1) and adult (n=9) patients from a single tertiary care institution between July 2015-2017. Patient demographics, clinical presentation, and hospital course were recorded. Subgroups comprised known risk factors for AIFS susceptibility and data was analyzed investigating treatment and outcomes. **Results:** Average age was 50 years old and 6/10 were male. Risk factors included type 2 diabetes (DM2) (4/10), prior organ transplantation (3/10), and hematologic pathology or malignancy (3/10). Orbital involvement occurred in the majority of cases (7/10), followed by intracranial (5/10) and cribriform plate (4/10) involvement. AIFS contained to just the nasal sinuses was less common (3/10). Of DM2 subjects, 3/4 survived. Mortality was observed in only 3/10 subjects and was associated with hemodynamic instability at time of presentation and significantly delayed diagnosis. Of living, 4/7 had orbital involvement, 3/7 had cribriform plate involvement and 2/7 had intracranial spread. **Conclusions:** Early diagnosis and initiation of medical and surgical treatment for AIFS at our institution and referring centers was paramount to reducing mortality. Orbital involvement was not necessarily an indicator of poor prognosis, and exenteration was shown to stop disease progression. Subjects without extrasinus spread of disease had no significant morbidities.

5. Pseudoaneurysm of the Descending Palatine Artery after Le Fort I Osteotomy: A Case Report and Review of the Literature

Amishav Y. Bresler, MD, Newark, NJ; Wayne D. Hsueh, MD, Newark, NJ; Shahid R. Aziz, DMD FACS, Newark, NJ; Jean A. Eloy, MD FACS, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the mechanism of formation of a pseudoaneurysm after orthognathic surgery, recognize its presentation, and the correct management.

Objectives: Epistaxis management comprises up to 12% of otorhinolaryngology inpatient consultations. Epistaxis can be secondary to a wide range of local and systemic factors, including recent orthognathic surgery. A Le Fort I osteotomy is commonly performed for the correction of dental facial deformities. Postoperative hemorrhage is one of the most feared complications of this osteotomy, but is reported to occur less than 2% of the time. We describe a case of recalcitrant

epistaxis secondary to the formation of a pseudoaneurysm of the descending palatine artery following an elective Le Fort I osteotomy. A literature review is provided detailing the presentation, natural history, and management of a pseudoaneurysm. **Study Design:** Case report. **Methods:** Case report with literature review. **Results:** A 19 year old male underwent Le Fort I osteotomy, bilateral intraoral vertical ramus osteotomies by an oral surgeon. The patient presented 6 days later with recurrent spontaneously resolving right sided epistaxis. The patient was anteriorly packed on the right with resolution of his epistaxis and given outpatient followup. The next day, the patient returned, now complaining of profuse spontaneously resolving left sided epistaxis. The patient underwent angiography that demonstrated a pseudoaneurysm originating of the descending palatine artery, which was successfully treated via embolization. The patient 6 is months out without recurrence. **Conclusions:** Pseudoaneurysm formation after Le Fort I osteotomy is highly dangerous and not responsive to traditional epistaxis management. This case presentation aims to highlight the importance of a high clinical suspicion for a pseudoaneurysm in the setting of recurrent spontaneously resolving epistaxis after orthognathic surgery.

6. The Role of Steroid Eluting Stents to Decrease Recurrence Risk in Adolescents with Allergic Fungal Rhinosinusitis

Brandon I. Esianor, BS, Houston, TX; William C. Yao, MD, Houston, TX; Soham Roy, MD, Houston, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate understanding in the utilization of mometasone eluting stents in the management of adolescent allergic fungal rhinosinusitis.

Objectives: Management for allergic fungal rhinosinusitis (AFRS) traditionally includes endoscopic sinus surgery (ESS), perioperative oral steroids, and long term intranasal steroids. Though this approach has proven to be efficacious, recurrence in the pediatric population ranges from 25-55%. We discuss the off label use of mometasone eluting stents to decrease the rate of recurrence in adolescent patients with AFRS. **Study Design:** Case series. **Methods:** Five teenage patients (mean age: 15.9 years, range 13.2-17.9 years) with a history of AFRS underwent ESS for disease management at a tertiary academic center. Two patients underwent primary surgery and the other three had revision surgeries following AFRS recurrence. At the conclusion of each case, biodegradable mometasone eluting stents were placed into the surgical cavity to contact areas with the highest disease burden. **Results:** No complications were encountered in the postoperative period. All patients remained free of symptoms and recurrence at a mean followup period of 81.8 days (range: 27 to 110 days). There were no adverse ocular effects with the off label use of steroid eluting stents. None of the five patients have required further surgical intervention to date. **Conclusions:** This is the first report detailing the use of the steroid eluting stents as an adjunct in the management of adolescents with AFRS. Although off label, the use of the steroid eluting implant has been observed to have low side effects and may lead to improved postoperative outcomes with longer symptom free intervals and fewer revision ESS in the adolescent population.

7. Biphenotypic Sinonasal Sarcoma Presenting as Inverted Papilloma: Report of a Rare Case and Review of the Literature

Mingyang L. Gray, MD MPH, New York, NY; Guiseppe Cruciat, MD, New York, NY; Peter M. Som, MD, New York, NY; Satish Govindaraj, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the clinical, histopathologic, and radiographic characteristics of biphenotypic sinonasal sarcoma.

Objectives: Discuss the diagnosis and management of a rare sinonasal malignancy. **Study Design:** Case report and review of literature. **Methods:** We present a patient with biphenotypic sinonasal sarcoma and a review of the current literature. **Results:** The patient is a 61 year old female who was referred to our institution for management of inverted papilloma (IP). She had nasal symptoms with frequent sinus infections for two years. CT and MRI revealed a left sinonasal mass with opacification of the left frontal ethmoids and a left frontal mucocele. The mass demonstrated involvement of the anterior skull base. Initial biopsy showed polypoid chronic rhinosinusitis with minimal eosinophilia, mild neutrophilia and squamous metaplasia. The patient underwent functional endoscopic sinus surgery with subfrontal craniotomy and obliteration of the frontal sinus. Intraoperative frozen section was consistent with IP. Final pathology revealed biphenotypic sinonasal sarcoma (BSNS), a rare low grade malignant tumor initially described in 2012 as low grade sinonasal sarcoma with neural and myogenic features. There have been approximately 50 cases reported. Histologically, there is a proliferation of spindle cells with invaginations of sinonasal epithelium that undergo squamous metaplasia, causing it to mimic papillomas. Gene mutations identified in these neoplasms most commonly involve PAX3. The limited literature suggests that they are slow growing with high rates of local recurrence but low rates of metastasis. **Conclusions:** Biphenotypic sinonasal sarcoma is a rare low grade malignancy that can mimic inverted papillomas. Management includes complete resection with close followup for recurrence.

8. Risk Factors for Disease Recurrence Following Surgery for Allergic Fungal Rhinosinusitis

Christopher J. Ito, MD, Augusta, GA; Thomas W. Holmes, MD, Augusta, GA; Mingsi Li, MD, Augusta, GA; Stilianos E. Kountakis, MD PhD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the need for

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postoperative medical therapy to control paranasal sinus disease associated with allergic fungal rhinosinusitis and discuss other potential risk factors that may be linked to recurrence.

Objectives: To identify risk factors for recurrent disease after surgery for allergic fungal rhinosinusitis. **Study Design:** Retrospective review of prospectively collected data. **Methods:** Patients with allergic fungal rhinosinusitis were identified in the senior author's patient database. Data were extracted, including demographics, subjective and objective measures of disease, pathology reports, and medication reconciliation lists. Patients were only included if they met standardized criteria for allergic fungal rhinosinusitis and had a postoperative followup period of at least 2 months. Patients were grouped according to the development or absence of disease recurrence during followup. **Results:** Fifty-nine patients were included after meeting strict diagnostic criteria for allergic fungal rhinosinusitis according to Bent and Kuhn with a mean followup period of 29.2 months. Thirty-one of the 59 patients (52.5%) were medically noncompliant. Twenty-nine of those 31 recurred at least once (93.5%), while only 8 of 28 patients (38.6%) who were compliant recurred ($p=0.00001$). The nonrecurrent group was significantly older than the recurrent group (40 vs 28 years old, $p=0.004$). Smoking ($p=0.95$) and asthma ($p=0.2$) were not risk factors for recurrence. **Conclusions:** Allergic fungal rhinosinusitis requires consistent long term therapy to prevent recurrence. Medical noncompliance is a major risk factor for recidivism in our patient population. Proper education and counseling is paramount to ensure the patient understands the importance of medical therapy.

9. Maxillary Sinus Cholesterol Granuloma

Nadeem R. Kolia, MD, Rochester, NY; Weitao Wang, MD, Rochester, NY; Li-Xing Man, MSc MD MPA, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the epidemiological, radiographic, clinical, gross, and histopathologic characteristics of paranasal sinus cholesterol granuloma.

Objectives: To report on two cases of maxillary sinus cholesterol granuloma and review the current literature on paranasal sinus cholesterol granulomas. **Study Design:** Case report and literature review. **Methods:** A retrospective chart review was performed of two patients with unilateral maxillary sinus cholesterol granuloma. A PubMed literature review of paranasal sinus cholesterol granulomas was also conducted. **Results:** The first patient was a 40 year old female who presented with left face pressure, tingling and numbness. CT and MRI showed a large cystic lesion occupying the left maxillary sinus and was negative for left infraorbital nerve involvement. The lesion had high signal on T1 and T2 weighted images. The second patient was a 15 year old male who presented with right nasal obstruction. CT imaging showed a large cystic lesion of the right maxillary sinus. Both patients were treated with endoscopic removal of the maxillary cyst, which was filled with yellow fluid and crystals, and attached to the anterior wall of the maxillary sinus. Final histopathology confirmed both as cholesterol granuloma. Serum lipid levels were not obtained. **Conclusions:** Paranasal sinus cholesterol granulomas are a benign pathology that can present on imaging as unilateral cystic lesions of the paranasal sinus. They are most common in middle aged men and most frequently occupy the frontal sinus. MRI may be a useful imaging modality to differentiate cholesterol granulomas from other cystic lesions. Endoscopic resection is an effective treatment, and they have not been reported to recur after removal.

10. Crenotherapy as a Complementary and Alternative Treatment for Chronic Rhinosinusitis: A Systematic Review

Luis E. Monterroso, BA, Rochester, NY; Isaac L. Schmale, MD, Rochester, NY; Li-Xing Man, MSc MD MPA, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the current published evidence for crenotherapy as a complementary and alternative treatment for chronic rhinosinusitis.

Objectives: Chronic rhinosinusitis (CRS) is a common condition which significantly affects patient quality of life. CRS treatments have known side effects and variable efficacy rates. As such, complementary and alternative treatments for CRS are of continued interest. Crenotherapy utilizes high mineral content water irrigations or inhalations to alleviate symptoms of various respiratory diseases including CRS. The purpose of this study is to provide a systematic review of crenotherapy for the treatment of CRS. **Study Design:** Systematic review. **Methods:** A systematic review utilizing Medline, Embase, and Cochrane Library databases was performed. Articles published prior to August 2017, with at least 10 patients, investigating crenotherapy treatment for CRS in humans were eligible for inclusion. **Results:** This review identified 271 unique articles. After review, including relevant cited references, 12 studies met our inclusion criteria, of which 7 were randomized controlled trials (RCTs). Among RCTs, rhinosinusitis related symptoms, mucociliary clearance, and rhinomanometry values were frequently measured with (3/5) 60%, (4/5) 80%, and (2/3) 66.7% articles showing a statistically significant improvement compared to control, respectively. Adverse reactions such as nasal irritation, burning sensation, and minor epistaxis were infrequently observed. **Conclusions:** Currently, the published literature is not strong enough to make formal recommendations for or against crenotherapy as a treatment for CRS. Most studies demonstrate an overall improvement in CRS objective and subjective measures after crenotherapy suggesting select CRS patients may benefit from crenotherapy treatment. However, positive results must be interpreted cautiously given variable CRS diagnostic criteria, inclusion/exclusion criteria, and outcome measures used in individual studies.

11. The Burden of Sinusitis in Hematologic Transplant Patients: A National Perspective

Vivek C. Pandrangi, BA, Richmond, VA; Evan R. Reiter, MD, Richmond, VA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the impact of sinusitis on hospital outcomes for patients undergoing hematologic transplants.

Objectives: To determine impact of sinusitis on outcomes of hematologic transplant procedures. **Study Design:** Retrospective analysis of a national hospital database (2012-2013 National Inpatient Sample). **Methods:** Database was queried using ICD-9 codes to identify patients undergoing hematologic transplants. Patients were divided based upon the presence or absence of a concomitant diagnosis of acute or chronic sinusitis. Patient demographics, clinical characteristics, discharge results, lengths of stay (LOS), and costs were compared between groups. **Results:** There were 7,069 hematologic transplant cases identified, 2.7% of which had a diagnosis of sinusitis. Sinusitis patients had longer LOS after transplant (24.9 ± 15.9 days vs. 19.1 ± 17.4 days, $p < 0.001$) and higher total hospital charges ($\$487,941 \pm 447,532$ vs. $\$322,300 \pm 369,596$, $p < 0.001$) than non-sinusitis patients. There was no difference in mortality between the two groups ($p = 0.75$). The 23 (12%) of sinusitis patients who underwent sinus procedures had longer LOS after transplant (34.8 ± 25 days vs. 23.5 ± 13.7 days, $p = 0.001$) and higher total hospital charges ($\$857,891 \pm 718,456$ vs. $\$437,293 \pm 372,075$, $p < 0.001$) than sinusitis patients without sinus procedures. Linear regression showed that sinusitis patients had excess LOS after transplant of 2.726 days and cost of $\$87,575.427$. **Conclusions:** This study demonstrates that presence of sinusitis in patients undergoing hematologic transplant places additional burden on both patients and healthcare systems due to increased LOS and higher total hospital charges. Increased focus on diagnosis and if possible treatment of sinusitis prior to admission for transplantation may help reduce the impact of sinusitis after hematologic transplant.

12. Actinomyces Acute Rhinosinusitis Complicated by Subperiosteal Abscess in an Immunocompromised 12 Year Old: Case Report and Review of the Literature

Isaac L. Schmale, MD, Rochester, NY; Li-Xing Man, MSc MD MPA, Rochester, NY; Margo M. Benoit, MD, Rochester, NY; John J. Faria, MD, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the management of actinomyces acute rhinosinusitis with an emphasis on high index of suspicion for unusual causative organisms in the immunocompromised host and aggressive early treatment with concern for impending complications or conservative treatment failure.

Objectives: We report a case of actinomycotic acute rhinosinusitis complicated by orbital subperiosteal abscess. The distinguishing clinical features and treatment of this rare presentation of rhinosinusitis are presented. **Study Design:** Case report. **Methods:** Case report and relevant literature review. **Results:** 12 year old patient with Crohn's disease on infliximab presented with 2 weeks of nasal congestion and URI symptoms not responsive to oral antibiotics. Purulent rhinorrhea and significant right eye swelling developed. Subsequent CT demonstrated right maxillary and ethmoid opacification and associated orbital cellulitis with subperiosteal abscess. Endoscopic sinus surgery was performed and cultures grew actinomyces species. Antibiotic therapy with ampicillin/sulbactam and vancomycin was initiated followed by a prolonged course of high dose amoxicillin/clavulanate. At followup, dacryocystitis persisted and was managed with topical erythromycin and warm compresses successfully. The patient recovered without further complication. **Conclusions:** Actinomyces of the paranasal sinuses with orbital subperiosteal abscess is a rare presentation of rhinosinusitis. Based on the small number of cases in the literature, actinomyces of the paranasal sinuses with or without complication is managed with surgical debridement and abscess drainage as necessary. Postoperative IV antibiotics followed by long term oral antibiotic therapy with amoxicillin, ampicillin or penicillin V is thought to reduce disease recurrence. The above treatment should also be therapeutic for dacryocystitis. However, topical antibiotic eye drops, warm compresses, or dacryocystorhinostomy may be required. This case highlights that in immunocompromised hosts, rhinosinusitis from unusual organisms should be considered and prompt aggressive therapy instituted if conservative treatment fails or with concern for complications.

13. Socioeconomic Factors Associated with Readmissions and Length of Stay after Transsphenoidal Pituitary Surgery: The Benefit of Experienced Centers

Joshua R. Zeiger, BA, New York, NY; Anthony Yang, BS, New York, NY; Sarah M. Kidwai, MD, New York, NY; Satish Govindaraj, MD, New York, NY; Raj K. Shrivastava, MD, New York, NY; Alfred M.C. Iloreta, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) illustrate disparities in care of patients who undergo pituitary surgery; and 2) recognize risk factors for readmission and complications after endoscopic pituitary surgery.

Objectives: 1) Highlight factors associated with a higher rate of readmission and length of hospital stay; 2) identify factors that can be targeted in high risk populations in order to decrease postoperative readmission rate. **Study Design:** Retrospective cohort study. **Methods:** Statewide planning and research cooperative system (SPARCS) database identified

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patients who underwent transsphenoidal pituitary surgery from 1995 to 2015. Logistic regression analysis was performed for sociodemographic factors, comorbidities, complications with readmissions and prolonged length of stay. **Results:** 9,373 patients were identified using ICD-9 codes for transsphenoidal pituitary lesion resection. Females were more likely than males to be readmitted within 30 days (OR 1.43, $p < 0.001$). Hispanic (OR 1.64, $p < 0.001$), black (OR 1.96, $p < 0.001$), patients greater than 65 years of age (OR 1.56, $p < 0.001$), patients with Medicaid (OR 2.59, $p < 0.001$), and patients with postoperative diabetes insipidus (OR 3.55, $p < 0.001$) and cerebrospinal fluid leaks (OR 4.53, $p < 0.001$) had a greater likelihood of having a prolonged hospital stay. Patients admitted to high volume hospitals (OR 0.58, $p < 0.001$) and with high volume surgeons (OR 0.45, $p < 0.001$) had a lower likelihood of having a prolonged hospital stay. **Conclusions:** There are significant disparities in readmission rates among: female, Hispanic, and black patients. Increased length of stay was associated with: age greater than 65, Medicaid insurance, DI, and postoperative CSF leak. Experienced, high volume centers may improve outcome measures. This data may help identify at risk populations and improve outcomes.

14. Measuring Nasal Mucosa Ciliary Beat Frequency Using Optical Coherence Tomography

Alisa Zhukhovitskaya, MD, Irvine, CA; Jason J. Chen, BS, Irvine, CA; Jeffrey T. Gu, BS, Irvine, CA; Andrew E. Heidari, BS, Irvine, CA; Zhongping Chen, MD, Irvine, CA; Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss a method of measuring sinonasal ciliary beat frequency in vivo.

Objectives: To demonstrate a method of quantifying ciliary beat frequency (CBT) of sinonasal mucosa in vivo using optical coherence tomography (OCT) in anesthetized rabbits. **Study Design:** Animal research study. **Methods:** In vivo intraoperative imaging of anesthetized New Zealand white rabbit sinonasal mucosa using OCT probe was performed. CBT was quantified using MATLAB script and Fourier analysis during control condition and after application of topical lidocaine and topical epinephrine. High resolution cross-sectional images were acquired using a rigid OCT probe with 1310 nm laser source, with lateral resolution of 5.4 μm , axial resolution of 10 μm and imaging depth of up to 2mm; data is acquired at 50 frames per second. **Results:** OCT imaging of sinonasal mucosa in anesthetized rabbit was technically feasible after surgically unroofing the nasal cavity and sinuses. CBT in rabbit in the epinephrine experiment was 12.5 Hz for control, 24.5 Hz after application of epinephrine. CBT in the rabbit undergoing the lidocaine experiment was 12 Hz for control, 8.5 Hz after application of lidocaine. **Conclusions:** To our knowledge, this is the first description of measuring CBT of sinonasal mucosa in vivo. Mucociliary clearance is driven by coordinated beating of cilia, impairment has been implicated in sinonasal disease; it may also be affected by drugs and toxins. Ability to monitor and quantify CBT may have implications in choice of treatment, measuring response to therapy, and monitoring the natural progression of sinonasal disease. Future directions include imaging of sinonasal mucosa of human patients undergoing sinus and cancer resection surgery.

15. Recovery from Rhinitis Medicamentosa: A Systematic Review

Shana M. Zucker, BA, New Orleans, LA; Blair M. Barton, MD, New Orleans, LA; Edward D. McCoul, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the gaps in the literature with regard to rhinitis medicamentosa, including 1) the incomplete understanding of its pathophysiology; 2) the inconsistency in current treatment practice; 3) the significant variability in study design, outcomes measured and methods of assessment, in the current literature.; 4) the current most common treatment of rhinitis medicamentosa; and 5) the necessity for prospective randomized clinical trials using standardized questionnaires, outcomes, and methods of outcome measurements to determine the optimal treatment of rhinitis medicamentosa.

Objectives: Rhinitis medicamentosa (RM), resulting from overuse of topical nasal decongestants, is a common practice, but clear treatment protocol has not yet been established. The outcome measures of treatment, including but not limited to patient reports of symptom relief and ability to discontinue topical vasoconstrictors without relapse, were reviewed. **Study Design:** PubMed, Embase, Cochrane, and Web of Science databases were examined for patients diagnosed with RM resulting from chronic use of topical nasal decongestants. **Methods:** Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines were utilized to identify English language studies reporting treatment of human patients with the primary complaint of RM, or related complaints of rhinitis after chronic use of a topical decongestant. Two independent reviewers assessed the quality of the articles by using the Methodological Index for Nonrandomized Studies (MINORS) criteria. **Results:** 350 articles were identified, nine of which met final inclusion criteria for qualitative analysis. Outcomes defined in each publication were highly varied, and several utilized different, unstandardized measures of such outcomes. Due to the heterogeneity of methodology and outcomes assessed, data could not be extracted for valid comparison. Based on analysis of the data, there was no consensus on the best treatment; still, most treat with nasal steroids. **Conclusions:** There is not adequate evidence to develop a standardized treatment protocol for RM. The development of a uniform questionnaire, standard outcomes to be measured, and a method of assessing such outcomes are recommended to yield consensus. Prospective, randomized controlled studies are warranted to determine the optimal treatment regimen following diagnosis of RM.

FACIAL PLASTIC & RECONSTRUCTIVE**16. Effect of Mandibular Involvement on Complication Rates of Facial Fracture Repair**

Gregory L. Barinsky, PharmD, Newark, NJ; Marcus L. Elias, BS, Newark, NJ; Joseph S. Weisberger, MS, Newark, NJ; Meghan Crippen, MS, Newark, NJ; Richard C.W. Park, MD, Newark, NJ; Boris Paskhover, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the impact of mandibular involvement in facial fractures on complication rates after fracture repair.

Objectives: To investigate the effect of mandibular involvement on complication rates following facial fracture repair. **Study Design:** Retrospective database analysis. **Methods:** The National Surgical Quality Improvement Program (NSQIP) database was queried for all facial fractures involving the mandible, maxilla, midface, nasal, and orbital regions from 2005-2014. Of 3,053 cases, 164 were excluded for concurrent procedures to other body parts, hardware removal/revision, and fractures associated with malignancy removal. These 2,889 cases were divided into mandibular fractures (n=956) and non-mandibular facial fractures (n=1933). The groups were compared using univariate analysis and further multivariate logistic regression. **Results:** The majority of the mandible fracture group was aged 16-40 (69.2%), male (86.4%), white (42.1%), and are current smokers (50.1%). Initial univariate analysis showed that mandible fractures have a higher risk of superficial surgical site infection (SSI) (p=0.015), deep SSI (p=0.003), wound disruption (p=0.019), total surgical complications (p=0.005), total medical complications (p=0.028), and all complications (p=0.001). The logistic regression accounting for age, sex, race, and statistically significant comorbidities showed that mandibular fracture is an independent predictor of superficial SSI (OR=2.358, p=0.035), deep SSI (OR=7.128, p=0.019), wound disruption (OR=6.422, p=0.031), total surgical complications (OR=2.176, p=0.003), and all complications (OR=1.996, p=0.003). However, mandibular involvement was not a significant predictor of total medical complications (OR=1.467, p=0.399). In the non-mandibular group the most common fracture site was midface (42.5%), followed by orbital (35.5%), multiple sites (14.8%), nasal (4.0%), and frontal (3.2%). **Conclusions:** Mandibular fractures were associated with significantly higher rates of surgical postoperative complications, specifically superficial SSI, deep SSI, and wound disruption, when compared to facial fractures with no mandibular involvement.

17. Complications and Informed Consent in Rhinoplasty

Dalan M. Cragun, Irvine, CA; Brian J.F. Wong, MD, Irvine, CA; Hollin E. Calloway, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the context of informed consent in rhinoplasty procedures and its importance in protecting both the patient and the physician.

Objectives: To underscore the importance of informed consent in rhinoplasty, a technically challenging operation with consistently reported revision rates varying from 5-15 percent for 50+ years. **Study Design:** Retrospective chart review. **Methods:** Comprehensive Google search, using the terms rhinoplasty informed consent and rhinoplasty consent forms, yielding 72,000 hits which were systematically evaluated to identify websites where consent forms could be downloaded. In parallel, consent forms were requested from select facial plastic surgery fellowship directors. **Results:** Fifty-eight forms were identified, and 98 specific complications were identified and categorized as: infections, SSTE issues, framework and intranasal, acute postoperative issues, revisions, realistic expectation, cautions to control or avoid, and general surgical/anesthesia risks. A literature search was performed to document the incidence rate of the rhinoplasty complications. Each potential complication and actual incidence were detailed. For example, bleeding was covered in 95% of the consent forms, and occurs in 1-4% of rhinoplasty operations. Improvement is cited in 6-9% of all secondary surgeries. Certain common complications were not covered in a majority of forms. Dehiscence occurs in up to 5% of rhinoplasties, however is covered in only 25% of analyzed consent forms. **Conclusions:** Informed consent is necessary to communicate possible negative and unfavorable outcomes to patients. This is the first survey focused on the content of rhinoplasty consent forms, and a survey, albeit limited, of what appear to be surgeon concerns. Many surgeons use boilerplate consent forms advocated by national organizations. While the relative occurrence of each of these complications is relatively low, they happen, and surgeons need comprehensive legal protection.

18. Hemostatic Profile and Microvascular Reconstructive Surgery of the Head and Neck: An Analysis of Postoperative Risk

Marcus L. Elias, BS, Newark, NJ; Joseph S. Weisberger, MS, Newark, NJ; Meghan M. Crippen, MS, Newark, NJ; Jean A. Eloy, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard C. Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of a patient's hemostatic profile on the potential for complications after microvascular free flap surgery.

Objectives: To investigate the impact of an abnormal coagulation profile on adverse events following free flap surgery of the head and neck. **Study Design:** Retrospective database review. **Methods:** The National Surgical Quality Improvement Program (NSQIP) database was queried for all free flap surgeries of the head and neck between 2005 and 2014

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(n=1985). Thrombocytopenia (platelets<150,000), thrombocytosis (platelets>450,000), anemia (male hematocrit<39%; female hematocrit <36%), abnormal INR (>1.1), and bleeding disorders (deficiencies of blood clotting elements) were the independent variables analyzed via univariate and multivariate analyses. **Results:** On multivariate analysis via logistical regression--controlling for age, sex, race, and significant comorbidities found through univariate analysis--all independent variable groups except the thrombocytopenia cohort presented with significant outcome differences. Thrombocytosis increased the risk for both surgical complications (OR=1.990, p=0.039) and overall complications (OR=2.062, p=0.035). The abnormal INR subgroup demonstrated a higher rate of cerebrovascular events (OR=5.109, p=0.014) and urinary tract infections (OR=5.109, p=0.014). Anemic patients exhibited more bleeding (OR=3.987, p<0.001), surgical complications (OR=3.086, p<0.001), and overall complications (OR=2.633, p<0.001). Bleeding disorders increased the risk of death (OR=6.076, p=0.006), bleeding (OR=2.352, p=0.016), septic shock (OR=9.093, p=0.009), surgical complications (OR=2.303, p=0.021), and overall complications (OR=2.658, p=0.010). **Conclusions:** For patients undergoing microvascular free flap surgeries of the head and neck, hemostatic disorders predicted the likelihood of several postoperative outcomes. However, graft failure was not affected by any of the examined hemostatic disorders. Thrombocytopenia did not indicate variations in outcome probability.

19. John J. Conley, MD Resident Research Award
FACE-Q Patient Perceived Nasal Appearance Evaluation Following Functional Septorhinoplasty with Spreader Graft Placement

Jennifer C. Fuller, MD, Boston, MA; Patricia A. Levesque, BS, Boston, MA; Robin W. Lindsay, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the impact of spreader grafts and patient perceived nasal appearance.

Objectives: To evaluate the impact of functional septorhinoplasty with spreader graft placement of patient satisfaction with nasal appearance. **Study Design:** Retrospective analysis of prospective cohort study. **Methods:** Patients undergoing functional septorhinoplasty for nasal obstruction were administered both the Nasal Obstruction Symptom Evaluation (NOSE) scale and the FACE-Q Satisfaction with Nose, Satisfaction with Nostrils, and Social Functioning scales pre and postoperatively at 2, 4, 6, and 12 months. Patient demographics, nasal history, and outcomes were analyzed. **Results:** 85 patients (44.7% male) with mean age (SD) of 38.5 (16.3) years underwent functional septorhinoplasty with spreader grafts for nasal obstruction. 50.0% had a history of nasal fracture and 36.7% had previous nasal surgery. Average last followup was at 4.2 (2.8) months, range 2-12 months. NOSE and FACE-Q satisfaction with nose, satisfaction with nostrils, and social functioning scores significantly improved from 60.0 (20.6) to 22.2 (20.2) (p<<0.001), 52.7 (23.1) to 75.1 (25.1) (p<<0.001), 57.1 (26.3) to 83.2(22.5) (p<<0.001), and 72.0 (23.2) to 81.5 (21.2) (p>0.001), respectively. When separated into those with only spreader grafts (n=54) and those with spreader grafts plus other graft types (columellar strut, alar rim, lateral crural strut; n=31), there was no significant difference between score improvements in the two groups. **Conclusions:** Despite concerns that placement of spreader grafts for the treatment of nasal obstruction due to nasal valve compromise during functional septorhinoplasty has the disadvantage of making the nasal dorsum wider, this study shows that both nasal obstruction and patient satisfaction with their nasal appearance significantly improve following surgery.

20. Stereolithography as an Aid for Free Tissue Transfer Mandibular Reconstruction

Dominick J. Gadaleta, MD, Philadelphia, PA; Nicholas Rankin, BS, Philadelphia, PA; Denis Huang, BS, Philadelphia, PA; Bon Ku, MD, Philadelphia, PA; Adam Flanders, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the possibility of stereolithography as a cost effective aid in mandibular reconstruction.

Objectives: Achieving functional and aesthetic outcomes with mandibular reconstruction remains a challenge for head and neck surgeons. The surgery involves the use of titanium reconstruction plates and autologous free tissue bone grafting. After exposing the mandible, plates are bent to the patient's anatomic contour. This can be both time consuming and challenging, specifically in cases with bony erosion or pathologic fractures. Applications of stereolithography in this field have improved surgical outcomes and reduced operation time. In this study, we use stereolithographic models to prebend mandibular reconstruction plates prior to procedure. **Study Design:** Small case series. **Methods:** CT scans were anonymized and converted into stereolithography (STL) files. Using commercially available software, the model was optimized for anatomical accuracy and printing quality. The mandible template was printed using polylactic acid (PLA) plastic filament on an Ultimaker 2+ Extended printer. Following post-print processing, a senior otolaryngology resident prebent the titanium plate to the model. The plate and model were then sterilized in preparation for surgery. **Results:** In this small case series, time spent prebending the plates before surgery ranged from 17-37 minutes and time spent adjusting the plates in the OR ranged from 0-1 minute and 43 seconds. Prebent plates were subjected to the same intraoperative fit testing as unbent plates yielding a functionally equivalent result. **Conclusions:** Preoperative plate bending using 3D printed templates has the potential to reduced intraoperative time while maintaining functional and cosmetic outcomes. The sterilized model allowed for the reconstructive surgeon to manipulate the plate when access to the field was limited.

21. Free Tissue Transfer in Patients with Ichthyosis

Savannah Gelesko, MD DDS, Portland, OR; Jeff Wong, Bsc, Portland, OR; Matthew Hanasono, MD, Houston, TX; Ted Teknos, MD, Columbus, OH; Mark Wax, MD, Portland, OR; Daniel Petrisor, MD DDS, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the complications associated with free tissue transfer in patients with ichthyosis.

Objectives: Determine whether microvascular reconstruction in patients with ichthyosis is a viable treatment option. **Study Design:** Retrospective chart review. **Methods:** Microvascular surgeons from 30 institutions were contacted by email with request for reply from anyone who had performed microvascular reconstruction on a patient with ichthyosis. **Results:** Three institutions treated one patient each, procedures ranged from 2013-2017. All patients underwent resection of an oral cavity cancer and reconstruction with a free flap (two fibula flaps and one anterolateral thigh flap). No patients had special pre or postoperative skin care management. Two patients required readmission and return to the OR for abscess drainage on postop days 20 and 21 respectively: one patient had diabetes mellitus and congenital ichthyosiform erythroderma, she developed a donor site infection and recipient site wound dehiscences; one patient had KID (keratitis-ichthyosis-deafness) syndrome, she developed a recipient site abscess. The third patient had no complications. No patients had problems related to the vascular anastomoses and all flaps survived. **Conclusions:** Patients with ichthyosis who require free flap reconstruction with a skin paddle may be at an increased risk of late wound infection; they may benefit from additional perioperative skin care and should have increased frequency of postoperative wound monitoring in anticipation of wound healing difficulties.

22. Turnkey Ultra-High Definition Point of View Operative Video Using Cell Phone and Telephoto Lens for Facial Plastic Surgery

Allison C. Hu, BA, Irvine, CA; Amir A. Hakimi, BA, Irvine, CA; Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to replicate the surgical video recording design outlined here and implement it in their own operating rooms.

Objectives: Surgical ultra-high definition video recorded from the surgeon's point of view enhances trainee education, research, and knowledge dissemination. Previous studies have described the use of Google Glass, GoPro-type devices, and other handheld cameras, each with limitations related to image quality, cost, point of view optics, and ergonomics. These shortcomings can be addressed using contemporary smartphone technology, head strap mounts, and low cost consumer telephoto lenses. Here, we describe the use of such a turnkey system and its use in facial plastic surgery. **Study Design:** An exploratory study evaluating the feasibility of using a head mounted smartphone and a telephoto lens for surgical videography. **Methods:** A smartphone (iPhone 7 or Samsung Galaxy S7) was outfitted with a telephoto lens (\$60, Moment Lens) and mounted on a head strap (\$7.50, AmazonBasics) oriented to yield and image with the surgeon's perspective in a field of view less than 32x18cm. The phone screens were projected onto a nearby monitor and a Bluetooth shutter remote was placed in a sterile bag controlled by the surgeon. Videos using conventional handheld digital camera and camcorder were also recorded. All videos were shown blinded to focus groups and graded on a 5 point scale. **Results:** A rhinoplasty procedure was recorded at 4K pixel resolution at 30 frames per second. The design was compatible with glasses and a surgical headlight. The captured videos from both smartphones were high quality and sufficient for evaluating operative skill, surgical education, or presentation purposes. Focus group results were significant ($p < 0.05$). **Conclusions:** This simple handsfree, point of view design can efficiently capture the relevant surgical field with adequate detail using consumer grade hardware and has a cost threshold factor of 15 less than commercial surgical systems.

23. Fibrous Mass as a Delayed Complication of Nasal Osteotomy

Richard Kao, MD, Indianapolis, IN; Brian C. Lobo, MD, Cleveland, OH; Taha Z. Shipchandler, MD, Indianapolis, IN

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) demonstrate understanding of the differential of nasal mass formation after rhinoplasty; 2) demonstrate understanding of fracture biology as it pertains to lateral osteotomy in rhinoplasty; and 3) describe fibrous mass formation as a potential delayed complication in rhinoplasty.

Objectives: 1) Demonstrate understanding of the differential of nasal mass formation after rhinoplasty; 2) demonstrate understanding of fracture biology as it pertains to lateral osteotomy in rhinoplasty; and 3) describe fibrous mass formation as a potential delayed complication in rhinoplasty. **Study Design:** Case report. **Methods:** Retrospective chart review. **Results:** Myriad complications have been described after rhinoplasty. The presence of a fibrous mass in the location of a prior nasal osteotomy has not been reported in the literature. We describe the case of a 43 year old female who five years after revision septorhinoplasty presented with a firm, palpable mass over her right nasal bone. Excisional biopsy was ultimately performed, demonstrating a mass emanating from a previous osteotomy site. Pathologic evaluation was consistent with benign granulomatous inflammation. We report the case herein and believe that this entity, while previously

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undescribed, is a complication of rhinoplasty that merits awareness of the otolaryngology community. **Conclusions:** Fibrous mass formation in the location of a prior nasal osteotomy is a previously undescribed complication of rhinoplasty that merits the awareness of the otolaryngology and facial plastic surgery community. The cosmetic deformity is benign in nature, and amenable to surgical treatment, but may require local tissue advancement to correct any soft tissue deficit.

24. Supercharged Pectoralis Major Myocutaneous Flap for Early Venous Congestion

Andrew H. Lee, MD, Baltimore, MD; Irene A. Kim, MD, Los Angeles, CA; Christopher J. Britt, MD, Baltimore, MD; Shaun C. Desai, MD, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to consider a novel solution in managing early venous congestion in the pectoralis major myocutaneous flap.

Objectives: We encountered a patient with a pectoralis major myocutaneous flap (PMMF) whose skin paddle was found to be reliant on intercostal perforator veins for venous drainage, leading to intraoperative venous congestion despite preservation of the pectoral branch of the thoracoacromial artery and associated vena comitantes. The aim of this report is to describe a novel surgical technique to address such a vascular anatomic variant in a PMMF. **Study Design:** Case report. **Methods:** The patient is a 72 year old male who underwent hemimandibulectomy for squamous cell carcinoma of the retromolar trigone who was a poor candidate for free tissue transfer. The PMMF was raised to the pedicle and inset into the surgical defect in the usual fashion. Afterwards, the common facial vein was dissected in its entirety for microvascular anastomosis and anastomosed to the intercostal vein using a 1.5 mm venous coupler. **Results:** There was successful anastomosis of the common facial vein (4mm diameter) to the intercostal perforator (1.5 mm diameter) despite size mismatch, with return of normal turgor and color from the skin paddle within 90 seconds. The flap continued to do well on 6 week followup. **Conclusions:** This technique represents a novel option to address a vascular anatomic variant in a PMMF. To our knowledge, such a hybrid supercharged PMMF to preserve sufficient venous outflow has not been previously reported.

25. Development and Evaluation of Rhinoplasty Suture Simulator as a Potential Training Model for Novice Surgeons

Connie J. Oh, BS, Irvine, CA; Prem Tripathi, MD MPH, Irvine, CA; Pamela Borden, BS, Irvine, CA; Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to utilize the described training model to objectively assess the skill level of otolaryngology residents during rhinoplasty.

Objectives: Rhinoplasty surgical simulators, specifically those aimed at developing and evaluating cartilage suturing skill, are not readily available. Suturing cartilage grafts is challenging for young surgeons and not reliably evaluated using subjective measures. Suturing a spreader graft to the septum is a common open rhinoplasty procedure, and among the first cartilage suturing skills a young surgeon acquires. Acquisition of this skill set is challenging as residents seldom train on aesthetic surgery patients. Hence, residents may greatly benefit from practice on simulators that use cartilage rather than synthetic materials, use models that mimic the nose in form factor, and gauge improvement using objective measures for suture placement accuracy, speed and efficiency of hand motion. Here we developed a surgical simulator for spreader graft placement using porcine costal cartilage and track outcomes in terms of efficiency and accuracy. We compared suture technique between residents and expert surgeons monitoring hand motion using a radiofrequency tracking device. **Study Design:** Cohort study comparing the suturing efficiency and accuracy between novice and expert cohort group using the spreader graft placement simulator. **Methods:** A simulator with form factor mimicking the human nasal vault was constructed. The porcine septal cartilage was precisely sectioned (2 x 15 x 25 mm) to emulate the quadrangular cartilage. 22 otolaryngologists in two groups (residents [10] and experts [12]) were instructed to secure the two cartilage graft specimen (2 x 5 x 20 mm) into position with three mattress sutures. Hand motion was tracked using an electromagnetic tracker. Cumulative time required to complete the task, total integrated displacement of the hand, cumulative number of hand motion direction changes, and accuracy of suture insertion were measured. The subjects completed a survey to rate realism and value of the model. **Results:** The expert group outperformed the resident group in mean cumulative time required to complete the task ($p < 0.05$), total integrated displacement of the hand ($p < 0.01$), and cumulative number of hand motion direction changes ($p < 0.001$). No significant difference was observed between the two groups in precision measurement. In the questionnaires that rated the increase in confidence level from the simulator and the recommendation of the simulator for practice, the participants scored 1.7 and 1.5 respectively on a scale of 1 to 5 (1=strongly agree, 5=strongly disagree). **Conclusions:** The efficiency of the suturing hand movement measured by the spreader graft placement simulator is associated with the skill level of the surgeon, demonstrating that the simulator is a reliable tool to objectively measure suturing efficiency. In conjunction with the participants' response to the simulator, this study suggests that the use of the spreader graft placement simulator may potentially be used to train novice surgeons.

26. Weather and Temporal Patterns in Pediatric Facial Fractures

Cyrus Cameron Rabbani, MD, Indianapolis, IN; Jack E. Burgeson, BS, Indianapolis, IN; Richard Kao, MD, Indianapolis, IN; Taha Z. Shipchandler, MD, Indianapolis, IN; David M. Chan, MD, Indianapolis, IN; Michael W. Sim, MD, Indianapolis, IN

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate a relationship between weather patterns and events to the frequency of pediatric facial fractures.

Objectives: Evaluate impact of weather, seasons, months and holidays on the frequency of facial fractures in the pediatric population. **Study Design:** IRB approved retrospective case review. **Methods:** Pediatric facial fracture data from a level 1 trauma center was evaluated over a 5 year period from January of 2012 until December of 2016. Weather data was acquired in the hours leading up to the initial encounter. The local public school schedule was acquired to examine over this same period of time for holidays and days off. Chi-squared tests and binomial regression model statistics were applied to examine any factors impacting the chance of an operative intervention. **Results:** A total of 285 patients were collected over a 5 year period, initially presenting for workup and management of facial fractures. The average age was 11.8 years old (SD=5), with 192 males and 93 females. The highest distribution of presentations occurred in the summer season (34.7%), on Sunday (18.9%), with temperatures between 60°-85° (55.1%), and when the weather was described as clear (53.0%). The most common mechanism of fractures were motor vehicle collisions (26.7%), followed by sport (16.1%) and blunt assault (15.1%) related injuries. Overall, 70 patients required operative intervention for the facial fracture (24.6%). The only factor that was found to impact the likelihood of intervention was the age of the patient [F(1)=1.076, p=0.02]. The mechanism of the fracture did not impact the likelihood of intervention. **Conclusions:** Pediatric facial fractures are more common in warmer weather with clear skies and are linked to season of the year and day of the week.

27. Temporoparietal Fascial Flap for Orbital and Eyelid Reconstruction

Akshay Sanan, MD, Philadelphia, PA; Ryan N. Heffelfinger, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the reconstructive paradigm for orbital and eyelid defects. We describe multiple cases using the temporoparietal fascial flap (TPFF) for complex orbital and eyelid reconstruction.

Objectives: To evaluate the success of the TPFF in primary and secondary reconstructions of orbital and eyelid defects. We describe the thought process and technical details of operative maneuvers. **Study Design:** Retrospective analysis. **Methods:** The case series of a single surgeon at a tertiary care academic medical center is presented. Patients' pertinent history and clinical findings are examined. Orbital and eyelid defects included soft tissue and bony defects from trauma, neoplasms and radiation treatment. Figures and intraoperative photography will demonstrate surgical specifics. **Results:** All patients had successful transfer of TPFF grafts without flap compromise. TPFF was good for providing bulk in concave orbital defects and eyelid defects. Other grafts used included full thickness skin grafts and mucosal and cartilage grafts. TPFF successfully restored vascularity, tissue contour, and obliterated the defects in all cases. Skin grafts placed on the pedicled TPFF had a 100% survival rate. **Conclusions:** TPFF is a reliable and hearty flap for orbital and eyelid reconstruction. Donor morbidity is low and well tolerated by patients. This study presents the use of TPFF in various defects ranging from orbital defects to total eyelid reconstruction. In all cases, there was improvement in aesthetic outcome and contour of the defect site.

28. The Use of Free Muscle Tissue Transfer for Coverage of Synthetic Custom Implants in Scalp Reconstruction

Vanessa C. Stubbs, MD, Philadelphia, PA; Karthik Rajasekaran, MD, Philadelphia, PA; Rabie M. Shanti, MD, Philadelphia, PA; John Y.K. Lee, MD MSCE, Philadelphia, PA; Jason G. Newman, MD, Philadelphia, PA; Steven B. Cannady, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the use of free tissue transfer for coverage of synthetic implants during reconstruction of scalp defects.

Objectives: Reconstruction of acquired scalp defects continues to be a challenge, especially in the setting of prior radiation, recurrent incisional breakdown, or infection. Free tissue transfer is an established strategy in the head and neck to recruit healthy, vascularized tissue to an area of poor wound healing to improve reconstructive outcome. While custom implants can be utilized to repair calvarial defects without additional soft tissue coverage, we propose that in cases of poor wound healing, free muscle transfer may be considered as a beneficial adjunct. **Study Design:** Consecutive case series. **Methods:** Three patients at our institution with calvarial defects underwent reconstruction with custom synthetic implants and free tissue transfer (two latissimus dorsi muscle flaps and one serratus muscle flap) for soft tissue coverage between January and May 2017. Each patient had a history of poor wound healing in the surgical area: one with recurrent infection following cranioplasty, one with a connective tissue disorder and persistent CSF leak following multiple craniotomies, and the third with osteoradionecrosis. Custom implants, composed of either polyetheretherketone (PEEK) or polyetherketone ketone (PEKK), were synthesized prior to surgery based on the individual patients' computed tomography (CT) imaging.

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Results: All three patients achieved complete defect coverage following reconstruction without wound breakdown or need for repeat procedure. No major donor site morbidity was observed. **Conclusions:** In cases of scalp defects in the setting of known impaired wound healing, free tissue muscle transfer can be considered a valuable adjunct for coverage of custom calvarial implants.

29. Changes in Nasal Staphylococcus Colonization and Infection Rates after Nasal Surgery

Warren C. Swegal, MD, Detroit, MI; Robert Deeb, MD, Detroit, MI; Joshua B. Greene, MD, Detroit, MI; Mary-Beth Perri, Detroit, MI; Marcus Zervos, Detroit, MI; Lamont Jones, MD, Detroit, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the impacts of MRSA on postoperative infection rates during nasal surgery and understand that nasal surgery can affect major nasal colonizers, a novel finding.

Objectives: In light of recent data demonstrating the nasal cavity as a potential reservoir for methicillin resistant staphylococcus aureus (MRSA) and increased surgical site infection rates, we sought to assess if MRSA colonization was a risk factor for postoperative infection in nasal surgery. In doing so, we also demonstrated for the first time how nasal surgery affects nasal colonization species. **Study Design:** Prospective cohort. **Methods:** Nasal swabs were obtained preoperatively and 1 week postoperatively in patients who had undergone functional and/or cosmetic nasal surgery from 2015 and 2016. Patient comorbidities and postoperative infections were assessed at 1 week and 1 month after surgery. Patients receiving prophylactic intraoperative or postoperative antibiotics were excluded. **Results:** A total of 86 patients were enrolled. Septoplasty was the most common procedure (51%). Six patients had diabetes (7.0%) and seven (8.1%) had prior nasal surgery. Only 2 patients (2.3%) had preoperative MRSA colonization while 11 patients had changes in their colonizing species from pre to postop. Two of the patients with changes in nasal flora become colonized with MRSA. A total of 5 patients (5.8%) had postoperative infections, none were MRSA related. Statistical analysis demonstrated prior nasal surgery was the only significant risk factor for postoperative infection. ($p=0.21$). **Conclusions:** Prior nasal surgery was the only significant risk factor associated with postoperative infection. MRSA carrier rate was minimal and MRSA carrier status was not associated with postoperative infection. Furthermore, nasal colonizers frequently change after nasal surgery, a novel finding, potentially changing risk for future infections.

30. Minimally Invasive Reconstruction of Clival Defects by Free Flap Delivery Through Caldwell-Luc

Brian P. Swendseid, MD, Philadelphia, PA; Akshay Sanan, MD, Philadelphia, PA; Timothy E. Ortlip, MD, Philadelphia, PA; Ryan N. Heffelfinger, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should understand the reconstructive ladder for posterior skull base lesions and specifically the indications for free flap reconstruction of this region. Participants will appreciate the unique anatomic challenges of this procedure.

Objectives: We review two cases of clival defects reconstructed with a free flap and compare them to other reported reconstructive methods of this region. We describe our decision making and operative technique for each step of the procedure. **Study Design:** Case series and literature review. **Methods:** We review two patients with osteoradionecrosis of the clivus who required operative debridement and reconstruction. Intraoperative imaging is provided to supplement discussion of operative technique. **Results:** A 35 year old and a 55 year old woman with history of nasopharyngeal carcinoma treated with radiation presented with osteoradionecrosis of the clivus. One had an exposed carotid artery, the other had velopharyngeal insufficiency (VPI) and trismus. Both were treated with endoscopic endonasal debridement of the clivus. Free flaps were chosen for reconstruction to provide vascularized tissue to radiated wound bed for coverage in the first case and to provide bulk to improve VPI in the second. A Caldwell-Luc and medial maxillectomy were performed for delivery of the flap and passage of the pedicle into the neck for anastomosis. **Conclusions:** Extensive, post-radiated skull base lesions may be safely reconstructed using free flaps. Coverage of an exposed carotid and improvement of VPI can be addressed in this manner. A medial maxillectomy and Caldwell-Luc may aid in pedicle delivery and may be necessary in the setting of severe trismus.

31. Risk Factors Associated with Postoperative Complications in Paramedian Forehead Flaps

Prem B. Tripathi, MD, Irvine, CA; Yarah M. Haidar, MD, Irvine, CA; Hossein Mahboubi, MD, Irvine, CA; Jeffrey T. Gu, BS, Irvine, CA; Tjason Tjoa, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand preoperative risk factors associated with postoperative complications in patients undergoing paramedian forehead flap reconstruction.

Objectives: Paramedian forehead flaps are vascularized pedicled interpolated flaps primarily utilized for complex nasal reconstruction. While risk factors for soft tissue infection and dehiscence are well established, no large scale study analyzing these patients has been performed. The purpose of this study is to analyze risk factors associated with postoperative complications in patients undergoing first stage paramedian forehead flap reconstruction, and to determine

if any increased risk is associated with the surgical service performing the procedure. **Study Design:** Retrospective chart review. **Methods:** Retrospective chart review using the NSQIP database from 2010-2015. Preoperative variables of included diabetes, smoking status, steroid use, bleeding disorders, disseminated cancer, dialysis, American Surgical Association (ASA) class, and surgical specialty (otolaryngology or plastic surgery). **Results:** A total of 767 paramedian forehead flaps were included. A total of 87 (11.3%) postoperative complications included SSI (14.9%), wound dehiscence (9.19%), reoperation (22.9%), with a total of 44 patient readmissions. Flap specific reoperations (n=16) included wound closure (43.8%), hematoma evacuation (25%), revision (6.25%) or repair of dehiscence (6.25%). Diabetes status was the only preoperative variable associated with all postoperative complication ($p < 0.002$) in univariate analysis. There was no statistically significant difference in postoperative complication between otolaryngologists or plastic surgeons (10.7% vs. 11.4%, $p = 0.817$). **Conclusions:** This large sample demonstrates that paramedian forehead flaps have relatively low rates of wound infection, dehiscence or postoperative hematoma, and may not be affected by surgical subspecialty.

32. Computer Aided Free Flap Reconstruction after Facial Gunshot Wounds

Savannah G. Weedman, MD, Portland, OR; Jeff W. Wong, BS, Portland, OR; Daniel I. Petrisor, MD, Portland, OR; Mark K. Wax, MD, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to understand challenges with free flap reconstruction of facial gunshot wounds.

Objectives: Primary objective: determine whether computer aided microvascular reconstruction in patients with facial gunshot wounds is a viable treatment option. Secondary objectives: determine whether the identified patients who underwent free flaps for facial gunshot wound reconstruction had a pattern of problems with anastomosis or wound healing. **Study Design:** Observational retrospective cohort study; case series. **Methods:** Records from one academic institution were retrospectively reviewed from January 2010--June 2017 to identify patients who had undergone free flap reconstruction for facial gunshot wounds. Patients who had computer planning for free flap reconstruction were included. Data was obtained regarding patient health history, surgical procedure, perioperative wound complications, flap survival, facial projection, oral-nasal competence, dental implant reconstruction, and dental or prosthetic rehabilitation. **Results:** Five patients were identified who met inclusion criteria. There were 7 total free flaps, as one patient had three flaps. There were 6 fibula osteocutaneous flaps and one radial osteocutaneous free flap. There were 2 maxillary reconstructions and four mandibular reconstructions. Four patients had successful reconstruction of their facial projection, all had eventual oronasal separation, three had oral competence, none were trach dependent, one had dental implants, and one had successful prosthodontic reconstruction. **Conclusions:** Free flap reconstruction is a viable option for patients with facial gunshot wounds. It is challenging to perform complete prosthetic rehabilitation for these patients.

33. Treatment of Intramural Exposed Bone with Porcine Urinary Bladder Extracellular Matrix

Ryan D. Winters, MD, New Orleans, LA; Brandon Prendes, MD, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to describe a novel method of treatment of intraoral exposed bone.

Objectives: Describe successful treatment of this challenging problem: intraoral exposed bone lacking periosteum due to tumor resection or osteoradionecrosis. In select cases this technique obviated the need for further vascularized tissue reconstruction. **Study Design:** Case series. **Methods:** All patients treated for exposed intraoral bone after tumor excision treated by the authors in the past 2 years were evaluated with respect to size of mucosal defect, original pathology, comorbidities and time to resolution of exposed bone. **Results:** Eight procedures were performed on seven patients during the study period. The most common location was mandibular alveolus, and mean defect size was 10.34cm² (range: 2--28cm²). All patients were successfully treated with porcine urinary bladder matrix, none required further flap coverage. Average healing time was 3.25 weeks (range: 2--8 weeks). **Conclusions:** In select patients porcine urinary bladder extracellular matrix can serve as a scaffold for neomucosalization over exposed intraoral bone, even in the absence of underlying periosteum, unlike some other xenograft materials. It has been used successfully in radiated patients, as well as immunocompromised patients, and in patients with severe medical comorbidities that precluded more extensive surgery with vascularized flaps.

34. Spider Limb Positioning Device Facilitates Arm Positioning during Pedicle Dissection of Subscapular System Free Flaps

Jeff Wong, Bsc, Portland, OR; Savannah Gelesko, MD DDS, Portland, OR; James Azzi, MD, Portland, OR; Daniel Petrisor, MD, Portland, OR; Mark Wax, MD, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to utilize the spider system to help facilitate the dissection of subscapular system free flaps.

Objectives: Determine whether the spider device is a useful adjunct such that it could potentially alleviate the need for an assistant to elevate and hold tension on the arm. To determine if it facilitates the dissection. **Study Design:** Retrospective

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case series. **Methods:** Review of all patients who had subscapular flaps over a one year period with use of the spider device to position the arm. Data collected on short term complications, patient BMI, cause and location of defect, location and type of free flap, positioning of and attachments used with the spider, setup time, and surgeon assessment of usefulness of the device. **Results:** Seven patients underwent subscapular flap harvest with use of the spider. The spider was rated as very useful in 5 cases, when attached to the bedrail on the same side as the flap harvest, and when the elbow attachments were used. It was not particularly helpful when placed on the opposite side of the bed (one patient) or when the wrist attachment was used (one patient). There was one spider related minor complication: temporary paresthesia of the hand from wrapping the Coban tightly, and no spider related major complications. **Conclusions:** The Spider is a useful adjunct for positioning that requires no equipment beyond what is readily available for wrist and shoulder surgeons. This device can alleviate the need for an additional person to elevate and move the donor side arm during flap harvest, particularly pedicle dissection.

35. Long Term Improvement in Nasal Obstruction and Global Health Related Quality of Life after Functional Septorhinoplasty with and without Turbinoplasty

Alisa Yamasaki, MD, Boston, MA; Patricia A. Levesque, BS MS, Boston, MA; Jennifer C. Fuller, MD, Boston, MA; Benjamin S. Bleier, MD, Boston, MA; Stacey T. Gray, MD, Boston, MA; Robin W. Lindsay, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the impact of septorhinoplasty with or without turbinoplasty on disease specific and global health quality of life as measured by validated instruments of Nasal Obstruction Symptom Evaluation (NOSE) scale and the EuroQol-5 Dimension Questionnaire (EQ-5D).

Objectives: To evaluate the impact of functional septorhinoplasty with and without turbinoplasty on disease specific and global quality of life (QOL). **Study Design:** Prospective cohort study. **Methods:** Patients undergoing functional septorhinoplasty with and without turbinoplasty were administered the Nasal Obstruction Symptom Evaluation (NOSE) scale and the EuroQol-5 Dimension Questionnaire (EQ-5D) pre and postoperatively at 2, 4, 6, 12, 24, and 36 months. Patient demographics, surgical technique, and outcomes were analyzed. **Results:** A total of 520 patients were included, 384 patients underwent functional septorhinoplasty alone (180 male, 201 female; mean age 38.7; mean preop NOSE 63.7, 95% CI: 62.4-63.7; mean preop EQ5D 75.6, 95% CI: 73.4-75.8) and 136 patients underwent septorhinoplasty with turbinoplasty (62 male, 73 female; mean age 36.4; mean preop NOSE 66.3, 95% CI 64.5-68.0; mean preop EQ5D 75.0, 95% CI 72.1-75.9). There was a significant decrease in NOSE and increase in EQ5D scores in both groups at all postop time points, with statistically significant correlation between NOSE and EQ5D postoperatively. Between 2 to 12 months postoperatively, the turbinoplasty cohort demonstrated lower NOSE scores than septorhinoplasty alone cohort, though this difference was not detected at 24 months. **Conclusions:** Septorhinoplasty with and without turbinoplasty results in significant long term improvement in nasal obstruction as measured by disease specific and global health QOL. This study provides the foundation for characterizing postoperative outcomes and understanding the health utility value of surgical interventions that address nasal obstruction.

GENERAL/CLINICAL FUNDAMENTALS/SLEEP MEDICINE/LARYNGOLOGY/BRONCHESOPHAGOLOGY

36. Nontuberculous Mycobacterial Pharyngitis: Case Presentation and Review of the Literature

Karam W. Badran, MD, Los Angeles, CA; Benjamin Rafii, MD, Los Angeles, CA; Abie H. Mendelsohn, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the manifestations, diagnosis, and treatment of 1) nontuberculous mycobacterial infections of the nasopharynx and oropharynx; and 2) to present a rare case of exudative pharyngitis secondary to mycobacterium (M) abscessus.

Objectives: Nontuberculous mycobacterial infections among immunocompetent adult hosts are uncommon. Head and neck manifestations typically arise in cervicofacial lymphatics. M abscessus is rarely identified in primary head and neck subsites. We present a rare case of exudative pharyngitis and perform a review of the literature. **Study Design:** Case report and literature review. **Methods:** A comprehensive literature search (BIOSIS from 1926, Embase from 1947, Medline from 1950) was performed for the presentation, diagnostic evaluation, and outcomes of patients with nontuberculous mycobacterial (NTM) pharyngeal infections as well as extranodal head and neck manifestations of M abscessus. **Results:** We describe the first reported case of M abscessus associated acute pharyngitis; and the second nontuberculous mycobacterial pharyngitis in an immunocompetent adult. Following operative debridement and genome sequencing, the time to diagnosis and treatment was 12 weeks. Extranodal, primary, head and neck manifestations of M abscessus have been associated with sinusitis (n= 31 patients), otitis (n= 11 patients), and parotitis (n=1 patient). All patients identified underwent at least one surgical intervention and required prolonged antibiotic therapy (>2 weeks). To date, only 2 cases of nontuberculous mycobacterial infections of the naso/oropharyngeal mucosa has been reported. **Conclusions:** Atypical mycobacterial infections represent a diagnostic challenge in immunocompetent hosts and should be considered as an

etiology of pharyngitis when refractory to empiric antibiotic trials. Prolonged, culture directed antibiotic therapy remains the mainstay of treatment when supported by clinical evidence. Given the protracted time to diagnosis, there exists an opportunity for more rapid diagnostic methodologies in the appropriate clinical setting.

37. Floor of Mouth Dermoid Cyst Mimicking an Oral Ranula

Amy P. Bansal, MD, Newark, NJ; Amishav Y. Bresler, MD, Newark, NJ; Debra S. Heller, MD, Newark, NJ; Evelyne Kalyoussef, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to workup and counsel patients on the differential diagnosis of cystic floor of mouth lesions.

Objectives: To present an usual presentation of a dermoid cyst and highlight its importance in the consideration of the differential diagnosis of cystic masses in the floor of mouth. **Study Design:** Case report and literature review. **Methods:** We present a case report of a 16 year old male who presented with a one year history of floor of mouth swelling and outside diagnosis of oral ranula. The patient underwent transoral excision of the mass and final pathology reported a dermoid cyst. **Results:** We report a case of a floor of mouth cyst with a thin walled transparent appearance and a history of intermittent swelling. A CT neck showed a well circumscribed cystic mass that appeared to arise from the right sublingual gland. The patient subsequently underwent transoral excision of the mass. The surgical specimen was noted for its well defined capsule and areas fluctuance and nodularity. Final pathology was consistent with dermoid cyst. **Conclusions:** Dermoid cysts are congenital anomalies of embryologic fusion and are uncommon occurrences in the head and neck. An estimated 1.6% of dermoid lesions occur in the oral cavity, however they are only sporadically reported in the literature. Characterized by the presence of epithelial and skin adnexa, these lesions are often overlooked in the workup cystic floor of mouth lesions. Consideration of this entity is important, as the presence of these lesions may predispose patients to infectious complications, and more rarely malignant transformation.

38. Otolaryngology Boot Camps: Current Landscape and Future Directions

Christine E. Demason, MD, Chapel Hill, NC; Kelly M. Dean, MD, Chapel Hill, NC; Sukgi S. Choi, MD, Boston, MA; Kelly M. Malloy, MD, Ann Arbor, MI; Sonya Malekzadeh, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate understanding of the current landscape of otolaryngology resident boot camps and opinions on improving boot camp enrollment and standardizing the curriculum.

Objectives: Simulation based boot camps (BC) have gained popularity with many surgical specialties implementing mandatory national BCs. However, there is no consensus in otolaryngology on BC timing, learner level or curriculum. The purpose of this study is to examine the current landscape and gather opinions regarding future curriculum and standardization of BCs in otolaryngology. **Study Design:** Cross-sectional survey. **Methods:** A survey was developed to examine current resident participation and BC content while also seeking opinions regarding improving BC enrollment and standardizing curriculum. All program directors (PD) of accredited otolaryngology residency training programs in the United States were queried via SurveyMonkey. Responses were collated anonymously and results were analyzed by descriptive statistical analysis. **Results:** Of the 45% (48/107) who responded, 76.6% reported their residents participate in BCs. The most common skills taught were basic suturing and airway management skills. The majority (95%) were likely to send residents to a local BC with 56% favoring early PGY-1 participation and 41% favoring one day BC. Subsidized expenses, improved regional access and supplementary BC information would help PD in their decision to send residents to BC. Only 31.7% felt BC should be standardized and 26.8% felt BC should be mandatory. **Conclusions:** Many otolaryngology residency programs participate in BCs. Additional data on the benefits of BCs, improved access and reduced financial burden may improve BC participation. Further discussion of ideal timing, PGY level and standardized curriculum should occur in conjunction with the otolaryngology academic societies with oversight from accreditation and certifying bodies.

39. Unusual Presentation of Bilateral Facial Paralysis

Shannon D. Fayson, Columbus, OH; Minka L. Schofield, MD FAAOA, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate understanding of diagnostic approaches, available treatment options, and overall prognosis for patients with bilateral facial paralysis.

Objectives: The course of the facial nerve is long with each segment being at risk for potential injury. Unilateral facial paralysis is commonly diagnosed and often due to Bell's palsy or idiopathic in nature. Bilateral facial paralysis is a rare occurrence, comprising less than 2% of all the facial palsy cases, and has an annual incidence of approximately 1 per 5 million. Most cases of bilateral facial paralysis present acutely shortly after initial onset. Reported causes of bilateral facial paralysis in the literature have included a wide variety of other pathologies such as trauma, sarcoidosis, Lyme disease, herpes virus, Epstein-Barr virus, and tumors. Determining the etiology of bilateral facial paralysis can be challenging due to the elusive nature of the disease. We report a case of a 35 year old African American female who presented to the oto-

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laryngology outpatient clinic with a one month history of sudden right complete facial paralysis followed by a complete left facial paralysis nine months later of unknown etiology. This case is aberrant compared to cases reviewed in the literature due to the delayed nature of onset of left sided paralysis. We will review the literature for bilateral facial paralysis, and discuss diagnostic approaches, available treatment options, and overall prognosis. **Study Design:** Case report. **Methods:** Chart review and literature review. **Results:** Our patient was diagnosed with an unusual case of bilateral idiopathic facial paralysis. She was initially treated with corticosteroids and Valtrex when she only presented with right facial paralysis, but after presenting with left facial paralysis nine months later, we obtained a brain MRI brain along with various serological tests to evaluate for possible infectious or autoimmune etiology. **Conclusions:** Diagnosing bilateral facial paralysis can be challenging, so it is important to rule out other cases, such as Lyme disease and neoplasms, to adequately evaluate patients. Recurrent episodes of facial paralysis tend to occur within a few months of each other, so delayed or unusual presentations warrant further evaluation.

40. A Rare Intralingual Congenital Teratoid Cyst with Recurrence as a Dermoid Cyst in an Infant

David M. Garber, MD, New York, NY; Erich P. Voigt, MD, New York, NY; Kristen M. Thomas, MD, New York, NY; Mari Hagiwara, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the clinical presentation, treatment options, imaging and pathologic characteristics of teratoid and dermoid cysts.

Objectives: To demonstrate a unique case of a teratoid cyst with recurrence as a dermoid cyst in an infant. **Study Design:** A clinical case report with a review of the literature. **Methods:** A chart review including patient's history, imaging, intraoperative photographs and pathology. A literature review of intralingual teratoid and dermoid cysts. **Results:** A 2 month old male born full term via C-section was noted to have a floor of mouth cyst detected at birth. MRI demonstrated a cyst within the right tongue musculature extending into the floor of mouth. Patient developed difficulty feeding due to its rapid growth in size. Surgical resection was performed with ligation of a tract approaching and abutting the inner table of the midline mandible. Pathology demonstrated a congenital germline fusion cyst teratoid variant. Approximately 6 months later, the patient began to develop a submental abscess requiring incision and drainage. The submental mass was resected and pathology demonstrated a dermoid cyst, likely a recurrence from the previously resected teratoid cyst. The patient has no further recurrence, as of 18 months post-dermoid resection. **Conclusions:** Teratoid cysts are rare variants of congenital germline fusion cysts, usually not present at birth. This case is unique as a residual tract composed of the dermoid component of the initial teratoid cyst likely resulted in the presentation of the dermoid cyst. Surgical excision remains the primary treatment for these lesions.

41. Increased Risk of Laryngopharyngeal Reflux in Obstructive Sleep Apnea Patients

Christopher J. Gouveia, MD, Stanford, CA; Saied Ghadersohi, MD, Chicago, IL; Amulya Yalamanchili, BA, Chicago, IL; Bruce K. Tan, MD, Chicago, IL

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the evidence for an association between laryngopharyngeal reflux and obstructive sleep apnea.

Objectives: To assess whether there is a significant difference in rates of laryngopharyngeal reflux (LPR) amongst patients with obstructive sleep apnea (OSA) versus those without. **Study Design:** This is a prospective, case control study of patients referred to an academic medical sleep center for home sleep testing. **Methods:** Patients consenting for the study filled out reflux symptom index (RSI) questionnaires--a validated diagnostic tool for LPR. Patient demographics and results of their sleep studies were then collected. Statistical analysis was done to examine score differences between OSA positive and OSA negative patient samples and correlation of apnea hypopnea index (AHI) with RSI score. **Results:** Of 52 patients, 19 had OSA and 33 did not have OSA. There was a significant difference in mean RSI score in patients with OSA and patients without OSA (11.21 v. 3.16, $P = < .0013$). There was a correlation between higher RSI score and AHI ($r = .37$, $P = < .0078$). **Conclusions:** OSA patients show a significantly increased risk of LPR compared to non-OSA patients. Further, there is correlation between severity of OSA, by AHI, and RSI score. Sleep surgeons can be proactive in diagnosing and treating LPR in their patients. General otolaryngologists should consider OSA as a diagnosis in patients presenting with LPR complaints.

42. Does the SLOR Matter? Comparing the SLOR with Objective Applicant Measures in the Otolaryngology Match

Jeffrey T. Gu, MS, Irvine, CA; Allison Hu, BS, Irvine, CA; Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the relationships between the objective aspects of the otolaryngology residency application and the attributes of the SLOR and recognize any differences in the assessment of the 10 SLOR attributes between professors of different ranks.

Objectives: 1) Determine if any of the 10 attributes of the SLOR correlate significantly with objective measures of each applicant; 2) determine if there are any differences in assessment of the 10 SLOR attributes between professors of

different ranks. **Study Design:** Retrospective cohort study. **Methods:** We reviewed 339 standardized letters of recommendation (SLOR) from 187 applicants with at least one SLOR. Those without any SLORs were excluded. The 10 SLOR attributes were converted into a percentile score using ImageJ32 to measure the pixel length of the line defined by the X and the right-most limit of the bar, divided by the total bar length. After adjusting for length of time of relationship, and professor rank, correlation between SLOR attributes and objective variables was determined using multiple linear regression or logistic regression. One way ANOVA was used to assess differences in means between the professor ranks. **Results:** All 10 SLOR attributes had means above the 80th percentile (0.819-0.925), standard deviations (0.08-0.52), and negative skewness. The distribution of professor rank among SLOR writers were: 10.4% assistant professors, 19.2% associate professors, 21.3% residency program directors, 5.3% vice chairs, and 43.8% chairs of departments. USMLE step 1 score correlated most strongly with match potential ($B=93.142$, $p<0.001$). USMLE step 2 score showed a similarly strong correlation with match potential ($B=96.261$, $p=0.002$). Students from a top 40 NIH funded institution had a significant difference in length of relationship ($B=-0.514$, $p=0.02$), and interpersonal communication skills ($B=-12.91$, $p=0.011$). There was a significant difference between AOA and non-AOA members in medical knowledge ($B=20.99$, $p=0.007$), research ($B=-8.80$, $p=0.036$), and commitment to otolaryngology ($B=-25.89$, $p=0.02$). Total number of research experiences correlated most strongly with medical knowledge ($B=-16.55$, $p=0.011$). There were no significant differences in SLOR attributes between applicants who took years off prior to, or during medical school, or between applicants with and without additional graduate degrees. There were no significant differences in SLOR attributes with regards to total number of awards, number of awards earned before or during medical school, number of volunteer activities, or number of work experiences. There were no significant differences between members and non-members of Phi Beta Kappa and the Gold Humanism Honor Society. There was a significant difference in means between ranks of professors in the length of the relationship ($F(4, 316)=7.29$, $p<0.001$), however no other differences in means were observed between groups. **Conclusions:** Differentiation between otolaryngology residency applicants is challenging due to the strong negative skewness in the 10 attributes of the SLOR. We demonstrate through the lack of correlation between SLOR attributes and objective measures that patient care, professionalism, procedural skills, and initiative and drive may provide unique information about the applicant that is not captured in any of the objective measures. Additionally, although there are significant differences in the length of relationship between professors and students with respect to rank, no other significant differences were observed, suggesting that professors across all ranks rate students in a similar fashion.

43. Indications for Sternotomy in Thyroidectomy: A Case Report and Review of Literature

Christine M. Kim, MD, Los Angeles, CA; John W. Frederick, MD, Los Angeles, CA; Eddie A. Ramirez, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss indications for sternotomy in thyroid surgery.

Objectives: To define indications for sternotomy in thyroid surgery. **Study Design:** A case report and comprehensive review of literature. **Methods:** A literature search was performed to identify previously described cases of thyroidectomies requiring sternotomy and to develop current indications for sternotomy in thyroid surgery. **Results:** A 68 year old Korean male presented to otolaryngology clinic at a tertiary academic care center for surgical evaluation of a thyroid mass. Imaging revealed a 7.3 x 6.5 x 3.9 cm mediastinal mass contiguous with the right thyroid lobe. The mass anteriorly displaced the great vessels. The patient denied any compressive symptoms. Fine needle aspiration biopsy suggested a benign pathology. The patient underwent a total thyroidectomy that necessitated a sternotomy by the cardiothoracic surgery team in order to resect the entirety of the mass. Final pathology confirmed a benign goiter. **Conclusions:** Sternotomy is very rarely indicated in thyroid surgery. We present a unique case and review indications for sternotomy in thyroidectomy.

44. Impact of an Upper Respiratory Tract Infection on Botulinum Toxin Efficacy in Spasmodic Dysphonia Patients

Diana N. Kirke, MBBS, New York, NY; Rachel Kaye, MD, Newark, NJ; Andrew Blitzer, DDS MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the effect of a concomitant URI on the effects of botulinum toxin in spasmodic dysphonia patients.

Objectives: To determine whether the presence of a concomitant upper respiratory tract infection (URI) impacts upon botulinum toxin (BoNT) efficacy in spasmodic dysphonia (SD) patients. **Study Design:** Case series and literature review. **Methods:** All SD patients with a concurrent URI presenting for BoNT therapy at a clinical research center from November 2016 to August 2017 were included. A total of 7 patients were identified. Patients were followed for at least two BoNT treatment cycles (approximately six months). The primary outcome measure was efficacy of the initial BoNT injection, and the secondary outcome measure was the efficacy of the subsequent BoNT injection. **Results:** All subjects had adductor type SD (ADSD). There were six females and one male with a median age of 50.57 years (range 18-76 years). All patients were well established on a consistent BoNT treatment regime, with an average administered dose of 0.79 units (range 0.2-1.65 units). Bilateral injections were administered to five patients. Regarding the primary outcome measure, three failed to have any response to BoNT (42.9%), one had a partial response (14.2%) and three had a positive response to treatment (42.9%). **Conclusions:** While the interplay between illness and BoNT efficacy is yet to be elucidated, we report that some patients are affected. We recommend that SD patients presenting for BoNT administration with a concomitant

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URI should be counseled that their treatment may have decreased effect.

45. Charge disparities in the management of epistaxis in New York State

Sean P. McKee, BS, New York, NY; Anthony Yang, BS, New York, NY; Mingyang L. Gray, MD, New York, NY; Sarah M. Kidwai, MD, New York, NY; Patrick M. Colley, MD, New York, NY; Alfred M.C. Illoreta, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) identify socioeconomic, demographic, hospital, and treatment factors associated with increased hospital charges for patients admitted with epistaxis; and 2) recognize that charge disparities exist among different patient populations across our state.

Objectives: Investigate predictors of higher medical care charges in patients admitted with epistaxis in our state. **Study Design:** Retrospective cohort study. **Methods:** The Statewide Planning and Research Cooperative System (SPARCS) database was used to identify patients admitted for epistaxis between 1995-2015. Linear regression was used to assess the association of patient and hospital variables as well as comorbidities and treatments on log transformed total inpatient hospital charges. **Results:** A total of 17,312 patients met the inclusion criteria, and 11,896 (68.7%) patients were white, 2640 (15.2%) were black, and 370 (2.1%) were Asian. Among the patients included, 14,214 (82.1%) were non-Hispanic and 1313 (7.6%) were Hispanic. Black and Asian patients were charged 14.1% ($p < 0.001$) and 22.7% ($p < 0.001$) more than white patients, respectively. Hispanic patients were charged 11.1% ($p < 0.001$) more than non-Hispanic patients. Hospitals located in rural areas charged 12.3% ($p < 0.001$) less than urban hospitals. Teaching hospitals charged 7.0% ($p < 0.001$) more than non-teaching hospitals. Patients from the 0-25th, 25-50th, and 50-75th income quartile were charged 13.3% ($p < 0.001$), 19.7% ($p < 0.001$), and 14.2% ($p < 0.001$) less than the highest income quartile, respectively. Patients treated with embolization and ligation were charged 102.8% ($p < 0.001$) and 32.0% ($p < 0.001$) more than patients receiving no treatment, respectively. **Conclusions:** This study reveals that patient sociodemographics, hospital characteristics, and therapeutic interventions are associated with hospital charge disparities. Patient factors influencing charges include race, ethnicity, and income while hospital factors include urban versus rural settings and teaching status.

46. Occult Squamous Cell Carcinoma in the Tonsil of OSA Patients

Tate M. Naylor, MD, Memphis, TN; Huaihong H. Chen, MD, Memphis, TN; Shaun A. Nguyen, MD, Charleston, SC; Marion B. Gillespie, MD, Memphis, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of routine histological evaluation of adult tonsillectomy specimens for occult cancer.

Objectives: In-depth review and discussion of two cases of occult oropharyngeal squamous cell carcinoma (OPSCC) found during routine pathological examination of adult tonsillectomy specimens. **Study Design:** Case reports. **Methods:** The electronic medical record of two patients found to have occult OPSCC on routine pathologic review of tonsillectomy specimens after sleep surgery were reviewed for patient demographics and disease and treatment related factors. An extensive literature search was performed to determine the standard of care with regard to routine histopathological examination of adult tonsil specimens. **Results:** Two male patients out of a total of 37 (5.4%) patients undergoing tonsillectomy and uvulopalatopharyngoplasty, ages 48 and 68, were found to have occult OPSCC on routine pathological examination of the tonsil specimens. Both cancers were completely excised. One patient had moderate dysplasia at the margin. Following radiological evaluation, both were staged T1M0N0 stage I requiring no further therapy other than close followup. **Conclusions:** The formal pathologic examination of tonsillar tissue from tonsillectomy specimens remains a debated topic in the field of otolaryngology, with many arguing that the low incidence of discovering occult cancer in these patients does not offset the costs of evaluation. Due to the growing incidence of OPSCC, and the significant demographic overlap between adult OSA and the HPV related OPSCC populations, these cases offer evidence for pathological review of adult tonsil specimens. Pathological review of tonsillar tissue from sleep apnea surgery may allow for diagnosis at an earlier stage thereby allowing for better workup, staging, and outcomes.

47. Reasons for CPAP Failure in OSA Patients Presenting for Upper Airway Stimulation Therapy

Tate M. Naylor, MD, Memphis, TN; Cecil B. Rhodes, MD, Memphis, TN; Amani G. Obeid, MD, Memphis, TN; Marion B. Gillespie, MD, Memphis, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the reasons for CPAP failure in OSA patients presenting for consideration of upper airway stimulation therapy.

Objectives: Determine reasons for CPAP failure in patients with OSA presenting for consideration of upper airway stimulation therapy. **Study Design:** Single center, prospective cohort study. **Methods:** A CPAP specific 22 point questionnaire was administered to all patients presenting for consideration of upper airway stimulation therapy over a nine month time-span. **Results:** The study cohort consisted of 63 patients, with 40 males and 23 females. The average age was 53 years (range 23-82) and the mean BMI was 34.99 (range 20.98-57.05). All subjects had attempted CPAP therapy for at least

one night. At the time of presentation, 23 (36.5%) had abandoned CPAP and only 21 (33.3%) were wearing CPAP for the recommended minimum of at least 4 hours a night. Of those still using CPAP, the average use was 3.1 nights per week for 3.3 hours per night. The primary reasons for CPAP intolerance included finding the mask disturbing to wear (84.5%), dry mouth (65.5%), dry nose (50%), and nasal crusting (41.5%). **Conclusions:** CPAP is a highly efficacious therapy which has low effectiveness due to a high rate of patient nonadherence. As more costly and invasive therapies become available there is a need to determine true CPAP failure from more mild CPAP complaints that could be effectively addressed by less invasive means. The high percentage of oral and nasal complaints present an opportunity for improved naso-oral care and minor procedures to improve CPAP use and satisfaction.

48. Correlation between Fine Needle Aspiration Cytology and Histopathology in Medullary Thyroid Carcinomas

Yin Ren, MD PhD, Boston, MA; Natalia Kyriazidis, MD, Boston, MA; Dipti Kamani, MD, Boston, MA; Rayan Saade, MD, Boston, MA; William C. Faquin, MD PhD, Boston, MA; Gregory W. Randolph, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain and discuss the differences and correlations between FNA cytology and pathology of medullary thyroid carcinomas.

Objectives: Medullary thyroid cancer (MTC) is a neuroendocrine tumor with a more aggressive clinical profile than well differentiated thyroid cancer. The purpose of this study is to determine the correlation between cytologic diagnosis from fine needle aspirations (FNA) and the surgical pathology of the indexed thyroid nodule. **Study Design:** Retrospective case review. **Methods:** Retrospective review of records from 76 patients with MTC on FNA and final surgical pathology at a tertiary referral center from 2000 to 2013 was performed. Factors including demographics and Bethesda classification were correlated with final pathologic diagnosis. **Results:** At a mean followup of 5 years, the overall survival rate was 92% and the disease free survival rate was 53%. There was a significant decrease in serum biomarkers postoperatively, with 88% decrease in the level of calcitonin ($P < 0.001$) and 59% decrease in carcinoembryonic antigen (CEA) ($P = 0.0165$). The FNA results included 1 (1.3%) nondiagnostic, 1 (1.3%) benign, 3 (3.9%) atypia of undetermined significance or follicular lesion of undetermined significance (AUS/FLUS), 6 (7.9%) suspicious for a follicular neoplasm (SFN), 18 (24%) suspicious for malignancy, and 42 (55%) malignant. Four (5.2%) classified as atypical and 1 (1.3%) showed a predominantly microfollicular pattern. Final pathology included 69 (91%) with MTC, 6 (7.9%) micro medullary thyroid cancer (MMC), and 1 (1.3%) mixed medullary/follicular cancer. When FNA results are reclassified into two groups of either suspicious for MTC (including FNA demonstrating MTC or suspicious for MTC, 46 of 76 patients) versus no definite MTC (all other categories, 30 of 76 patients) and correlated with final pathologic diagnosis, the resulting FNA classifier has a sensitivity of 62.7% and a specificity of 28.6%. **Conclusions:** This study provides a correlative analysis between FNA histology and surgical pathology of indexed thyroid nodules with medullary thyroid cancer.

49. An Unusual Complication of Medialization Thyroplasty

Shruthi K. Rereddy, MD, Philadelphia, PA; Natasha Mirza, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe rare complications of medialization thyroplasty.

Objectives: To describe a case of medialization thyroplasty (MT) complicated by implant extrusion and thyroid cartilage fracture in a patient on denosumab for metastatic breast cancer. **Study Design:** Case report. **Methods:** Retrospective chart review and literature review. **Results:** A 67 year old woman with metastatic breast cancer on denosumab, a monoclonal antibody RANKL inhibitor, underwent MT with gortex ribbon for unilateral vocal fold paralysis followed by a revision for residual glottic gap and persistent raspy voice. Five months later, she developed cough and hoarseness and was noted to have extrusion of the implant into the larynx. She was taken to the OR for endoscopic and transcervical removal of the extruded implant. At the time of surgery, she was noted to have a thyroid cartilage fracture extending superiorly from the cartilage window. After all implanted material was removed, revision thyroplasty was performed using strap muscle and the fracture was repaired with sutures. Postoperative recovery was uneventful. The patient required injection laryngoplasty 3 months later and continues to be followed. **Conclusions:** This is the first report of implant extrusion and thyroid cartilage fracture as a complication of MT. Patients on medications with immunosuppressive effects may have increased risk of complications following laryngeal framework surgery due to impaired wound healing. RANKL inhibitors in particular suppress osteoclastic bone repair and have been associated with osteonecrosis of the jaw. This patient population may benefit from medialization using biologic materials rather than implants to limit the risk of extrusion.

50. Combined Anterograde-Retrograde Approach to Severe Pharyngoesophageal Stricture after Circumferential Free Flap Reconstruction

Caroline C. Rieger, MD, Washington, DC; William Z. Gao, MD, Washington, DC; Shaum S. Sridharan, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize combined

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anterograde and retrograde endoscopic dilation as a safe and effective option to address pharyngoesophageal stenosis after total laryngopharyngectomy with tubed free flap reconstruction.

Objectives: Upon completion of this presentation, the participant should be able to 1) recognize pharyngoesophageal stenosis as a source of major morbidity after head and neck cancer treatment; 2) describe the technique of combined anterograde-retrograde endoscopic dilation (CARD); and 3) understand the utility of CARD for severe pharyngoesophageal strictures, even in the setting of free flap reconstruction. **Study Design:** Pharyngoesophageal stricture formation is a source of major morbidity following treatment of head and neck cancer, at times resulting in significant dysphagia, inability to tolerate an oral diet, and gastrostomy tube dependence. Severe strictures can often form as sequelae to chemoradiation toxicity or postoperative scarring/fibrosis, which are challenges to safely treat. Combined anterograde-retrograde endoscopic dilation (CARD) is a technique utilized in increasing frequency by multidisciplinary teams of otolaryngologists and gastroenterologists for the treatment of near complete and complete pharyngoesophageal strictures. However, its use and safety have not been reported in patients who have had tubed free flap reconstruction of the pharynx. We present the first case of CARD used for severe pharyngoesophageal segment stricture following total laryngopharyngectomy with tubed anterolateral thigh (ALT) free flap reconstruction of the pharynx. **Methods:** Case report and literature review. **Results:** A 67 year old man underwent total laryngopharyngectomy with tubed ALT free flap reconstruction for left pyriform sinus squamous cell carcinoma. He initially tolerated an oral diet after surgery with patent reconstruction on esophagram. After postoperative radiation, he developed worsening dysphagia and stenosis at the junction of the distal flap and native esophagus. Despite early anterograde endoscopic balloon dilation, he progressed to a near complete stricture with inability to tolerate an oral diet or secretions. He then underwent a successful CARD procedure in conjunction with the gastroenterology service that reestablished luminal patency without complication. With subsequent serial dilations, he has maintained a modified oral diet and improved handling of secretions. **Conclusions:** Our case demonstrates that combined anterograde-retrograde endoscopic dilation of severe pharyngoesophageal strictures can be safely and successfully utilized even in the setting of free flap reconstruction and prior radiation. It is an important minimally invasive option to consider for near complete and complete pharyngoesophageal strictures in juxtaposition to open surgeries, which can carry increased risk and morbidity. The CARD technique deserves further study to define its effectiveness and role in the management of high grade/complicated pharyngoesophageal stenosis.

51. Iron Pill Induced Chemical Laryngitis

Rishabh Sethia, BS, Columbus, OH; Laura Matrka, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss pill induced laryngitis by reviewing a unique case as well as previous reports in the literature.

Objectives: To discuss the presentation and management of pill induced chemical laryngitis by illustrating a rare case. **Study Design:** Case report and literature review. **Methods:** We report a unique case of a patient with iron pill induced laryngitis. **Results:** A 71 year old male presented for evaluation of dysphonia. Five weeks prior, the patient had reportedly aspirated an iron pill which was lodged in his throat for several hours. The pill was subsequently coughed up and appeared undissolved, soft, and whole. Since that event, the patient noted complete voice loss. He denied any recent illness, neurological symptoms, or dysphagia. One year prior, he had undergone spinal surgery complicated by infection requiring a prolonged course of suppressive antibiotics which he continued to take on a daily basis. A previous modified barium swallow revealed silent penetration with no evidence of aspiration. On exam, the patient was noted to have a very breathy and asthenic voice. Stroboscopy revealed significant ulceration of the infraglottic region of the anterior commissure extending into the upper subglottis associated with thick exudate. Vocal folds were noted to be mobile but atrophic with overlying crusted secretions. The patient was treated with nebulized Ciprodex and humidified air without resolution of symptoms prompting culture and biopsy of the subglottis along with bilateral hyaluronic acid injection. **Conclusions:** Pill induced laryngitis is extremely rare, with only one previous report of alendronate induced chemical laryngitis discovered in the literature. To the best of our knowledge, this is the first report of iron pill induced laryngitis.

52. Comparison of Upper Airway Stimulation and Transoral Robotic Surgery for the Treatment of Obstructive Sleep Apnea

Michael C. Topf, MD, Philadelphia, PA; Colin T. Huntley, MD, Philadelphia, PA; Vanessa M. Christopher, BA, Philadelphia, PA; Joseph M. Curry, MD, Philadelphia, PA; Maurits S. Boon, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the safety and effectiveness of upper airway stimulation and transoral robotic surgery for the treatment of obstructive sleep apnea.

Objectives: To evaluate and compare the safety and success rate of upper airway stimulation (UAS) and transoral robotic surgery (TORS) for the treatment of obstructive sleep apnea (OSA). **Study Design:** Retrospective chart review. **Methods:** Clinical data was reviewed on all patients that underwent UAS and TORS for OSA at a single institution. Demographic, preoperative polysomnogram (PSG), postoperative PSG, complications, hospital length of stay, and hospital readmission data was compiled. Surgical success was defined as a decline in postoperative apnea-hypopnea index (AHI) to less than or equal to 50% of the preoperative value and a postoperative value of less than or equal to 20. **Results:** 76 patients underwent UAS and had postoperative PSG. The rate of surgical success and postoperative AHI less than 15 and

5 for UAS were; 86.84%, 89.47%, and 59.21. All patients underwent same day surgery with no unplanned readmissions. 24 patients underwent TORS and had postoperative PSG. The rate of surgical success and postoperative AHI less than 15 and 5 were: 54.17%, 50.00%, and 20.83%. The mean length of stay was 1.33 days and 4 patients were readmitted within 30 days secondary to pain and dehydration. UAS showed a statistically significant improvement in surgical success rate, postoperative AHI less than 15 and 5, postoperative O2 nadir, length of stay, and rate of readmission when compared to TORS. **Conclusions:** UAS is a safe and effective method of treating OSA showing improved outcomes, length of stay, and readmission rate compared to TORS.

53. The Phonetically Specific Oral Cavity Detection by Applying Programmed High Frequency Signal
Shu Wei Tsai, MD, Palo Alto, CA; Yi-hsin Chen, PhD, Taipei, Taiwan; Yero Yeh, PhD, Taipei, Taiwan

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the usage of novel intravocal voice spectrum usage and the combination work between physician and the mechanical engineer.

Objectives: The feasibility test for the phonetically specific oral cavity detection by applying programmed high frequency (16KHz to 22K Hz) signal. **Study Design:** We performed a case control study during July 2016. **Methods:** The signal emitting device (SED) and signal receiving device (SRD) were selected by their high frequency (16KHz to 22KHz) responsibility. To detect the phonetically specific oral cavity shape, the SED was placed in the common nasal meatus with biocompatible silicon cushion with the SRD placed in front of the mouth (~3 cm). The programmed high frequency signal was delivered through the SED with an appropriate level when the subject changed their oral cavity shape by the designated protocol with different phonemes. The SRD received the signal passing through the vocal tract. The received signal was recorded and analyzed by software Audacity® and TensorFlow®. The categorization of the phonemes followed the International Phonetic Alphabet chart. **Results:** In the frequency range of 16kHz to 20kHz, the signal showed the consistency for the same consonant and vowel (e.g., k and k). The different spectra could be detected when the oral cavities were in different phonemic shapes. Specifically, obvious difference between the nasal and the velar consonants could be observed by their spectra. Meanwhile, the difference between each consonant and combination with vowels is recognizable. Moreover, the detection was sensitive enough to differentiate velar consonants, such as k and g. **Conclusions:** The programmed high frequency (16KHz to 22KHz) signal could be applied for the phonetically specific oral cavity shape detection, which could potentially be further applied for voice reconstruction.

54. Dress to Impress? Investigating Patient Preferences in Physician Attire in the Outpatient Otolaryngology Setting
Kevin Wong, BA, Boston, MA; Leah Sax, BS, Boston, MA; Anand K. Devaiah, MD, Boston, MA; Gregory A. Grillone, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, participants will be able to discuss patient preferences regarding physician attire in the outpatient otolaryngology setting.

Objectives: Previous studies have suggested that physician attire can influence the doctor patient relationship. We sought to investigate this topic within otolaryngology. **Study Design:** Prospective survey study. **Methods:** Adults presenting to a general otolaryngology clinic at a North American teaching hospital were included. Patients were approached by a researcher wearing a white coat and either (1) smart business casual attire or (2) surgical scrubs, then completed a Likert style survey evaluating feelings of trust, comfort, and professionalism. Statistical significance was set at $\alpha=0.05$. **Results:** Fifty patients were included (23 male, 27 female). Mean age was 42.7 ± 17 . Twenty-four patients were Caucasian, 14 were Hispanic, 7 were black, 3 were Asian, and 2 were Middle Eastern. Most patients believed attire and shoe choice were important (82% and 66%, respectively). Men were significantly more likely to believe that attire was important ($P=0.01$). Older patients were also more likely to believe attire was important ($P=0.005$). Patients were more comfortable when seen by a provider wearing business smart clothing compared to scrubs ($P=0.021$), however, there was no difference in feelings of trust or professionalism ($P=0.5^*$ and 0.6^* , respectively). Differences may also exist based on nationality, education, and chief complaint. **Conclusions:** Physician attire is important in otolaryngology clinic. Overall, patients favored smart business attire over scrubs, however, differences in preference may exist based on demographics such as age, gender, and culture.

55. Ramsay-Hunt: An Interesting Case of Multiple Cranial Neuropathies
Christopher C. Xiao, MD, Oakland, CA; Christopher G. Tang, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize and discuss the involvement of multiple cranial nerves associated with flares of herpes zoster.

Objectives: To discuss a unique case of CN 9, 10 and 11 palsy associated with herpes zoster. **Study Design:** A case report with review of literature. **Methods:** A 50 year old female presents to head and neck surgery clinic with left auricular swelling and vesicular eruption for seven days associated with aspiration, dysphagia, and left shoulder discomfort. Physical exam reveals a left vocal cord paralysis as well as numbness around the helix corresponding to a CN X palsy,

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left spinal accessory weakness, and dysphagia with laryngeal penetration on swallow study. **Results:** The patient was treated with oral prednisone and acyclovir. MRI brain was performed showing asymmetric enhancement in the left jugular foramen corresponding to left 9/10/11 weakness. Patient had a vocal cord injection augmentation to help improve her voice and is undergoing physical therapy for the left shoulder weakness. **Conclusions:** Ramsay-Hunt syndrome has been commonly described in patients with a cranial nerve 7 or 8 palsy and rarely affects cranial nerves 9, 10, and 11. A PubMed search revealed less than 10 such cases described in the literature.

56. Socioeconomic and Racial Disparity in Treatments of Epistaxis

Anthony Yang, BS, New York, NY; Mingyang L. Gray, MD, New York, NY; Sean P. McKee, BS, New York, NY; Sarah M. Kidwai, MD, New York, NY; Anthony Del Signore, MD, New York, NY; Alfred M.C. Iloreta, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) identify socioeconomic factors associated with different treatments for epistaxis requiring admission; and 2) discuss possible bias and causes of disparities in the management of epistaxis.

Objectives: Highlight factors associated with different treatment modalities for patients admitted for epistaxis in our state from 1995-2015. **Study Design:** Retrospective cohort study. **Methods:** The Statewide Planning and Research Cooperative System (SPARCS) database was used to identify patients admitted and treated for epistaxis between 1995-2015. Disparities were stratified by area deprivation index, which is a measure of socioeconomic deprivation based on zip code. Multivariate logistic regression was used to determine socioeconomic predictors of treatment modality, while controlling for comorbidities and hospital characteristics. **Results:** A total of 17,312 patients were admitted for epistaxis and underwent nasal packing, ligation, embolization, or no intervention. Patients who were more likely to receive no treatment included those who are Hispanic (OR 1.53, CI 1.32-1.78, $p<0.001$), black (OR 1.39, CI 1.24-1.56, $p<0.001$), over 65 (OR 1.16, CI 1.00-1.34, $p=0.044$), or receiving Medicaid (OR 1.59, CI 1.39-1.82, $p<0.001$). Black patients with the greatest socioeconomic deprivation were more likely to receive no treatment during their admission compared to their white counterparts (OR 1.92, CI 1.52-2.43, $p<0.001$). These disparities did not appear in the least deprived population. Black patients with the greatest socioeconomic deprivation were also less likely to receive packing (OR 0.67, CI 0.54-0.83, $p<0.001$), or ligation (OR 0.48, CI 0.29-0.81, $p=0.006$). **Conclusions:** This study highlights the disparities in treatment modalities based on socioeconomic deprivation and race. This not only uncovers possible bias in management but also illustrates the need to improve equity of care.

HEAD & NECK

57. Management of the Neck in Regionally Metastatic HPV Associated Oropharyngeal Squamous Cell Carcinoma

Hena S. Ahmed, BS, Boston, MA; Anuraag S. Parikh, MD, Boston, MA; Beshar Assi, MD, Boston, MA; Sidharth V. Puram, MD PhD, Boston, MA; Mark A. Varvares, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, participants should be able to compare outcomes following definitive management of the neck in HPV associated oropharyngeal squamous cell carcinoma with upfront neck dissection versus radiation therapy with or without chemotherapy, with neck dissection reserved for salvage.

Objectives: To describe a single center experience with management of the neck in regionally metastatic HPV associated oropharyngeal squamous cell carcinoma (OPSCC), comparing regional control and survival outcomes with upfront neck dissection (ND) versus upfront radiation therapy (XRT) with or without chemotherapy. **Study Design:** Retrospective chart review. **Methods:** The institutional cancer registry was used to identify patients who underwent definitive management of the neck for HPV associated OPSCC between February 2000 and December 2014. Clinical and pathologic data were collected retrospectively and analyzed for their association with regional control, overall (OS) and disease free survival (DFS). **Results:** 90 patients with regionally metastatic disease were identified who underwent management of the neck with ND, XRT, or a combination of both. Mean age at diagnosis was 56.6 years and mean followup time was 59.1 months (SD 31.2). 43 patients underwent upfront ND, and of these patients 95% received postoperative XRT. 47 patients underwent upfront XRT to the neck, with or without chemotherapy, and of these patients 17% required subsequent ND for persistent disease in the neck. 5 and 10 year OS were 98% and 98% for upfront ND and 93% and 88% for upfront XRT. 5 and 10 year DFS were 93% and 81% for upfront ND and 86% and 86% for upfront XRT. Recurrence rates were 9.3% with upfront ND and 10.6% with upfront XRT. **Conclusions:** Our single center experience of 90 patients suggests that for management of the neck in regionally metastatic HPV associated OPSCC, regional control, OS, and DFS are comparable with upfront ND versus upfront XRT.

58. Transoral Robotic Surgery (TORS) for Pediatric Supraglottic Neurofibroma

Mark A. Arnold, MD, Syracuse, NY; Mark F. Marzouk, MD, Syracuse, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss a novel surgical management technique of supraglottic neurofibroma.

Objectives: To discuss a novel surgical management technique of supraglottic neurofibroma. **Study Design:** Case report. **Methods:** A literature review was performed on PubMed searching keywords including supraglottic neurofibroma, laryngeal neurofibroma, and transoral robotic surgery. **Results:** Laryngeal neurofibromas are rare tumors in the pediatric population. Surgical resection has been the management of choice via open resection or CO2 laser excision. We report the case of a 6 year old girl with a history of neurofibromatosis type I, who presented with mild obstructive sleep apnea. Nasopharyngolaryngoscopy (NPL) revealed a large laryngeal mass. Telescopic laryngoscopy revealed a submucosal mass based on the left aryepiglottic fold, with involvement of the left piriform sinus, left epiglottis, and left true vocal fold. Biopsy was consistent with neurofibroma. Tracheostomy was then performed in anticipation for future surgical management. MRI revealed a lobulated, well circumscribed enhancing supraglottic mass measuring 4.0 x 2.0 x 3.3cm extending laterally into the carotid space. Transoral robotic resection was performed. The mass was resected off the parapharyngeal space and the hyoid bone and dissected medially without violation the endolarynx, down to the level of the false vocal fold. The mass seemed to be grossly totally excised. Postoperatively the patient initially had silent aspiration, but she improved with inpatient speech therapy and was discharged on postoperative day 23. In followup, NPL revealed continued improvement, with fullness to the left arytenoid. **Conclusions:** This case highlights the unique management of an extensive supraglottic neurofibroma. This is the first case reporting the use of TORS for such a lesion. TORS offers several advantages over CO2 laser excision, including improved visualization and technical options for hemostasis. In particular for lesions of the supraglottic larynx, TORS offers a favorable outcome with a more complete excision.

59. Optimizing Dynamic Optical Contrast Imaging (DOCI): An ex vivo Oral Cavity Animal Model

Karam W. Badran, MD, Los Angeles, CA; Harrison Cheng, PhD, Los Angeles, CA; Sara Ardehali, BSc, Los Angeles, CA; Shijun Sung, PhD, Los Angeles, CA; Nikan K. Namari, BSc, 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 the applications of DOCI as a rapid and novel imaging modality with the capability of differentiating tissue types in the oral cavity tissue macroenvironment.

Objectives: DOCI is a novel imaging modality with the ability to detect variations in endogenous fluorophore lifetimes by illuminating tissue with pulsed ultraviolet (UV) light. We have previously shown that DOCI is capable of delineating tumor margins. Tissue macro-/micro-environments, however, vary with organ site and histology. We therefore sought to better characterize DOCI signal analysis within the varying subsites of the oral cavity in this ex vivo animal model. **Study Design:** Translational study, animal model. **Methods:** Fresh ex vivo oral cavity specimens (n=66) from three New Zealand white rabbits were harvested for pulsed UV illumination utilizing a 6 diode in-series DOCI system. Photons produced were detected and fluorophore lifetimes calculated over a specified, homogenous, region of interest. Specimen site, size, histology, and fluorophore lifetime were collected and analyzed. **Results:** 66 specimens produced over 2 million data points for fluorophore lifetime analysis. The oral tongue muscle, dentition, and mucosa from the dorsal tongue, floor of mouth, and hard palate all produced unique DOCI values. Each subsite was found to be uniquely different from one another and produced statistically significant differences in DOCI value ($p < 0.05$). **Conclusions:** DOCI has the ability to distinguish subtle differences in oral cavity subsites following fresh ex vivo harvest. The fluorophore lifetimes of each tissue is uniquely different posing a novel strategy for intraoperative oncologic imaging, surveillance, and possibly aid in the workup of precancerous lesions. Growing a repository of normal tissue subsites is crucial for integrating an automated real time deep learning algorithm for rapid tissue analysis.

60. Population Based Trends in Treatment and Outcomes in Adenocarcinoma of the Oral Cavity

Gregory L. Barinsky, PharmD, Newark, NJ; Alexander Mozeika, PharmD, Newark, NJ; Jacob S. Brady, BA, Newark, NJ; Jean A. Eloy, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard C.W. Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand trends in treatment and outcomes in adenocarcinoma of the oral cavity.

Objectives: To investigate the impact of patient characteristics, tumor characteristics, and treatment modalities on the survival of patients with adenocarcinoma of the oral cavity. **Study Design:** Retrospective review of a cancer registry. **Methods:** The Surveillance, Epidemiology, and End Results Program (SEER) database was queried for all oral cavity adenocarcinomas from 1973-2013 (665 cases). 544 were included in the survival analysis. Five year survival rates were analyzed based on demographical features, tumor characteristics, and treatments. Survival outcomes were measured using Kaplan-Meier analyses at 5 years and log-rank for significance. **Results:** The majority of patients were female

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(56.7%), white (77%), and had low grade tumors (59.9%). The hard palate (34.8%) and cheek (22.4%) were the most common sites. The most common treatment was surgery alone (68.0%). Being male ($p=0.001$) and being diagnosed at age 75+ ($p=0.006$) were associated with worse survival. Patients with low grade (I-II) tumors had better survival ($p<0.001$), as did patients with T1-T2 tumors ($p<0.001$). Surgery alone had the best survival (96.1%) followed by surgery then radiation (78.5%), no treatment (60.6%), and radiation only (33.2%). Surgery alone ($p<0.001$) and surgery then radiation ($p<0.001$) had higher survival than no treatment while radiation alone did not ($p=0.103$). Lip tumors had the highest survival (97.2%) while gum tumors had the lowest (47.8%). The usage of adjuvant radiation has also been on the rise during this study period. **Conclusions:** Adenocarcinoma of the oral cavity is a treatable cancer that is predominantly located to the hard palate and cheek. Surgery alone remains the superior treatment modality based on 5 year disease specific survival comparisons.

61. A Unique Case of a Primary Angiosarcoma in the Buccal Mucosa

Michael H. Berger, MD, Irvine, CA; Yarah M. Haidar, MD, Irvine, CA; Jennifer L. Anderson, PhD, Irvine, CA; Tjason Tjoa, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the spectrum of angiofibroma primary sites in the oral cavity and mandible. Participants should also be able to demonstrate the importance of including this aggressive disease process in the differential of oral cavity masses and lesions.

Objectives: To describe a novel primary site for angiosarcoma of the head and neck. **Study Design:** Case report. **Methods:** A retrospective case review and review of the literature was performed. **Results:** A 73 year old female initially presented to an outside hospital with a 1.0 cm right buccal lesion detected on ultrasound but not seen on maxillofacial CT scan. She subsequently experienced rapid growth of the mass, with involvement of her right lower cheek skin and underwent biopsy, which was consistent with moderate to poorly differentiated angiosarcoma. She then was referred to our institution after an MRI of the neck revealed a 4.6 cm x 1.6 cm hypervascular enhancing mass within the buccal mucosa extending along and invading the mandible from the anterior body to the base of the coronoid process. Due to the histology and rapidly growing nature of the mass, the patient received a composite resection with segmental mandibulectomy with fibula free flap reconstruction. **Conclusions:** While there have been rare cases described of angiofibroma of the mandible and gingiva, there has never to our knowledge been a documented case of primary angiofibroma arising from the buccal mucosa. With the case described here and recently described cases of angiofibroma in the oral cavity and mandible, further studies may be indicated to expand our understanding of this aggressive tumor within the head and neck. Additionally, with the rapid growth and histology of the patient's tumor, it is important to include angiofibroma in the differential diagnosis of buccal lesions.

62. Sentinel Lymph Node Biopsy in Malignant Chondroid Syringoma of the Scalp: A Case Report

Clifford Chang, BA, New York City, NY; Eric Q. Lee, MD, New York City, NY; Fabio Ponzio, MD, New York City, NY; Cheng Liu, MD, New York City, NY; Kenneth Hu, MD, New York City, NY; Babak Givi, MD, New York City, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the clinical presentation of a rare cutaneous tumor, malignant chondroid syringoma (MCS), of the parietal scalp and to discuss treatment options with emphasis on the role of sentinel lymph node biopsy (SLNB).

Objectives: Malignant chondroid syringomas (MCS) are extremely rare cutaneous tumors with less than twenty reported cases in the head and neck. MCS are known to metastasize to regional lymph nodes early in their progression. We present the first utilization of sentinel lymph node mapping and biopsy in MCS to guide treatment. **Study Design:** Case report and review of the literature. **Methods:** Chart review and review of the Medline literature. **Results:** A 64 year old man presented to his primary care physician with a slow growing, painless mass on the parietal scalp. Incisional biopsy revealed adenocarcinoma centered in the dermis, suspicious for a metastasis. A PET/CT demonstrated no other lesions. Review of the slides at our institution was consistent with MCS. Sentinel node mapping showed drainage to two periauricular lymph nodes. Wide local excision and sentinel lymph node biopsy (SLNB) revealed invasive adenocarcinoma admixed with benign chondroid syringoma; the lesion was completely excised and there was no lymph node involvement. Perineural invasion was noted. The defect was reconstructed with local flaps and a partial thickness skin graft. Adjuvant radiotherapy was administered. The patient remained free of disease at three month followup. **Conclusions:** The known tendency of regional metastases in MCS requires addressing lymphatic drainage basins. Scalp lesions drain to the periparotid, periauricular, occipital, or contralateral nodal basins. SLNB could guide treatment and spare unnecessary lymphadenectomy and irradiation of uninvolved lymphatic basins. We present the first report of SLNB in MCS of the scalp. This procedure is feasible and useful in directing treatment. SLNB as a diagnostic modality may be a useful tool in the management of this rare disease.

63. Core Muscle Size as a Predictor of Outcomes in Head and Neck Free Flap Patients

Tolbin M. Collett, MD, Loma Linda, CA; David A. Macias, BS, Loma Linda, CA; Paul C. Walker, MD, Loma Linda, CA; Jared C. Inman, MD, Loma Linda, CA; Carlos D. Chavez, MD, Loma Linda, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the relationship between core muscle size and frailty. Measuring core muscle size is simple and provides objective data to aid in risk stratification of head and neck surgical candidates.

Objectives: Determining operative risk in patients undergoing head and neck free flap reconstruction is difficult. By measuring the cross-sectional area and density of the psoas muscle, we examine the utility of core muscle size as an objective measurement of frailty and predictor of outcomes in patients undergoing head and neck free flap reconstruction.

Study Design: Retrospective review of one hundred twelve head and neck cancer patients undergoing free flap reconstruction. **Methods:** Two hundred thirty-four head and neck cancer patients underwent free flap reconstruction following cancer resection between 2013 and 2016. One hundred twelve patients had preoperative computed tomography scans involving the psoas muscle available for review. The cross-sectional area (cm²) and density (Hounsfield units) of the right and left psoas muscles were measured at the L4 vertebral level. The relationship between psoas area and postoperative complications was assessed. **Results:** Of the one hundred twelve patients, there was a significant association between psoas area and postoperative surgical and medical complications. Psoas area was compared to other predictors of complications and mortality including the American Society of Anesthesiologists (ASA) score and Charlson Comorbidity Index (CCI). **Conclusions:** Core muscle size, as determined by psoas muscle area, is a simple, objective measurement that may aid in risk stratification of patients undergoing head and neck free flap reconstruction.

64. A Case Series of Horner Syndrome Secondary to Metastatic Squamous Cell Carcinoma in the Neck

Natalie A. Derise, Shreveport, LA; Saudamini J. Lele, MD, Shreveport, LA; Shehanaz K. Ellika, MD, Shreveport, LA; Cherie-Ann O. Nathan, MD, Shreveport, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the prognostic value of Horner syndrome as a presenting sign in metastatic head and neck squamous cell carcinoma.

Objectives: To highlight the clinical significance of finding Horner syndrome in advanced squamous cell carcinoma of the head and neck (HNSCC). **Study Design:** Retrospective chart review of patients with Horner syndrome secondary to metastatic HNSCC in the neck who presented between 2014 and 2017. **Methods:** We reviewed charts of 6 presenting patients for demographics, tumor characteristics, radiological findings, treatment and outcomes. **Results:** All 6 patients (5 males and 1 female) had a pathologically confirmed metastatic HNSCC. There was one unknown primary and in the remaining 5 patients the primary tumor was identified in the pharynx (3), larynx (1), and oral cavity (1). The neck disease was staged as N2 in 5 patients and N3 in 1 patient with radiological imaging showing nodal disease involving the carotid sheath. Three patients were deceased within 1 month of diagnosis, before the initiation of any treatment. One patient received radiation only while 2 patients received chemoradiation with cisplatin as they were unresectable given carotid sheath involvement. Median survival was 4.5 months. Only 1 out of the 6 patients survived after undergoing a salvage neck dissection for persistent disease following chemoradiation and showed a complete resolution of Horner syndrome after surgery. This patient had HPV positive disease and has been disease free for 32 months. **Conclusions:** This is the first case series of neck metastasis from a mucosal HNSCC as an unusual cause of Horner syndrome and generally indicates carotid sheath encasement with very poor prognosis.

65. William W. Montgomery, MD Resident Research Award

Intraoperative Recurrent Laryngeal Nerve Monitoring during Thyroid Surgery: Trends among Otolaryngologists and General Surgeons

Allen L. Feng, MD, Boston, MA; Sidharth V. Puram, MD PhD, Boston, MA; Rahul Modi, MD, Boston, MA; Dipti Kamani, MD, Boston, MA; Gregory W. Randolph, MD FACS, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss intraoperative nerve monitoring (IONM) patterns of use and associated differences in utilization as well as factors associated with IONM.

Objectives: To investigate intraoperative nerve monitoring usage among thyroid surgeons. **Study Design:** Prospective survey. **Methods:** Hundreds of surgeons were sent a 26 question survey to assess attitudes towards IONM use. Surveys were sent to surgeons registered to the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS), International Association of Endocrine Surgeons (IAES), and American Head and Neck Society (AHNS). Groups were compared using chi-squared analysis for nominal variables. **Results:** In total, 64.8% of survey responders reported always using IONM and 18.3% reported selective use. Among them, 11.8% were general surgeons and 88.2% were otolaryngologists. 75.4% of general surgeons reported using IONM (41.3% all the time and 34.1% selectively) compared to 84.2% of otolaryngologists (68.2% all the time and 16.0% selectively), a significant difference ($p < 0.001$). Specifically, there was significantly greater IONM utilization among otolaryngologists compared to general surgeons who were 46-65 years old ($p < 0.001$), had greater than 10 years in practice ($p < 0.02$), and those who performed >50 surgeries per year ($p < 0.001$).

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Conclusions: Prevalence of IONM has increased significantly over the past decade among both general surgeons and otolaryngologists. IONM use is significantly more prevalent among otolaryngologists compared to general surgeons, specifically those that are older, have more years in practice, and have high surgical volume.

66. Computed Tomography Characteristics of Parotid and Submandibular Salivary Stones

Andrew J. Goates, BS, Iowa City, IA; Michaelangelo G. Fuortes, MD PhD, Iowa City, IA; Joan E. Maley, MD, Iowa City, IA; Henry T. Hoffman, MD, Iowa City, IA

Educational Objective: At the conclusion of this presentation, the participants should be able to evaluate salivary stone density using computed tomography (CT) attenuation to assist in treatment decision making and research protocols.

Objectives: Define radiographic characteristics in comparison of submandibular (SM) and parotid (P) intraductal calculi using a novel CT scan windowing protocol designed to assist in preoperative planning and future research studies. **Study Design:** Retrospective imaging analysis at an academic tertiary care hospital. **Methods:** Using the ICD-9 code (527.5), 193 patients diagnosed with sialithiasis at a large academic medical institution between 03/2013 and 03/2017 were identified. Records review directed CT analysis further restricting the study to 116 patients. Imaging studies were analyzed using standard abdominal window settings and novel salivary stone window settings. Stone size and location were recorded and selective free hand region of interest was used to determine stone density measured in Hounsfield units (HU), and stone heterogeneity index (SHI): defined as standard deviation of HU. **Results:** 116 patients (60 men and 56 women, age: 50.25 ± 15.23 years) with 147 total stones (74.8% SM and 25.8% P) met criteria for the study. Submandibular stones were significantly larger, denser, and have higher SHI compared to the parotid stones ($p < 0.05$). A nonlinear regression analysis of all patients suggests a logarithmic relationship between stone size and stone density ($\text{Density[H.U.]} = 125.3 * \ln(\text{Volume[mm}^3]) - 181.1$; $R^2 = 0.779$). **Conclusions:** Sialolith size is logarithmically related to stone density. Submandibular stones are larger, denser, and have greater heterogeneity compared to parotid stones. This novel CT salivary stone window protocol can give clinicians valuable data for the preoperative planning and provide standard analysis for future research studies.

67. Carotid Body Paraganglioma with Lung Metastasis

Jeewanjot S. Grewal, BS, Syracuse, NY; Mark A. Arnold, MD, Syracuse, NY; Jesse T. Ryan, MD, Syracuse, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding about a rare disease presentation and discuss the difficulty of proposing a treatment plan given the lack of treatment standards.

Objectives: To report a rare diagnosis and discuss treatment options given patient's young age and presentation. **Study Design:** Case report. **Methods:** A literature review was performed on PubMed searching keywords including paraganglioma, metastatic paraganglioma, carotid body tumor and chemodectoma. **Results:** Cases of primary carotid body paragangliomas outline the rarity of malignancy, however treatment and incidence of lung metastasis have not been discussed previously. We report the case of a 22 year old male presenting with a 6 month history of a growing left neck mass with associated lung metastasis. The patient has no other significant past medical history. MRI and CT neck reveal a left cervical enhancing mass at the carotid bifurcation measuring 5.4 cm x 4.7 cm x 6.6 cm along with nodular lung lesions in the upper lobes, confirmed by CT thorax. The internal and external carotid arteries are partially encased. Biopsy of the neck mass and lung nodules are both consistent with paraganglioma. **Conclusions:** There are no treatment standards in the literature of advanced metastatic paraganglioma. Studies indicate surgical intervention as the primary removal method along with definitive radiation therapy and possible chemotherapy. It is uncertain if surgical removal/debulking would be indicated given the patient's young age, lung metastasis, and delicate location of the mass.

68. Warthin's Tumor of the Parotid Gland with Associated Salivary Calculi

Yarah M. Haidar, MD, Irvine, CA; Michael Berger, MD, Irvine, CA; Jennifer Anderson, PhD, Irvine, CA; Tjason Tjoa, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the pathophysiology of Warthin's tumor and the possible association with chronic salivary disease.

Objectives: To demonstrate a possible association between Warthin's tumor and salivary calculi of the parotid gland. **Study Design:** Case report. **Methods:** A retrospective case review and review of the literature was performed. **Results:** A 74 year old male presented to clinic with a longstanding history of a left parotid mass with associated intermittent pain and swelling. He was diagnosed with recurrent acute sialadenitis but was also found to have a left parotid mass on imaging. CT neck demonstrated a 3.4 x 2 x 3.8 cm contrast enhancing mass within the superficial lobe of the parotid gland extending to the parapharyngeal space. Ultrasound guided fine needle aspiration (FNA) demonstrated oncocytic cells. The patient underwent a left superficial parotidectomy with resection of the parapharyngeal space mass. He was found to have inflammation within the tail of the parotid gland with firm scar surrounding the parotid mass and several pockets of purulence. There was also a palpable calcified salivary calculus in the superficial lobe of the parotid gland distinct from the

tumor. Postoperatively, the patient did well with normal facial nerve function. Histologically, he was diagnosed with a Warthin's tumor. **Conclusions:** This is the first reported case, to our knowledge, of Warthin's tumor with associated parotid calculus. The long standing ductal obstruction caused by the slow growing tumor could result in sialolithiasis and recurrent sialadenitis, suggesting clinical evaluation of patients with longstanding recurrent acute sialadenitis. Alternatively, the inflammatory tumor could develop secondary to the recurrent acute sialadenitis caused by the salivary calculus. Further studies could clarify this association.

69. Variation in Partial and Total Thyroidectomy Costs in a Multi-Hospital Network

Daniel B. Hall, BS, Salt Lake City, UT; Marcus M. Monroe, MD, Salt Lake City, UT; Richard B. Cannon, MD, Salt Lake City, UT; Jeremy D. Meier, MD, Salt Lake City, UT

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss variation in costs and operative time for thyroidectomy and how this could impact value of healthcare delivery.

Objectives: To 1) identify the major expenses for partial thyroidectomy (PT) and total thyroidectomy (TT) in a multi-hospital network; 2) compare differences for variation in cost and operative time by surgeons and hospitals; and 3) compare the impact of surgeon volume on costs and operative time. **Study Design:** Observational cohort study. **Methods:** A multi-hospital network's standardized activity based accounting system was used to determine hospital costs per encounter for PT and TT cases from January 2007 - June 2017. Costs were subdivided into categories, including anesthesia, imaging, inpatient unit, labs, pharmacy, operating room (OR), operating room supplies (ORS), PACU, same day services, and other expenses. Analysis was accomplished using the mean difference and mean ratio of total and categorical costs above and below the median for surgeons by hospital and volume. **Results:** The study cohort included 3,423 PT performed by 127 surgeons and 2,098 TT performed by 96 surgeons at 16 hospitals. Mean cost per PT=\$4,320±\$32 (range \$783-\$14,110), mean operative time=84±1 minute. Mean cost per TT=\$4,615±\$37 (range \$513-\$17,252), mean operative time=108±1 minute. The largest cost categories included OR (PT=40%, TT=41%), ORS (PT=20%, TT=18%), and inpatient unit (PT=14%, TT=16%). Variation in mean difference and mean ratio of total, OR, ORS, and inpatient unit costs was identified among surgeons and hospitals (p<0.001). Surgeon volume only impacted mean operative time for PT. **Conclusions:** Variation in PT and TT mean costs exists among surgeons and hospitals within a multi-hospital network. Mean operative time, ORS, and inpatient unit costs vary among surgeons. Understanding how these variables impact outcomes could improve value of care delivery for thyroidectomy.

70. Pectoralis Major Flap with Preservation of Breast Implant

Erin K. Haser, MD, Boston, MA; William S. Kim, MD, Boston, MA; Miriam A. O'Leary, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the feasibility of raising a pectoralis major flap while preserving a patient's breast implants and understand the technique used to perform this surgery successfully.

Objectives: To report a successful case of pharyngocutaneous fistula repair using a pectoralis major flap (PMF) with preservation of a patient's breast implant. **Study Design:** Case report. **Methods:** Case report and literature review of PMF with breast implant preservation. **Results:** A 56 year old female with T4a N0 M0 hypopharyngeal cancer underwent total laryngectomy, partial pharyngectomy, right thyroid lobectomy, and right neck dissection. Pathology demonstrated two microscopically positive margins. The postoperative course was complicated by a leak above the stoma concerning for a malignant pharyngocutaneous fistula. PMF is commonly recommended in this situation for its bulk and reliability. However, the patient wished to preserve her bilateral breast implants. Fistula repair was undertaken in conjunction with plastic surgery. The prior breast augmentation surgery had caused a dehiscence in the pectoralis major muscle; therefore flap vascularity was assessed using fluorescence angiography. Care was taken to maintain the fibrous capsule around the implant, avoiding dissection below the inframammary crease to prevent implant migration inferiorly. Upon 6 month followup, the patient's breast implant remains intact and PMF remains viable. **Conclusions:** Pectoralis major flap is a reliable regional flap ideal for repair of pharyngocutaneous fistula in laryngectomy patients. The existence of a breast implant has formerly been described as a contraindication to PMF. This case describes a successful technique using SPY Elite fluorescence angiography to raise a PMF, assess its vascularity, and prevent breast implant migration postoperatively.

71. Impact of Patient Characteristics and Treatment Type on Survival in Anaplastic Thyroid Carcinoma: A Population Based Study

Christopher M. Hatzis, BA, Newark, NJ; Roman Povolotskiy, BA, Newark, NJ; Meghan Crippen, MS, Newark, NJ; Jean Anderson Eloy, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard C. Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to assess the impact of treatment type on survival with anaplastic thyroid carcinoma.

Objectives: To investigate the impact of patient characteristics and treatment type on survival with anaplastic thyroid

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carcinoma. **Study Design:** Retrospective analysis of a population based tumor registry. **Methods:** The Surveillance, Epidemiology, and End Results (SEER) database was queried for cases of anaplastic carcinoma of the thyroid gland from 1983-2013 (1260 cases). Demographics, clinicopathologic features, treatment modalities, and survival rates were analyzed. Of the 1260 cases, 1050 were included in the survival analysis. Kaplan Meier testing for disease specific survival was assessed at 6, 12, and 18 months. For each treatment type, log-rank significance and Cox hazard regression proportions were generated. **Results:** Overall survival was 30.2% at 6 months, 17.9% at 12 months, and 14.6% at 18 months. Female gender, increased age, unmarried marital status, tumor stage (T4b), regional lymph node involvement, and distant metastasis at diagnosis were each correlated with significantly worse disease specific survival at all time points. Patients receiving radiation alone survived an additional 4.2 months ($p=0.002$), those receiving surgery alone survived an additional 6.59 months ($p=0.002$), and those receiving combination therapy survived an additional 18.47 months ($p<0.001$). After accounting for confounding factors via multivariate analysis the following groups had a significantly lower risk of death, including: radiation only group (OR:0.582[0.420-0.806] $p=0.001$), surgery only group (OR:0.653[0.457-0.933] $p=0.019$), and combination (radiation and surgery) therapy group (OR:0.247[0.163-0.374] $p<0.001$). **Conclusions:** Anaplastic thyroid carcinoma is a morbid disease with high rates of death due to disease within the first year. Treatment, when appropriate, is correlated with improved survival after controlling for significant demographic and clinicopathologic factors.

72. NUT Midline Carcinoma of the Larynx: A Unique Case of Response to Chemoradiotherapy

Rohan R. Joshi, MD, New York City, NY; David G. Pfister, MD, New York City, NY; Richard J. Wong, MD, New York City, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the diagnosis, epidemiology, pathophysiology, and treatment options for NUT midline carcinomas of the larynx and more broadly, the head and neck.

Objectives: 1) Report a case of an exceedingly rare tumor, NUT carcinoma, in the larynx; 2) discuss management of this case as well as other cases described in the literature. **Study Design:** Retrospective case report. **Methods:** We report a unique case of NUT midline carcinoma of the larynx and perform a review of the literature. **Results:** A 39 year old male with NUT midline carcinoma underwent total laryngectomy, partial pharyngectomy, and bilateral neck dissections. Postoperatively, the patient developed peristomal recurrence and a new neck and lung mass. After undergoing quadshot radiation and cycle 1 of cisplatin, he developed a dermal metastasis. The patient then underwent 3 additional cycles of cisplatin and 7000 Gy to treat his disease in the head and neck. At the conclusion of this treatment, both his pulmonary metastasis and neck disease regressed and he showed resolution of his stomal and dermal disease. Shortly thereafter, he developed new lung nodules, hilar adenopathy as well as new bony, adrenal, and hepatic metastases. He underwent 2700Gy to these sites and palliative cisplatin as well as docetaxel; he was also given one dose of pembrolizumab to which his disease showed no response. At his death, the patient's local disease and dermal metastases had shown complete resolution. **Conclusions:** No guidelines currently exist for treatment of NMC. This case was unique for an initial, positive response to chemoradiotherapy. Thought should be given to expedited adjuvant CRT postoperatively.

73. Differentiating Primary Neuroendocrine Tumors of the Larynx from Metastatic Medullary Thyroid Carcinoma: A Case Report and Review of Literature

Christine M. Kim, MD, Los Angeles, CA; Karam W. Badran, MD, Los Angeles, CA; Alex N. Goel, BA, Los Angeles, CA; Veling W. Tsai, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the unique overlap in immunohistochemical (IHC) staining patterns of primary laryngeal neuroendocrine carcinoma and metastatic medullary thyroid carcinoma and understand how to differentiate the two.

Objectives: To describe the rare case of a primary laryngeal neuroendocrine tumor of the larynx with unique immunophenotype staining patterns. **Study Design:** Case report and comprehensive literature review. **Methods:** A case report was analyzed and supporting literature was reviewed to aid in differentiating primary neuroendocrine tumors of the larynx from metastatic medullary thyroid carcinoma. **Results:** A 65 year old Chinese male with a two year history of progressive raspy dysphonia and globus was found to have a broad based, exophytic mass centered over the left arytenoid process. Excisional biopsy was focally positive for calcitonin and strongly positive for TTF-1, supporting the diagnosis of metastatic medullary thyroid carcinoma. Following thyroidectomy and neck dissection, however, no primary thyroid pathology was identified. Calcitonin and TTF-1 are positive in the overwhelming majority of medullary thyroid carcinomas. p53 has uniquely been found to be positive in site specific laryngeal neuroendocrine carcinomas. Based on immunophenotype staining patterns, diagnosis was changed to a primary neuroendocrine tumor of the larynx. **Conclusions:** Neuroendocrine carcinomas of the larynx are uncommon, and IHC staining can often be misleading. Given the significantly different approaches to treatment, there is an opportunity to improve current diagnostic standards.

74. Multiple Simultaneous Head and Neck Cancers in Lynch Syndrome: A Case Report and Review of Literature

Amanda Le, Boston, MA; Daniel N. Johnson, MD, Boston, MA; Mark A. Varvares, MD, Boston, MA; Allen L. Feng, MD, Boston, MA

Educational Objective: At the conclusion of the presentation the reader should understand the basic genetic defect of Lynch syndrome, what cancers are associated with it and in particular, what head and neck malignancies may be related to this disorder and their appropriate management.

Objectives: To report the first known case of a patient diagnosed with three simultaneous head and neck cancers in the setting of Lynch syndrome and review the relevant literature. **Study Design:** Case report and literature review. **Methods:** Describe the clinical presentation, pathological findings and management for a patient with multiple head and neck malignancies in the setting of Lynch syndrome. **Results:** A 44 year old man with past medical history of Lynch syndrome (prior genetic testing positive for MSH2 mutation), presented with a 6 month progressively enlarging oral cavity lesion. The left buccal lesion was biopsied demonstrating a low grade adenocarcinoma. Preoperative imaging discovered an incidental right parotid mass and multiple thyroid nodules. Re-excision of the left buccal mucosa revealed a minor salivary gland polymorphous low grade adenocarcinoma. Fine needle aspiration revealed papillary thyroid carcinoma and acinic cell carcinoma of the left thyroid lobe and right parotid gland, respectively. Total thyroidectomy, central and left lateral neck dissections, and right sided parotidectomy with facial nerve preservation were performed in one operation. Radioactive iodine treatment was given due to the extensive nature of his thyroid disease. The two mucosal lesions did not receive adjuvant therapy as both had been completely resected and were of low risk for recurrence. At 6 month postoperative followup the patient remains well. **Conclusions:** Clinicians caring for patients with Lynch syndrome should be aware of its potential contribution to the development of head and neck malignancies and have a low threshold to evaluate any incidentally found head and neck lesions.

75. Influence of a Multidisciplinary Head and Neck Oncology Tumor Board Conference on Quality of Care

Eric Q. Lee, MD, New York City, NY; Clifford M. Chang, BA, New York City, NY (Presenter); Kenneth S. Hu, MD, New York City, NY; Mark D. Delacure, MD, New York City, NY; Mark S. Persky, MD, New York City, NY; Babak Givi, MD, New York City, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to evaluate the effectiveness of a multidisciplinary tumor board in guiding the treatment of head and neck cancer patients in different care settings.

Objectives: Multidisciplinary treatment is required in a significant portion of head and neck cancer patients. We sought to investigate the impact of a multidisciplinary tumor board conference on the eventual treatment plans of head and neck patients. **Study Design:** Prospective database and chart review. **Methods:** All newly diagnosed patients from an academic institution, an affiliated public hospital, and a Veterans Affairs medical center presented at a weekly head and neck tumor board conference were entered into a prospective database. Patient demographics, diagnoses, and tumor board recommendations were recorded at the time of the presentation. Compliance with national treatment guidelines and course of treatment were recorded. **Results:** From October 2015 through July 2017, 188 patients met inclusion criteria. Most were male (133, 70.7%) and from the academic institution (120, 64.8%) followed by the public hospital (49, 26.0%). The median age was 64 (7-96). The most common diagnosis was squamous cell carcinoma (132, 70.2%) followed by adenoid cystic carcinoma (9, 4.8%). Nine patients were lost to followup and five transferred care to other institutions. Tumor board recommendations were consistent with established National Comprehensive Cancer Network (NCCN) guidelines and were followed in 171 (91.0%) cases. Compliance was not different between the academic institution, the public hospital, and the Veterans Affairs medical center (92.5% vs 85.7% vs 94.7%, $p=.321$). **Conclusions:** Multidisciplinary tumor board conference is an effective tool in providing evidence based care. High compliance rate with tumor board recommendations can be achieved in different care environments. Tumor board conferences have the potential to improve quality of care for head and neck cancer patients.

76. Sialendoscopy with Intraductal Steroid Irrigation in Patients with Sialadenitis with Autoimmune Presentation

Saudamini J. Lele, MD, Shreveport, LA; Torrey L. Fourrier, MD, Winston Salem, NC; Cherie Ann O. Nathan, MD, Shreveport, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to realize the importance of sialendoscopy with steroid irrigation as a treatment option in patients with autoimmune sialadenitis.

Objectives: To analyze outcomes of sialendoscopy and steroid irrigation in patients with sialadenitis in the setting of laboratory confirmed and unconfirmed autoimmune disease at our institute. **Study Design:** Retrospective analysis of patients who underwent interventional sialendoscopy with steroid irrigation from 2013 to 2016 for the treatment of sialadenitis. **Methods:** We retrospectively reviewed all patients who underwent sialendoscopy for sialadenitis without any previous evidence of sialolithiasis from 2013-2016. Sialendoscopy with ductal dilation and steroid irrigation was performed in all

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patients after conservative measures were exhausted. **Results:** Twenty-two patients underwent interventional sialendoscopy with intraductal steroid irrigation for the treatment of sialadenitis without any previous evidence of sialolithiasis. Conservative measures had failed in all. Eleven patients had symptoms arising from the parotid gland, 4 patients had symptoms arising from the submandibular gland while 5 patients had symptoms in both parotid and submandibular glands. Two patients complained of only xerostomia without glandular symptoms. The mean age of the study group which included 1 male and 21 females was 44.6 years (range 3-86 years). Only six patients had laboratory confirmed autoimmune disease. The mean followup period was 378.9 days (range 16 to 1143 days). All patients underwent sialendoscopy with ductal dilation and steroid irrigation. Only 3 patients required repeat sialendoscopy. There were no intra- or post-procedural complications noted. **Conclusions:** The combination of sialendoscopy with dilation and steroid irrigation is a safe and effective treatment option for patients with autoimmune sialadenitis refractory to conservative measures. Prospective studies with a larger case series are needed to establish its role as a definitive treatment option.

77. The Role of Frailty in Assessing Mortality Risk Inside and Outside the Operating Room

Leila J. Mady, MD PhD MPH, Pittsburgh, PA; Marci L. Nilsen, PhD RN, Pittsburgh, PA;
Jeffrey D. Borrebach, MS, Pittsburgh, PA; William G. Albergotti, MD, Charleston, SC;
Daniel E. Hall, MD MHS FACS, Pittsburgh, PA; Jonas T. Johnson, MD, Pittsburgh, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the role of frailty as a tool for avoiding low value interventions.

Objectives: There is no consensus regarding an operative definition of frailty. Through decreased physiologic reserve and resistance to stressors, frail patients are more vulnerable to poor health outcomes. This study aims to assess the predictive value of a frailty assessment tool on mortality in nonsurgical and surgical head and neck (HN) patients. **Study Design:** Single site, prospective quality improvement initiative from 2016-2017. **Methods:** The Risk Analysis Index (RAI) is a previously validated 14 item instrument. Inclusion criteria was either: 1) visit with HN surgical oncology provider; 2) surgery performed within 90 days of RAI assessment. Cox proportional hazards models were utilized to associate RAI with mortality whereas Kruskal-Wallis tests were utilized to associate RAI with other variables. **Results:** 527 nonsurgical patients (47.1% male) were identified (mean [SD]: age, 56.2 [17.3]yrs) of whom 27 (5.1%) died within the study period. 141 surgical patients (66.7% male) were identified (mean [SD]: age, 62.2 [14.5]yrs; surgery time, 6.4 [4.0]hrs) of whom 18 (12.8%) died. Mean RAI nonsurgical vs. surgical 20.0 vs. 24.0 ($p < 0.001$). Each incremental RAI score increase was associated with an 8.7% mortality hazard increase ($p < 0.001$) among nonsurgical patients and a 6.1% mortality hazard increase ($p = 0.027$) among surgical patients. In patients who underwent major ablative or regional/free flap reconstruction, there was a significant difference in frailty between primary (mean=32, range=10-59) versus recurrent/persistent disease (mean=39, range=20-51) ($p = 0.010$) and by subsite (mean: oral cavity=33; larynx=36; oropharynx=24; cutaneous=36; salivary=37) ($p = 0.002$). **Conclusions:** Frailty is associated with increased mortality risk in HN patients. Understanding frailty is critical for shared decision making and avoiding low value interventions.

78. Schwannoma and Morsicatio Linguarum Masquerading as Oral Cancer: A Case Report

Joseph B. Meleca, MD, Cleveland, OH; Robert R. Lorenz, MD, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand the pathogenesis of traumatic ulcerative granuloma with stromal eosinophilia (TUGSE); 2) establish a differential diagnosis for exophytic lingual masses in young patients and the importance of maintaining a high index of suspicion for malignancy given the increased incidence of HPV associated oral squamous cell carcinoma in non-tobacco users; and 3) describe treatment options for oral schwannoma and TUGSE lesions.

Objectives: 1) Review the pathogenesis of traumatic ulcerative granuloma with stromal eosinophilia (TUGSE); 2) establish a differential diagnosis for exophytic lingual masses in young patients and the importance of maintaining a high index of suspicion for malignancy given the increased incidence of HPV associated oral squamous cell carcinoma in non-tobacco users; and 3) describe treatment options for oral schwannoma and TUGSE lesions. **Study Design:** Case report. **Methods:** Case report. **Results:** A 19 year old female with history of depression, suicidal ideation and no prior use of tobacco presented to clinic with complaint of an unusual right tongue mass for the past year that developed after initial bite trauma. The lesion waxed and waned but never completely healed; however, it greatly increased in size the three weeks prior to presentation. She reported constant 8/10, stabbing pain and occasional swelling that kept her from eating. On exam, the mass was a large, 3 x 2 cm, exophytic and highly raised plateau-like lesion on the right lateral tongue, with approximately 1-2 cm of surrounding induration, highly suspicious for squamous cell carcinoma. CT neck with IV contrast revealed a 1.6 x 1.9 x 1.9 cm heterogenous attenuated lesion with peripheral hypoattenuation and a 1.4 cm reactive vs. metastatic right level IIA lymph node. Biopsies were taken of the tongue mass at the time of visit, and urgent surgical planning was initiated due to high clinical concern for malignancy. Biopsy results demonstrated ulceration with polymicrobial colonization including candidal organisms and adjacent pseudoeplitheliomatous hyperplasia and stromal eosinophilia. The lesion was resected in its entirety with close surgical margins and closed primarily. Final surgical pathology revealed immunohistochemistry consistent with schwannoma within a background of traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) consistent with repetitive trauma. **Conclusions:** This case report details a unique primary lateral tongue schwannoma with secondary traumatic propagation presenting like squamous cell carcinoma. A review of patho-

genesis, approach to establishing a differential and overview of treatment options will be discussed.

79. Patient Reported Outcomes Following Treatment for Oropharyngeal Cancer with Primary Radiation versus Surgery: An Analysis of the SEER-MHOS Database

Elliot C. Morse, BS, New Haven, CT; Rance J.T. Fujiwara, BS, New Haven, CT; Saral Mehra, MD MBA, New Haven, CT

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the different effects on patient reported outcomes of primary radiation and primary surgical treatment for oropharyngeal cancer (OPSCC).

Objectives: To determine whether primary treatment modality is associated with differences in patient reported outcomes following OPSCC treatment in elderly survivors using a multi-institutional database. **Study Design:** Retrospective cross-sectional study of elderly adults included in the Surveillance, Epidemiology, and End Results Medicare Health Outcomes Survey (SEER-MHOS) linked database from 1998 through 2013. **Methods:** Difference in health related quality of life (HRQOL), as measured by the Short Form-36 and Veteran's Rand 12 questionnaires, odds of impairment with activities of daily living (ADLs) (bathing, dressing, eating, getting in/out of chairs, walking and toileting), and odds of risk for major depressive disorder (MDD) were compared between patients completing MHOS surveys following primary treatment with surgery versus radiation for OPSCC. **Results:** 171 patients were included in this study; 83 received primary radiation and 88 received primary surgery. The cohorts did not differ significantly on any epidemiologic variables examined. Those receiving radiation had significantly more advanced cancer stage than those treated with surgery (87% versus 74% regional stage). On multivariable analysis, primary radiation treatment was associated with a 6.04 point lower HRQOL score compared with primary surgical treatment (95% CI -0.25 to -11.8, $p = 0.04$). No differences in ADL impairment (OR = 1.77, 95% CI 0.77 to 4.05, $p = 0.18$) or MDD risk (OR = 2.57, 95% CI 0.87 to 7.58, $p = 0.09$) was found. **Conclusions:** Patient reported outcome metrics are important considerations when choosing a treatment regimen for OPSCC. Primary surgery when compared to primary radiation is not associated with significantly worse HRQOL, impairment with ADLs, and risk for MDD.

80. Case Control Analysis Identifying Factors Affecting Noncompliance in Veterans with Head and Neck Squamous Cell Cancer

Kelly F. Moyer, MD, Washington, DC; Jessica H. Maxwell, MD MPH, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss predictors of noncompliance with treatment among advanced stage head and neck squamous cell carcinoma patients of our area's VA population.

Objectives: Treatment noncompliance at our area's VA medical center is a significant problem among veterans, particularly in the head and neck cancer population. Existing literature shows noncompliance as a strong predictor of persistent disease. Unintended treatment prolongation has been associated with inferior tumor control and estimates one missed treatment day decreases locoregional control by 1.6% per day in HNSCC. The objective of this study is to determine the incidence of noncompliance and to identify predictors of noncompliance in advanced stage veterans with HNSCC. We hypothesize that veterans living farther from the VAMC and those with psychiatric comorbidities will have increased risk of noncompliance. **Study Design:** This is a retrospective case control study evaluating patients with all subsites of advanced stage HNSCC. Retrospective analysis includes VAMC patients between 2000-2016. **Methods:** Patient data was analyzed including demographics, geographic distance from the VA, psychiatric and medical comorbidities and substance abuse. These patients were compared to matched controls. Statistical analysis of the data includes odds ratio and chi-squared tests. **Results:** We identified 67 noncompliant patients meeting inclusion criteria and 423 matched controls. Separation among patients was noted for TIA/CVA (24% vs. 6%), diabetes (9% vs. 14%) and increasing geographic distance from the VA (119 vs. 52 miles). **Conclusions:** Patients with a history of CVA and those who live farther from the VAMC are at increased risk of noncompliance. Patients with diabetes are more likely to be compliant with treatment. These predictors are important to be noted in pretreatment planning discussions with patients in order to optimize treatment and ensure compliance.

81. Parathyroid Carcinoma and Atypical Parathyroid Adenoma: A Case Series

Rebecca C. Nelson, MD, Cleveland, OH; Deborah J. Chute, MD, Cleveland, OH; Brian B. Burkey, MD, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss characteristics and natural history of patients with parathyroid carcinoma and atypical parathyroid adenoma and compare the two.

Objectives: Parathyroid carcinoma (PC) and atypical parathyroid adenoma (APA) are rare causes of primary hyperparathyroidism with little data describing their presentation and natural history. Our objective is to further characterize this pathology. **Study Design:** Retrospective case series. **Methods:** We reviewed all patients with a tissue diagnosis of PC

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or APA at our institution from 2002 to 2017. **Results:** 23 patients were selected (43% male) with an average age of 58 at time of surgery. 12 were diagnosed with APA and 11 with PC. The classic neck mass was a presenting sign in only 5 (41%) of APA cases and 2 (18%) of PC cases. Average preoperative parathyroid hormone and calcium levels were elevated, though no statistical difference was found between either group (parathyroid hormone levels: APA: 212, PC: 265 pg/mL, $p=0.599$; calcium levels APA: 11.2, PC: 11.1 mg/dL, $p=0.795$). Preoperative neck ultrasound findings suggested a malignant process (e.g., mass with irregular borders) in only a minority of patients (3/20). Gross surgical findings such as lesion adherence to local structures was seen in 4 cases of APN and 2 cases of gross invasion were seen with carcinoma. Four patients with PC underwent further surgical intervention beyond initial parathyroid exploration. There were 3 cases of recurrent PC, with an average time to recurrence of 5.3 years (range 3-11). One mortality was identified in this group. **Conclusions:** In conclusion, PC and APA presentation often varies from the classic triad and may be difficult to predict. This carries implications for intraoperative management of primary hyperparathyroidism.

82. Impact of Procedural Delay of Emergent Tracheostomies on Postoperative Complications

Kalin K. Nishimori, MBS, Newark, NJ; Eric H. Zhao, BS, Newark, NJ; Jacob Brady, BA, Newark, NJ; Jean A. Eloy, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard C. Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the impact of procedural delay on postoperative complications following emergent tracheostomies.

Objectives: 1) Analyze the impact of procedural delay of emergent tracheostomies on postoperative complications; and 2) apply these data toward recommendations of case management. **Study Design:** Retrospective database review. **Methods:** The National Surgical Quality Improvement Program database was queried for all emergent tracheostomies between 2005 and 2014. Cases with a procedural delay of greater than 7 days were omitted. The remaining data were then subdivided into 2 cohorts consisting of patients who underwent tracheostomies the same day of hospital admission and patients who underwent emergent tracheostomies 1 day or more following hospital admission. These 2 cohorts were compared via univariate and multivariate analyses for demographic information, comorbidities, and postoperative complications. An independent samples t-test was conducted to compare average length of total hospital stay for non-delayed and delayed cases. **Results:** Among the 175 emergent tracheostomies examined, 105 (60%) cases were non-delayed and 70 (40%) cases delayed. A procedural delay of 1 day or greater increased risk of ventilation for more than 48 hours ($RR=5.846$, $p=0.024$). Multivariate analysis accounting for age, sex, race, and significant comorbidities revealed no significant difference in all postoperative complications ($RR=2.014$, $p=0.300$), surgical complications ($RR=4.444$, $p=0.050$), and medical complications ($RR=1.480$, $p=0.551$) between cohorts. There was a significant difference in mean length of total hospital stay for non-delayed ($M=13.03$, $SD=12.50$) and delayed ($M=23.61$, $SD=19.08$) cases; $t(108.228)=-4.09$, $p<0.001$. **Conclusions:** Patients whose emergent tracheostomies were delayed had an increased risk of ventilation for more than 48 hours, and their average total length of hospital stay was 10.59 days longer than that of non-delayed patients.

83. WITHDRAWN

84. Comparison of the Scapular Osteocutaneous Free Flap and Simultaneous Double Free Flaps with Fibula for Reconstruction of Large Composite Oromandibular Defects

Melissa S. Oh, BA, Atlanta, GA; Mark W. El-Deiry, MD, Atlanta, GA; H. Michael Baddour, MD, Atlanta, GA; Danielle L. Gainor, MD, Atlanta, GA; Amy Y. Chen, MD, Atlanta, GA; Andrés M. Bur, MD, Kansas City, KS

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the advantages and disadvantages of scapular versus simultaneous double free flaps with fibula for reconstruction of large composite oromandibular defects.

Objectives: To compare perioperative and functional outcomes of patients who underwent scapular osteocutaneous versus double free flaps with fibular bone flap for oromandibular reconstruction. **Study Design:** Single institution retrospective chart review. **Methods:** Patients who underwent free tissue reconstruction of a large composite oromandibular defect between March 2014 and July 2017 were identified. Main outcome measures included differences in demographics, operative time, perioperative complications, tracheostomy status and swallowing function measured by the Functional Oral Intake Scale. Wilcoxon Rank-Sum and chi-squared tests were used to compare continuous and categorical variables respectively. **Results:** Overall, 35 patients with scapular reconstruction and 14 patients with double flaps were included. All double flaps consisted of fibular and, most commonly, radial forearm free flaps (78.6%). Patients who underwent double flaps were significantly younger than scapular flap patients (59.2 vs. 68.5 years, $p=0.002$). Total operative time was longer for double flaps (15.1 vs. 13.6 hours, $p=0.041$). There was no significant difference in reoperation rate, and there was one flap loss in the scapular group. After accounting for the difference in age between the two groups, there were no significant differences in decannulation rate, wound complications or oral intake. **Conclusions:** Reconstruction of large composite oromandibular defects presents unique technical, functional and aesthetic challenges. Only the scapular free flap and double flaps provide adequate bone and soft tissue volume and each has advantages and limitations. Our analysis suggests that scapular and double flaps have similar perioperative and functional outcomes and that patient age is an important predictor of functional recovery.

85. Case Report of a STAT-6 Negative Solitary Fibrous Tumor

Susannah C. Orzell, MD MPH, Syracuse, NY; Yesha Sheth, MD, Syracuse, NY; Jesse T. Ryan, MD, Syracuse, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the typical clinical, radiographic and histopathologic findings for a solitary fibrous tumor. They should also be aware that STAT-6 positivity is highly sensitive and specific for the diagnosis of a solitary fibrous tumor but not pathognomonic.

Objectives: Discuss the presentation, histology and immunohistochemical characteristics of solitary fibrous tumors. **Study Design:** Case report and literature review. **Methods:** A retrospective chart review was performed on a 54 year old female who had presented with a midline mobile, nontender neck mass. She underwent an FNA followed by an uneventful excision of the mass. Radiology, pathology and histology were reviewed. A PubMed search was performed for the literature review. **Results:** Histology was consistent with a solitary fibrous tumor, and this was supported by bcl-2, CD34 and CD99 positivity, as well as S-100 and EMA negativity. STAT-6, which has been shown to be highly predictive of solitary fibrous tumors, was negative in this patient. **Conclusions:** Although STAT-6 has been shown to be highly predictive of solitary fibrous tumors, it is not diagnostic, as demonstrated in this case report. The diagnosis of a solitary fibrous tumor was made based on histology and results of other immunohistochemical testing.

86. Parathyromatosis and Intraoperative PTH Monitoring: A Case Report and Literature Review

Mauricio Parra-Ferro, MS, Gainesville, FL; Peter T. Dziegielewski, MD, Gainesville, FL; Alan Tate, MD, Gainesville, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the clinical presentation of parathyromatosis, a rare cause of recurrent and persistent hyperparathyroidism, and discuss relevant treatment options.

Objectives: We aim to increase awareness of parathyromatosis and discuss the impact that intraoperative (IO) PTH monitoring can have on treatment success. **Study Design:** Case report and literature review. **Methods:** We report the case of a woman with a history of two failed parathyroid surgeries who presented with persistent hyperparathyroidism. A literature review was conducted to review reported cases of parathyromatosis that utilized IO-PTH monitoring. **Results:** A 62 year old female with a history of an ectopic mediastinal parathyroid adenoma status post-thoracotomy and recurrent hypercalcemia status post-cervical neck exploration presented for an evaluation of persistent hyperparathyroidism. Her most recent blood work showed a PTH level of 809 pg/ml with a serum calcium of 14.2 mg/dL. Several imaging modalities were performed but failed to localize any specific lesions. The patient proceeded with a bilateral neck and superior mediastinum exploration. Multiple parathyroid tissue deposits were identified at several sites, with IO-PTH recordings after each sample. Final sample from the neck coincided with a PTH level of 567 pg/ml. A median sternotomy was then performed, followed by a thorough anterior and posterior mediastinal dissection with thymectomy. Final IO-PTH was noted to drop down below 300 pg/ml. The patient recovered well from the procedure and has maintained calcium levels within normal limits and PTH level below 250 pg/ml. **Conclusions:** IO-PTH monitoring is a valuable tool that increases rates of initial operative success. It is an accurate predictor of cure, and can decrease the frequency of recurrent hyperparathyroidism and revision surgeries.

87. Advanced Head and Neck Surgical Techniques: A Survey Based Assessment of Otolaryngology-Head and Neck Surgery Resident Perspectives

Karolina A. Plonowska, BS, San Francisco, CA; Patrick K. Ha, 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 describe otolaryngology-head and neck surgery (OHNS) resident experience and perspectives on training in advanced head and neck surgical techniques and to identify potential areas for additional curriculum development.

Objectives: To assess the perspectives of OHNS residents with their training in the following advanced head and neck surgery techniques: transoral robotic surgery (TORS), transoral laser microsurgery (TLM), sialendoscopy, and surgeon performed ultrasound (SP-US) for possible curricula development. **Study Design:** Cross-sectional survey. **Methods:** A 20 item questionnaire was electronically distributed to OHNS residency programs assessing volume of cases, training barriers, satisfaction, additional training preferences, and pertinence to future practice. **Results:** 124 residents responded with a 72% questionnaire completion rate. Trainee satisfaction with advanced techniques did not vary significantly with level of training or type of fellowship interest. Residents who participated in more TLM, sialendoscopy, and SP-US cases were significantly more likely to be satisfied (all $p < 0.05$). The most frequently reported limitation to training was low home institution procedure volume (23-45%, $n=94$). Fifty-two of 94 (55%) respondents indicated an insufficient opportunity to participate in TORS, with most participants denoting that this procedure was preferentially performed by attendings (39/52, 75%). Thirty-three of 84 (39%) reported having adequate access to skills training in TORS, compared to 52%, 48%, and 56% for sialendoscopy, TLM, and SP-US, respectively. Vast majority expressed interest in home institution sponsored

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training courses in SP-US (80/84, 95%) and sialendoscopy (74/85, 87%) and anticipated using these techniques in their future practice (57/86, 66.3% and 52/88, 59.1% for SP-US and sialendoscopy, respectively). **Conclusions:** Greater resident participation in advanced head and neck surgical procedures is associated with higher trainee satisfaction. There is a possible need for additional home institution sponsored training courses, especially in sialendoscopy and SP-US.

88. Uvular Metastasis of Renal Cell Carcinoma 27 Years after Nephrectomy

Viran J. Ranasinghe, MD, Philadelphia, PA; David Lerner, BS, Philadelphia, PA; Karthik Rajasekeran, MD, Philadelphia, PA; Rabie M. Shanti, MD DMD, Philadelphia, PA; Jason G. Newman, MD, Philadelphia, PA; Steven B. Cannady, MD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the presentation of late metastasis of renal cell carcinoma to the head and neck.

Objectives: Present a rare case of very late metastasis of renal cell carcinoma to the head and neck 27 years after initial treatment. **Study Design:** Case report. **Methods:** Retrospective case presentation. **Results:** Renal cell carcinoma frequently metastasizes, with up to 17% of patients having metastatic disease at the time of presentation. Metastases are most common in lung, bone, and liver. While not well reported in the literature, rates up to 15% for metastasis to the head and neck have previously been cited. Late metastases are known to occur however they are less common. This presentation is a rare case of very late metastasis from renal cell carcinoma 27 years after initial treatment. Our patient had an oncologic history significant for nephrectomy for renal cell carcinoma 27 years prior and radical tonsillectomy with chemoradiation for tonsillar squamous cell carcinoma 15 years prior. He presented with a smooth lesion on the posterior uvula one year after episodes of pulmonary hemorrhage from a pulmonary mass requiring repeat bronchoscopy. Pulmonary biopsies at the time were inconclusive. Biopsy of the uvular mass was consistent with metastatic renal cell carcinoma. Computed tomography showed a well defined lesion in the soft palate that was managed with metastasectomy for local control. Further postoperative workup included repeat biopsies of the pulmonary mass that were consistent with metastatic renal cell carcinoma. **Conclusions:** This is an interesting case given the large amount of time elapsed from initial treatment of renal cell carcinoma to presentation of metastasis. The practitioner should always consider metastases in a patient with a new head and neck mass and a history of renal cell carcinoma.

89. The Effect of Psychological Distress on Hospital Length of Stay and Postoperative Pain Scores in Patients Undergoing Transoral Robotic Surgery (TORS) for Head and Neck Squamous Cell Carcinoma (HNSCC)

Scott A. Roof, MD, New York, NY; Rocco M. Ferrandino, BA, New York, NY; Alok T. Saini, MD, New York, NY; Marita S. Teng, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the effect of preoperative psychological distress on important healthcare outcomes in patients undergoing transoral robotic surgery for newly diagnosed head and neck squamous cell carcinoma.

Objectives: Current guidelines recommend that all new cancer patients be evaluated and treated for psychological distress as part of a comprehensive treatment plan. In this study, we aim to determine the prevalence of distress in a subset of HNSCC patients, and to determine the effect of psychological distress on important healthcare outcomes. **Study Design:** Retrospective cohort. **Methods:** Twenty-four patients undergoing TORS resection for HNSCC with completed preoperative, validated distress questionnaires in 2015 were identified. Two cohorts were identified: subjects with psychological distress (score ≥ 4 on the distress questionnaire) and those without psychological distress (score < 4). We used multivariate regression to evaluate the effect of distress on hospital length of stay and postoperative pain scores. **Results:** A preoperative diagnosis of distress was found in 10 of 24 patients (42%). Adjusting for confounding variables, there was no significant difference in hospital length of stay, 24- or 72-hour pain scores, and total opioid consumption between the two cohorts. **Conclusions:** Although the negative effects of distress on postoperative outcomes have been demonstrated in other fields such as cardiothoracic and colorectal surgery, it has not been well studied in HNSCC. We found that although 42% of patients had a preoperative diagnosis of distress, there was no significant correlation between distress and postoperative length of stay, pain scores, or opioid consumption. With increased pressure to minimize resource utilization while providing best outcomes, it is important to continue to study the effect of psychological distress on healthcare outcomes in different populations to determine the most cost and resource effective targets for intervention.

90. Pharyngeal Merkel Cell Carcinoma: Case Report

Monica K. Rossi, BS, Peoria, IL; D. Anand Rajan, MD, Iowa City, IA; Henry T. Hoffman, MD, Iowa City, IA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of Merkel cell carcinoma etiology through discussion on relevant advances in pathologic assessment and immunotherapy.

Objectives: We present a 66 year old male treated with chemoradiation for T3N2cM0 laryngeal squamous cell carcinoma.

noma (SCCa) six years before he was identified with multifocal MCC isolated to the radiated laryngopharynx. Metastatic MCC has been reported to rarely occur in previously radiated tissue but never before to the laryngopharynx. Implications regarding cancer biology and management are focused with discussion on relevant advances in pathologic assessment and immunotherapy. **Study Design:** Case report. **Methods:** Comprehensive summary of the patient's relevant medical history and diagnostic process is detailed with discussion of the tumor cell pathology and clinical picture. **Results:** Upon review of the literature, only three case reports describe MCC occurring in locations previously radiated for treatment of distinct cancers after a disease free interval. Our patient is the first case report of pharyngeal MCC occurring in an area of previous radiotherapy for laryngeal squamous cell carcinoma. **Conclusions:** Due to the lack of large population studies for radio-induced MCC, the immune cell staining of the neoplastic tissue prompted us to pursue chemotherapy. Further studies are needed to establish a significant relationship between radiotherapy and MCC, as well as the single best approach to treatment.

91. Complications of Intravenous Drug Use in the Head and Neck

Janine M. Rotsides, MD, New York, NY; Eric Q. Lee, MD, New York, NY; Adam S. Jacobson, MD FACS, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe diagnostic and surgical approach for safe removal of multiple foreign bodies in the neck.

Objectives: To describe a unique presentation of multiple foreign bodies in the neck of an intravenous drug user (IVDU) along with the diagnostic and surgical approach for safe removal. **Study Design:** Case report and retrospective chart review. **Methods:** A single patient presented to our institution with acute right neck pain after injecting heroin into his neck when the needle snapped off. A retrospective chart review was performed. Diagnostic tools, surgical technique and postoperative course were recorded. **Results:** Initial CT scan demonstrated 10 linear metallic fragments within the right neck, embedded within soft tissue and abutting the great vessels. Given the proximity of the needles to the jugular vein and severe pain, treatment with surgical neck exploration and foreign body removal was pursued. The deep planes of the neck were noted to be obscured secondary to significant scarring and fibrosis. Intraoperative x-ray was utilized and a total of 8 needles were found and safely removed. Postoperative course was uncomplicated and patient was discharged home on postoperative day two. **Conclusions:** Removal of multiple needle fragments in the neck poses a technical challenge due to difficulties in localizing foreign bodies in an anatomically confined region dense with vital structures. In the setting of IVDU, local infection and tissue fibrosis and scarring from repeated injections further complicate the clinical picture. Early identification and treatment is extremely important to prevent life threatening sequela. In our patient, multiple imaging modalities including CT scan and x-ray were utilized and careful surgical exploration was performed to safely remove multiple needles embedded in the neck.

92. National Trends in Primary Tracheoesophageal Puncture after Total Laryngectomy

Rosh K.V. Sethi, MD MPH, Boston, MA; Daniel G. Deschler, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe recent trends in primary TEP and identify factors associated with its use in the United States inpatient setting.

Objectives: Tracheoesophageal puncture (TEP) can be performed at the time of laryngectomy (primary TEP) or post-operatively (secondary TEP). Previous studies demonstrate safety and earlier voice rehabilitation with primary TEP. The objective of this study was to assess national trends in primary TEP and identify predictors of its use. **Study Design:** Retrospective database review. **Methods:** Retrospective analysis of the United States Nationwide Inpatient Sample from 2010 to 2014 was performed. NIS was queried for patients who underwent total laryngectomy (TL) (ICD9CM 30.3-30.4) and primary TEP (ICD9CM 31.95). Patient demographics, comorbidities, and factors known to influence the decision to perform a TEP were characterized. Factors associated with primary placement of TEP were identified by multivariable regression. **Results:** A total of 15,410 patients underwent TL during the study period. Of this cohort, 1,124 patients (7.3%) underwent primary TEP. Among patients who underwent primary TEP, 80.9% had laryngeal cancer, 16.4% had pedicled or free flap reconstruction at the time of TL, 4.2% underwent partial pharyngectomy and 48.0% underwent cricopharyngeal myotomy (CPM). The majority of primary TEPs were performed at urban, teaching hospitals (90.6%). In multivariable regression, patients who underwent CPM were at significantly increased odds of primary TEP (OR 1.33, p<0.0001). Flap reconstruction, partial pharyngectomy, age, gender, history of laryngeal cancer, hospital region and teaching status were not associated. **Conclusions:** Primary TEP is associated with earlier voice restoration but is infrequently performed. The majority of primary TEPs are performed in teaching hospitals and primary TEP is associated with concurrent cricopharyngeal myotomy. Future studies should investigate ongoing barriers to primary TEP.

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93. **Predictive Value of Single Photon Emission Computed Tomography (SPECT) for Sentinel Lymph Node Localization in the Parotid and External Jugular Chain for Cutaneous Head and Neck Malignancies**
Rosh K.V. Sethi, MD MPH, Boston, MA; Nicholas B. Abt, MD, Boston, MA; Yingbing Wang, MD, Boston, MA; Kevin S. Emerick, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the predictive value, sensitivity and specificity of SPECT imaging for anatomical localization of sentinel lymph nodes in the external jugular and parotid lymph node chains in patients with head and neck cutaneous malignancies.

Objectives: Preoperative SPECT imaging may aid in the localization of sentinel lymph nodes (SLN) in cutaneous head and neck malignancies. The ability to predict SLN location in anatomic sites lateral to the sternocleidomastoid muscle, versus medial to the muscle, however, has not been previously characterized. The purpose of this study was to assess the sensitivity, specificity and positive predictive value of SPECT for preoperative localization of external jugular (EJ) chain, intraparotid and level II sentinel lymph nodes. **Study Design:** Retrospective chart review. **Methods:** SPECT images were obtained preoperatively for patients undergoing SLN biopsy for cutaneous head and neck malignancies. These were re-reviewed by a single nuclear medicine physician and head and neck surgeon. SPECT imaging localization was compared with intraoperative SLN location, considered the gold standard. Sensitivity, specificity, positive and negative predictive values were calculated. These measures were compared for EJ/parotid nodes versus level II nodes. **Results:** Fifty-three patients were included in the study. The majority underwent SLN biopsy for cutaneous melanoma (69.8%). The positive predictive value (PPV) of EJ/parotid node identification by SPECT imaging was 85.7%, specificity 88.9% and sensitivity 69.2%. Comparatively, the PPV for level II node identification was 76.9%, specificity 50% and sensitivity 85.7%. There was no significant difference in these measures between EJ/parotid and level II node identification ($p < 0.05$). **Conclusions:** SPECT imaging has strong specificity and positive predictability for preoperative localization of SLN lateral to the sternocleidomastoid muscle in cutaneous head and neck malignancies. SPECT imaging may be a useful radiographic aid for preoperative SLN mapping in this patient population.

94. **Non-HIV Oral Kaposi Sarcoma: A Case Report and Review of the Literature.**
Rishabh Sethia, BS, Columbus, OH; Maria Koenigs, MD, Columbus, OH; Enver Ozer, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss non-HIV oral Kaposi sarcoma by reviewing a unique case as well as previous reports in the literature.

Objectives: To discuss the presentation and management of non-HIV oral Kaposi sarcoma (KS) by illustrating a rare case. **Study Design:** Case report and literature review. **Methods:** We report a unique case of a young, healthy patient with HIV-negative, HHV-8-positive, isolated oral KS treated with primary radiotherapy. **Results:** A 28 year old previously healthy male presented for evaluation of a new oral cavity mass. Three months prior to evaluation, he noticed swelling of the right upper and lower gingiva and right palate. He was initially treated for suspected dental abscess and subsequently failed two rounds of clindamycin. The lesion progressively increased in size with intermittent bleeding and pain for which he was referred for otolaryngologic evaluation. Exam revealed poor dentition and a 3.5 cm blue-purple, soft, exophytic mass of the right maxilla extending from the first molar to the front incisor. Biopsy was performed and revealed an inflammatory lesion consistent with KS. Immunologic workup revealed that he was HIV-negative but HHV-8 and hepatitis B positive. Further immunodeficiency workup was negative. CT and PET scans demonstrated a hypermetabolic, lytic, expansile lesion of the right maxilla with extension to the hard palate and inferior anterior aspect of the right maxillary sinus without distant spread. Surgical resection was considered at tumor board, but ultimately primary radiotherapy was recommended. **Conclusions:** To the best of our knowledge, this is only the third report in the literature of non-HIV associated oral KS. As this neoplasm is highly radiosensitive, early involvement of radiation oncology is essential.

95. **Identification of Risk Factors in Carotid Body Surgeries: A National Surgical Quality Improvement Program Study**
Emaad A. Siddiqui, BS, Newark, NJ; Jacob S. Brady, BS, Newark, NJ; Jean A. Eloy, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard C. Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to determine that while hypertension is the most common comorbidity found in carotid body resections, it does not independently increase a patient's risks for complications from this surgery.

Objectives: Carotid body tumors (CBT) are rare paragangliomas of the carotid body, at the carotid bifurcation. The purpose of this study was to determine the effect of hypertension on outcomes in carotid body tumor surgery. **Study Design:** A retrospective database review. **Methods:** Data on carotid body resections performed from 2005-2014 were drawn from the American College of Surgical National Surgical Quality Improvement (ACS-NSQIP) database. Two groups were created based on the presence of preoperative hypertension. These groups were analyzed for demographics, comorbidities, and postoperative complications using bivariate and multivariate methods, as well as propensity matching. **Results:** Of the 452 patients included in the analysis, 49.3% had hypertension. Those with hypertension were significantly more likely

to have additional comorbidities, including obesity, alcohol use, diabetes, anemia, dyspnea, COPD, previous percutaneous coronary interventions, and transient ischemic attacks. These hypertensive patients also had significantly longer hospital stays. After additional propensity score matching and multivariate analysis, the data consistently showed that there were no differences in surgical or medical complications following carotid body surgery in hypertensives. **Conclusions:** This statistically robust study revealed that hypertension does not independently increase a patient's risk for postoperative surgical or medical complications following a carotid body resection. However, it is notable that almost half of all CBT patients have hypertension and these hypertensive patients are significantly more likely to carry additional comorbid conditions that may have an adverse effect on outcomes.

96. Esthesioneuroblastoma: Patterns of Recurrence and Outcomes of Salvage Treatment

Madeleine P. Strohl, MD, San Francisco, CA; Deema M. Almutuawa, MBBS MPH, San Francisco, CA; Michael W. McDermott, MD, San Francisco, CA; Sue S. Yom, MD, San Francisco, CA; Christine M. Glastonbury, MBBS, San Francisco, CA; Ivan H. El-Sayed, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the patterns of recurrence of esthesioneuroblastoma (ENB) and the different salvage treatment options.

Objectives: To describe patterns of recurrence, treatment trends and survival outcomes for patients with recurrent esthesioneuroblastoma. **Study Design:** Retrospective chart review. **Methods:** A retrospective review was performed on all patients who underwent treatment for esthesioneuroblastoma at a single institution during a 40 year period. Patient demographics, recurrence patterns, treatment patterns and survival data were then reviewed. Overall survival and disease specific survival were analyzed for patients who developed recurrence. **Results:** Fifteen patients with recurrent ENB were identified. Eight patients developed local recurrence (LR), seven patients developed regional nodal recurrence (RR) and five patients developed distant metastases (DM). Time to relapse was a median of 140 mo for LR, 47 mo RR, and 120 mo to DM. Of the patients with LR (4) only, 75% had chemotherapy and 25% no intervention. Of the four patients with RR only, 75% had surgery and radiation. Of the two with DM alone, both were treated with repeated gamma knife therapy. Two patients had LR/RR and two had LR/DM and both were treated with radiation and chemotherapy. The five and ten year overall survival (OS) was 80% and 67%, respectively, with a median survival time of 157.4 months. From the time after recurrence, the overall five and ten year survival rate was 50% and 25%, respectively. Median survival was 60 months after recurrence. Although not statistically significant, patients with isolated LR had the shortest survival with all dead by 33 months after recurrence. **Conclusions:** ENB portends a poor prognosis; however, with aggressive treatment, select patients can still achieve long term survival.

97. Epidemiology of Branchial Cleft Carcinoma in the United States: A Population Based Cohort Analysis

Brooke M. Su, MD MPH, Los Angeles, CA; Albert Y. Han, MD PhD, Los Angeles, CA; Jose E. Alonso, MD MBA, Los Angeles, CA; Corinne Jansen, BS, Los Angeles, CA; Edward C. Kuan, MD MBA, Philadelphia, PA; Maie A. St. John, MD PhD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the incidence and demographics of branchial cleft carcinoma in the United States and demonstrate an understanding of major prognostic factors.

Objectives: This study seeks to describe the incidence and determinants of survival among patients with branchial cleft carcinoma. **Study Design:** A population based cohort analysis using the Surveillance, Epidemiology, and End Results (SEER) cancer database. **Methods:** Patients with branchial cleft carcinoma were identified in SEER from 1973 to 2014, excluding cases with metastases. Demographics, tumor T/N/M stage, tumor histology, treatment with surgery, overall survival (OS), and disease specific survival (DSS) were extracted from the database. OS and DSS were calculated using the Kaplan-Meier method. Multivariate Cox proportional hazards models were used to determine impact of demographic and tumor variables on OS and DSS. **Results:** A total of 45 patients were identified. 75.6% were male. Mean age was 57.0 years and most patients were white (93.3%). Tumors were most commonly diagnosed at stage III (31.1%) and stage II (24.4%). Squamous cell carcinoma comprised 77.8% of tumor histological types. 93.3% of patients underwent surgical resection. On average, OS of branchial cleft carcinoma was 110.9 months (95% confidence interval 99.3 - 122.5), and DSS was 117.2 months (95% CI 107.2 - 127.3). Multivariate analysis showed that increasing age negatively impacted OS ($p=0.027$) but not DSS. OS and DSS also decreased with increasing tumor stage ($p=0.015$ and $p=0.043$, respectively), whereas patients who were treated with surgery had improved OS and DSS ($p=0.033$ and $p=0.043$, respectively). **Conclusions:** Branchial cleft carcinoma, though very rare, tends to present in males in the fifth or sixth decade of life. Advanced stage and age at diagnosis portend a poorer prognosis, though surgical resection improved both OS and DSS.

98. Hinged Perichondrial Cartilage Tympanoplasty: A Versatile Graft

Christopher G. Tang, MD, San Francisco, CA; Justin B. Fong, St. Louis, MO (Presenter); Barry M. Rasgon, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss a unique

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method of repairing scutal defects and buttressing the tympanic membrane during tympanomastoidectomies for cholesteatoma surgery.

Objectives: To discuss a unique method of repairing scutal defects and buttressing the tympanic membrane during tympanomastoidectomies for cholesteatoma surgery. **Study Design:** A case report with description of surgical technique. **Methods:** A 34 year old male presented with a recurrent left epitympanic retraction pocket with cholesteatoma. The patient had a history of a left posterior superior epitympanic retraction pocket with cholesteatoma status post-tympanomastoidectomy with a cartilage graft 15 months prior to presentation. The cartilage graft had shifted medially and anteriorly and there was a new posterior superior retraction pocket between the residual scutum and old cartilage graft. The patient was brought to the operating room for a revision tympanomastoidectomy. **Results:** A novel technique utilizing a tragal cartilage punch was employed. After the cholesteatoma was dissected out and removed from the middle ear, a 5mm punch was obtained from the tragus with attached perichondrium. A midline 1mm of cartilage was removed leaving two semicircular pieces of tragal cartilage attached to the perichondrium. This was then placed in the atticotomy defect. **Conclusions:** The hinged perichondrial cartilage graft is an excellent custom made graft for atticotomy and scutal defects.

99. The Utility of Ultrasonography in the Diagnosis and Management of Oral Tongue Squamous Cell Carcinoma: A Systematic Review

Osama M. Tarabichi, MD, Boston, MA; Mustafa G. Bulbul, MD, Boston, MA; Amy F. Juliano, MD, Boston, MA; William C. Faquin, MD PhD, Boston, MA; Mary E. Cunnane, MD, Boston, MA; Mark A. Varvares, MD FACS, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the utility of ultrasound in the diagnosis and management of oral tongue cancer.

Objectives: To assess the utility of ultrasound in the diagnosis and management of oral tongue squamous cell carcinoma (SCCa). **Study Design:** Systematic review. **Methods:** The Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) statement checklist was used to inform the design of this systematic review. All studies that utilized ultrasound in the diagnosis/management of primary SCCa of the oral tongue were included. PubMed, Embase and Cochrane were reviewed to identify eligible studies. **Results:** After inclusion and exclusion criteria, 18 articles were analyzed. 14/18 of all articles detailed the use of ultrasound in the preoperative setting. 4/18 studies reported its use intraoperatively for deep margin visualization. Statistically significant positive correlations were seen between sonographic and histologic measures of tumor thickness in 9 studies. Finally, 4 studies found positive correlations between the likelihood of cervical node metastasis and tumor depth measurements on ultrasound. **Conclusions:** Ultrasound is a useful tool in the evaluation and intraoperative management of oral tongue SCCa.

100. Tobacco Associated Mutations and Prognosis in Laryngeal Cancer: An Investigation Using The Cancer Genome Atlas

Patrick T. Tassone, MD, Philadelphia, PA; Mina Youn, BS, Philadelphia, PA; Joseph M. Curry, MD, Philadelphia, PA; Ubaldo M. Martinez-Outschoorn, MD, Philadelphia, PA; Nicoline Y. Den Breems, PhD, Auckland, NZ New Zealand; Andrew South, PhD, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the clinical implications of tobacco associated mutations in laryngeal squamous cell carcinoma as investigated using The Cancer Genome Atlas.

Objectives: Tobacco smoke is a well established causative agent in laryngeal squamous cell carcinoma, and tobacco smoke causes mutations throughout the cancer genome. The Cancer Genome Atlas (TCGA) allows for analysis of somatic mutations in laryngeal cancers; mutational signatures unique to tobacco smoke can be identified using TCGA. The relationship between tobacco associated mutations and prognosis in laryngeal cancer is unknown. **Study Design:** TCGA data from 72 patients with laryngeal cancer were reviewed. **Methods:** Patient age, gender, tumor stage, overall somatic mutations, tobacco associated mutations, and overall survival were determined for each patient. Tobacco associated mutations were assessed by number and percent in relation to T stage, N stage, and overall survival. Using receiver operator curves, cutoff points for number of tobacco associated mutations were determined and used in univariate and multivariate analyses of overall survival. **Results:** Most, but not all, laryngeal cancers had tobacco associated mutations as identified in TCGA. Increasing T and N stage was associated with decreasing number of tobacco associated mutations. Higher total number of tobacco associated mutations was associated with better overall survival on multivariate analysis ($p=0.022$). Other mutational signatures did not impact survival in this cohort. **Conclusions:** According to the available TCGA data on laryngeal cancer, patients with a high number of tobacco associated somatic mutations had improved overall survival. The mechanism by which these mutations improve survival is unclear, but may involve immune recognition of cells with a high tobacco associated mutational burden. If these data can be corroborated in a prospective study, tobacco associated mutations may serve as a biomarker for patients with laryngeal cancer.

101. Survival Trends in Parathyroid Carcinoma: A Retrospective Analysis

Sarangdev Vaidya, BA, Newark, NJ; Devika Sachdev, BS, Newark, NJ; Meghan Crippen, MS, Newark, NJ; Jean A. Eloy, MD, Newark, NJ; Soly Baredes, MD, Newark, NJ; Richard C.W. Park, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand trends in treatment and outcomes in patients with parathyroid carcinoma.

Objectives: To investigate the impact of patient characteristics, cancer stage, and treatment type on survival with parathyroid carcinoma. **Study Design:** Retrospective analysis of a population based tumor registry. **Methods:** The Surveillance, Epidemiology, and End Results (SEER) database was queried for cases of parathyroid carcinoma from 1973-2013 (n=627). Incidence, demographics, staging characteristics, and treatment modalities were analyzed. Kaplan-Meier testing for disease specific survival (DSS) was assessed at 5 and 10 years. Cox hazard regression proportions were generated for each stage and treatment type. **Results:** Parathyroid carcinoma was evenly distributed between the sexes. Most patients were white, 40 to 70 years old, and diagnosed with cancer at T1, N0, and M0 stages. The incidence of parathyroid carcinoma increased by 86.7% between 1973 and 2013. Overall survival was 89.5% at 5 years and 76.3% at 10 years. Increased age, unmarried status, late stage cancer, and distant metastasis at diagnosis were correlated with worse DSS (P<0.001). Surgery, radiation, surgery with radiation, and neck dissection were analyzed. Patients with surgery had a 5 year DSS of 92%, whereas those without surgery had a DSS of 50% (P<0.001). Those who had both surgery and radiation did not show a significant improvement in survival compared to those with surgery alone (89.3% vs. 92.1%). **Conclusions:** Parathyroid carcinoma is an uncommon disease that is primarily treated by surgical resection. Survival after diagnosis is correlated with increased age, marital status, and late stage cancer. The addition of radiation therapy did not improve survival compared to surgery alone.

102. Misleading Data: Differences between Preoperative Intact Parathyroid Hormone Levels and those Obtained from Rapid Intraoperative Assays

Anna G. Wertz, MD, Detroit, MI; Spandana Alluri, BA, Detroit, MI; Michael C. Singer, MD, Detroit, MI

Educational Objective: At the end of this talk, the audience should be able to tell there are significant differences between parathyroid hormone (PTH) levels measured with preoperative intact assays versus those obtained with rapid, intraoperative assays.

Objectives: To demonstrate in patients with primary hyperparathyroidism the significant differences between parathyroid hormone (PTH) levels measured with preoperative intact assays versus those obtained with rapid, intraoperative assays. **Study Design:** Retrospective chart review of consecutive patients undergoing parathyroidectomy for primary hyperparathyroidism by a single surgeon between November 2014 and October 2016. Preoperative intact PTH (iPTH) levels and pre-incision intraoperative (ioPTH) levels were compared. **Methods:** Single database of patients undergoing parathyroidectomy for primary hyperparathyroidism by a single surgeon was used. **Results:** Complete data was available for 180 patients from the study period. Forty-four patients (24%) had nonsuppressed iPTH (PTH in normal range) levels. In these patients, the mean preoperative iPTH was 52.9 pg/mL and the rapid ioPTH was 114.6 pg/mL. This was a statistically significant difference (p < .01). Of the patients with nonsuppressed iPTH levels, 33 (75%) had elevated ioPTH levels. Among the 33 patients with a nonsuppressed iPTH but an elevated ioPTH, 7 patients had multiglandular disease. In patients with both normal range iPTH and ioPTH levels 4/11 had multiglandular disease. In patients (n=136) with elevated iPTH levels, the mean iPTH was 154.3 pg/mL and the mean ioPTH was 246.6 pg/mL. **Conclusions:** In patients with primary hyperparathyroidism, significant differences are often present between iPTH and ioPTH levels. Patients with nonsuppressed, preoperative iPTH levels frequently have elevated ioPTH levels, facilitating its use to guide prediction of cure. A nonsuppressed iPTH should not discourage a recommendation for surgery.

103. Nodular Fasciitis: Pseudosarcomatous Mimicry

Christopher C. Xiao, MD, Oakland, CA; Christopher G. Tang, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the presentation of nodular fasciitis and compare it with sarcomas.

Objectives: To discuss a unique case of nodular fasciitis. **Study Design:** A case report with review of literature. **Methods:** A 35 year old male presents to head and neck surgery clinic with a small nodular mass growing just inferolateral to the right lateral canthus. Palpation revealed a small nodular cyst roughly 5mm in size. Fine needle aspiration was performed, which showed benign tissue. One month later, the mass has grown significantly and was now roughly 1.5cm in size. **Results:** The patient had an excision of the mass in clinic. Tumor could be seen extending from the periorbital fascia to the subcutaneous fat. The mass was removed leaving the capsule on the right temporal branch of the facial nerve as well as the periorbital muscles. Pathology revealed nodular fasciitis. **Conclusions:** Nodular fasciitis is a rare rapidly growing tumor that is often mistaken for sarcoma. There have only been described in cases and rare case reports since the early 1960's. We describe a case and review the literature of this rare clinical entity.

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104. Intracapsular Enucleation of Facial Nerve Schwannomas

Robert J. Yawn, MD, Nashville, TN; James L. Netteville, MD, Nashville, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the technique of intracapsular enucleation of facial nerve schwannomas and describe the efficacy of this technique with regards to recurrence and facial nerve function postoperatively.

Objectives: To describe the technique of intracapsular enucleation of facial nerve schwannomas and evaluate the efficacy of this technique for the treatment of these lesions. **Study Design:** Retrospective case series. **Methods:** Six patients with facial nerve schwannomas that were primarily extratemporal were evaluated at a tertiary head and neck surgery center. All patients underwent intracapsular enucleation of their tumors. Clinical or radiographic tumor recurrence and postoperative facial nerve function as measured by the House-Brackmann (HB) scale were recorded as primary outcome measures. **Results:** Six patients were included with a mean age of 35.2 years (range 9-73 years). Primary surgical indications were facial swelling and facial weakness. There was one recurrence at 13 months requiring revision surgery and cable graft. One patient had three separate tumors from the vertical/mastoid segment of the facial nerve to the parotid gland that were successfully enucleated with final HB of 2/6. Of the five patients that underwent only enucleation, two patients had completely normal (HB 1/6) facial function at last followup. Only one patient did not achieve HB \leq 3 at last followup with a final HB of 4. **Conclusions:** Enucleation is a reasonable surgical approach in symptomatic patients with facial nerve schwannomas. Facial nerve outcomes are better than with total resection and grafting but patients should be counseled that there is an increased risk of recurrence.

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105. Hearing Preservation Following Translabyrinthine Excision of a Vestibular Schwannoma: Intraoperative Electrocochleography and Postoperative Audiometric Results

Kenneth E. Akakpo, BS, Columbus, OH; William J. Riggs, AuD, Columbus, OH; Michael S. Harris, MD, Milwaukee, WI; Edward E. Dodson, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding that, in the setting of translabyrinthine craniotomy, hearing is affected via a reduction of neural and hair cell function during destruction of the vestibular labyrinth.

Objectives: To describe a case of inadvertent hearing preservation following a classical translabyrinthine resection of a vestibular schwannoma of the internal auditory canal. **Study Design:** Case report. **Methods:** Herein, we describe the case of an otherwise healthy patient who underwent resection of an intracanalicular vestibular schwannoma via a translabyrinthine approach. Furthermore, as part of an ongoing study aimed at characterizing hearing changes due to intraoperative events, cochlear hair cell and nerve activity were monitored using electrocochleography throughout surgery. Unexpectedly, the patient maintained serviceable hearing following surgery. As a result, we are able to provide electrophysiologic evidence of cochlear hair cell activity at various stages of this surgery. **Results:** Inner ear hair cell responses across tested frequencies were detectable prior to and following completion of the translabyrinthine procedure. Neural integrity of the auditory division of cranial nerve VIII was maintained throughout. Lastly, postoperative audiometric testing supported the patient's subjective assertion of serviceable hearing in the surgical ear. **Conclusions:** Our results suggest that some degree of hair cell and neural integrity can be maintained throughout the course of the translabyrinthine approach, and if preservation of the auditory division of cranial nerve VIII is feasible, a functional amount of hearing preservation is attainable.

106. Geographical Differences in Intracranial Meningioma Management: Examining 65,973 Patients Across the United States

Charles L. Anzalone, MD, Rochester, MN; Matthew L. Carlson, MD, Rochester, MN; Jamie J. Van Gompel, MD, Rochester, MN; Amy E. Glasgow, MHA, Rochester, MN; Elizabeth B. Habermann, PhD, Rochester, MN; Brandon R. Grossardt, BS, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the effects of geography on disease presentation and management of intracranial meningiomas in the United States.

Objectives: To study the effects of geography on disease presentation and management of intracranial meningiomas in the United States. **Study Design:** Retrospective analysis of the United States National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) database. **Methods:** The population based Surveillance, Epidemiology, and End Results data were queried for cases of intracranial meningioma using appropriate topography and histology codes. Incidence was estimated using the population sizes of the respective SEER areas. Univariate analysis as well as multivariable logistic regression was utilized to analyze longitudinal and geographical trends in meningioma incidence and management. **Results:** A total of 65,973 patients (median age 65 years, 73.4% female) with a documented history of intracranial meningioma were identified. Univariate analyses demonstrated strong associations between geographic

location with age and size of tumor at presentation ($P < 0.0001$). When analyzing subjects with tumors between 0-3 cm in size, multivariable models identified strong associations between place of residence and primary treatment modality ($P < 0.0001$). Multivariable analysis demonstrated that in many cases the impact of geography on treatment selection was greater than other established variables such as tumor size and age. **Conclusions:** These data indicate that disease presentation and treatment are significantly influenced by regional referral patterns, provider or institutional treatment preferences, and regional availability of subspecialty expertise. Understanding such biases are important for patients, referring physicians, and treatment providers in an effort to provide balanced counseling and treatment.

107. Lateral Skull Base Surgery for Aggressive Cholesteatoma with Skull Base Erosion

Geoffrey C. Casazza, MD, Salt Lake City, UT; Clough Shelton, MD, Salt Lake City, UT; Richard K. Gurgel, MD, Salt Lake City, UT

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the clinical presentation, treatment strategies, clinical course, and outcomes for patient's presenting with aggressive cholesteatoma with skull base erosion.

Objectives: To describe the clinical course and treatment outcomes for patients with aggressive cholesteatoma with skull base erosion. **Study Design:** Retrospective case series. **Methods:** A retrospective chart review was performed to identify all patients surgically managed by otolaryngology for aggressive cholesteatoma at a single tertiary care institution from 2001 to 2017. The presenting symptoms, imaging, pre and postoperative clinical course, and complications were reviewed. **Results:** Five patients were identified. Four patients had a complex otologic history with multiple surgeries for recurrent cholesteatoma including 2 with prior canal wall down procedures. All patients presented with severe to profound hearing loss (average pure tone 82.5 dB) and 0% speech discrimination. Two patients presented with complete facial paralysis (House-Brackmann 5/6 and 6/6) and one patient presented with facial weakness (House-Brackmann 2/6). The average age at the time of surgery was 36.2 years (range 20 to 83). Two patients underwent a transcochlear approach to the skull base, 1 patient a transtemporal approach with concomitant neck dissection, 1 patient a translabyrinthine approach, and 1 patient an infratemporal fossa approach with mastoid obliteration. Facial nerve function was preserved in all patients with preoperative normal function or weakness. One patient developed an immediate postoperative CSF leak managed with conservative treatment. No patient developed cholesteatoma recurrence. **Conclusions:** Lateral skull base surgery is an effective treatment for aggressive cholesteatoma with skull base erosion. In our series facial nerve function was preserved and there were no episodes of recurrence.

108. Measuring Mental Stress during Ear Surgery Using Heart Rate Variability Analysis

Matthew M. Dedmon, MD PhD, Nashville, TN; Brendan P. O'Connell, MD, Chapel Hill, NC; Robert J. Yawn, MD, Nashville, TN; Adriana Kipper-Smith, PhD, Nashville, TN; Marc L. Bennett, MD, Nashville, TN; David S. Haynes, MD, Nashville, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to understand how heart rate variability analysis can be used to quantify intraoperative mental stress among surgeons.

Objectives: Healthy individuals have significant beat-to-beat variability in heart rate, and this variability decreases with mental stress. We aim to use this property of heart rate variability (HRV) to objectively compare mental stress levels in otologic surgeons at rest and during key portions of procedures. **Study Design:** Pilot study. **Methods:** Two neurotology fellows performed six mastoidectomy and facial nerve (FN) dissections in the operating room and six in a cadaver lab wearing a Zephyr Biomodule measuring continuous electrocardiograms. Five minute samples were recorded during resting, preoperative, mastoidectomy, and FN dissection. Beat-to-beat time intervals were analyzed in time and frequency domains. The standard deviation of normal beat-to-beat intervals (SDNN) and the ratio of low frequency to high frequency power (LF/HF, measure of sympathetic tone) were calculated. Decreases in SDNN and increases in LF/HF indicate elevated mental stress. **Results:** Mean resting SDNN was 43.9ms, not statistically different from preoperative SDNN (34.1ms, $p=0.13$). SDNN decreased during mastoidectomy (29.4ms) and further decreased for FN dissection (22.8ms), which was significant compared to preoperative values ($p=0.03$). Intraoperative LF/HF increased for FN dissection (6.8) compared to resting (2.2, $p=0.004$), indicating increased sympathetic tone. Mastoid and FN cadaveric procedures resulted in SDNN of 33.6 and 32.9ms, respectively, not statistically different from preoperative values ($p=0.82$ and $p=0.94$, respectively). Cadaveric FN dissection did not result in increased LF/HF (2.4) compared to resting ($p=0.94$). **Conclusions:** Decreased HRV and increased sympathetic tone were observed intraoperatively, indicating high levels of mental stress, particularly with FN dissection. Similar changes were not found during cadaveric dissections.

109. Automated Smartphone Audiometry: A Proof of Concept for Bone Conduction Threshold Testing

Nicholas A. Dewyer, MD, Boston, MA; Patpong Jiradejvong, MS, San Francisco, CA; David S. Lee, BA, San Francisco, CA; Jennifer Henderson Sabes, AuD, San Francisco, CA; Charles J. Limb, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain a strategy for

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obtaining bone conduction thresholds using an iPhone app and describe the accuracy and limitations of this particular test.

Objectives: Develop and validate an automated smartphone app that determines bone conduction thresholds. **Study Design:** Within subjects diagnostic test comparison. **Methods:** An automated smartphone app that determines bone conduction thresholds using a bone oscillator was developed. English speaking adults who were obtaining audiograms were recruited from an audiology clinic and were administered the automated app bone conduction test. Best ear bone conduction thresholds determined by the app and the gold standard audiogram were compared. **Results:** Forty subjects were tested. Approximately 50% of app determined thresholds were within 10 dB, and 90% of app determined thresholds were within 20 dB of the audiogram thresholds. Nearly all subjects required assistance to correctly place the oscillator on their mastoid. **Conclusions:** Bone conduction thresholds can be determined using an automated smartphone app and bone oscillator. Although the use of this app does not require an audiologist, a technician is still needed to provide and assist with placement of the bone oscillator. The precision of this test should be improved.

110. Diagnosis and Treatment of a Rare Case of Rosai Dorfman Disease

Khodayar Goshtasbi, BS, Irvine, CA; Ronald Sahyouni, BS MS, Irvine, CA; Afsheen Moshtaghi, BS, Irvine, CA; Harrison W. Lin, MD, Irvine, CA; Hamid R. Djallilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to articulate a better understanding of diagnosis and possible treatments in rare Rosai Dorfman cases.

Objectives: To present a rare case of Rosai Dorfman (RD), also known as sinus histiocytosis with massive lymphadenopathy involving the ear. **Study Design:** Case report. **Methods:** Retrospective review of records. **Results:** A 36 year old female presented with a two month history of worsening left sided otalgia, hearing loss, and otorrhea. She had also experienced intermittent episodes of vertigo, facial weakness, taste change, and nausea. CT Imaging demonstrated a left sided destructive mass at the posterior mesotympanum and hypotympanum. Biopsy of the external auditory canal mass demonstrated multinucleated giant cells and histiocytes consistent with RD. After intralesional steroid injection failed to change the size of the tumor, the patient turned to surgical intervention for relief. Subsequently, a tympanomastoid approach to the excision of the lesion was performed. The mass was strongly adherent to the facial nerve resulting in minor residual mass remaining on the medial portion of the nerve to avoid injury. Patient recovered well experiencing complete symptomatic improvement. The residual mass is being monitored with serial MRIs. **Conclusions:** This is a rare presentation of RD confined to the ear. Characteristically, a mixture of histiocytes and multinucleated giant cells is observed on presentation. Localized disease to the ear can be treated successfully with surgical excision, yet disseminated disease may require systemic therapy.

111. Diagnosis of a Left Skull Base Plasmacytoma with Ultrasound Guided Fine Needle Aspiration of a Cervical Lymph Node

Yarah M. Haidar, MD, Irvine, CA; Ronald Sahyouni, BS, Irvine, CA; Omid Moshtaghi, BS, Irvine, CA; Hossein Mahboubi, MD, Irvine, CA; Hamid R. Djallilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the significance of examination of the cervical neck with clinical examination and in-office ultrasound in evaluation of a patient with a temporal bone mass.

Objectives: To demonstrate the importance of a complete head and neck examination in patients presenting with temporal bone malignancies. **Study Design:** Case report. **Methods:** A retrospective case review and review of the literature was performed. **Results:** A 60 year old male initially presented for evaluation of left facial and tongue pain. He subsequently developed rapidly progressive left tongue weakness, hoarseness, left sided hearing loss, and diplopia. On imaging, he was found to have a large left sided skull base tumor involving the temporal bone and clivus. A skull base approach was planned for biopsy. On examination, he had evidence of paralysis of cranial nerves VI, IV, X, and XII. He was also found to have a 1 cm left level II palpable lymph node on examination which was not seen on imaging. In office ultrasound was performed which demonstrated 1.2 x 0.9 x 1.4 cm hypoechoic mass without other pathologic adenopathy on either side of the neck. An ultrasound guided fine needle aspiration (FNA) was then performed. Four days later, FNA results returned as plasmacytoma. The patient was admitted after obtaining the results of the FNA to expedite workup and treatment of his plasmacytoma. **Conclusions:** A comprehensive head and neck examination of patients with temporal bone tumors can allow for diagnosis of lymphadenopathy, expediting diagnosis and treatment. When available, in-office ultrasound and ultrasound guided FNA or core needle biopsy of a neck mass can improve the time to diagnosis of skull base tumors.

112. Francis E. LeJeune Sr., MD Resident Research Award

Jugular Dominance Is Unrelated to Isolated Unilateral Congenital Aural Atresia in Children

Tyler R. Halle, MD, Atlanta, GA; Amanda S. Corey, MD, Atlanta, GA; N. Wendell Todd, MD MPH, Atlanta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to

know and discuss that the side of the larger jugular foramen is not related to the presence of unilateral nonsyndromic congenital aural atresia.

Objectives: The right jugular foramen is usually larger than the left in homo sapiens, but it is unknown if right sided jugular dominance is also more common amongst those with unilateral congenital aural atresia. We hypothesized that the dominant (i.e. large) jugular foramen in children with isolated nonsyndromic unilateral congenital aural atresia would be contralateral to the atretic ear. **Study Design:** Retrospective self-controlled case series. **Methods:** We reviewed high resolution computed tomography scans of the temporal bones of 70 children with isolated nonsyndromic unilateral congenital aural atresia. Images were viewed in the transverse (axial) plane by a neuroradiologist and an otolaryngologist. Consensus opinion was recorded. Multiple logistic regression was used to assess the impact of age, sex, and side of aural atresia on jugular dominance. Chi squared test was used to compare the relationship between the side of aural atresia and relative side of jugular dominance (i.e., contralateral vs. ipsilateral to the atretic ear). **Results:** Jugular foramen dominance was not associated with the side of aural atresia ($P=.20$), age ($P=.50$) or sex ($P=.76$). Right sided jugular dominance (46/70, 65.7%) was found whether the atretic ear was on the right or left ($P=.004$). **Conclusions:** The side of jugular foramen dominance is not associated with the side of aural atresia in children with isolated nonsyndromic unilateral congenital aural atresia. Right sided jugular dominance is more common irrespective of unilateral aural atresia.

113. A Case Series of Middle Ear Adenoma Demonstrating Recurrence and Distant Metastatic Potential

Erin K. Haser, MD, Boston, MA; Jonathon S. Sillman, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the pathologic entity of middle ear adenoma and its controversial nomenclature, understand its rare metastatic potential, and differentiate it from glomus tympanicum.

Objectives: Adenomatous tumors of the middle ear are rare tumors described under varying names based on their neuroendocrine features and rare metastases. These tumors may actually represent a spectrum of a pathologic entity. There are rare reports of regional metastases with even fewer distant metastases. This case series serves to describe four patients with middle ear adenoma, including a case of distant visceral metastasis, as well as describe its differentiation from glomus tympanicum on pathology. **Study Design:** Case series with retrospective chart review. **Methods:** We report a series of four cases of middle ear adenoma in patients age 40-80 years old. **Results:** All four cases involve recurrent middle ear adenoma. One case is a 67 year old man presenting with a recurrent mass involving the right cerebellopontine angle (CPA), jugular foramen, and hypoglossal foramen as well as a concurrent large liver lesion. The patient underwent resection of the CPA mass and percutaneous liver biopsy, and pathology with immunohistochemical staining for neuroendocrine markers confirmed metastasis. Another case involves a woman with history of presumed glomus tympanicum later diagnosed with middle ear adenoma of the hypotympanum. The patients' clinical course, diagnosis, and pathology are presented. **Conclusions:** The nature of middle ear adenomas (carcinoid) has been a controversial topic. These cases exemplify the tendency for recurrence when surgical resection is incomplete, the potential for intracranial extension, and rare distant metastatic potential. These neuroendocrine differentiated tumors may represent a spectrum of pathology with varying metastatic potential rather than a benign entity and should be differentiated from glomus tympanicum on pathology.

114. Systematic Review of Otogenic Brain Abscess: Diagnosis and Treatment of a Significant Complication of Otitis Media

Elliott D. Kozin, MD, Boston, MA; Maria J. Duarte, BA, Boston, MA; Miriam B. Barshak, MD, Boston, MA; D. Bradley Welling, MD PhD, Boston, MA; David H. Jung, MD PhD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the common presentations, causes, and treatment modalities for patients with otogenic brain abscesses.

Objectives: Complications of otitis media (OM) are not uncommon given the high prevalence of OM in the population. While rare, otogenic brain abscess remains one of the most significant life-threatening complications of otologic disease. Herein, we aim to provide an analysis of otogenic brain abscess and to describe common clinical signs and symptoms, bacteriology, location, treatment options, morbidity, and mortality. **Study Design:** Systematic review of PubMed, Cochrane CENTRAL database, Google Scholar, and Scopus. **Methods:** A systematic review of literature was performed using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) recommendations. Variables assessed included clinical signs and symptoms, bacteriology, location, treatment, morbidity, and mortality. **Results:** The initial search identified 105 articles; 29 met inclusion criteria resulting in a total of 1302 otogenic abscess cases for study. Fifty-five percent were found in the temporal lobe and 28% were in the cerebellum. Most identified patients also suffered from suppurative chronic otitis media. The most common symptoms were headache, altered mental status, papilledema, and meningeal irritation. Fever, nausea, and vomiting affected about 40% of patients. The most commonly cultured bacterial species was proteus mirabilis. In addition to antibiotics, most brain abscesses were treated by burr hole aspiration. Average mortality after the advent of CT was 8.11%. **Conclusions:** Otogenic brain abscess may occur as a complication of acute and chronic suppurative otitis media and requires a high index of suspicion. Appropriate imaging studies are often helpful in the diagnosis.

Posters

115. Donor Site Complications of Free Fat Transfer in Otolaryngologic Procedures

Eric Q. Lee, MD, New York, NY; Ryan Ruiz, MD, New York, NY; Richard Lebowitz, MD, New York, NY; John T. Roland, MD, New York, NY; Daniel Jethanamest, MD, New York, NY; Babak Givi, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the complication rates for and differences in approach to free fat transfer.

Objectives: The use of free (nonvascularized) fat transfer in head and neck surgery and skull base procedures is common. However, literature regarding complication rates of the donor site is sparse. We investigated the donor site complications of this procedure. **Study Design:** Retrospective chart review. **Methods:** Patients undergoing skull base or head and neck procedures with free fat transfer were reviewed in a single institution from 2013-2016. Patient demographics, comorbidities, primary donor site, drain placement, and donor site complications were analyzed. **Results:** A total of 278 cases met inclusion criteria. The median age was 47 (2-85), and 174 (63%) were female. Thirty-six (13%) were active smokers, while 21 (8%) had diabetes. The most common indication was lateral skull base defects (181, 65%), followed by anterior skull base defects (69, 25%) and head and neck facial augmentation (25, 9%). The majority of cases utilized the infra-umbilical donor site (209, 72%), followed by lower abdominal quadrant (74, 27%). Drains were placed in 132 (48%) patients. Ten (3.5%) complications were recorded: 7 (2.5%) hematomas, 1 (0.4%) infection, 1 (0.4%) wound dehiscence, and 1 (0.4%) peritoneal perforation. All complications occurred with the infra-umbilical approach. Four complications (57%) required operative interventions. There was no association between drain placement and hematoma ($p=0.30$). Smoking ($p=0.38$) and diabetes ($p=0.45$) were not associated with increased complications. **Conclusions:** Donor site morbidity in free fat transfer is very low. While infra-umbilical site might be more cosmetically acceptable, the lower abdominal harvest site was associated with the lowest morbidity and might be safer in high risk groups.

116. Middle Cranial Fossa Cerebrospinal Fluid Leaks - Defining an "Area of Weakness"

Yong Ming David Andrew Low, MBBS MRCS MMed, Toronto, ON Canada; Maya Kuroiwa Rivero, MD, Toronto, ON Canada; Trung Le, MD PhD FRCSC, Toronto, ON Canada; Joseph Chen, MD FRCSC, Toronto, ON Canada; Vincent Lin, MD FRCSC, Toronto, ON Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the region of the middle cranial fossa through which CSF leaks occur.

Objectives: To radiologically define an area along the floor of the middle cranial fossa through which cerebrospinal fluid (CSF) leaks occur. This will help surgeons plan for the extent of exploration necessary in the middle cranial fossa (MCF) approach. **Study Design:** Retrospective case series in a tertiary, otologic center. **Methods:** All patients who presented with a MCF CSF leak from January 1, 2014, to April 31, 2017, were enrolled in our study. After a clinical and radiological evaluation, all patients underwent a CSF leak repair via the MCF approach. The preoperative high resolution CT scans (HRCTs) of these patients were analyzed and the region through which CSF leaks occurred was defined against known landmarks. The characteristics, presentation, intraoperative findings and outcomes of these patients will be described. **Results:** A total of 17 patients were included in our study. There were 4 males and 13 females and the mean age at presentation was 54.0 years. An area of weakness along the floor of the MCF was defined in relation to the inner table of the skull, geniculate ganglion and arcuate eminence. All patients had an uncomplicated intra and postoperative course. There was 1 patient who continued to have CSF leak postoperatively and this resolved with conservative measures. **Conclusions:** Patients with middle fossa CSF leaks often have a very extensive and thin tegmen. Our study defines an area of weakness along the floor of the MCF and provides a basis for the extent of exploration, especially in cases with occult or multiple points of CSF leak. This will allow surgeons to conduct successful repairs and yet minimize the risk from unnecessarily extensive explorations.

117. Lymphoma Presenting with Facial Paralysis and Cerebellopontine Angle Mass

Hossein Mahboubi, MD MPH, Irvine, CA; Omid Moshtaghi, BS, Irvine, CA; Ronald Sahyouni, BA, Irvine, CA; Yarah Haidar, MD, Irvine, CA; Hady Shahbaz, BS, Irvine, CA; Hamid Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe clinical and radiological findings in cerebellopontine angle masses and their differential diagnoses and common approaches.

Objectives: To describe a case of facial nerve lymphoma presenting with facial paralysis and a cerebellopontine angle mass and discuss its differential diagnosis and management process. **Study Design:** Case report and review of the literature. **Methods:** Patient's medical record was reviewed. **Results:** A 62 year old female with a remote history of non-Hodgkin's lymphoma (chemotherapy finished 10 years prior and in remission) presented with left sided hearing loss and facial nerve paralysis. She initially developed sudden hearing loss after an upper respiratory infection and then developed progressive left facial weakness until complete paralysis occurred after 3 months. She denied any other complaints. On examination, she had grade V paralysis on the left side with mild orbicularis oris motion. Her audiogram revealed a severe sensorineural hearing loss with no speech discrimination in the left ear. An MRI revealed a contrast enhancing lesion in the left cerebellopontine angle (CPA) extending into the internal auditory canal (IAC), following the facial nerve

course into the tympanic segment. She underwent a translabyrinthine approach to her left CPA for tumor resection. Frozen section of the tympanic segment of the nerve was inconclusive. Final pathology of the CPA tumor showed a B cell non-Hodgkin's lymphoma and further systemic workup was negative. **Conclusions:** Although rare, recurrence of lymphoma has to be considered in the differential diagnosis of IAC/CPA lesions, especially in patients with a previous history of lymphoma.

118. An Unusual Case of a Congenital Hypoplastic IAC with Facial Paralysis

Omid Moshtaghi, MS, Irvine, CA; Ronald Sahyouni, BA, Irvine, CA; Afsheen Moshtaghi, BS, Irvine, CA; Kian Bagheri, Irvine, CA; Hady Shahbaz, Irvine, CA; Hamid R. Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate the key features evident in a hypoplastic IAC and its presenting symptoms.

Objectives: To present a unique case report of a patient with congenital hypoplasia of the internal auditory canal (IAC) and facial paralysis. **Study Design:** Case report. **Methods:** The patient's chart and treatment history, which spanned a 10 year period, was reviewed. Pertinent radiological, audiology, and clinical history were assessed. **Results:** The patient initially presented at 5 months of age after failing newborn OAE and with left sided facial paralysis. CT examination showed a very narrow IAC < 1 mm. MRI showed a hypoplastic vestibulocochlear nerve and difficult to discern tympanic portion of the facial nerve. In addition, imaging showed evidence of a dehiscent superior semicircular canal and an enlarged vestibule. The contralateral side showed no evidence of pathology. At five years old, audiogram showed profound left sided hearing loss and right sided mild sensorineural hearing loss which remained unchanged. Patient received contralateral routing of signal (CROS) hearing aid. In addition, the patient's facial paralysis was grade IV at presentation, but slightly improved to grade III by 10 years of age. **Conclusions:** Hypoplastic IAC with facial paralysis is rarely found in isolation, with few cases described in literature. Though the facial nerve was not readily discernible on MRI, the patient was found to have some facial function which slightly improved over time.

119. Metastatic Malignant Neuroendocrine Carcinoma of the Temporal Bone Masquerading as Malignant Otitis Externa: Case Report and Clinical Review of Presentation, Diagnosis, and Therapeutic Options

Zain H. Rizvi, MD, Los Angeles, CA; Brooke Su, MD, Los Angeles, CA; Andrew Vahabzadeh-Hagh, MD, Los Angeles, CA; Quinton Gopen, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the clinical manifestations, diagnosis, workup, and treatment unique to temporal bone neuroendocrine carcinoma.

Objectives: Describe and emphasize the need to recognize a rare clinical entity during diagnostic workup. Understand involvement and management of temporal bone neuroendocrine carcinoma. **Study Design:** Case report, clinical and histopathological analysis, and review of the literature. **Methods:** A case report is described. Presentation, workup and diagnostic details are discussed. Epidemiology, natural history, and treatment options are reviewed. **Results:** A 75 year old female with type 2 diabetes presented with several week history of right aural fullness, drainage, and facial paralysis following respiratory infection. She was previously treated with antibiotics without improvement and referred for presumed malignant otitis externa. Outside imaging reported a middle ear mass with dural enhancement suggestive of epidural abscess in the setting of chronic otomastoiditis. Review of imaging suggested a mass centered in the right middle ear cavity growing into the external auditory canal, eroding the sigmoid plate and tegmen. Examination revealed a friable mass in the external auditory canal with biopsy suggestive of middle ear adenoma versus carcinoma. PET/CT and biopsy of a lung nodule noted on x-ray were denied by the patient's HMO. A subtemporal craniotomy with mastoidectomy and static facial reanimation was performed and biopsy of her lung nodule obtained. Pathology demonstrated high grade neuroendocrine carcinoma and the patient referred for radiation therapy. **Conclusions:** Though primary tumors may be located in distant sites, presenting symptoms of middle ear malignancy may prompt diagnosis by the otolaryngologist. Recognition of this diagnosis masquerading as other disease processes is paramount to ensure expedient workup and treatment.

120. Facial Onset Sensory and Motor Neuropathy Syndrome

Ronald Sahyouni, MS, Irvine, CA; Omid Moshtaghi, MS, Irvine, CA; Khodyar Goshtasbi, BS, Irvine, CA; Yarah M. Haidar, MD, Irvine, CA; Hossein Mahboubi, MD, Irvine, CA; Hamid R. Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe FOSMN and its symptomatology, progression, and rarity.

Objectives: To present a rare case of facial onset sensory and motor neuropathy syndrome (FOSMN). **Study Design:** Case report. **Methods:** Retrospective review of records. **Results:** The patient, a 70 year old woman with a history of invasive ductal carcinoma stage IA two years prior and Parkinson's disease, presented with a 1 month history of progressive bilateral facial sensory loss and weakness affecting the facial (grade III progressed to grade IV over 5 month period), trigeminal, and hypoglossal nerves. Workup included CSF studies showing one negative cytology result, MRI imaging of brain and auditory canal, rheumatologic evaluation for Sjogren's syndrome, and infectious evaluation for Lyme disease

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which were all normal. EMG/NCS confirms chronic changes with fibrillations and motor units showing long duration, high amplitude with reduced recruitment consistent with chronic neuropathic changes in the facial nerve innervated muscles of the face. Due to hypoesthesia and slow progression of facial paralysis, Bell's palsy was ruled out. She had normal deep tendon reflexes, normal CSF with negative cytology, negative ANCA, negative ACE (serum and CSF). **Conclusions:** FOSMN is an extremely rare progressive motor neuron disorder characterized by facial onset sensory abnormalities followed by facial weakness and bulbar symptoms. FOSMN was first described in 2006, with only 36 reported cases worldwide. In this case, progressive left sided facial paralysis and hypoesthesia due to FOSM was restricted to the craniofacial region, and did not progress to the upper limbs, which is a unique finding. Although the pathophysiological mechanisms underlying FOSMN remain unclear, neurodegenerative and autoimmune mechanisms have been proposed.

121. Patterns of Hearing Loss among Children of Different Racial Backgrounds: A Large Sample Cross-Sectional Study

Heather K. Schopper, BS, Charleston, SC; Jonathan L. Hatch, MD, Charleston, SC; Ted A. Meyer, MD PhD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the patterns of hearing loss in children of different racial backgrounds and consider the multifactorial reasons for these differences.

Objectives: As the population grows more diverse, we believe that it is important to better understand the effect of racial background as it relates to patterns and severity of hearing loss. Studies have shown lower rates of hearing loss in black adults as compared to white adults, but have examined differences between children of different racial backgrounds. The focus of this study was to evaluate hearing loss among children of different races. **Study Design:** Cross-sectional database study with selected followup information. **Methods:** Data extracted from the Audgen database based on coded race group yielded 55,471 white, 14,176 black, 2583 Asian, and 817 multiple race patients. First available audiograms were analyzed for type and severity of hearing loss. For patients who had more than one audiogram available, the most recent audiogram was used to evaluate for change in hearing. **Results:** Overall rates of hearing loss among children of white, black, Asian, or multiple race were 58.7%, 54.7%, 56.8%, and 48.2% respectively ($p < 0.001$). Rates of sensorineural hearing loss (SNHL) were 25.1% in children who are white, 28.4% black, 30.4% Asian, and 20.6% mixed race ($p < 0.001$). The children of Asian descent had significantly worse hearing (PTA) compared to the black and white groups ($p < 0.001$) and the black group had worse hearing than the Caucasian group ($p < 0.001$). **Conclusions:** Our study shows that hearing loss patterns among children of different races and appear to contradict findings in the adult population. The causative factors behind this are likely multifactorial and difficult to determine from this database.

122. Relationship between Childhood Weight Status and Hearing Loss: A Large Sample Cross-Sectional Study

Heather K. Schopper, BS, Charleston, SC; Jonathan L. Hatch, MD, Charleston, SC; Paul R. Lambert, MD, Charleston, SC; Ted A. Meyer, MD PhD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the relationship between childhood weight status and prevalence of hearing loss type and severity.

Objectives: Childhood obesity is a growing problem associated with a large number of comorbidities. A seldom studied issue is the risk of hearing loss, with only one study demonstrating increased rates of hearing loss in adolescents who are obese. The focus of this study was to evaluate hearing loss patterns among children in different weight groups in a large cross-sectional data set. **Study Design:** Cross-sectional database study with selected followup information. **Methods:** Data extracted from the AudGen database yielded 1615 children who were obese, 930 overweight, 806 normal weight, and 144 underweight. First available audiograms were analyzed for type and severity of hearing loss. For patients who had more than one audiogram, the most recent audiogram was used to evaluate for change in hearing. **Results:** Overall rates of hearing loss among children in the obese, overweight, normal weight and underweight categories were 53.6%, 51.0%, 49.3%, and 57.6% respectively ($p = 0.095$). Rates of SNHL among ears with hearing loss were 28.2% in the obese, 21.6% overweight, 20.2% normal weight, and 25.6% underweight ($p < 0.001$). There was not a significant difference in average PTA as a measure of severity on first audiogram, but there was a significant worsening of SNHL in the underweight and normal weight groups on repeat testing ($p = 0.022$). **Conclusions:** While weight may not increase risk of hearing loss regardless of type, it seems to increase rates of SNHL in both obese and underweight children. These data reinforce the need for prospective studies of hearing loss patterns among children at extremes of the growth curve.

123. Takayasu's Arteritis Associated Hearing Loss with Atypical Features of Cogan's Syndrome

Tymon M. Tai, MD, Los Angeles, CA; Nathan C. Tu, MD, Los Angeles, CA; Courtney C. Voelker, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the variable otolaryngologic presentations of Takayasu's arteritis and Cogan's syndrome and their respective treatments.

Objectives: We present a case of sensorineural hearing loss associated with Takayasu's arteritis and atypical features of Cogan's syndrome. To our knowledge, this combination of findings have not been previously reported. **Study Design:** Case report and review of relevant literature. **Methods:** A 44 year old Hispanic female presented with diffuse myalgia, polyarthralgia, sudden onset hearing loss and blurry vision two weeks after the resolution of flu-like symptoms and non-bloody diarrhea treated with oral antibiotics. On workup she was diagnosed with Takayasu's arteritis. Audiometry confirmed the presence of sensorineural hearing loss. Imaging of the internal auditory canal and orbit demonstrated bilateral enhancement in the cochlea, the nerve complexes of cranial nerves VII and VIII and the optic sheath. **Results:** The patient was promptly treated with intravenous corticosteroids. Over the course of seven months, the corticosteroids were tapered and transitioned to low dose immunosuppressive therapy. Audiometric evaluation demonstrated resolution of her sensorineural hearing loss. Improvements in her vision and vestibuloauditory symptoms were also observed. **Conclusions:** Separately, Cogan's syndrome and Takayasu's arteritis associated hearing loss are extremely rare. The combination of findings in a single patient have not been previously documented. We suspect that the pathogenesis of these immunologic disorders are responsible of the wide and often overlapping spectrum of presentations observed in the literature. Clinicians should be aware of these variable presentations and the challenges associated with diagnosis so that treatment can be administered in a timely manner.

- 124. Endoscopic Assisted Excision of Intracochlear Schwannoma with Simultaneous Cochlear Implantation**
Zahrah M. Taufique, MD MBA, New York, NY; Baishakhi Choudhury, MD, New York, NY; David M. Garber, MD, New York, NY; Kaleb H. Yohay, MD, New York, NY; Daniel Jethanamest, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the use of the endoscope to assist in intracochlear schwannoma excision and to understand the feasibility and benefits of simultaneous cochlear implantation.

Objectives: 1) Present a case report of excision of an intracochlear schwannoma using an endoscopic assisted approach followed by simultaneous cochlear implantation; and 2) review the current literature on intracochlear schwannoma management and cochlear implantation. **Study Design:** Literature review and case report. **Methods:** Case report. **Results:** A structured literature review returned a few case reports of intracochlear schwannomas with simultaneous cochlear implantations; however in these cases, the schwannomas were left in situ. Endoscopic removal of schwannomas have also been described; however none of these also included simultaneous cochlear implantations. This case report describes a 69 year old woman with bilateral sensorineural hearing loss (right greater than left) who was found to have bilateral schwannomas: a left vestibular schwannoma and a right intracochlear schwannoma. She was also found to have a spinal peripheral nerve sheath tumor. The patient underwent endoscopic assisted removal of her right intracochlear schwannoma. The tumor was present in the basal turn of the cochlea. Access to the tumor was gained by drilling out the lateral wall of the basal turn of the cochlea and gross total removal of the lesion was performed. Following tumor excision, she underwent cochlear implantation via facial recess approach. Representative photos from the surgery will be included. **Conclusions:** Endoscopic assisted excision of intracochlear schwannoma with simultaneous cochlear implantation is a viable method of treatment for sensorineural hearing loss from intracochlear schwannoma.

- 125. Preliminary Audiometric Outcomes Following Placement of the Slim Modiolar Cochlear Implant Electrode (CI 532)**

Danielle Trakimas, MSE, Worcester, MA; Stephanie Wu, Worcester, MA; Nicole Seymour, AuD, Worcester, MA; Caitlin Agreda, AuD, Worcester, MA; Elliott D. Kozin, MD, Boston, MA; Aaron K. Remenschneider, MD MPH, Worcester, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss early post-implant audiometric outcomes of the slim modiolar cochlear implant electrode (CI 532).

Objectives: To evaluate early post-implant outcomes in patients receiving the cochlear profile slim modiolar electrode (CI532). **Study Design:** Retrospective review of prospectively collected data. **Methods:** Adult postlingually deafened patients with hearing loss duration less than 50 years deemed eligible for cochlear implantation by FDA criteria were included if they received a CI532 (slim modiolar) device. All patients had preoperative and early post-activation audiometric results. Patient demographics, medical histories and hearing results were reviewed. Absolute and baseline changes in audiometric scores at early followup were measured. **Results:** Six CI532 patients met inclusion criteria. Extended round window approach was performed in all cases. Intraoperative plain film at the time of surgery was performed in each procedure and demonstrated no cases of tip foldover. Mean implantation age was 57.2±16.2 years, 50% were male, and mean hearing loss duration was 12.5±17.4 years. Preoperative word recognition scores were 3.3±5.3% for CNCWW and 3.5±6.1% for AzBio sentence test in quiet. Outcomes were assessed at a mean of 5.3 (4.3-7.3) weeks post-activation. At early followup, mean CNCWW scores were 34.7±22.3% and AzBio scores were 67.6±30.4%. A rapid rate of improvement in AzBio scores was observed in implanted patients: mean change of 64.6%±26.0%. **Conclusions:** In this small cohort, patients with slim modiolar electrodes showed substantial, rapid improvements in early post-activation word recognition as measured with AzBio testing. The sharp rise in early word recognition may be due to perimodiolar electrode position, which theoretically provides more specific activation of spiral ganglion neurons. Longer duration followup is necessary and currently underway.

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126. Fibrin Sealant as an Alternative External Ear Canal Packing

Yona Vaisbuch, MD, Palo Alto, CA; Hamed Sajjadi, MD, Los Gatos, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss an alternative method for external ear canal packing after surgery.

Objectives: To describe a new method for external ear canal packing using fibrin sealant during otological surgeries. **Study Design:** Retrospective review. **Methods:** Retrospective review of several hundred chronic ear surgery patients' charts, during the years 2008-2017 operated by a single otologist. The focus of the chart review was on postoperative healing and any complications including bleeding, granulation tissue formation, poor wound healing. **Results:** The surgical technique consists of placing 2-4 Gelfoam pieces over the eardrum and or the graft, followed by topical infusion of fibrin sealant (Tisseel) that fills the entire ear canal. The patients' ear canals were examined after 6 weeks, as the first postoperative visit. At this first visit, most ear canals were clear and there was seldom any need to remove any remnant of the Gelfoam or Tisseel material. No postoperative complications related to the external ear canal Tisseel use were noted, specifically no canal infections, no granulation tissue formation and no poor healing of the canal incisions were detected. **Conclusions:** The common practice of gauze or sponge packing the external ear canal at the end of the otological surgery is often uncomfortable and painful when removed and usually necessitates an early postoperative visit to remove the packing. We present an alternative technique using the fibrin sealant that reduces the postoperative canal serosanguinous secretions, number of postoperative visits, avoids the inconvenience of sponge packing removal, especially in the pediatric population, with excellent healing outcomes, as well as a small reduction in the operative time by few minutes.

127. Diagnosis of Cochlear Implant Infection with Gallium SPECT

Varun V. Varadarajan, MD, Gainesville, FL; Patrick J. Antonelli, MD, Gainesville, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of nuclear imaging techniques in the diagnosis of subclinical cochlear implant infections.

Objectives: Indolent, low grade cochlear implant infections are challenging to diagnose and may present with only persistent, localized pain. We report a case of a low grade cochlear implant infection that was diagnosed using gallium-67 citrate single photon emission computerized tomography (Ga-SPECT) and review the literature describing the utility of Ga-SPECT in the diagnosis of cochlear implant infections. **Study Design:** Case report and literature review. **Methods:** The medical records of a patient with a cochlear implant infection diagnosed with Ga-SPECT were reviewed. A literature review was performed regarding the utility of nuclear imaging techniques in the diagnosis of cochlear implant infections. **Results:** A 7 year old male underwent right sided cochlear implantation for bilateral sensorineural hearing loss. Ten months after surgery, he developed pain at the implant site, refractory to empiric oral and parenteral antimicrobial therapy. Computerized tomography and technetium bone scans revealed no findings suggestive of soft tissue infection or osteomyelitis. Ga-SPECT demonstrated uptake at the base of the stimulator receiver. Findings upon explantation confirmed a low grade implant infection. Sequencing of DNA isolated from the implant revealed staphylococcus epidermidis. Pain resolved with explantation. **Conclusions:** This is the first reported case of a cochlear implant infection diagnosed solely with Ga-SPECT. Patients experiencing persistent pain around their cochlear implant with clinical suspicion for an underlying infection should undergo Ga-SPECT imaging.

128. Tympanic Membrane Repair Using Porcine Small Intestinal Submucosal Grafting (Biodesign®)

Robert J. Yawn, MD, Nashville, TN; Matthew M. Dedmon, MD PhD, Nashville, TN; Brendan P. O'Connell, MD, Nashville, TN; Alejandro Rivas, MD, Nashville, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the use of porcine small intestinal submucosal allografts for tympanic membrane repair.

Objectives: To evaluate the use of porcine small intestinal submucosal grafts for tympanic membrane repair. **Study Design:** Retrospective case series. **Methods:** Thirty-four adult and pediatric patients were evaluated at a tertiary otologic center for tympanic membrane perforation with and without chronic otitis media or cholesteatoma. Endoscopic and microscopic tympanic membrane repair was performed using porcine small intestinal submucosal grafts (Biodesign®) for tympanic membrane perforations with and without chronic otitis media and perforations after removal of cholesteatoma. Perforation closure, bone and air pure tone averages (PTA), air bone gap (ABG), and word recognition scores (WRS) were recorded as primary outcome measures. **Results:** Thirty-four patients were included with a mean age of 26.4 years (range 6-75), 56% male. Twenty-three cases (68%) were performed endoscopically and 31 (91%) had concomitant cartilage grafting. Two patients (6%) had postoperative pinpoint (<1% surface area) perforation, and three patients (12%) had postoperative perforation, with an overall success rate of 85%. The mean improvement in air bone gap was 7.6 dB and ($p=0.03$). There were no statistically significant differences in closure rates when comparing primary versus revision cases, endoscopic versus microscopic cases, size of perforation, cholesteatoma, concomitant mastoidectomy, age, tobacco exposure, or comorbid diabetes mellitus. **Conclusions:** Porcine small intestinal submucosal grafts (Biodesign®) are effective in the repair of the tympanic membrane. Biodesign® is an excellent choice in total endoscopic cases as it avoids incisions necessary for allograft harvest.

PEDIATRIC OTOLARYNGOLOGY**129. Endoscopic View of a High and Dehiscent Jugular Bulb during Pediatric Tympanoplasty**

Ashwin Ananth, MD MBA, New Orleans, LA; Peter Debbaneh, BS, New Orleans, LA; John M. Carter, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) discuss the incidence and presentation of a high and dehiscent jugular bulb; 2) recognize the radiological and endoscopic findings of the high and dehiscent jugular bulb; and 3) explain the importance of imaging review with attention to vascular structures before middle ear surgery.

Objectives: 1) Present the case and intraoperative findings of a high and dehiscent jugular bulb during endoscopic assisted tympanoplasty for cholesteatoma removal in a pediatric patient; and 2) review the incidence, presentation, radiological findings, and management of high and dehiscent jugular bulb. **Study Design:** Case presentation and review of the literature. **Methods:** The case of a 15 year old male with right sided cholesteatoma is presented. The relevant literature regarding high and dehiscent jugular bulb is reviewed along with the important considerations for preoperative imaging review and intraoperative management. **Results:** The patient presented with symptoms of recurrent right ear pain and ipsilateral conductive hearing loss. Otoscopic exam demonstrated a cholesteatoma in the right EAC and middle ear. A preoperative CT of the temporal bone was obtained and is reviewed. The patient was taken to surgery for a right sided endoscopic assisted tympanoplasty. A high riding and dehiscent jugular bulb was present and the endoscopic visualization is presented. The procedure was completed without injury to the internal jugular vein. **Conclusions:** The high riding and dehiscent jugular bulb is an important and relatively prevalent finding in the middle ear that is associated with other vascular anomalies. Surgeons should recognize the radiological and endoscopic findings of this anomaly and be aware of the challenges it poses during pediatric middle ear surgery.

130. Intranasal Lobular Hemangioma Presenting with Recurrent Epistaxis in a 9 Year Old

Sydney H. Beatty, BA, New Orleans, LA; John M. Carter, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss intranasal lobular capillary hemangioma as a differential for pediatric patients presenting with epistaxis and nasal obstruction.

Objectives: Lobular capillary hemangioma (LCH) is a benign skin and mucosal growth named for its features on microscopy. LCH has a largely unknown etiology; however, there is reported greater prevalence of LCH in a child with nose picking and in patients with a history of recent nasal packing. LCH often affects the skin and mucosa of the head and neck, though it is rarely found to involve the nasal mucosa. Our objective is to have LCH considered in the differential for pediatric patients with intranasal masses. **Study Design:** We report a new case with imaging, endoscopic pictures, and histologic slides of a pediatric intranasal LCH presenting with recurrent epistaxis. **Methods:** We reported the case of a pediatric patient with intranasal LCH. **Results:** 9 year old male child presented with symptoms of recurrent epistaxis that would last for up to 45 minutes and symptoms of nasal obstruction. In-office endoscopy demonstrated a polypoid anterior nasal mass abutting the left septum. CT scan demonstrated a lobular mass abutting the septum extending to the middle turbinate and left ostiomeatal complex. Patient underwent endoscopic sinus surgery with excision of this mass. **Conclusions:** Intranasal LCH can present with epistaxis, unilateral nasal obstruction, epiphora, and rhinorrhea. Complete endoscopic excision is the recommended treatment. Pediatric intranasal LCH is a rare benign growth and should be considered in the differential for pediatric patients with intranasal masses.

131. Do Demographic Disparities Exist in the Diagnosis and Surgical Management of Chronic Otitis Media?

Janice E. Chang, MD PhD, Los Angeles, CA; Nina L. Shapiro, MD, Los Angeles, CA; Neil Bhattacharyya, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate understanding of the demographic differences in the diagnosis of otitis media, and the provision of myringotomy and tube procedures in children under the age of 18.

Objectives: Determine if demographic disparities exist between the diagnosis of otitis media and the provision of myringotomy and tubes in children. **Study Design:** Cross-sectional analysis of a national database. **Methods:** The National Ambulatory Medical Care Survey (NAMCS) 2010 and the National Hospital Ambulatory Medical Care Survey-Ambulatory Surgery (AS) 2010 were abstracted for cases with a diagnosis of otitis media (OM) and myringotomy and tube (MT) procedures in children, respectively. Sex, race, ethnic and insurance distributions were computed for OM and MT and then compared for healthcare disparities between rates of OM diagnoses and MT procedures. **Results:** 13.6 million ambulatory pediatric OM diagnoses were identified in 2010 (55.9% male; 82.4% white, 11.3% black and 6.3% other; 14.3% Hispanic, 85.7% non-Hispanic). 413,000 ambulatory myringotomy procedures were identified (59.6% male; 86.0% white, 11.0% black and 3.0% other; 13.0% Hispanic, 87.0% non-Hispanic). There was no statistically significant difference in the provision of MT versus OM diagnosis according to sex ($p=0.400$), race ($p=0.313$) or ethnicity ($p=0.228$). There was

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also no statistically significant difference in the percentage of Medicaid coverage for OM children (37.0%) versus those undergoing MT (31.1%; $p=0.376$). There does, however, appear to be a statistically higher percentage of non-Hispanic children being diagnosed with otitis media than Hispanic children ($p=0.049$). **Conclusions:** There were no significant demographic differences in the incidence of children with OM undergoing MT with respect to sex, race, ethnicity or insurance status. As a specialty, otolaryngology does not appear to exhibit any disparate healthcare access bias in providing MT to children with OM.

132. Development of In-House Genetic Screening for Pediatric Hearing Loss

Karl William Doerfer, MD, Milwaukee, WI; Tara L. Sander, PhD, Milwaukee, WI; David R. Friedland, MD PhD, Milwaukee, WI; Joseph E. Kerschner, MD, Milwaukee, WI; Christina L. Runge, PhD, Milwaukee, WI

Educational Objective: At the conclusion of this presentation, the participants will know the difference in turnaround times for in-house vs send out genetic testing for inherited SNHL. They will also be able to explain how two standard audiometric parameters help increase the diagnostic yield of genetic testing for inherited SNHL.

Objectives: To evaluate the efficiency of in-house genetic testing for mutations causing the most common types of inherited, nonsyndromic, sensorineural hearing loss. **Study Design:** Retrospective cohort. **Methods:** Pediatric patients at our institution with suspected or confirmed hearing loss underwent genetic testing for mutations in GJB2/GJB6, SLC64A and MTMRNR1. 104 send out tests were performed between 10/2010 and 6/2014. 100 in-house tests were performed between 11/2014 and 11/2016. Difference in mean turnaround time for in-house vs send out testing was analyzed. Additionally, audiometric testing was analyzed to evaluate associations between genetic test results and audiometric outcomes. **Results:** Significantly shorter turnaround time was found between send out testing (mean 53.7 days) and in-house testing (mean 18.9 days; $p<.001$). Additionally, we identified two standard audiometric parameters (i.e., bilateral newborn hearing screen referral and audiometry showing symmetric SNHL) that increase the diagnostic yield of genetic testing. **Conclusions:** 1) The development of in-house genetic testing programs for inherited SNHL can significantly reduce testing turnaround times. Increased efficiency reduces risk of delayed diagnosis and facilitates expedited treatment. 2) Newborn hearing screening and audiometry results can help clinicians identify patients most likely to test positive for common mutations on genetic analyses, which would facilitate best practices in genetic testing.

133. Cochlear Implantation in Children with Sensorineural Hearing Loss Secondary to Ototoxic Agents

Zainab Farzal, MD, Chapel Hill, NC; Elizabeth D. Stephenson, BA, Chapel Hill, NC; Carlton J. Zdanski, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the effectiveness of cochlear implantation for children with sensorineural hearing loss secondary to ototoxic agents.

Objectives: Sensorineural hearing loss (SNHL) in children may result from exposure to ototoxic agents. The objective of this study was to analyze outcomes for children receiving cochlear implants secondary to SNHL due to ototoxic exposure. **Study Design:** Retrospective review. **Methods:** We performed a retrospective review of our pediatric hearing loss database from 1996 to present. Charts were analyzed for etiology of ototoxicity, age at time of first cochlear implantation, perioperative complications, and performance outcomes. **Results:** Thirteen children (7 males, 6 females) with SNHL due to ototoxic exposures were identified. Eight had profound SNHL, 4 severe, and 1 moderate. The mechanism of ototoxicity included antibiotics (7) and chemotherapeutics/immunosuppressive drugs (6). Four patients received hearing aids and were excluded. The remaining 9 patients (13 ears) underwent cochlear implantation with an average age of first implantation at 9.5 years. One patient had two cochlear implant revisions on one side secondary to two separate instances of trauma. No major perioperative complications occurred. Except for 1 patient who is deceased, 8 of 9 patients are active users of their cochlear implants and have performed well since implantation. **Conclusions:** Children with SNHL secondary to ototoxic exposures have appropriate auditory habilitation from cochlear implantation. Analysis of a larger cohort is needed to further validate these findings.

134. Does Therapeutic Bronchoscopy in Pediatric Laryngotracheal Reconstruction Improve the Postoperative Course?

Erin K. Haser, MD, Boston, MA; Ameer T. Shah, MD, Boston, MA; Andrew R. Scott, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the benefits and drawbacks of performing therapeutic bronchoscopy at the conclusion of laryngotracheal reconstruction in pediatric patients.

Objectives: To evaluate the effect of therapeutic flexible bronchoscopy at the conclusion of open airway surgery on the postoperative course and short term respiratory outcomes in pediatric patients undergoing laryngotracheal reconstruction. **Study Design:** Retrospective, single center study. **Methods:** The inpatient medical records of children undergoing single stage laryngotracheal reconstruction (LTR) from 2010 to 2016 were examined. Prior to May 2013, patients undergoing LTR underwent blind flexible suctioning of the trachea prior to nasotracheal intubation. After May 2013, directed

suctioning of the distal airways using intraoperative therapeutic flexible bronchoscopy was instituted. Patients within the two treatment groups were divided for subset analysis according to the type of surgery performed (anterior-posterior (AP) graft, anterior graft, or resection procedures). Multiple clinical outcome measures were assessed. **Results:** A total of 29 patients (age: 3.6 months - 6.2 years) met inclusion criteria. Sixteen did not undergo flexible bronchoscopy and 13 underwent therapeutic bronchoscopy. Demographics and comorbidities between the groups were equivalent other than slightly older age in the therapeutic bronchoscopy group. All clinical outcomes analyzed were equivalent other than a lower rate of additional antibiotic therapy and faster time to room air in a subset of patients who did not undergo therapeutic bronchoscopy ($p < 0.02$). **Conclusions:** The postoperative course after single stage open airway surgery involves prolonged intubation that may result in respiratory complications. Endoscopically directed therapeutic suctioning of the distal airways at the conclusion of the surgical procedure may not offer benefit over simple blind suctioning of the trachea prior to endotracheal intubation.

135. Chronic Stridor Secondary to Extrusion of Esophageal Foreign Body into Mediastinum

Sarah A. Lookabaugh, MD, Rochester, NY; Derek S. Wakeman, MD, Rochester, NY; Walter Pegoli, MD, Rochester, NY; Margo M Benoit, MD, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand that foreign body ingestion should be kept in the differential diagnosis of children presenting with tracheal compression despite a negative history and lack of gastrointestinal symptoms.

Objectives: To report an unusual case of an extruded esophageal foreign body presenting as chronic stridor. **Study Design:** Case report from tertiary academic children's center. **Methods:** Chart review of a 2 year old male referred by an outside allergist with complaints of biphasic stridor since early infancy that worsened with illness and physical activity. The patient was initially diagnosed with asthma; however, he did not experience symptom relief with steroids, nebulizers, or leukotriene receptor antagonists. No reported history of foreign body ingestion. Outpatient flexible laryngoscopy revealed normal vocal fold mobility and no subglottic stenosis, but given the degree of stridor on exam, he was taken to the operating room for direct laryngoscopy and bronchoscopy for further evaluation. **Results:** Operative evaluation revealed severe, nonpulsatile mid-tracheal compression from the left posterolateral direction, as well as left mainstem bronchus narrowing. MRI showed a periesophageal inflammatory mass surrounding a foreign structure. CT scan confirmed a foreign body in the periesophageal space near the subglottis that extended into the superior mediastinum, compressing the trachea. The child subsequently underwent open thoracotomy to remove the foreign body, which was deemed to be a plastic disc. He recovered from surgery and has not experienced further respiratory symptoms since. **Conclusions:** Late complications from foreign body ingestion can be difficult to diagnose, particularly with a negative history and no gastrointestinal symptoms. This case demonstrates that foreign body ingestion should be kept in the differential of children presenting with tracheal compression. Multidisciplinary collaboration is often beneficial in the evaluation of children with unexplained stridor.

136. Analysis of Postoperative Hospitalization Trends and Complication Rates Following Pediatric Choanal Atresia Repair

Alexander P. Marston, MD, Charleston, SC; Terral Patel, BS, Charleston, SC; Sharon H. Gnagi, MD, Charleston, SC; Shaun A. Nguyen, MD, Charleston, SC; David R. White, MD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to identify patient comorbidity factors that are associated with adverse postoperative events following pediatric choanal atresia repair.

Objectives: The goal of this study is to describe postoperative sequelae of pediatric choanal atresia repair and identify predictive factors for adverse events. **Study Design:** The American College of Surgeons' National Surgery Quality Improvement Program-Pediatric (NSQIP-P) database was searched between January 1, 2012 and December 31, 2015 to identify pediatric patients status-post choanal atresia repair. **Methods:** Patients were identified in NSQIP-P using CPT code 30540. Patient demographic and comorbidity data were collected. Postoperative outcomes included surgical site complications, readmissions and total length of stay. **Results:** A total of 178 children status-post choanal atresia repair were identified. The overall complication rate was 6.2%, while the readmission rate was 15%. Multivariable analysis determined predictors of postoperative outcomes. Ventilator dependence ($p = 0.001$, OR = 2.962-55.688) and steroid use ($p = 0.001$, OR = 3.302-122.233) were strong predictors of postoperative complications. Ventilator dependence ($p = 0.009$, OR = 1.495-16.340) was a strong predictor of higher readmission rates. Ventilator dependence ($p = 0.002$, OR = 6.967-29.923), oxygen support ($p = 0.015$, OR = 2.871-25.882) and esophageal/gastric/intestinal disease ($p = 0.004$, OR = 3.758-19.933) were all strong predictors of longer hospital stays. **Conclusions:** Overall, data from this study demonstrates that ventilator dependence, steroid use, oxygen support and esophageal/gastric/intestinal disease are predictive factors for adverse clinical outcomes following pediatric choanal atresia repair.

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137. Rare Pathology in a Case of a Parotid Tumor in a 7 Year Old

Lindsey E. Moses, MD, New York, NY; Margaret A. Black, MD, New York, NY; Robert F. Ward, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the workup and management of pediatric parotid tumors.

Objectives: To present an interesting case of a parotid tumor in a pediatric patient with rare pathologic finding of myxoid mesenchymal neoplasm with osteoclastic giant cells. **Study Design:** Case report. **Methods:** Retrospective case review, histologic tissue review, and literature review. **Results:** The patient was an otherwise healthy 7 year old boy who presented to pediatric ENT clinic with a progressively enlarging left parotid mass for 3 months. MRI showed a 3.6 x 2.4 x 3.3 cm T1 hypointense, T2 hyperintense lobulated mass within the left parotid gland. FNA was performed in clinic, but results came back as nondiagnostic. Superficial parotidectomy was then performed with preservation of the facial nerve. Pathology revealed an osteoclastic-like giant cell rich, cellular fibrohistiocytic lesion. Due to the unusual nature of these findings the specimen was sent for further evaluation and final pathologic diagnosis was myxoid mesenchymal neoplasm with osteoclastic giant cells. The tumor could not be typed further with certainty, though it was deemed to have potential for local recurrence but no metastatic potential. A postop MRI was obtained 3 months following surgery showing no residual or recurrent tumor. **Conclusions:** Parotid masses are uncommon in the pediatric population and can represent a variety of pathologic diagnoses with a higher preponderance of malignant tumors than that seen in the adult population. Obtaining adequate tissue for diagnosis on FNA can be challenging due to the limited tolerance of this procedure by many children. Surgical excision remains the mainstay of diagnosis for parotid tumors.

138. Down Syndrome as an Indicator for Pediatric Otolaryngologic Procedures

Terral A. Patel, BS, Charleston, SC; Shaun A. Nguyen, MD, Charleston, SC; David R. White, MD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the pediatric otolaryngologic disease states associated with Down syndrome and compare their association with otolaryngology procedures with those without Down syndrome.

Objectives: Down syndrome (DS) is the most common chromosome abnormality in humans. Due to the phenotype associated with DS, there are many disease states that require otolaryngologic procedures. Our goal is to use national data to study otolaryngologic procedures, their association with DS, and the degree of difference in risk profiles encountered with DS. **Study Design:** Retrospective case control study. **Methods:** Data was obtained from the 2012-2015 American College of Surgeons National Surgical Quality Improvement Program-Pediatric public use files. ENT procedure CPT codes were used to query the database and DS patients were identified using ICD-9 code 758.0. The ENT procedures were grouped into 18 categories and their frequency in DS patients as well as outcomes were analyzed. Postoperative outcomes were measured by complication rates, readmission rates, operation time, anesthesia time, and total length of stay. **Results:** Results showed that DS patients are significantly over-represented in the following categories: tracheostomy, endoscopy, laryngoscopy, tracheoplasty, myringoplasty, tympanoplasty with mastoidectomy, and tympanoplasty without mastoidectomy. DS patients are under-represented in the following categories: abscess, palatoplasty, excision of congenital neck cyst, and cochlear implantation. Logistic regression analysis showed that DS patients were significantly more likely to undergo procedures in the over-represented categories and were significantly less likely to undergo procedures in the under-represented categories as listed above. Outcomes analysis yielded no pattern of significance. **Conclusions:** Our data showed that DS may predispose patients to require certain procedures over others.

139. Our First Four Years: Incidence, Severity and Demographics of Pediatric Sensorineural Hearing Loss Served in New Freestanding Children's Hospital

Cedric V. Pritchett, MD MPH, Orlando, FL; Firas Sbeih, BS, Orlando, FL; Tyler Janz, BS, Orlando, FL; Timothy Maul, PhD, Orlando, FL; Julie L. Wei, MD, Orlando, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the characteristics of a cohort of children with sensorineural hearing loss and discuss the impact access at a new tertiary care pediatric institution provides.

Objectives: To characterize all children identified with sensorineural hearing loss (SNHL) in a growing division of pediatric otolaryngology and audiology over four years with increased access in pediatric hospital clinics. **Study Design:** Retrospective summary of case series. **Methods:** ICD 9 and 10 codes were used to identify all patients with diagnosis of mixed or sensorineural hearing loss in our pediatric health system seen between October 2012 (opening of the hospital) and October 2016. Data included patient demographics, insurance type, new or established diagnosis, severity of hearing loss in each ear, diagnostic workup and treatment. Demographic information include age at diagnosis, gender, race and ethnicity, primary spoken language at home, zip code, and county of residence. **Results:** Six hundred and sixty-four children were identified with hearing loss during the study period, with majority having purely sensorineural hearing loss

(596, 92.5%). Unilateral loss was identified in 196 (29.6%), bilateral loss in 450 (67.8%). For unilateral loss, 99 (25.1%) were severe to profound. For bilateral loss 189 (42%) had the worst ear identified as severe to profound. Overall new diagnosis of HL was identified in 234 (35.2%), with yearly incidence of 22%-50.3%. Majority of patients were male (353; 53.2%), white (304; 45.8%), and self-reported as English speaking families (512; 77.1%). However, our population is of high Hispanic ethnicity (262, 39.6%). Other racial backgrounds were identified in 230 (34.6%) and black (100, 15.1%). Most children (63.7%) lived in the four county target area of the hospital; however 29 of 67 counties in our state represented. Majority of the children had Medicaid or managed Medicaid, 63.4% vs 35.1% commercial. The number of both otolaryngologists and audiologists doubled in the division during the study period which increased access for care.

Conclusions: A new and growing division of pediatric otolaryngology and audiology increases access and diagnosis of pediatric SNHL hearing loss. Approximately one third of children seen annually had new diagnosis of bilateral SNHL, with over 40% having severe to profound loss. Access to pediatric otolaryngologists and audiologists is critical especially for those with Medicaid.

140. Incidence of Operative Airway Intervention in Pediatric Patients at a Large Tertiary Care Center

Uma S. Ramaswamy, MD, Houston, TX; Margaret I. Engelhardt, BS, Houston, TX; Zi Yang Jiang, MD, Houston, TX; Zhen J. Huang, MD MBA, Houston, TX; Sancak Yuksel, MD, Houston, TX; Soham Roy, MD, Houston, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to compare surgical findings in patients who undergo staged airway evaluation and subsequent tracheostomy to those found in patients who undergo both procedures during the same surgical encounter.

Objectives: Tracheostomies performed in neonatal and pediatric intensive care units (NICUs and PICUs) are major events in the care of children. This study reviews one institution's NICU/PICU airway intervention experience, focusing on timing and indications for tracheostomies. **Study Design:** Retrospective chart review. **Methods:** Patients admitted to the NICU and PICU who underwent operative airway procedures between July 1, 2008 and July 31, 2015 were reviewed. Total number of patients and procedures, age at tracheostomy, time to tracheostomy, and associated surgical findings were identified. **Results:** 258 patients underwent 369 airway procedures, including 115 tracheostomies. Average age at tracheostomy was 14 months. 46 patients underwent tracheostomy without initial airway evaluation. 31 patients underwent initial airway evaluation and tracheostomy during the same surgical encounter. The most common airway findings in this group were glottic granulation (23%), tracheomalacia (23%), bronchomalacia (23%), and subglottic stenosis (23%). 22 patients underwent airway evaluation and tracheostomy as separate surgical encounters. Common surgical findings were subglottic stenosis (27%), tracheomalacia (23%), bronchomalacia (23%), and bilateral vocal cord paralysis (18%). 16 patients underwent airway evaluation with endoscopic management of pathology and subsequent tracheostomy as separate surgical encounters. Common surgical findings were subglottic stenosis (75%), tracheomalacia (25%), laryngomalacia (13%), and glottic granulation (13%). Average time to tracheostomy was 56 days. **Conclusions:** Children more frequently had staged airway evaluations and tracheostomy than synchronous airway evaluation and tracheostomy. Surgical findings were similar between these groups. This suggests tracheostomy may be considered immediately following airway evaluation in patients with these findings to avoid multiple surgical and anesthesia encounters.

141. Otolaryngologists and Pediatricians and Ophthalmologists, Oh My! Role of Otolaryngology in Pediatric Orbital Infections

Andrew J. Thomas, MD, Salt Lake City, UT; Jared A. Olson, PharmD, Salt Lake City, UT; Jeremy D. Meier, MD, Salt Lake City, UT; Laura N. Hodo, MD, Salt Lake City, UT

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the current role of the otolaryngologist in the care of pediatric patients with preseptal and postseptal orbital infections and discuss the utility of otolaryngology consultation in these infections.

Objectives: Multiple medical services are involved in managing orbital infections, without a clearly defined role of the otolaryngologist. Our aims were to determine the role of the otolaryngologist in the management of these infections, and the utility of otolaryngologist involvement by comparing differences in costs and outcomes of care. **Study Design:** Retrospective cohort. **Methods:** Children with orbital/periorbital infection 1/1/2015 to 12/30/2106 were identified through electronic data warehouse diagnostic codes. Clinical and financial data were extracted from the database. Additional data was abstracted by manual chart review, including patient/disease characteristics, otolaryngology involvement, and outcomes. Statistical significance was determined by Fisher's exact test (categorical variables) and two tailed unpaired t-test (continuous variables). **Results:** Total 105 patients identified; 57 preseptal and 48 orbital/postseptal infection. Otolaryngology involved in 83.7% postseptal versus 0% preseptal only ($P < 0.0001$), and 93.1% postseptal abscess versus 64.3% postseptal cellulitis ($p = 0.028$). Sinusitis radiographically identified in 74% of patients with CT (70% with CT), and associated with orbital (OR 27.46; $p < 0.0001$) versus preseptal disease. Eight patients had subperiosteal abscess surgery, all involving otolaryngology (0% 30 day return). For orbital cellulitis, otolaryngology involvement did not impact average total cost (\$5018 vs \$5045), length of stay (2.41 vs 2.43 days), or 30 day return (0%). **Conclusions:** Clinician perceived utility of otolaryngology in surgical management of orbital infection (100% involvement) is high, but is low for preseptal infections (0%) despite 43% sinusitis comorbidity. For medically managed patients, utility of otolaryngology involvement

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prior to considering surgery appears limited. Reducing ambiguity of consultant roles may improve the value and process of care.

142. Management of a Case of Foregut Duplication Cyst Postnatally Causing Failure to Thrive: Case Report and Review of the Literature

Weitao Wang, MD, Rochester, NY; Margo M. Benoit, MD, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the epidemiological, radiographic, clinical and histopathologic characteristics and management of oral cavity foregut duplication cysts.

Objectives: To review a challenging case of foregut duplication cyst presenting as a floor of mouth mass in a newborn. **Study Design:** Case report and literature review. **Methods:** We report a single case of a foregut duplication cyst (FDC) arising from the floor of mouth in a newborn. A PubMed review of the available literature on this rare entity was also performed. **Results:** A 5 day old otherwise healthy infant presented with a cystic mass along the left floor of mouth, with poor feeding and weight gain. An initial diagnosis of ranula was made, and due to the patient's young age, he underwent a brief marsupialization procedure at 3 weeks of age. The cyst recurred, requiring interval needle aspiration. He then underwent excision of the lesion and left sublingual gland at 21 weeks of age. The mass recurred, and an MRI was obtained, demonstrating a cystic mass with septation and loculation inferiorly along the floor of mouth. At 8 months of age, he underwent excision of the cyst and right sublingual gland. Pathology was consistent with FDC. Patient had no complications and has had no recurrence to date. **Conclusions:** FDCs of the oral cavity are rare with less than 60 reported cases in the literature. The differential for a cystic floor of mouth lesion in a neonate remains broad, and FDC should be included even for lesions that are not midline. MRI is helpful in surgical planning, but cannot provide definitive diagnosis. When noted antenatally, EXIT procedure may be useful if respiratory compromise is suspected. Complete surgical excision is typically curative.

143. Trichofolliculoma Presenting as a Pedunculated Neck Mass: A Case Report

Stephanie J. Wong, MD, Rochester, NY; Glynis Scott, MD, Rochester, NY; Margo M. Benoit, MD, Rochester, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe characteristic histopathologic features of trichofolliculomas, understand management, and also be able to compare this lesion with similar entities.

Objectives: Trichofolliculoma is an uncommon, hamartomatous lesion with follicular differentiation. This case report describes an atypical presentation of trichofolliculoma which presented as a pedunculated midline neck mass in a newborn male patient. Management and outcome are described. **Study Design:** Case report. **Methods:** A retrospective chart review was performed. A literature search using PubMed databases was performed using the search term, trichofolliculoma and the results further screened for relevance. **Results:** The patient presented at birth with a large pedunculated midline neck mass. An MRI was performed showing that the 1.4cm x 1.4cm x 6cm lesion was confined to the dermis. He underwent surgical excision at 9 months of age. Pathologic analysis was most consistent with trichofolliculoma. We discuss the pathological characteristics that led to this rare diagnosis in contrast to other pathologic entities on the differential diagnosis, including common midline lesions such as bronchogenic cysts. The literature review of known cases confirms that this is the first published case presenting as a lobulated, midline neck mass in a pediatric patient. **Conclusions:** This case describes an atypical presentation and pathologic features of trichofolliculoma presenting as a congenital, lobulated midline neck mass, and adds to the limited amount of published data regarding this entity.

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Active Fellows cont'd

Douglas G. Hetzler, MD FACS
Wesley Hicks Jr., MD FACS
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Michael L. Hinni, MD FACS
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Robert H. Miller, MD MBA FACS
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Diego Alfonso Preciado, MD PhD
Edmund DeAzevedo Pribitkin, MD FACS
Garrold Mark Pyle, MD
Melissa A. Pynnonen, MD Msc
Reza Rahbar, MD FACS

Active Fellows cont'd

Hassan H. Ramadan, MD FACS
 Gregory W. Randolph, MD FACS
 Barry M. Rasgon, MD
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 Yael Raz, MD
 James S. Reilly, MD FACS
 Anthony Reino, MD FACS
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 George H. Yoo, MD FACS
 Ramzi Tamer Younis, MD FACS
 Adam M. Zanation, MD
 Steven M. Zeitels, MD FACS
 Karen Bracha Zur, MD BS

Emeritus Fellows

Edward L. Applebaum, MD FACS
 Stanley M. Blaugrund, MD
 Derald E. Brackmann, MD
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 Richard R. Gacek, MD
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 David F. Wilson, MD

Senior Fellows

Warren Y. Adkins Jr., MD
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 Don B. Blakeslee, MD FACS
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 Irving M. Blatt, MD FACS
 Andrew Blitzer, MD DDS FACS
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Senior Fellows cont'd

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Jack E. Brooks, MD FACS
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Richard L. Mabry, MD FACS

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Robert H. Maisel, MD FACS
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Lindsay L. Pratt, MD
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 Joan T. Zajtchuk, MD FACS
 Dean H. Zobell, MD
 Harry Zoller, MD FACS

Inactive Fellows

Eugenio A. Aguilar III, MD FACS
 Dan Joshua Castro, MD FACS
 Newton J. Coker, MD
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 Russell Allen Faust, MD PhD
 A. Julianna Gulya, MD FACS
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 Nancy Sculerati, MD
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Honorary/Associate Members

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Harvey L.C. Coates, FRACS
William B. Coman, MBBS FACS
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Bahman Emami, MD
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Alfio Ferlito, MD FACS
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Juan Manuel Garcia Gomez, MD

Tu Guy-Yi, MD
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Koichi Omori, MD
T. Metin Onerci, MD
Kishore C. Prasad, MD
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Gabor Repassy, MD
Alessandra Rinaldo, MD FACS

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Mirko Tos, MD
Paul Van Den Broek, MD PhD
William H. Wachter
John C. Watkinson, MSC MS DLO
Sabina Wullstein, MD
Thomas Wustrow, MD FACS
Eiji Yumoto, MD

Candidates Preparing Theses

Nishant Agrawal, MD FACS
Samantha Anne, MD FACS
Ben J. Balough, MD
Marc Logan Bennett, MD FACS
Simon R.A. Best, MD FACS
Naveen D. Bhandarkar, MD
Maurits S. Boon, MD
Michael J. Brenner, MD FACS
Matthew Thomas Brigger, MD MPH
Matthew Alexander Bromwich, MD FRCSC
BSc
Valerie Julie Brousseau, MDCM FRCSC
Kevin David Brown, MD PhD
Paul C. Bryson, MD FACS
Farrel Joel Buchinsky, MBChB BSc FACS
Brian B. Burke, MD FACS
Eugene Hanyoung Chang, MD FACS
Jolie L. Chang, MD FACS
Steven S. Chang, MD FACS
Douglas B. Chepeha, MD MScPH FACS
J. Jared Christophel, MD MPH FACS
J. Madison Clark II, MD FACS
Matthew S. Clary, MD
David B. Conley, MD FACS
Marion Everett Couch, MD PhD MBA FACS
John Robert Craig, MD
James Vincent Crawford, MD BS
Robert D. Cullen, MD
Sharon L. Cushing, MD BScH MSc
Alessandro De Alarcon, MD MPH
Robert Hadi Deeb, MD
Mark D. Delacure, MD FACS
James Clinton Denny, MD FACS
Megan L. Durr, MD FACS
Umamaheswar Duvvuri, MD PhD FACS
Charles Stephen Ebert Jr., MD MPH
David Jeffrey Eisenman, MD
Dale Christopher Ekbo, MD
Jean Anderson Eloy, MD FACS
Ivan El-Sayed, MD FACS
James K. Fortson, MD MPH MBA FACS
Lisa T. Galati, MD

Mark E. Gerber, MD FACS
Anne E. Getz, MD
Michael Seth Goldrich, MD FACS
Bradley John Goldstein, MD PhD FACS
David Paul Goldstein, MD MSc FACS
Satish Govindaraj, MD FACS
Scott M. Graham, MD
James A. Hadley, MD FACS
Nathan Wayne Hales, MD BA FACS
Catherine K. Hart, MD
Ryan N. Heffelfinger, MD BS
Ronna Hertzano, MD PhD
Alexander Tell Hillel, MD
Barry E. Hirsch, MD
Paul Theodore Hoff, MD FACS
F. Christopher Holsinger, MD FACS
Michael R. Holtel, MD FACS
Melton J. Horwitz, MD FACS
Kevin Chung-Kai Huoh, MD
Brandon Isaacson, MD
Adam Saul Jacobson, MD BS FACS
Nausheen Jamal, MD
Mark James Jameson, MD PhD FACS
Kris R. Jatana, MD FACS
Alan J. Johnson, MD
Paul Elvin Johnson, MD FACS
Arjun Shankar Joshi, MD FACS
Seungwon Kim, MD
Young Jun Kim, MD PhD FACS
Philip Daniel Knott, MD
Niels C.T. Kokot, MD FACS
Joe Walter Kutz, MD FACS
Devyani Lal, MD MBBS MS
Alexander J. Langerman, MD FACS
Amy Anne Donatelli Lassig, MD FACS
Marcie Marie Lesperance, MD MS FACS
Derrick Telun Lin, MD FACS
Xue Zhong Liu, MD PhD FACS
David Gary Lott, MD
Amber U. Luong, MD PhD FACS
Sonya Malekzadeh, MD FACS
Stephen Charles Maturo, MD

Andrew Alexander McCall, MD FACS
Michael Edward McCormick, MD
Edward David McCoul, MD MPH FACS
Kevin Christopher McMains, MD
Frank R. Miller, MD FACS
Stephanie N. Misono, MD MPH
Aaron Christopher Moberly, MD
Larry Leonard Myers, MD FACS
Rick F. Nelson, MD PhD
Daniel W. Nuss, MD FACS
James N. Palmer, MD
Samip N. Patel, MD FACS
Urjeet A. Patel, MD FACS
Yash J. Patil, MD FACS
Spencer Cranston Payne, MD
Michael Peter Platt, MD BS
Steven Daniel Pletcher, MD
Gregory N. Postma, MD
Liana Puscas, MD MHS MA FACS
Murugappan Ramanathan, MD FACS
Christopher H. Rassekh, MD FACS
Elie E. Rebeiz, MD FACS
Lindsay S. Reder, MD
Douglas D. Reh, MD
Vicente A. Resto, MD PhD FACS
Jason T. Rich, MD FACS
Scott Michael Rickert, MD FACS
Pamela C. Roehm, MD PhD
Austin Samuel Rose, MD
Marc Robert Rosen, MD FACS
Paul Thomas Russell, MD
Michael John Rutter, BHB MBChB FRACS
William Russell Ryan, MD FACS
Ravi N. Samy, MD FACS
Maya Guirish Sardesai, MD MEd
Ahmad R. Sedaghat, MD PhD
Hadi Seikaly, MD
Gavin Setzen, MD FACS
Jennifer J. Shin, MD
David C. Shonka Jr., MD FACS
Kathleen C.Y. Sie, MD FACS
Raj Sindwani, MD FACS

Candidates Preparing Theses cont'd

Michael Carmi Singer, MD FACS	Scott P. Stringer, MD FACS	Douglas Jerry Van Daele, MD FACS
Ameet S. Singh, MD	Jeffrey D. Suh, MD FACS	Sunil Pal Verma, MD
Davud Bardaran Sirjani, MD FACS	Baran D. Sumer, MD	Eric Wesley Wang, MD FACS
Margaret Leigh Skinner, MD	Maria V. Suurna, MD FACS	Edward M. Weaver, MD MPH FACS
Libby Jo Smith, DO	Masayoshi Takashima, MD FACS	Nancy M. Young, MD FACS
Stephanie Shintani Smith, MD	Melin Tan, MD	Carlton Jude Zdanski, MD FAAP FACS
Phillip Changhun Song, MD	Theodoros Nicholas Teknos, MD FACS	Chad Anthony Zender, MD FACS
Ryan J. Soose, MD	Douglas K. Trask, MD PhD FACS	Jose Pedro Zevallos, MD MPH FACS

PostGraduate Members

Geoffrey P. Aaron, MD	Daniel R. Cox, MD	Terence E. Imbery, MD
Rami Y. Abdou, MD	John D. Cramer, MD	Yula A. Indeyeva, MD
Faisal I. Ahmad, MD	Francis X. Creighton, MD	Christopher John Ito, MD
William Greer Albergotti, MD	Deepa Danan, MD	Jad R. Jabbour, MD
Blake C. Alkire, MD	Andrew T. Day, MD	Ryan S. Jackson, MD
Amir Allak, MD	Anthony G. Del Signore, MD	Taha A. Jan, MD
Stephanie E. Ambrose, MD	Conor M. Devine, MD	Dinchen A. Jardine, MD
Misha Amoils, MD	Karuna Dewan, MD	Azeem S. Kaka, MD
Kristen V.H. Angster, MD	Nicholas A. Dewyer, MD	Nicholas S. Karter, MD
Hamid Arjomandi, MD	Vaninder K. Dhillon, MD	Brian Marshall Kellermeyer, MD
Kimberly J. Atiyeh, MD	Isaac F. Dingle, MD	Elizabeth Anne Kelly, MD
Joshua K. Au, MD	Sunshine M. Dwojak, MD	Priya Kesarwani, MD
Christopher H. Azbell, MD	Susan D. Emmett, MD	Brandon Juntae Kim, MD
Kenneth A. Bagwell, MD	Benjamin F. Erhardt, MD	Adam Jordan Kimple, MD
Fred M. Baik, MD	Antoine Eskander, MD	Ruwan Kiringoda, MD
Christopher Eric Bailey, MD	Erynne A. Faucett, MD	Kaelyn A. Krook, MD
Stephen R. Bakos, MD	Lauren Wood Fedore, MD	Edward C. Kuan, MD
Robert M. Baskin, MD	Aaron J. Feinstein, MD	George Kurien, MD
Peter Carl Baxter, MD	Elisabeth Henderson Ference, MD	Ian J. Lalich, MD
Shethal Bearely, MD	Elizabeth M. Floyd, MD	Allen C. Lam, MD
Mathieu Bergeron, MD	Jonathan W. Fowlkes, MD	Jessica L. Lange, MD
Regan W. Bergmark, MD	Daniel P. Fox, MD	Brian R. Langford, MD
Amy R. Best, MD	Mark A. Fritz, MD	Claire M. Lawlor, MD
Daniel M. Beswick, MD	Laura R. Garcia-Rodriguez, MD	Trung N. Le, MD
Jay M. Bhatt, MD	Frank G. Garritano, MD	Christopher J. Lee, MD
Sneh Biyani, MD	Mark R. Gilbert, MD	Joshua M. Levy, MD
Randall A. Bly, MD	Jason E. Gilde, MD	Sean M. Lewis, MD
Patrick L. Bockenstedt, MD	Lyuba Gitman, MD	Shawn Li, MD
Brian N. Boone, MD	Sharon H. Gnagi, MD	Rui Jun Lin, MD
Ryan C. Borek, MD	Brian Goico, MD	Christopher V. Lisi, MD
Benjamin D. Bradford, MD	Adam D. Goodale, MD	Lyndsay Leigh Madden, MD
Christopher John Britt, MD	Lindsay Goodstein, MD	Chadi Makary
Christopher D. Brook, MD	Christopher J. Gouveia, MD	Michael J. Marino, MD
Jennifer A. Brooks, MD	Jacqueline J. Greene, MD	Alexander P. Marston, MD
Lucas M. Bryant, MD	Joshua B. Greene, MD	Alice Zhao Maxfield, MD
Benjamin D. Bush, MD	Grayson M. Gremillion, MD	Jessica H. Maxwell, MD
Rachel B. Cain, MD	Lori M. Guillot, MD	Patricia S. McAdams, MD
Hollin E. Calloway, MD	Scott A. Hardison, MD	Beth Nicole McNulty, MD
Nathan Hamilton Calloway, MD	Matthew S. Harris, MD	Mark A. Merkley, MD
Adam P. Campbell, MD	Chase M. Heaton, MD	Niv Mor, MD
Eric T. Carniol, MD	Brian Hendricks, MD	Nadia K. Mostovych, MD
John M. Carter, MD	Douglas M. Hildrew, MD	James G. Naples, MD
Alexander J. Caten, MD	Brian W. Hixon, MD	Matthew R. Naunheim, MD
Norman J. Chan, MD	Thuy-Van T. Ho, MD	John R. Neiner, MD
Hamad Chaudhary, MD	Benjamin L. Hodnett, MD PhD	Andrew M. Nida, MD
Michael Z. Chen, MD	Peter Klaas Hoekman, MD	Carrie L. Nieman, MD
Christopher J. Chin, MD	Gia E. Hoosien, MD	Kathryn Y. Noonan, MD
Karen Y. Choi, MD	Brittany Emma Howard	Clara M. Olcott, MD
Kevin J. Choi, MD	Danielle S. Hoyne, MD	Allison G. Ordemann, MD
Winsion Chow, MD	Emily Hrisomalos, MD	Ryan K. Orosco, MD
Amelia K. Clark, MD	Wayne D. Hsueh, MD	Timothy E. Ortlip, MD
Timothy J. Cooper, MD	Elisa A. Illing, MD	Heather Ann Osborn, MD

Member Directory

PostGraduate Members cont'd

Jonathan B. Overdevest, MD
Reema K. Padia, MD
Haig Panossian, MD
William John Parkes IV, MD
Mariah B. Pate, MD
Krupal B. Patel, MD
Brandon W. Peck, MD
Colleen F. Perez, MD
Enrique R. Perez, MD
Michael J. Persky, MD
David J. Phillips, MD
Kristina Piastro, MD
Ann W. Plum, MD
Hannah E. Qualls, MD
David A. Reiersen, MD
Aaron K. Remenschneider, MD
Eleni M. Rettig, MD
Jessica L. Riccio, MD
Charles A. Riley, MD
Nicholas R. Rowan, MD
Douglas S. Ruhl, MD
Kimberly A. Russell, MD
Marisa A. Ryan, MD
Adam C. Satteson, MD

Stefanie S. Saunders, MD
George A. Scangas, MD
Amy E. Schell, MD
David W. Schoppy, MD
Nathan M. Schularick, MD
Brian D. Schwab, MD
Sophie G. Shay, MD
Abraham M. Sheffield, MD
Jasper Shen, MD
Valeria Silva Merea, MD
Del R. Sloneker, MD
David F. Smith, MD
Matthew M. Smith, MD
Emily A. Spataro, MD
Robert T. Standing, MD
Jeffrey T. Steitz, MD
Daniel A. Strigenz, MD
Larissa Sweeny, MD
Nizar H. Taki, MD
Matthew L. Tamplen, MD
Christopher G. Tang, MD
George S. Tarasidis, MD
Kareem O. Tawfik, MD
Trisha L. Thompson, MD

Jason E. Thuener, MD
Brittney N. Tillman, MD
Joshua Tokita, MD
Anthony M. Tolisano, MD
Jeremiah C. Tracy, MD
Samuel J. Trosman, MD
Andrew M. Vahabzadeh-Hagh, MD
Yona Vaisbuch, MD
Jennifer A. Villwock, MD
Peter G. Volsky, MD
Erika M. Walsh, MD
Todd J. Wannemuehler, MD
Brittany C. Weber, MD
Joshua P. Weiss, MD
Adam S. Weisstuch, MD
Jamie Welshhans, MD
Aileen P. Wertz, MD
Cameron Connelly Wick, MD
Lyndy J. Wilcox, MD
Soroush Zaghi, MD
Joseph Zenga, MD
Qi Zhang, MD

Resident Members

Ksenia A. Aaron, MD
Jason M. Abramowitz, MD
Anish Abrol, MD
Nicholas B. Abt, MD
Joseph R. Acevedo, MD
Omar H. Ahmed, MD
Annie K. Ahn, MD
Suhyla Alam, MD
Aurash S. Alemi, MD
Anthony P. Alessi, MD
David K. Alexander, MD
Ashwin Ananth, MD
Yvette R. Anderson, MD
Charles L. Anzalone, MD
Swathi Appachi, MD
Mark A. Arnold, MD
Malika Atmakuri, MD
Karam W. Badran, MD
Grace Baik, MD
Brandon Jackson Baird, MD
Andrew B. Baker, MD
Sanjeer Balamohan, MD
Daniel P. Ballard, MD
Grace L. Banik, MD
Amy P. Bansal, MD
Eric Barbarite, MD
Samuel R. Barber, MD
Jonnae Y. Barry, MD
Keith J. Basler, MD
Aaron Dorian Baugh, MD
Yael E. Bensoussan, MD
Angelique M. Berens, MD
Michael H. Berger, MD
Caitlin R. Bertelsen, MD
Neel K. Bhatt, MD
Amit N. Bhojwani, MD

Colin T. Bohr, DO
Craig A. Bollig, MD
Juliana Bonilla-Velez, MD
Jacqueline R. Booth, MD
Hayley L. Born, MD
Lindsay C. Boven, MD
Bryan M. Brandon, MD
Amishav Y. Bresler, MD
Sabrina A. Brody-Camp, MD
Jason R. Brown, MD
Jens C. Brown, DO
William Colby Brown, MD
Jacob P. Brunner, MD
Lauren S. Buck, MD
Michael William Canfarotta, MD
Zachary J. Cappello, MD
Daniel A. Carlton, MD
Matthew L. Carmichael, MD
Daniel J. Carroll, MD
Lauren M. Cass, MD
Elizabeth D. Cedars, MD
Keith A. Chadwick, MD
Janice E. Chang, MD
Joseph Chang, MD
Divya A. Chari, MD
D. Wenhua Chen, MD
David S. Chen, MD
Jenny X. Chen, MD
Michelle M. Chen, MD
Janet S. Choi, MD
Stephen R. Chorney, MD
Peter J. Ciolek, MD
Kate L. Clancy, MD
Bhavishya S. Clark, MD
C. Alessandra Colaanni, MD
Nicole J. Colgrove, MD

Benjamin A. Collins, MD
Rebecca A. Compton, MD
Andrew J. Coniglio, MD
Dustin J. Conrad, MD
Ryan Crane, MD
Matthew Gordon Crowson, MD
Steven A. Curti, MD
Macaela J. Dagucon, MD
Pedram Daraei, MD
Richard O. Davila, MD
Andrew B. Davis, MD
Wesley L. Davison, MD
Kristine Elizabeth Day, MD
Kelly Marie Dean, MD
Carolyn A. DeBiase, MD
Tyler K. DeBlieux, MD
Nicholas L. Deep, MD
Austin N. DeHart, MD
Jaron M. Densky, MD
Adeeb Derakhshan, MD
Anita Deshpande, MD
Jacob K. Dey, MD
Sandeep Dhaliwal, MD
Shumon I. Dhar, MD
Amanda E. Dilger, MD
Julie Bao Anh Do, MD
Karl William Doerfer, MD
William M. Dougherty, MD
Brandyn S. Dunn, MD
Luke W. Edelmayer, MD
Colin Edwards, MD
Christian Eisert, MD
Sean S. Evans, MD
Danielle F. Eytan, MD
Douglas R. Farquhar, MD
Zainab Farzal, MD

Resident Members cont'd

Allen L. Feng, MD
 Camilo D. Fernandez-Salvador, MD
 George S. Ferzli, MD
 Caitlin E. Fiorillo, MD
 Gitanjali M. Fleischman, MD
 Tatyana E. Fontenot, MD
 Mathieu Forgues, MD
 Joel Franco, MD
 John W. Frederick, MD
 Monika E. Freiser, MD
 Colin W. Fuller, MD
 Jennifer C. Fuller, MD
 Shekhar Gadkaree, MD
 Samkon K. Gado, MD
 Deepa J. Galaiya, MD
 Oliver H. Gantz, MD
 William Z. Gao, MD
 Anna Garcia, MD
 Jonathan C. Garneau, MD
 Mark W. Gelpi, MD
 Deniz Gerecci, MD
 John A. Gerka Stuyt, MD
 Daniel R. Gerry, MD
 John D. Gettelfinger, MD
 Saied Ghadersohi, MD
 Victoria B. Givens, MD
 Susannah C. Gould, MD
 Nandini Govil, MD
 Mingyang L. Gray, MD
 Jessica Grayson, MD
 Ross W. Green, MD
 Ariel B. Grobman, MD
 Matthew C. Gropler, MD
 Yarah M. Haidar, MD
 Tyler R. Halle, MD
 Chelsea S. Hamill, MD
 James M. Hamilton, MD
 Thomas K. Hamilton, MD
 Mickie J. Hamiter, MD
 Andrea L. Hanick, MD
 Lucas D. Harless, MD
 Jeffrey Harmon, MD
 Vandra C. Harris, MD
 Rebecca S. Harvey, MD
 Erin K. Haser, MD
 Angela Haskins, MD
 Casey Y. Hay, MD
 Edmund B. Haywood, MD
 Avram S. Hecht, MD
 Cameron M. Heilbronn, MD
 Mamie N. Higgins, MD
 John Peyton Hines, MD
 Sandra H. Ho, MD
 Elizabeth A. Hobbs, MD
 Sarah E. Hodge, MD
 Sean P. Holmes, MD
 Thomas W. Holmes, MD
 Justin W. Holt, MD
 Adam L. Honeybrook, MD
 Kathryn R. Hoppe, MD
 Laura K. House, MD
 Jessica B. Howell, MD
 Kevin Hur, MD
 Qasim Husain, MD
 Phillip A. Huyett, MD
 Rachel T. Irizarry, MD
 Ayaka J. Iwata, MD
 Lia K. Jacobson, MD
 Sebastian M. Jara, MD
 Christopher Z. Johnson, MD
 Jeffrey D. Johnson, MD
 Rohan R. Joshi, MD
 Paul D. Judge, MD
 Natalie S. Justicz, MD
 Rebecca J. Kamil, MD
 Ankit Kansal, MD
 Vivek Kanumuri, MD
 Richard Kao, MD
 Lee J. Kaplowitz, MD
 Anatoli F. Karas, MD
 Christopher R. Kaufmann, MD
 Aasif A. Kazi, MD
 Suraj Kedarisetty, MD
 Robert G. Keller, MD
 Sarah M. Kidwai, MD
 Christopher R. Kieliszak, MD
 Christine S. Kim, MD
 David S. Kim, MD
 Grace S. Kim, MD
 Jeehong Kim, MD
 Matthew H. Kim, MD
 Natalie A. Kim-Orden, MD
 Ashley E. Kita, MD
 Krista K. Kiyosaki, MD
 Armine Kocharyan, MD
 Scott F. Kohlert, MD
 Nikita V. Kohli, MD
 Nadeem R. Kolia, MD
 Rachel A. Kominsky, MD
 Yann-Fuu Kou, MD
 David M. Kowalczyk, MD
 Elliott D. Kozin, MD
 Yoseph A. Kram, MD
 Scott T. Kramer, MD
 Natalie A. Krane, MD
 Anisha R. Kumar, MD
 Raymond W. Kung, MD
 Alexander Eric Lanigan, MD
 Richard H. Law, MD
 Phong T. Le, MD
 Brittany Leader, MD
 Nicole L. Lebo, MD
 Andrew H. Lee, MD
 David R. Lee, MD
 Eric Q. Lee, MD
 Victoria S. Lee, MD
 Ashton E. Lehmann, MD
 Heidi E. L'Esperance, MD
 Christopher J. Leto, MD
 Brian M. Lin, MD
 Chen Lin, MD
 Jiahui Lin, MD
 Jonathan K. Lin, MD
 Tzyy-Nong Liou, MD
 Yuan F. Liu, MD
 Garrett D. Locketz, MD
 Sarah A. Lookabaugh, MD
 Marlon M. Maducdoc, MD
 Leila J. Mady, MD
 Hossein Mahboubi, MD
 Ahmad F. Mahmoud, MD
 Matthew T. Maksimoski, MD
 Alexander K. Malone, MD
 Mohammed Mamdani, MD
 Erin Marie Mamuyac, MD
 Amy Manning, MD
 Nauman F. Manzoor, MD
 Sonya Marcus, MD
 Eric C. Mason, MD
 Sean T. Massa, MD
 Frank H. Masters III, MD
 Joseph H. McClellan, MD
 Patrick O. McGarey, MD
 Conor W. McLaughlin, MD
 Casey Means, MD
 Joseph Benjamin Meleca, MD
 Ashley L. Miller, MD
 Craig Miller, MD
 Justin D. Miller, MD
 Matthew Q. Miller, MD
 Mark M. Mims, MD
 Roxana Moayer, MD
 Jeremy A. Mock, MD
 Suresh Mohan, MD
 Lauren B. Moneta, MD
 Phillip A. Montague, MD
 Kevin A. Moore II, MD
 Lindsay S. Moore, MD
 Lindsay E. Moses, MD
 Kelly F. Moyer, MD
 Rula Mualla, MD
 Calvin W. Myint, MD
 John P. Naughton, MD
 Margaret L. Nauenheim, MD
 Jason C. Nellis, MD
 Rebecca Chota Nelson, MD
 Miles R. Neumann, MD
 Christopher W. Noel, MD
 Julia E. Noel, MD
 Leah J. Novinger
 Brian A. Nuyen, MD
 Adetokunbo A. Obayemi, MD
 Daniel C. O'Brien, MD
 Ashley P. O'Connell Ferster, MD
 Cristen E. Olds, MD
 Susannah C. Orzell, MD
 Lewis J. Overton, MD
 Patrick Owens, MD
 Andrew Keith Pappa, MD
 Anuraag S. Parikh, MD
 Sean M. Parsel, MD
 Matthew D. Partain, MD
 Amit S. Patel, MD
 Krupa Patel, MD
 Neil Subodh Patel, MD
 Pratik B. Patel, MD
 Prayag S. Patel, MD
 Ronica R. Patel, MD
 Tapan D. Patel, MD

Member Directory

Resident Members cont'd

Vijay A. Patel, MD
Prasanth Pattisapu, MD
Tiffany Peng, MD
Philip L. Perez, MD
Elizabeth L. Perkins, MD
Kelly Joy Pettijohn, MD
Katie M. Phillips, MD
Kristen D. Pitts, MD
Marc A. Polacco, MD
Christopher D. Pool, MD
Jason D. Pou, MD
Sidharth V. Puram, MD
Patricia L. Purcell, MD
Nicholas A. Quinn, MD
Cyrus C. Rabbani, MD
Rachael L. Raffle, MD
Viran J. Ranasinghe, MD
Vinay K. Rathi, MD
Rounak B. Rawal, MD
Jordan W. Rawl, MD
Amrita Ray, MD
Lauren K. Reckley, MD
Andrew Redmann, MD
Saranya Reghunathan, MD
Lara K. Reichert, MD
Yin Ren, MD
William J. Reschly, MD
Kiersten L. Riedler, MD
Caroline C. Rieger, MD
Katherine K.S. Rieth, MD
Ryan A. Rimmer, MD
Alexander Rivero, MD
Zain H. Rizvi, MD
Christopher J. Rizzi, MD
Andrew M. Robichaux, MD
Zachary N. Robinett, MD
Alexander N. Rock, MD
Dylan F. Roden, MD
Jennifer P. Rodney, MD
Matthew L. Rohlfing, MD
Lauren T. Roland, MD
Scott Allan Roof, MD
Janine M. Rotsides, MD
Benjamin J. Rubinstein, MD
Shannon F. Rudy, MD
Chetan Y. Safi, MD
Akshay Sanan, MD
Griffin D. Santarelli, MD
Daniel Schaerer, MD
Sam D. Schild, MD
Elizabeth K. Schimmel, MD
Isaac L. Schmale, MD
Ronald J. Schroeder, MD
Zachary G. Schwam, MD
Isaac E. Schwartz, MD
Marissa A. Schwartz, MD
Nolan B. Seim, MD
Anne M. Selleck, MD
Kimberly L. Serbousek, MD
Rosh K.V. Sethi, MD
Ameer T. Shah, MD
Janki Shah, MD
Manan U. Shah, MD
Parth Vinit Shah, MD
Ravi R. Shah, MD
Shivani Shah-Becker, MD
Scott B. Shapiro, MD
Daniel D. Sharbel, MD
Giriraj K. Sharma, MD
Dustin A. Silverman, MD
Jonathan C. Simmonds, MD
Pedrom C. Sioshansi, MD
Aaron M. Smith, MD
Blake R. Smith, MD
Erin J. Smith, MD
Sungjin A. Song, MD
Yohan Song, MD
Resha S. Soni, MD
Jonathan E. Sorrel, MD
Justin C. Sowder, MD
Satyan B. Sreenath, MD
Aurora G. Standlee, MD
Ryan M. Stephenson, MD
William A. Stokes, MD
Jeffrey M. Straub, MD
Madeleine P. Strohl, MD
Vanessa C. Stubbs, MD
Rahul Sridhar Subbarayan, MD
Eric F. Succar, MD
Daniel C. Sukato, MD
Warren C. Swegal, MD
Tyler Paul Swiss, MD
Blake R. Szelestey, MD
Ryan D. Tabtabai, MD
Akina Tamaki, MD
Alex J.F. Tampio, MD
Grace X. Tan, MD
Liyang Tang, MD
April M. Tanner, MD
Patrick T. Tassone, MD
Alan Tate, MD
Zahrah M. Taufique, MD
Raluca T. Tavaluc, MD
Benjamin A. Taylor, MD
Jeffrey Cabral Teixeira, MD
Stephanie E. Teng, MD
Andrew J. Thomas, MD
Carissa M. Thomas, MD
William W. Thomas, MD
Nicholas James Thompson, MD
Richard William Thompson, MD
Alisa Timashpolsky, MD
Julia Toman, MD
Michael C. Topf, MD
Melanie E. Townsend, MD
Prem Bharat Tripathi, MD
Andrew G. Tritter, MD
Chelsea A. Troiano, MD
Kristy H. Truong, MD
Nathan C. Tu, MD
Olivia Twu, MD
Aykut A. Unsal, MD
Reza Vaezeafshar, MD
Varun V. Varadarajan, MD
Jonathon W. Vargo, MD
Adam P. Vasconcellos, MD
Joseph B. Vella, MD
Varun Vendra, MD
Avanti Verma, MD
Peter M. Vila, MD
Douglas Von Allmen, MD
Scott K. Walton, MD
James C. Wang, MD
Tammy J. Wang, MD
Tiffany Wang, MD
Weitao Wang, MD
Tyler S. Weaver, MD
Michael H. Weber, MD
Justin M. Wei, MD
Christopher M. Welch, MD
Jacob Wester, MD
Elizabeth H. Wick, MD
Nathan Wiebracht, MD
Stephanie J. Wong, MD
Mary Lauren Worthen, MD
Derek B. Wu, MD
Christopher C. Xiao, MD
Alisa Yamasaki, MD
Jennifer Yan, MD
Shiayin F. Yang, MD
Zao Yang, MD
Yin Yiu, MD
Frederick Yoo, MD
Peng You, MD
Jason L. Yu, MD
Phoebe K. Yu, MD
Sonia N. Yuen, MD
Habib G. Zalzal, MD
Kevin Y. Zhan, MD
Zhipeng Paul Zhang, MD
Nina W. Zhao, MD
Melissa Zheng, MD
Zhong Zheng, MD
Alisa Zhukhovitskaya, MD
Zachary A. Zimmerman, MD
Steven A. Zuniga, MD