Message from the Vice Presidents

Welcome to Scottsdale! Thank you for attending our Combined Sections Meeting. It has been a pleasure to serve the membership as Section Vice Presidents this year and we are very proud of the outstanding program that has been assembled by our Program Chair, Dr. Stephen Park, our Section Liaisons, Drs. John Pallanch, Robert Kellman, Ronald Amedee, and Peter Weisskopf, and our Program Committee. Some of our program highlights include Thursday's panel on "What's the Latest and Greatest" and the popular "Point/Counterpoint" followed by the video sessions on "How I Do It". Friday panels will address geriatric otolaryngology, tough cases in laryngology, and sinonasal malignancies. Friday's session is rounded out with the Resident Bowl. Come and cheer for your favorite team. Saturday's panels include "Past, Present and Future Battles in Otolaryngology" and the topics of parathyroid surgery, tinnitus and chronic rhinosinusitis. Saturday's session also has a "How I Do It" video session. You won't want to miss Dr. Daniel Sulmasy's invited lecture "What's Love Got to Do With It? Philotechnia and Philanthropia in Otolaryngology", which you will find fascinating and thought provoking. We look forward to our panel of experts who will give a great wrap-up to the meeting by imparting "Can You Be Faithful to the Hippocratic Oath in the 21st Century?". We are confident that you will find this meeting to be of great value in assisting you with the care of your patients, your research endeavors, and your teaching. We look forward to renewing old friendships and meeting new colleagues.

STEVEN D. SCHAEFER, MD FACS
Eastern Section Vice President

ROBERT C. KERN, MD FACS
Middle Section Vice President

PAUL R. LAMBERT, MD FACS
Southern Section Vice President

MICHAEL E. HOFFER, MD FACS
Western Section Vice President

Meeting Overview

Wednesday - January 23

5:00 pm - 8:00 pm	Speaker Ready Room - Cushing B
5:00 pm - 8:00 pm	Registration - Hall of States Foyer

Thursday - January 24

6:00 am - 9:00 am	Exhibitor Set Up - Trailblazer Ballroom
7:00 am - 12:00 pm	Poster Set Up - Trailblazer Ballroom
7:00 am - 5:00 pm	Speaker Ready Room - Cushing B
7:00 am - 5:00 pm	Registration - Hall of States Foyer
7:30 am - 8:30 am	Continental Breakfast - Trailblazer Ballroom
8:00 am - 12:00 noon	SCIENTIFIC SESSIONS - Kierland Ballroom 1 & 2
8:30 am - 11:00 am	Spouse Hospitality Suite - Merriam
9:30 am - 3:30 pm	Exhibits open - Trailblazer Ballroom
9:30 am - 5:30 pm	Poster viewing - Trailblazer Ballroom
12:00 pm - 1:15 pm	Lunch - Trailblazer Ballroom

Meeting Overview continued

Thursday - January 24, continued

12:00 noon - 1:15 pm	Laryngoscope Editors Meeting - Noble Board Room
12:00 noon - 1:15 pm	Resident Focus Groups - Merriam and Powell
1:15 pm - 5:15 pm	SCIENTIFIC SESSIONS - Kierland Ballroom 1 & 2
5:15 pm - 6:30pm	Vice Presidents Welcome Reception - Vista Morada Terrace

Friday - January 25

7:00 am - 12:30 pm	Speaker Ready Room - Cushing B
7:00 am - 12:30pm	Registration - Hall of States Foyer
7:00 am - 7:50 am	Southern Section Business Meeting - Powell
7:00 am - 7:50 am	Western Section Business Meeting - Merriam
7:00 am - 8:00 am	Continental Breakfast - Trailblazer Ballroom
7:00 am - 11:00 am	Exhibits open - Trailblazer Ballroom
7:00 am - 11:00 am	Poster viewing - Trailblazer Ballroom
8:00 am - 12:15 pm	SCIENTIFIC SESSIONS - Kierland Ballroom 1 & 2
8:30 am - 11:00 am	Spouse Hospitality Suite - Merriam
12:30 pm - 2:00 pm	Thesis Seminar (candidates and potential candidates) - Powell
12:30 pm - 2:00 pm	RESIDENT BOWL - Kierland Ballroom 1
	Free Afternoon/Free evening

Saturday - January 26

7:00 am - 3:00 pm	Speaker Ready Room - Cushing B
7:00 am - 5:30 pm	Registration - Hall of States Foyer
7:00 am - 7:50 am	Eastern Section Business Meeting - Powell
7:00 am - 7:50 am	Middle Section Business Meeting - Merriam
7:00 am - 8:00 am	Continental Breakfast - Hall of States Foyer
7:00 am - 1:00 pm	Exhibits open - Trailblazer Ballroom
7:00 am - 1:00 pm	Poster viewing - Trailblazer Ballroom
8:00 am - 11:45 am	SCIENTIFIC SESSIONS - Kierland Ballroom 1 & 2
8:30 am - 11:00 am	Spouse Hospitality Suite - Merriam
11:45 pm - 1:00 pm	Lunch - Trailblazer Ballroom
1:00 pm - 5:15 pm	SCIENTIFIC SESSIONS - Kierland Ballroom 1 & 2
5:15 pm	MEETING ADJOURNS
5:15 pm - 6:30 pm	Meet the Authors Poster Reception - Trailblazer Ballroom
6:30 pm - 9:00 pm	Wrap Up Party - Trailblazer Ballroom

Combined Sections Meeting
Westin Kierland Resort
Scottsdale, Arizona
January 24-26, 2013

About the Triological Society

The American Laryngological, Rhinological and Otological Society, Inc., aka The Triological Society, was founded in 1895 in New York, NY. In the years 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 journal, The Laryngoscope. 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.

Goals

- To disseminate the latest basic and evidence based clinical research findings pertaining to the diagnosis, treatment and prevention of the full spectrum of disorders of the head and neck and related structures in pursuit of improved patient care.
- To provide a forum for the international exchange of ideas and knowledge in otolaryngology-head and neck surgery and related fields of medicine and science.
- To provide for physician professional development through support of teaching and peer reviewed research.
- To encourage the highest ethical and professional standards in the delivery of patient care by otolaryngologists-head and neck surgeons.
- To promote academic excellence by requiring peer recommendations and an acceptable mentored thesis for admission to membership.
- To ensure that all educational activities comply with ACCME requirements.
- To ensure the continuation of the noble legacy of the Triological Society by mentoring young otolaryngologists to become scholars and leaders.

To facilitate the above goals, the Society sponsors educational meetings. The Society's journal, The Laryngoscope, serves as a means of disseminating the latest basic and clinical research results. The Society encourages clinical and basic research by providing research grants and awards on a competitive basis.

Educational Objectives for Program

After attending the 2013 Combined Sections Meeting, participants will be able to:

- Understand the controversy over robotic surgery and the role of image guidance during sinus surgery
- Pick up specific surgical pearls from video sessions
- Appreciate the nuances of geriatric otolaryngology and how this population has some unique disease patterns.
- Be updated on the MOC process under ABMS
- Be exposed to the intricacies of electronic medical records and how they can be most efficiently utilized
- Understand the latest in managing the hearing impaired and speech delay

Accreditation Statement

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the American College of Surgeons and The Triological Society. The American College 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 16.25 *AMA PRA Category 1 Credits*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

American College of Surgeons
Division of Education

Exhibits/Commercial Support

Exhibitors will include representatives of pharmaceutical companies, instrument companies (including laser and endoscopic equipment), diagnostic equipment companies, publishers, public service companies, and others. We encourage attendees to examine the exhibits for information that may assist in their pursuit of improved patient care. Exhibitor arrangements and commercial support are in compliance with the Accreditation Council for Continuing Medical Education (ACCME) revised Standards for Commercial Support.

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

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 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 · 402-346-5500

Triological Society Thesis Seminar

This seminar is aimed at Triological Society active candidates as well as those interested in pursuing Active Fellowship in the Triological Society. Seminars are open to Triological Society Fellows. In this seminar, candidates will learn how to select and focus an appropriate topic and research question, how to select a study design based on the research question, select variables, and some basic principles of study conduct. The seminar will also present some useful tips on organizing, analyzing, and presenting the data, and sources of funding for continued investigation. The seminars will be conducted by Maureen Hannley, PhD, a research mentor in otolaryngology-head and neck surgery.

The Seminar will be held immediately following the morning scientific session on Friday, January 25th.

Program Planning and Advisory Committee

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DIVISION OF EDUCATION
CME Joint Sponsorship Program

Disclosure Information
Triological Society
January 24-26, 2013
Scottsdale, Arizona

In accordance 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. Therefore, it is mandatory that both the program planning committee and speakers complete disclosure forms. Members of the program committee were required to disclose **all** financial relationships and speakers were required to disclose any financial relationship **as it pertains to the content of the presentations**. The ACCME defines a 'commercial interest' as "any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients". It does not consider providers of clinical service directly to patients to be commercial interests. The ACCME considers "relevant" financial relationships as financial transactions (in any amount) that may create a conflict of interest and occur within the 12 months preceding the time that the individual is being asked to assume a role controlling content of the educational activity.

ACS is also required, through our joint sponsorship partners, to manage any reported conflict and eliminate the potential for bias during the activity. All program committee members and speakers were contacted and the conflicts listed below have been managed to our satisfaction. However, if you perceive a bias during a session, please report the circumstances on the session evaluation form.

Please note we have advised the speakers that it is their responsibility to disclose at the start of their presentation if they will be describing the use of a device, product, or drug that is not FDA approved or the off-label use of an approved device, product, or drug or unapproved usage.

The requirement for disclosure is not intended to imply any impropriety of such relationships, but simply to identify such relationships through full disclosure, and to allow the audience to form its own judgments regarding the presentation.

SPEAKERS / MODERATORS / CHAIRS/ DISCUSSANTS	NOTHING TO DISCLOSE	DISCLOSURE (As it pertains to the content of the presentation)
Sameer Ahmed, MD	X	
Terah J. Allis, MD	X	
Ronald G. Amedee, MD	X	
Douglas J. Angel, MD	X	
William B. Armstrong, MD	X	
Christoph A. Arnoldner, MD	X	
Byron J. Bailey, MD	X	
Carey Balaban, PhD	X	
Sanjeev M. Balamohan, BA	X	
Stephen F. Bansberg, MD	X	
Rebecca S. Bartlett, MA	X	
Marc Logan Bennett, MD FACS	X	
Michael S. Benninger, MD	X	
Jennifer L. Bergeron, MD	X	
Derald E. Brackmann, MD	X	
Carol R. Bradford, MD	X	
Kathleyn A. Brandstetter, BA	X	
Dale H. Brown, MD	X	
Major B. Burch, MS	X	
Daniel J. Carroll, BA	X	
John M. Carter, MD	X	
Mohamad R. Chaaban, MD	X	
Kyle J. Chambers, MD	X	
Claudia I. Chapuy, MD	X	
Steven W. Cheung, MD	X	

SPEAKERS / MODERATORS / CHAIRS/ DISCUSSANTS	NOTHING TO DISCLOSE	DISCLOSURE (As it pertains to the content of the presentation)
Anthony E. Chin Loy, MD	X	
Alexander Guang-Yu Chiu, MD	X	
Do Yeon Cho, MD	X	
Sukgi S. Choi, MD	X	
Benjamin A. Collins, BS	X	
Matthew P. Connor, MD	X	
Mark S. Courey, MD	X	
Kristine E. Day, MD	X	
Sigsbee W. Duck, MD	X	
Roland D. Eavey, MD	X	
David E. Eibling, MD	X	
Dave W. Eisele, MD	X	
Carolyn L. Engelhard, MPA	X	
Adrien Eshraghi, MD		MEDEL GmbH (research support-consulting fee)
Brian A. Fishero, MD	X	
Aaron M. Fletcher, MD	X	
Marvin P. Fried, MD	X	
Rick A. Friedman, MD		Otonomy (founder and consultant)
C. Gaelyn Garrett, MD	X	
Douglas A. Girod, MD	X	
Christine G. Gourin, MD	X	
Brian C. Gross, MD	X	
Kenneth M. Grundfast, MD	X	
Joseph K. Han, MD	X	
Marlan R. Hansen, MD	X	
George T. Hashisaki, MD	X	
Bruce H. Haughey, MBChB	X	
Richard E. Hayden, MD	X	
Gerald B. Healy, MD	X	
Douglas M. Hildrew, MD	X	
Peter Hilger, MD	X	
Michael L. Hinni, MD		Karl Storz (employer has licsensed a laryngoscope design to Karl Storz for possible manufacture)
Allen S. Ho, MD	X	
Michael E. Hoffer, MD	X	
G. Richard Holt, MD	X	
Larry A. Hoover, MD	X	
Peter H. Hwang, MD	X	
David W. Jang, MD	X	
Nancy Jiang, MD	X	
Michael M. Johns III, MD	X	
Jonas T. Johnson, MD	X	
Lamont R. Jones, MD	X	
Paul A. Judge, MD	X	
Robert M. Kellman, MD		Synthes Nursing Education (honorarium-speaker)
Robert C. Kern, MD	X	
Nabeel A. Khan, MD	X	
Glenn William Knox, MD JD		Invotec (royalty agreement - consultant)
Amit Kochhar, MD	X	
Karen M. Kost, MD		Cook Medical (no fees received-consultant; Cook Medical ($1500-speaker)
Stilianos E. Kountakis, MD PhD	X	
Dennis H. Kraus, MD		Endoethicon (speakers honorarium)
Paul R. Lambert, MD	X	
Scott V. Larson, MD	X	
Ryan P. Leary, BA	X	

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Matthew K. Lee, MD	X	
Paul A. Levine, MD	X	
Daniel D. Lydiatt, DDS MD	X	
Jeffery Scott Magnuson, MD		Intuitive Surgical Inc. (honorarium)
Scott C. Manning, MD	X	
Robert H. Mathog, MD	X	
Jesus E. Medina, MD	X	
Albert L. Merati, MD	X	
Ralph B. Metson, MD	X	
Alan G. Micco, MD	X	
Joshua R. Mitchell, MD	X	
Thomas H. Nagel, MD	X	
Carrie L. Nieman, MD MPH	X	
Brian M. Nussenbaum, MD	X	
Richard R. Orlandi, MD	X	
Robert H. Ossoff, DMD MD	X	
John F. Pallanch, MD		Acclarent (hotel stay-speaker); Brainlab (honorarium-speaker)
Randal C. Paniello, MD	X	
Steven M. Parnes, MD		Acclarent (speaker); MEDA (speaker)
Kevin A. Peng, MD	X	
Jay Piccirillo, MD	X	
J. Christopher Post, MD PhD MSS		Otonomy ($10,000/year-member of scientific advisory board)
Wm. Russell Ries, MD	X	
Daniel S. Roberts, MD PhD	X	
Marc Robert Rosen, MD	X	
Robert T. Sataloff, MD DMA		Jaypee Brothers Medical Publishers (P) Ltd. (royalties); Medtronic-Xomed (royalties); Plural Publications (royalties)
Steven D. Schaefer, MD	X	
Richard L. Scher, MD	X	
Michael D. Seidman, MD		Body Language Vitamin Co. (founder); NIH (grant-receive funding); Visalus Sciences (medical director and director product development)
Brent A. Senior, MD		Entrigue (consultant fee/options-consultant); Laurimed (consultant fee/options-consultant); Medtronic (consultant fee-consultant); Olympus (consultant fee-consultant); Sinuwave (consultant fee-consultant)
Rosh K.V. Sethi, BS	X	
Ameer T. Shah, MA	X	
Anil N. Shah, MD	X	
Stanley M. Shapshay, MD	X	
William W. Shockley, MD	X	
Kathleen C.Y. Sie, MD	X	
Michael C. Singer, MD	X	
Richard V. Smith, MD	X	
Michael H. Stevens, MD	X	
David L. Steward, MD	X	
Daniel P. Sulmasy, MD PhD	X	
Millie J. Surati, MD	X	
Larissa Sweeny, MD	X	
Sherard A. Tatum, MD		Synthes (honorarium-speaker)
Steven A. Telian, MD	X	
David J. Terris, MD		Johnson & Johnson (honorarium-director, thyroid courses)
J. Regan Thomas, MD	X	
Jonathan Y. Ting, MD	X	
Jessica M. Van Beek-King, MD	X	

SPEAKERS / MODERATORS / CHAIRS/ DISCUSSANTS	NOTHING TO DISCLOSE	DISCLOSURE (As it pertains to the content of the presentation)
Veronique G.S. Wan Fook Cheung, MDCM BSc(Hons)	X	
Julie L. Wei, MD	X	
Peter A. Weisskopf, MD	X	
D. Bradley Welling, MD PhD	X	
Brian J.F. Wong, MD PhD		Aerin Medical (consultant, stock options); Allergan, Inc. (research support); Candela Corp. (grant, research support); Infralase, Inc. (grant, research support); Johnson & Johnson (consultant); Lockheed-Martin Corp. (grant, research support); NewStar Lasers, Inc. (grant, research support); OCT Medical, Inc. (grant); Praxis BioSciences, LLC (equity); Silhouette Medical, Inc. (consultant, stock purchase)
Peak Woo, MD	X	
Bradford A. Woodworth, MD		ArthroCare ENT (consultant); Gyrus (consultant); Medtronic (consultant)
Arthur W. Wu, MD	X	
Kathleen L. Yaremchuk, MD	X	
Soroush Zaghi, MD	X	
Adam M. Zanation, MD	X	
Carla M. Zimmerman, MNS CCC-SLP	X	
PLANNING COMMITTEE	**NOTHING TO DISCLOSE**	**DISCLOSURE (As it pertains to the content of the presentation)**
Ronald G. Amedee, MD FACS	X	
Michael S. Benninger, MD FACS		Arthrocare (honorarium--consultant); Merck (honorarium--consultant); Plural Publishing (book royalties); Sonitus Medical (honorarium--consultant)
Ricardo L. Carrau, MD FACS		Medtronic Corp. (consultant as part of lab contract payment to the lab); Storz Endoscopy Inc. (reimbursement of travel expenses to hands-on course as faculty--speaker)
Karen J. Doyle, MD PhD	X	
Sigsbee Walter Duck, MD FACS	X	
Roland D. Eavey, MD FACS	X	
Marvin P. Fried, MD FACS		Medtronic (consultant)
Kenneth M. Grundfast, MD FACS	X	
Joseph K. Han, MD	X	
David S. Haynes, MD		Advanced Bionics Corp. (honorarium--advisory board); Anspach Co. (honorarium--advisory board); Cochlear Corporation (honorarium--advisory board); Grace Medical (honorarium--consultant)
Michael E. Hoffer, MD FACS	X	
Michael M. Johns III, MD	X	
Robert M. Kellman, MD FACS		Synthes Nursing Education (honorarium--speaker and course organizer)
Robert C. Kern, MD FACS		Novartis (honorarium--consultant not active)
Dennis H. Kraus, MD FACS		Endo Ethicon (honorarium--speaker bureau)
Paul R. Lambert, MD FACS	X	
Christopher J. Linstrom, MD FACS		Grace Medical Corp. (royalties for stapes prosthesis--inventor)
Jeffery Scott Magnuson, MD FACS		Intuitive Surgical Inc. (honorarium--consultant/instructor)
Scott C. Manning, MD FACS	X	
Albert L. Merati, MD FACS	X	
Alan G. Micco, MD FACS		Alcon Labs (honorarium--speaker)
Brian Nussenbaum, MD FACS	X	
John F. Pallanch, MD FACS		BrainLab (loan of workstation); Euroclinic (loan of rhinomanometer)
Randal C. Paniello, MD	X	
Stephen S. Park, MD	X	

PLANNING COMMITTEE	NOTHING TO DISCLOSE	DISCLOSURE (As it pertains to the content of the presentation)
J. Christopher Post, MD PhD MSS FACS	X	
Robert T. Sataloff, MD DMA FACS		Jaypee Brothers (book royalties); Medtronic Xomed (instrument royalties); Plural Publications (book royalties)
Steven D. Schaefer, MD FACS	X	
Richard L. Scher, MD FACS		Ethicon Endosurgery Inc. (consulting fees--educational consultant)
William W. Shockley, MD FACS	X	
Sherard A. Tatum, MD FACS		Synthes (honorarium--speaker)
David J. Terris, MD FACS		Johnson & Johnson (honorarium--director thyroid courses)
J. Regan Thomas, MD FACS	X	
Julie L. Wei, MD	X	
Peter A. Weisskopf, MD FACS	X	
Brian J.F. Wong, MD PhD		Allergan (research support--consultant); Candela Corp. (grant--research support); Infralase Inc. (grant--research support); Johnson & Johnson (consultant); Lockheed Martin Corp. (grant--research support); NewStar Lasers Inc. (grant--research support); OCT Medical Inc. (grant); Praxis BioSciences LLC (equity); Silhouette Medical Inc. (stock purchase--consultant)
Peak Woo, MD FACS	X	

Rev 2-12

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Triological Society Research Grant Program

The Society continues to promote 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 more than $3 million to otolaryngologists-head and neck surgeons in support of clinical and basic research.** These competitive research grant programs have included funding for resident research projects, research training grants, and career development grants.

The Society's research grant programs include Research Career Development Awards and Clinical Scientist Development Awards.

Research Career Development Awards are available to otolaryngologists who hold full-time, part-time and contributed service medical school faculty appointments, and who have made a commitment to focus on patient-oriented research. Awards provide support for research career development for up to $40,000 of support over a one or two year period. The deadline for the Letters of Intent are in December of each year with applications due in January.

The 2012-2013 Research Career Development Awardees and their funded projects are:

- Wade Wei-De CHien, MD - *Gene Therapy for Genetic Hearing Loss*
- Anne Getz, MD - *Adverse Outcomes in Endoscopic Skull Base and Sinus Surgery*
- Ian Neal Jacobs, MD - *Tissue-Engineered Rabbit Model for Pediatric Laryngotracheal Reconstruction*
- Jayakar V. Nayak, MD PhD - *Basal Cells in Maintenance and Regeneration of the Nasal Epithelium*
- Melissa Pynnonen, MD - *Rhinosinusitis: Variations in Care and Opportunities for Improvement*

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. The deadline for 2013-14 applications is May 10, 2013 and information is available at www.triological.org.

The 2012-2013 Triological/American College of Surgeons Clinical Scientist Development Awardees (TRIO/ACS) and their funded projects are:

- New award--Bruce K. Tan, MD - *Role for B-cell Mediated Olfactory Loss in Chronic Sinusitis with Nasal Polyps*
- Renewal--Frank R. Lin, MD PhD - *Hearing Loss and Aging*
- Renewal--Seungwon Kim, MD -*Concurrent Targeting of EGFR and VEGFR in Oral Squamous Cell Carcinoma*
- Renewal--Young Jun Kim, MD - *Combinatorial Immunotherapy of Head and Neck Squamous Cell Carcinoma*
- Renewal--Michael Kupferman, MD - *Critical Role of TrkB for Invasion and Metastasis of Oral Cancer*

The 2012-2013 Triological Society Clinical Scientist Development Awardee and his funded project is:

- Renewal--Benjamin T. Crane, MD PhD - *Visual and Vestibular Percepts of Motion*

Guidelines and additional information is available at the Triological website - www.triological.org/researchgrants.htm

TRIOLOGICAL SOCIETY
COMBINED SECTIONS MEETING PROGRAM
JANUARY 24 - 26, 2013

THURSDAY, JANUARY 24, 2013

Kierland Ballroom 1 & 2

7:55 **Welcome by Vice Presidents**

8:00 **Eastern Section Guest Introductions -** Steven D. Schaefer, MD*, New York, NY

Citation Awardees: Richard L. Goode, MD*, Stanford, CA
Christopher J. Linstrom, MD*, New York, NY
Peter D. Costantino, MD*, New York, NY
Dale H. Rice, MD*, Los Angeles, CA

Guest of Honor: Byron J. Bailey, MD*, Galveston, TX

Dealing with Mega Change

Southern Section Guest Introductions - Paul R. Lambert, MD*, Charleston, SC

Citation Awardees: Terry A. Day, MD, Charleston, SC
D. Bradley Welling, MD PhD*, Columbus, OH
C. Ron Cannon, MD*, Jackson, MS
Ramon M. Esclamado, MD, Durham, NC

Guest of Honor: Paul A. Levine, MD*, Charlottesville, VA

Maintaining a Professional Focus during These Challenging Times: No Small Task

Western Section Guest Introductions - Michael E. Hoffer, MD*, San Diego, CA

Citation Awardees: Herbert Silverstein, MD*, Sarasota, FL
Darrell H. Hunsaker, MD*, San Diego, CA
Peter A. Weisskopf, MD*, Phoenix, AZ
Joni K. Doherty, MD PhD, Los Angeles, CA

Guest of Honor: Carey Balaban, PhD, Pittsburgh, PA

Translational Research

Middle Section Guest Introductions - Robert C. Kern, MD*, Chicago, IL

Citation Awardees: Edward L. Applebaum, MD*, Chicago, IL
Robert Schleimer, PhD, Chicago, IL
Eugene N. Myers, MD*, Pittsburgh, PA

Guest of Honor: Robert H. Mathog, MD*, Detroit, MI

The Triological Society - Its Research Legacy

Middle Section George L. Adams, MD Young Faculty Awardee Introduction
Daniel S. Alam, MD FACS, Cleveland, OH

9:05 **Presidential Address: Physicians as Teachers: Are We Ready for Changing Times?**
Jesus E. Medina, MD*, Oklahoma City, OK

*Denotes Fellow

Thursday

9:25 **Recognition of Triological Society Grant Awardees**
Career Development Awards: Wade Wei-De Chien, MD, Anne E. Getz, MD, Ian Neal Jacobs, MD, Jayakar V. Nayak, MD PhD, Melissa Pynnonen, MD
Career Scientist Awards New: Bruce K. Tan, MD
Career Scientist Awards Renewals: Frank R. Lin, MD PhD, Seungwon Kim, MD, Young Jun Kim, MD, Michael Kupferman, MD, Benjamin T. Crane, MD PhD

9:30 **Presentation of First Annual *Patrick E. Brookhouser, MD Award of Excellence* to Gerald B. Healy, MD**

9:35 - 10:00 ***Break with Exhibitors/Poster Viewing - TRAILBLAZER BALLROOM***

10:00 - 12:05 GENERAL SESSION
Kierland Ballroom 1 & 2

Moderator: Robert C. Kern, MD*, Chicago, IL

10:00 **Triological Society Thesis Honorable Mention, Basic Science Research**
Molecular Mechanisms Involved in Cochlear Implantation Trauma and the Protection of Hearing and Sensory Cells by Inhibition of c-Jun-N-Terminal Kinase Signaling
Adrien Eshraghi, MD*, Miami, FL

10:10 **Triological Society Thesis Honorable Mention, Clinical Research**
Prognostic Factors and Survival Unique to Surgically Treated p16+ Oropharyngeal Cancer
Bruce H. Haughey, MBChB*, St. Louis, MO

10:20 **Triological Society Thesis With Distinction Award**
The Influence of the 'Final Cause Doctrine' on Anatomists of the Sixteenth and Seventeenth Centuries Concerning Selected Anatomical Structures of the Head and Neck
Daniel D. Lydiatt, DDS MD*, Omaha, NE

10:30 - 12:00 **WHAT'S THE LATEST AND GREATEST IN….**
Moderator: J. Christopher Post, MD PhD MSS*, Pittsburgh, PA
The State of Health Care in America Today
Carolyn L. Engelhard, MPA, Charlottesville, VA *(30 mins)*
MOC and Measuring Your Clinical Outcomes
Peter Hilger, MD, Minneapolis, MN *(20 mins)*
Electronic Health Records
Richard L. Scher, MD*, Durham, NC *(20 mins)*
The New ACGME Review
Sukgi S. Choi, MD*, Washington, DC *(20 mins)*

12:10 - 1:15 ***Lunch***

1:15 - 3:05 CONCURRENT SESSION
Head & Neck and Laryngology
Kierland Ballroom 1

MODERATOR: Michael M. Johns III, MD*, Atlanta, GA

1:15 **Success of Endoscopic Pharyngoesophageal Dilation after Head and Neck Cancer treatment**

Claudia I. Chapuy, MD, Boston, MA; Donald J. Annino, MD DMD, Boston, MA; Roy B. Tishler, MD PhD, Boston, MA; Robert I. Haddad, MD, Boston, MA; Anna Snavely, PhD, Boston, MA; Laura A. Goguen, MD, Boston, MA

Educational Objective: At the conclusion of this presentation the participants should understand the safety of endoscopic esophageal dilation techniques in head and neck cancer patients and expected success rates. They should understand measures of dilation success and should be familiar with procedure complications and risk factors for dilation failure.

Objectives: To assess the clinical success and safety of endoscopic pharyngoesophageal dilation after chemoradiation (CRT) or radiation (RT) for head and neck cancer and to identify risk factors for dilation failure. **Study Design:** Case series with chart review. **Methods:** Between 2000 and 2008 one hundred and eleven patients treated with CRT or RT for head and neck cancer with subsequent severe pharyngeal or upper esophageal strictures requiring endoscopic dilation were identified. Patients were evaluated for type of endoscopic dilation, severity of stricture, technical and clinical success, intra and post operative complications and number of dilations. The diet/GT score, range 1-5, was utilized to measure swallow success. Risk factors associated with dilation failure were analyzed by univariate and multivariate analyses. **Results:** A total of 271 dilations were performed, with 42 combined antegrade retrograde dilations (CARD), 208 dilations over a guidewire and 21 bougie dilations. Intraoperative patency was successfully achieved with the initial dilation in 95% of patients. A diet/GT score of 5 (GT removed and soft/regular diet) was attained in 84/111 (76%) patients at one year post dilation. The GT removal rate was 77% during first year after dilation. Univariate and multivariate logistic regression analyses revealed that the number of dilations within the first year was the strongest risk factor associated with a low diet/GT score. **Conclusions:** Esophageal strictures, occurring after CRT and RT treatment, can be successfully and safely treated with endoscopic dilation techniques. Patients with restenosis requiring multiple repeat dilations have a higher risk of persistent dysphagia.

1:22 **Treatment and Prognostic Factors for Malignant Head and Neck Paragangliomas**

Roshan V. Sethi, BS, Boston, MA; Rosh K.V. Sethi, BS, Boston, MA (Presenter); Marc W. Herr, MD, Boston, MA; Daniel G. Deschler, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the prognostic value of age, tumor spread and treatment modality on overall survival of patients with malignant head and neck paragangliomas. They should be able to compare the efficacy of surgery and radiation in the treatment of these tumors.

Objectives: Malignant head and neck paragangliomas (MHNP) are rare and occur in 6-19% of all HNP. We sought to identify predictors of survival and compare efficacy of treatment modalities to inform management of this rare disease. **Study Design:** We performed a retrospective review of MHNP cases in the National Cancer Institute Surveillance Epidemiology and End Results database (SEER) from 1973-2009. **Methods:** We included only patients with documented regional or distant tumor spread. We used Cox proportional hazard models to assess the significance of demographic factors and treatment on 5 year overall survival. **Results:** We identified 58 patients with a median age of 47. The majority of tumor spread was confined to regional lymph nodes (56.9%). Carotid body tumors were more likely to spread regionally (83.3%). The most common treatment was surgery alone (37.9%), followed by surgery and radiation (34.5%). With an overall median followup of 88 months, five year overall survival was 84.2% for surgery alone, 65.0% for adjuvant radiation and 57.8% for radiation alone. In univariate analysis, regional (vs. distant) spread (HR 0.21, p=0.0001) and surgery alone (HR 0.33, p=0.01) conferred significant survival advantage whereas primary site outside of the carotid body (HR 2.60, p=0.04) and age (HR 1.05, p=0.002) did not. Regional (vs. distant) spread (HR 0.29, p 0.013) and age (HR 1.04, p 0.017) remained significant in multivariate analysis. **Conclusions:** This is the largest series of MHNP patients with complete survival followup. Age and tumor stage are significant factors in predicting survival. Surgery offers superior five year survival outcomes to adjuvant radiation.

1:29 **Level IIB Lymph Node Metastasis in Oropharyngeal Squamous Cell Carcinoma**

Brian C. Gross, MD, Rochester, MN; Steven M. Olsen, MD, Rochester, MN; Jean E. Lewis, MD, Rochester, MN; Daniel L. Price, MD, Rochester, MN; Kerry D. Olsen, MD*, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the significance of level IIB lymph node metastasis in the treatment of head and neck cancer, define factors that are associated with level IIB lymph node metastasis in oropharyngeal squamous cell carcinoma, and list the indications for level IIB lymph node dissection in elective and therapeutic neck dissections for oropharyngeal squamous cell carcinoma.

Objectives: Determine the incidence of lymph node metastasis to level IIB in patients with oropharyngeal squamous cell carcinoma. **Study Design:** Retrospective cohort study. **Methods:** 348 patients with oropharyngeal squamous cell carcinoma were surgically managed at the authors' institution from 2004 to 2010. Neck dissection specimens were reviewed by the pathology department and level IIB metastases were analyzed with respect to clinical and pathologic data. **Results:** Level IIB lymph node metastases were present in 3% of elective neck dissections and 25% of therapeutic neck dissection. Level IIa metastasis, clinical tumor stage, clinical nodal stage, extracapsular spread, and primary tumor location in the tonsil were significantly associated with level IIB metastasis. **Conclusions:** This study uniquely demonstrates a statistically significant association between clinical T stage and subsite with level IIB metastasis in oropharyngeal squamous cell carcinoma. Based on the predicted incidence of nodal metastasis we conclude that level IIB can be omitted from the neck dissection in early stage clinically node negative (cN0) oropharyngeal squamous cell carcinoma. Dissection of level IIB should be handled on an individual basis for advanced T stage cN0 tumors, tonsil primary tumors, and contralateral cN0 necks in the setting of ipsilateral clinical node positive (cN+) necks. Level IIB should routinely be dissected in patients with oropharyngeal carcinoma with cN+ necks.

1:36 **Effects of Superior Laryngeal Nerve Asymmetries on Laryngeal Vibration**

Jennifer L. Bergeron, MD, Los Angeles, CA; Nausheen A. Jamal, MD, Los Angeles, CA; Juergen A. Neubauer, PhD, Los Angeles, CA; David A. Berry, 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 understand the vibratory, acoustic, and aerodynamic consequences of superior laryngeal nerve paresis and paralysis.

Objectives: While vibratory phase asymmetries are considered signs of laryngeal asymmetry, it is not known whether superior laryngeal nerve (SLN) asymmetries can produce vibratory phase asymmetry. This study evaluated laryngeal vibration during symmetric and asymmetric SLN activation conditions. **Study Design:** Basic science research using a neuromuscularly intact in vivo canine model of phonation. **Methods:** While bilateral recurrent laryngeal nerves were symmetrically stimulated to achieve glottic closure during phonation, the superior laryngeal nerves (SLNs) were asymmetrically stimulated at 8 graded levels of activation. The vibratory parameters of these 64 distinct SLN activation conditions were evaluated by high speed video analysis (at 3000 fps). Assessments were made at phonation onset. Concurrent acoustic and aerodynamic measurements were also made. **Results:** Vibratory phase asymmetries were found with all asymmetric SLN activation conditions. The vibratory phase always led on the vocal fold side with the more significantly higher SLN activation level. Vibratory phase was symmetric in all symmetric SLN activation conditions. **Conclusions:** This study demonstrates that SLN asymmetries lead to vibratory asymmetries. It also supports the notion that the leading edge of the phase asymmetry is on the side of increased vocal fold tension.

1:43 **A Pilot Study Comparing Fistula Rates after Salvage Laryngectomy Using Pectoralis Myofascial or Myocutaneous Flaps**

Nabeel A. Khan, MD, Oklahoma City, OK; Jesus E. Medina, MD*, Oklahoma City, OK; Jose A. Sanclement, MD, Oklahoma City, OK; Greg A. Krempl, MD*, Oklahoma City, OK

Educational Objective: At the conclusion of this presentation, the participants should be able to determine whether the use of pectoralis myocutaneous flaps is superior to pectoralis myofascial flaps in terms of pharyngocutaneous fistula complication.

Objectives: Salvage laryngectomy after failed organ preservation often has a high complication rate, pharyngocutaneous fistulas being the most common. These fistulas increase morbidity, prolong hospitalization, and potentially delay adjuvant treatment. Fistula rates in the literature range from 3% - 65%. Use of the pectoralis flap in an attempt to prevent fistula formation has been adopted as a common practice at our institution. A review of our experience using a myofascial flap showed a higher than desired complication rate. The aim of this pilot study is to assess whether the use of pmcf instead of the pmmf might result in a lower fistula rate. **Study Design:** A retrospective review of 60 patients that had received salvage laryngectomies after organ preservation treatment, followed by a prospective pilot series of patients reconstructed. **Methods:** The operation notes of 60 laryngectomies were analyzed. The type of pretreatment, choice of flap, and fistula rate were documented. **Results:** Of the patients retrospectively reviewed, 50% had a pmmf used as part of the closure. Tumor staging was T3 or T4 in 25% of patients receiving the pmmf and 25% of patients receiving the pmcf. Wound complication rates for the pmmf cohort was 50% with a pharyngocutaneous fistula rate of 25%. In contrast, wound complication rates for the pmcf cohort was 75% with a pharyngocutaneous fistula rate of 75%. **Conclusions:** The use of the pmcf in this pilot series did not show promise for a lower rate of fistula formation, and other alternatives should be pursued to decrease this significant complication.

1:50 **Expression of Bone Morphogenetic Protein 6 in Oral Cavity Squamous Cell Carcinoma is Associated with Bone Invasion**

Major B. Burch, MS, Birmingham, AL; Alexandra E. Kejner, MD, Birmingham, AL; Larissa Sweeny, MD, Birmingham, AL; Eben L. Rosenthal, MD*, Birmingham, AL

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the relationship of EGFR and BMP-6 in oral cavity cancer and should be able to compare expression of BMP-6 in small tumors with bony invasion to large tumors with bony invasion. One should also be able to discuss the potential for therapeutic targets for patients with oral cavity squamous cell carcinoma.

Objectives: To evaluate bony invasion, survival, and expression of BMP-6 in oral cavity cancer in the context of known biomarkers indicative of poor prognosis. **Study Design:** Molecular expression study combined with retrospective chart review of corresponding patients at a tertiary care center. **Methods:** Between 2000 and 2009, 197 patients underwent resection for oral cavity squamous cell carcinoma. Of these, 30 pathologic specimens were chosen for further molecular analysis. These 30 patients were separated into three groups (n=10 per group) based on American Joint Committee on Cancer staging and staging based on size alone (TAJCC/Tsize). Tumors were probed using standard immunohistochemical techniques. The expression of extracellular matrix metalloproteinase inducer (EMMPRIN), bone morphogenetic protein-6 (BMP-6), and epidermal growth factor receptor (EGFR) were scored utilizing a modified Allred technique. Patient demographics, tumor characteristics, survival, and recurrence were compared. Relationships among expression of biomarkers, bony invasion, and disease course were then evaluated. Correlation between bony invasion and tumor biomarkers was utilized in order to propose a potential molecular profile for prognosis and possible therapeutic targets. **Results:** Patients were followed for an average of 21 months. Expression of BMP-6 was significantly higher in smaller tumors with bone invasion (T2/T4) cohort than the T4/T4 cohort (p=0.05). Additionally, increased BMP-6 expression correlated with aggressive behavior in smaller tumors. Increased EGFR expression was associated with increased levels of BMP-6. **Conclusions:** Increased expression of BMP-6 in oral cavity cancer may affect bony invasion and is a potential therapeutic target.

Q&A

2:00 - 3:00 **UPDATE ON OROPHARYNGEAL CA - HPV AND THE LATEST TREATMENT ALGORITHMS**

Moderator: Dennis H. Kraus, MD*, New York, NY
Panelists: Christine G. Gourin, MD*, Baltimore, MD
Jeffery Scott Magnuson, MD*, Orlando
Brian Nussenbaum, MD*, St. Louis, MO
Richard V. Smith, MD, Bronx NY

Q&A

3:05 - 3:30 ***Break with Exhibitors/Poster Viewing - TRAILBLAZER BALLROOM***

1:15 - 3:05 CONCURRENT SESSION
Otology
Kierland Ballroom 2

MODERATOR: Ronald G. Amedee, MD*, New Orleans, LA

1:15 **Facial Nerve Prognostication in Vestibular Neuroma Surgery--The Concept of Percent Maximum and its Predictability**

Christoph A. Arnoldner, MD, Toronto, ON Canada; Paul T. Mick, MD, Toronto, ON Canada; David A. Houlden, PhD, Toronto, ON Canada; Julian M. Nedzelski, MD*, Toronto, ON Canada; Vincent Y.W. Lin, MD, Toronto, ON Canada; Joseph M. Chen, MD, Toronto, ON Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the concept and predictive value of percent maximum as a method of predicting facial nerve function, in the context of intraoperative monitoring.

Objectives: To evaluate the predictive value percent maximum as a paradigm of intraoperative facial nerve stimulation and prognostication during acoustic neuroma surgery. Facial nerve outcome after a mean followup time of 384 days was used to establish predictive ability, while factors such as age, gender, tumor size and muscle response amplitude were included in risk calculations. **Study Design:**

Continuous running EMG recordings and evoked facial responses of three muscle groups were performed during surgery. Upon completion of tumor removal, prior to wound closure, evoked amplitude responses to varying levels of stimulus intensity at the nerve root were compared to their supramaximal responses (Mmax) as a percentage. The Mmax served as each patient's own control. **Methods:** Response charts were constructed for each of the five levels of stimulus intensity between 0.05mA to 0.3mA to establish sensitivity and positive predictive values. Logistic regression analyses were used to determine the impact of gender, age, tumor size, and historically defined response parameters on outcomes. **Results:** 78 patients who underwent acoustic neuroma surgery between 2005 and 2010 with intraoperative facial nerve monitoring and an intact facial nerve after tumor excision were included. Direct stimulation of the facial nerve at a stimulus level of 0.3 mA yielded high degrees of sensitivity and a positive predictive value of 90% for a good FN outcome (HBI-II), when the response amplitude was 50% or greater compared to their Mmax. No significant impact of age and gender on a poor outcome (HB III-VI) was found. In contrast, tumor size was found to significantly influence outcome, with each cm increase of tumour size, the patients were 105% more likely to have poor outcome. If the response amplitude was >240uV at 0.05mA, the patient was 185% more likely to have a poor outcome. **Conclusions:** The concept of percent maximum in intraoperative facial nerve monitoring is a valid tool in predicting long term facial nerve outcome in acoustic neuroma surgery. It has a higher sensitivity threshold compared to conventional techniques while it provides high predictive values. It should be considered a complementary method of monitoring when evoked responses do not conform to conventional predictors.

1:22 **Second Place William W. Montgomery, MD Resident Research Award - Eastern Section**

Health Care Practice Patterns for Balance Disorders in the Elderly

Daniel S. Roberts, MD PhD, Boston, MA; Harrison W. Lin, MD, San Diego, CA; Neil Bhattacharyya, MD*, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the current practice patterns for balance disorders in the elderly.

Objectives: Characterize health care practice patterns for balance disorders in the elderly. **Study Design:** Cross-sectional analysis of national healthcare database. **Methods:** Balance disorder cases in patients > 65 were extracted from the 2008 National Health Interview Survey. Records were analyzed for health professionals seen, diagnostic testing ordered, diagnoses given and treatments offered. Relationships between diagnostic success, imaging studies, and specialty providers seen were then compared. **Results:** Among 7.02±0.22 million elderly persons reporting a balance problem, 50.0% (3.44+0.16 million, annually) saw a health professional and 35.8% saw > 3 providers. 59.6% of elderly patients reported a diagnosed cause for the balance problem, most commonly: medication side effects (11.3%), inner ear infection (11.0%), heart disease (8.6%) and "loose ear crystals" (7.9%). Imaging studies were obtained in 56.7% (2.00±0.11 million cases). Among 24.3% of patients receiving some form of treatment, 61.7% received prescription medication, most commonly diuretics (36.5%), anxiolytics (25.1%) and meclizine (21.4%). Seeing an otolaryngologist or neurologist was associated higher but similar rate of diagnostic imaging studies (70.1%, p=0.029 and 78.5%, p<0.001, respectively). However, obtaining an imaging study was not significantly associated with a diagnosed cause of the balance disorder (61.5% with imaging versus 56.9% without, p=0.265). **Conclusions:** Despite a high prevalence of balance problems in the elderly, a significant proportion does not obtain a clearly diagnosed cause. The rate of prescription medication utilization for balance disorders is conspicuous. Given an increasingly aging population, attention needs to be given to balance problems in the elderly to optimize diagnoses and healthcare utilization.

1:29 **Complications Associated with Nitinol Prosthesis Use in Middle Ear Surgery**

Glenn William Knox, MD JD*, Jacksonville, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) demonstrate different complications associated with Nitinol in middle ear surgery; and 2) discuss ways to avoid such complications.

Objectives: To determine the nature and rate of complications associated with the use of Nitinol in middle ear surgery and to suggest ways to avoid these complications. **Study Design:** Survey of the American Neurotology Society membership. **Methods:** A survey of the 508 members of the American Neurotology Society was carried out after written approval by the society. The survey was carried out using a standard internet survey tool (surveymonkey.com). 94 useful responses were obtained. Questions included: number of surgeries performed, types of devices, number and types of complications if any, revision surgeries if any, and findings at such revision surgeries. **Results:** 60.6% reported the use of SMart pistons. The average number of surgeries per three years per utilizing surgeon was 21.91. 41.8% of the utilizing surgeons reported complications. The most common complication was "loose wire" syndrome (50%). Incus necrosis was noted in 21.9%. In revision cases, the piston was noted to have pulled out of the footplate in 50% of cases. **Conclusions:** Significant complications are noted with the use of Nitinol middle ear implants such as the SMart piston. The loose wire syndrome and the piston pulling out of the footplate were common, in agreement with previous investigators. Incus necrosis was noted to be much more significant than in previous studies. Allergic reactions would be difficult to identify in a survey such as this. An improved prosthesis would have a crook designed to avoid piston "pull-out"; a martensite-austenite finishing curve to avoid "unwinding"; possible insulation of the crook to avoid incus necrosis; and perhaps plating the implant to avoid allergic reactions.

1:36 **Otologic Assessment of Blast and Non-Blast Injury in Returning Middle East Deployed Service Members**

Anil N. Shah, MD, San Diego, CA; Marco A. Ayala, MD, North Chicago, IL; Gregory G. Capra, MD, San Diego, CA; David B. Fox, MD, San Diego, CA; Michael E. Hoffer, MD*, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the neurotologic sequelae of blast injury.

Objectives: 1) To determine if tympanic membrane perforation offers any protection from inner ear damage and sensorineural hearing loss; and 2) to determine the incidence and pattern of otologic blast injury in military personnel returning after IED blast trauma. **Study Design:** Retrospective analysis of US service members injured in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) from July 2006 to July 2008. **Methods:** One-hundred and ten blast injured patients were compared to 54 non-blast injured patients returning from deployment. Data captured included audiogram results, location of tympanic membrane perforation, demographic data, clinical symptoms of headache, dizziness, memory loss, tinnitus, and location and nature of injury. **Results:** Of 110 blast injured patients, 18 total patients suffered TM perforation (16%) of which 9 patients suffered bilateral TM perforation (8%). Blast patients suffered more hearing loss across all frequencies compared to control ($p<.0001$) and perforation was linked to increased hearing loss in the high frequencies ($p<.019$). Blast injury was associated with headache, memory loss, tinnitus, and dizziness ($p<.001$), but only tinnitus was seen more frequently in patients with TM perforation. Speech recognition scores were greater than 90% in all patients. **Conclusions:** Due to its violent nature, blast exposure is linked to hearing loss and significant clinical neurological sequelae. While tympanic membrane perforation may offer a protective effect at lower frequencies, patients had a higher incidence of tinnitus and high frequency sensorineural hearing loss.

1:43 **A Prospective Analysis of Need for Revision Surgery in Longer Length Abutments in BAHA Patients**

Terah J. Allis, MD, Omaha, NE; Benjamin D. Owen, BS, Omaha, NE; Baojiang C. Chen, PhD, Omaha, NE; Gary F. Moore, MD*, Omaha, NE

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) explain the steps in BAHA placement; 2) discuss clinical indications for longer length abutments and recognize appropriate candidates; and 3) recognize the challenges associated with the growing obese population and surgical wound complications specifically skin overgrowth, infection, and need for revision in BAHA patients with obesity.

Objectives: To study the complication rate of skin overgrowth, infection, and need for revision surgery in longer length BAHA abutments. **Study Design:** Setting includes a tertiary medical center and private neurosurgical hospital. A prospective study group of 9 mm abutment lengths placed by a single surgeon using the standard 4mm fixture in October 2011 with comparison to a retrospective cohort of patients of 6 mm abutment length from May 2010 to October 2011. **Methods:** IRB approved. Starting in October of 2011 all adult patients undergoing BAHA were consented to place a 9 mm abutment at the time of surgery. These patients were followed for at least 3 months time to assess for complications including skin overgrowth, infection, and need for revision surgery. This was compared to a retrospective group of patients who received the 6 mm abutment the previous year and half. Patient factors including sex and age were recorded as well as factors that may influence wound healing and device failure such as smoking and diabetes. Total patients n=33, 11 in the prospective 9 mm group and 23 in the 6 mm retrospective group. A statistician performed a statistical analysis comparing the 2 groups with a two sample t-test for age, weight, height and BMI, and Fishers' exact test for smoking, sex, infection, need for revision and skin overgrowth. **Results:** N=33. The groups were similar in a smoking status, diabetes, a female preponderance and in age, although the 9 mm group was older. Average age in the 6 mm group was 48 years old and 59 years old in the 9 mm group. There were more female patients then males in both groups 6 mm group 15 females 7 males, and in the 9 mm group 7 females and 4 males ($p=1.0$). The average BMI for both groups was classified as overweight and nearing obese, 28.7 and 29.15 for the 6 mm and 9 mm groups respectively. Only 1/11 patients who received the longer length 9 mm abutment developed skin overgrowth, infection, and need for revision surgery while 9/21 developed infection, 9/21 developed skin overgrowth, and 10/22 needed revision surgery due to wound complications in the 6 mm group. The need for revision surgery approached significance between the 2 groups ($p=0.5$). **Conclusions:** As the percentage of overweight and obese patients increases surgeons have more challenges with wound difficulties. The 9 mm abutment is a good alternative for BAHA patients with obesity and thicker scalp flaps and lends to decreased complications postoperatively and need for revision surgery.

1:50 **Lead and the Deafness of Ludwig van Beethoven**

Michael H. Stevens, MD*, Salt Lake City, UT; Teemarie Jorgensen, AuD, Salt Lake City, UT; Alicia Kay Crofts, AuD, Salt Lake City, UT

Educational Objective: At the conclusion of this presentation, the participants should be able to understand why lead poisoning is a better explanation of Beethoven's slowly progressive hearing loss than other current hypothesis.

Objectives: To show that Ludwig van Beethoven's lead poisoning is a better explanation of his slowly progressive hearing loss than

other current hypothesis. **Study Design:** A thorough review of the medical and musical literature was done as a part of an unpublished research paper for the degree of Master of music history and literature. This included examination of evidence regarding the presence of heavy metals and other substances in his hair and bone. It also included the discovery of recent articles in the neurological literature that describe a new pathophysiology in chronic lead poisoning. **Methods:** N/A. **Results:** Evidence of cochlear otosclerosis is lacking because careful gross examination of Beethoven's middle ear space at his autopsy did not find any otosclerotic foci. Other features also do not correlate with otosclerosis. As Beethoven had gastrointestinal problems it has been suggested that his hearing loss was due to autoimmune disease. However, his slowly progressive hearing loss over a period of years differs from reported cases of autoimmune hearing loss that are rapidly progressive over a period of weeks or months. In addition he lacked bloody diarrhea that is invariably present with autoimmune bowel disease. The absence of mercury in Beethoven's hair and bone samples leads us to conclude that his deafness was not caused by syphilis, because in that era syphilis was treated with mercury. High levels of lead in Beethoven's skull bone suggest repeated exposure over a long period of time rather than limited exposure prior to the time of his death. The finding of shrunken cochlear nerves at his autopsy is consistent with axonal degeneration seen with exposure to heavy metals such as lead. Chronic low level exposure causes a hearing loss along with sensory and autonomic findings, rather than the classic wrist drop due to motor neuropathy from subacute poisoning. At Beethoven's time lead was added to inexpensive wine to improve the flavor. Four of his physicians, as well as friends and tavern keepers, confirm that he had a problem with chronic alcohol dependence. He particularly liked adulterated wine. **Conclusions:** Beethoven's chronic consumption of wine tainted with lead is a better explanation of his hearing loss than other causes.

Q&A

2:00 - 3:05 **DIAGNOSIS AND TREATMENT OF MENIERE'S IN 2013**

Moderator: Michael E. Hoffer, MD*, San Diego, CA
Panelists: Rick A. Friedman, MD*, Los Angeles, CA
Marlan R. Hansen, MD*, Iowa City, IA
Steven A. Telian, MD*, Ann Arbor, MI
D. Bradley Welling, MD PhD*, Columbus, OH

Q&A

3:05 - 3:30 ***Break with Exhibitors/Poster Viewing - TRAILBLAZER BALLROOM***

3:30 - 5:05 GENERAL SESSION
Kierland Ballroom 1 & 2

3:30 - 4:30 **THE GREAT DEBATE - POINT/COUNTERPOINT**

Moderator: Dale H. Brown, MD*, Toronto, ON

3:30 - 3:50 **Preferred Management of Mucosal Cancer - TORS vs. TLM**

TORS - William B. Armstrong, MD*, Irvine, CA *(10 mins)*
TLM - Michael L. Hinni, MD*, Phoenix, AZ *(10 mins)*
Q&A

4:00 - 4:20 **Image Guidance Surgery - Standard of Care?**

No, Don't Be Ridiculous - Marvin P. Fried, MD*, Bronx, NY *(10 mins)*
Yes, of Course It Is - Stilianos E. Kountakis, MD PhD*, Augusta, GA *(10 mins)*
Q&A

4:30 - 5:10 **HOW I DO IT: NOT WHEN AND WHY, JUST HOW - VIDEO SESSION** *(4 minutes each)*
Moderator: Jonas T. Johnson, MD*, Pittsburgh, PA
Endoscopic CSF Leak Repair
Bradford A. Woodworth, MD, Birmingham, AL
Sentinel Node Biopsy
Carol R. Bradford, MD*, Ann Arbor, MI
Sialendoscopy for Stones
David W. Eisele, MD*, Baltimore, MD
Office Based Laryngology
Peak Woo, MD*, New York, NY
Tips in Functional Rhinoplasty
Wm. Russell Ries, MD*, Nashville, TN
Endoscopic ORIF of Subcondylar Fractures
Robert M. Kellman, MD*, Syracuse, NY
Q&A

5:15 - 6:30 ***VICE PRESIDENTS WELCOME RECEPTION - VISTA MORADA TERRACE***

FRIDAY, JANUARY 25, 2013

7:00 - 7:50 **Triological Society Business Meetings - Fellows Only**
Southern Section - POWELL
Western Section - MERRIAM

8:00 am **Announcements by Vice Presidents**

8:05 - 10:00 CONCURRENT SESSION
Facial Plastic/Reconstructive and Head & Neck
Kierland Ballroom 1

MODERATOR: Dennis H. Kraus, MD*, New York, NY

8:05 **Changing Indications for and Demographics of Maxillomandibular Reconstruction with Osseous Free Flaps: A 17 Year Experience with 606 Consecutive Cases at One Institution**
Soroush Zaghi, MD, Los Angeles, CA; Jennifer N. Danesh, BS, Los Angeles, CA; Vishad Nabili, MD, Los Angeles, CA; Keith E. Blackwell, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to characterize the changing indications for and demographics of osseous free flaps in maxillomandibular reconstruction and understand the geographically disproportionate referral patterns of grade III advanced osteoradionecrosis of the mandible.

Objectives: To characterize the changing indications for and demographics of osseous free flaps in maxillomandibular reconstruction at one institution. **Study Design:** Retrospective database review at a single academic tertiary care medical center. **Methods:** Database review and analysis of patients who underwent free flap reconstruction of the jaws using vascularized bone containing free tissue transfer from 1995-2012 at our institution. **Results:** A total of 606 osseous free flaps were performed including fibula (n=551), latissimus dorsi -serratus anterior + rib (n=48), iliac crest (n=3), serratus anterior + rib (n=2), and scapular bone (n=2). The most common indications for surgery were squamous cell carcinoma (SCCA, n=434) and osteoradionecrosis of the mandible (ORN, n=70). There were no significant differences in 90 day perioperative complication and mortality rates between malignant and non-malignant indications. Analysis of number of surgeries vs. year reveals increasing incidence of surgeries being performed for non-malignancy indications. ORN cases represented 4.0±1.8% of surgical volume from 1996-2001, 8.8 ±2.0% from 2002-2007 and 15.9 ±2.2% from 2008-2012. County of origin analysis revealed that the per capita incidence of ORN as an indication for free flap reconstruction at our institution was significantly increased in patients living outside of our major metropolitan county when compared to patients living within our major metropolitan county (6.0 ±1.0 vs. 2.9 ±0.5 per 100,000 persons, p<0.0001). **Conclusions:** The incidence of ORN as an indication for free flap reconstruction of the jaw has increased at our institution in recent years, and this may be a reflection of an increasing prevalence of this disorder. A disproportionate number of ORN referrals to our institution come from smaller counties surrounding our major metropolitan area. While the cause of this discrepancy remains unclear, we feel that it may in part be a reflection of differences in patient's access to cancer treatment at high volume, tertiary care centers.

8:12 **Genome Wide Scan for Methylation Profiles in Keloids**
Lamont R. Jones, MD, Detroit, MI; William G. Young, MD, Detroit, MI; David M. Ozog, MD, Detroit, MI; Kang M. Chen, MD, Detroit, MI; Geroge Divine, PhD, Detroit, MI; Maria J. Worsham, PhD, Detroit, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to learn about novel insights into keloid formation from the epigenome perspective of DNA hypermethylation.

Objectives: Provide novel insights into keloid formation from the epigenome perspective of DNA hypermethylation. **Study Design:** Prospective cohort study. Six fresh keloid and six normal skin samples from 12 anonymous donors (IRB approved). **Methods:** Genome-wide profiling was done using the Infinnium Human Methylation450BeadChip®, which interrogates 485,577 cytosine positions with coverage for 96% of the CpG islands and 99% of reference sequence genes. CpGs were considered differentially methylated when the ratio between average beta for normal and keloid samples was either greater than 2.0 (hypermethylated) or less than 0.5 (hypomethylated), and the adjusted false discovery rate (aFDR) associated with the comparison was 0.05 or lower (computed using the Benjamini Hochberg procedure). A CpG was classified as associated with a promoter region, if the annotation for any of the associated gene isoforms was designated as TSS200, TSS1500, 5'UTR, or 1st exon. Non-promoter regions included gene body, 3'UTR and other (inter-

genic). **Results:** Of the 485,577 cytosine positions, 5,575 CpGs were differentially methylated (keloid/normal >= 2.0, or <= 0.5). Of the 5,575, 1,534 sites, 551 with hypermethylation and 983 with hypomethylation, were also statistically significant after aFDR. Both hypermethylated and hypomethylated sites had more non-promoter than promoter regional locations (hypermethylated: 350 vs 201; hypomethylated: 539 vs. 344). **Conclusions:** Keloid genomes overall are more hypomethylated than hypermethylated occurring more often in non-promoter genomic regions. Further unraveling of the regionally methylated genomic landscape in keloids should provide a better understanding of the contribution of the DNA methylome to keloid pathogenesis.

8:19 **Hybrid Submental Flaps: Part Pedicled, Part Free**

Richard E. Hayden, MD*, Phoenix, AZ; Thomas H. Nagel, MD, Phoenix, AZ (Presenter); Carrlene B. Donald, PA-C, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand and discuss the surgical technique presented. They should be able to compare this technique with available options of pedicled and free flaps.

Objectives: To assess the feasibility of extending the arc of rotation of the submental flap by dividing its venous pedicle proximally at the internal jugular vein and anastomosing that pedicle to a more caudal vein. **Study Design:** Prospective evaluation of the outcomes for 17 submental flaps requiring “hybrid” vascular pedicle manipulation to reach the defect out of 200 consecutive submental flaps. **Methods:** This paper describes a technique for extending the arc of rotation of the pedicled submental flap to reach the upper face. The flap is perfused by retrograde facial artery flow. The venous pedicle is divided where it joins the jugular vein and this divided pedicle is then anastomosed to a more caudad vein, such as the superficial temporal or retromandibular. The paper outlines the necessary preoperative and intraoperative assessments and maneuvers required to avoid vascular compromise and the features that necessitate conversion to a true free flap. **Results:** All 17 “hybrid” flaps survived. Torsion, kinking and/or traction of the extended venous pedicle must be avoided. **Conclusions:** The submental flap is an easy, quick option for facial repair and enjoys skin color and texture match with the rest of the face. The arc of rotation of the submental flap can be successfully extended by utilizing retrograde facial artery supply and by dividing the venous pedicle at the jugular vein and then anastomosing it to a more caudad vein. This “hybrid” pedicle allows rotation of the flap to the temple mid-forehead region without the need for an arterial microvascular anastomosis.

8:26 **Biomimetic Scaffolds Induce Healing of Critical Sized Segmental Mandibular Defects**

Matthew K. Lee, MD, Los Angeles, CA; Min Lee, PhD, Los Angeles, CA; Olga Bezouglaia, SRA, Los Angeles, CA; Sotirios Tetradis, DDS PhD, Los Angeles, CA; Tara Aghaloo, DDS MD PhD, Los Angeles, CA; Maie St. John, MD PhD*, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should demonstrate an understanding of the role of tissue engineering and stem cells in the healing of segmental mandibular defects.

Objectives: To investigate the efficacy of biomimetic scaffolds, alone and in combination with osteogenic signaling factors and adipose derived stem cells (ASCs), to heal a critical sized segmental mandibular defect in a rat model. **Study Design:** Prospective study using an animal model. **Methods:** Adipose derived stem cells were isolated and cultured from the inguinal fat of GFP transgenic Lewis rats. Using 3D printing, biomimetic PLGA scaffolds were fabricated and impregnated with ASCs and/or bone morphogenic protein (BMP-2). Critical sized 5mm segmental mandibular defects were created in adult Lewis rats and implanted with 1) blank PLGA scaffolds; 2) PLGA scaffolds seeded with ASCs; 3) PLGA scaffolds with BMP; and 4) PLGA scaffolds with both ASCs and BMP. Animals were sacrificed at 12 weeks and bone healing evaluated using microCT analysis and histomorphometry. **Results:** A total of 28 rats underwent creation of segmental mandibular defects with implantation of biomimetic scaffolds (4 groups, 7 rats per group). MicroCT analysis demonstrated no bridging of the segmental bony defect in rats implanted with blank scaffolds (control). Rats implanted with scaffolds containing ASCs and BMP-2 demonstrated healing of critical sized segmental mandibular defects, as determined by microCT analysis and confirmed by histomorphometry. **Conclusions:** In humans, segmental mandibular defects are often created during oncologic resection of head and neck cancer, requiring extensive reconstructive surgery to restore mandibular continuity. Biomimetic scaffolds that have the ability to induce bone regeneration in a segmental mandibular defect could potentially obviate the need for extensive reconstructive surgery. The current study utilizes a rat model to study the efficacy of biomimetic scaffolds in potentiating osteogenesis and inducing healing of an established critical sized segmental mandibular defect.

8:33 **Identifying Nasal Tip Support Mechanisms Using a Finite Element Model**

Cyrus T. Manuel, BS, Irvine, CA; Ryan P. Leary, BA, Irvine, CA (Presenter); Dmitriy E. Protsenko, PhD, Irvine, CA; Brian J.F. Wong, MD PhD*, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain how the finite element method may be used to objectively test the mechanisms of nasal tip support.

Objectives: Although major and minor tip support mechanisms have been described in detail and accepted as dogma, no studies exist to provide support for the relative contributions of the structural properties of the lower alar cartilage (LAC), their fibrous attachments to surrounding structures, and the rigid support structures, i.e. nasal septum and bony skeleton, in an objective manner. **Study Design:** The aim of the study is to use the finite element method (FEM) to compute the stress distribution in the nose during simple tip compression, and then identify the specific anatomic structures that resist deformation and thus contribute to tip support. **Methods:** The FEM (generated in COMSOL Multiphysics ®) consisted of three tissue components (soft tissue, cartilage and bone) with anatomically correct geometries for skin and bone derived from CT data. Septum and LAC were generated to fit the model using 3D CAD software. Parametric analysis was performed by varying the length of the caudal septum (CS) in response to a 5mm nasal tip compression. **Results:** As CS length was reduced, the von Mises stress increased across the LAC along with greater overall displacement of adjacent soft tissue. The intermediate crura and CS were identified as discrete load bearing regions. When CS length reduction reached a critical size, only the alar cartilages resisted the load. **Conclusions:** Our model supports the concept of the CS and LAC as providing the majority of critical load bearing support. This model is the first step in the comprehensive mechanical analysis of nasal tip mechanics, and further studies will focus on dynamic interactions and the impact of geometry change produced by different rhinoplasty maneuvers.

8:40 **A Cost Effectiveness Analysis of Closed Reduction of Nasal Bone Fractures**

Brian A. Fishero, MD, Charlottesville, VA; Jason C. Nellis, BS, Charlottesville, VA; J. Jared Christophel, MD MPH, Charlottesville, VA

Educational Objective: At the conclusion of this presentation, the participants should be able to determine when it is more cost effective to treat nasal bone fractures with closed reduction in the operating room under general anesthesia versus in clinic under local anesthesia.

Objectives: To evaluate the cost effectiveness of treating nasal bone fractures (NBF) with local anesthesia (LA) versus general anesthesia (GA). **Study Design:** Cost effectiveness analysis using clinical decision model, parameters from literature, and recent institutional outcomes. Rates of effective NBF reduction under LA vs GA were obtained by literature review and from a retrospective chart review that classified NBF by severity. Costs were obtained from a clinical data repository. To assign health care value (utility) to the states of a straight or crooked nose, both a time-trade off technique and recent literature values for cosmetic states were used. **Methods:** Monte Carlo simulation was performed to identify break even points in treatment of nasal bone fractures under GA or LA. **Results:** From a societal cost perspective, it is never cost effective to perform closed nasal bone reduction (CNR) under GA. It is more cost effective to perform CNR under GA when physician success rates for CNR under LA are below 61% in individuals with private insurance and a very low utility for a crooked nose. **Conclusions:** The point at which CNR under GA is more cost effective depends on the success rate of the surgeon when reducing NBF under LA, the utility of a crooked nose for the individual, and the cost that is to be borne by the patient. Surgeons with low success rates of NBF reduction under LA should consider GA for select patients.

8:47 **In Vivo Imaging of the Nasal Valve and Valve Collapse Using Optical Coherence Tomography**

Anthony E. Chin Loy, MD, Irvine, CA; Joseph C. Jing, MS, Irvine, CA; Alex C. Wang, MS, Irvine, CA; Andrew Emon Heidari, BS, Irvine, CA; Zhongping C. Chen, PhD, 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 the use of long range optical coherence tomography as a viable technology in the visualization of the internal nasal valve and internal nasal valve angle.

Objectives: As the narrowest segment of the airway, slight changes in internal nasal valve (INV) angle can profoundly alter airflow. There is no reliable method to date that measures physiologic change in the INV angle in real time. CT imaging is the most accurate modality for measurement of the INV, though it is rarely performed for clinical use and does not provide real time images of dynamic valve collapse. **Study Design:** The aim of this study is to use long range optical coherence tomography (LR-OCT) to accurately measure the geometry of the INV in normal and obstructed subjects. LR-OCT is an imaging modality that functions as a precise optical rangefinder to provide anatomic information of hollow structures. **Methods:** LR-OCT was used to image the native geometry of the INV at rest and in collapse. INV was imaged bilaterally in real time over multiple respiratory cycles in 50 patients. Volumetric renderings of the INV were generated from axial OCT images by constructing a series of 2D slices into a 3D volume and also imaged as 2D images in time. Patients with obstructive symptoms were given the Nasal Obstruction Symptom Evaluation (NOSE) survey to determine severity of obstruction. **Results:** INV angle in asymptomatic normal subjects was 39.23 ± 2.50 degrees compared to an average of 30.32 ± 1.97 degrees in symptomatic subjects. INV angles were reduced by 5-15 degrees during inspiration. Calculated average NOSE score in symptomatic patients was reported as 56.6. LR-OCT is able to show the collapse of the nasal wall during inspiration in real time. Decreases in cross-sectional area were calculated for each patient over the respiratory cycle. 3D renderings of the nasal cavity show detailed anatomical structure. **Conclusions:** LR-OCT is a novel in-office that can be used to quickly and accurately image the INV region of a patient complaining of nasal obstruction, and may be used to potentially identify appropriate patients for valve surgery and monitor the outcomes of surgery.

Q&A

9:00 - 10:00 **FUNCTIONAL RHINOPLASTY IN THE 21st CENTURY**

Moderator: J. Regan Thomas, MD*, Chicago, IL
Panelists: William W. Shockley, MD*, Chapel Hill, NC
Sherard A. Tatum, MD*, Syracuse, NY
Brian J.F. Wong, MD PhD*, Irvine, CA

Q&A

10:00 - 10:30 ***Break with Exhibitors/Poster Viewing - TRAILBLAZER BALLROOM***

8:05 - 10:00 CONCURRENT SESSION
General and Sleep Medicine
Kierland Ballroom 2

MODERATOR: Kathleen L. Yaremchuk, MD*, Detroit, MI

8:05 **IMOUTA: A Proposal for Patient Care Handoffs**

Matthew P. Connor, MD, Lackland AFB, TX; Anneka C. Bush, ScD MHS, Lackland AFB, TX; Joseph Brennan, MD, Lackland AFB, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of having effective patient care handoffs and understand the advantages to using a standardized format.

Objectives: To comply with new training requirements, residency programs have adopted new resident schedules that resulted in an increased number of patient handoffs. Inadequate handoff of patient care leads to residents feeling unprepared for events that happen during cross cover periods and has been associated with adverse events. The objective of our study was to develop and test a patient handoff method in an otolaryngology residency program. **Study Design:** Nonrandomized controlled trial. **Methods:** A standardized, anonymous questionnaire was developed that scored on-call residents' understanding of their patients' diagnoses, hospital courses, active concerns, and treatment plans. For the first 45 days, residents used their traditional handoff mechanism which relayed patient information without any structured format. For the next 45 days, the residents utilized a novel handoff mechanism using the acronym of "IMOUTA". This novel "IMOUTA" handoff mechanism was developed to better communicate patient identity (I), medical course (M), outcomes possible tonight (OU), responsibilities to do tonight (T), and opportunity to ask questions and give morning feedback in the AM (A). The questionnaires were then compared at the end of the study. **Results:** No significant difference was found between the two groups in level of activity during the call night. The residents who used the IMOUTA mnemonic scored significantly higher on their perceived knowledge of patients diagnoses ($p=0.001$), hospital courses ($p<0.001$), active concerns ($p<0.001$), and treatment plans ($p<0.001$). **Conclusions:** Residents felt significantly better prepared for call duties when using the "IMOUTA" mnemonic. This standardized system of patient handoff may also be valuable to other residency programs.

8:12 **Second Place G. Slaughter Fitz-Hugh, MD Resident Research Award - Southern Section**
Hospital Acquired Conditions in Head and Neck Cancer Surgery

Amit Kochhar, MD, Baltimore, MD; Christine G. Gourin, MD MPH*, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to define hospital acquired conditions and the risk factors and short term outcomes associated with the development of these.

Objectives: The Centers for Medicare and Medicaid Services has identified 10 hospital acquired conditions (HACs) for which they will not reimburse care. We sought to determine the incidence of HACs in head and neck cancer (HNCA) surgery and the association with in-hospital mortality, complications, length of hospitalization, and costs. **Study Design:** Retrospective cross-sectional study. **Methods:** Discharge data from the Nationwide Inpatient Sample for 123,662 patients who underwent an ablative procedure for a malignant oral cavity, laryngeal, hypopharyngeal or oropharyngeal neoplasm in 2001-2008 was analyzed using cross-tabulations and multivariate regression modeling. **Results:** HACs occurred in less than 1% of cases, with vascular catheter associated infection comprising >50% of all HACs. The occurrence of HACs was significantly associated with urgent or emergent admission (OR=2.0, P=0.004), major surgical procedures (OR 3.0, P<0.001), flap reconstruction (OR 2.7, P<0.001) and advanced comorbidity (OR=2.0, P<0.001). There was no association between HACs and hospital size, location, ownership, volume status, or safety net burden. HACs were significantly associated with in-hospital mortality (OR 3.6, P=0.002), surgical complications (OR 4.8, P<0.001), and medical complications (OR 5.6, P<0.001). After controlling for all other variables, HACs were associated with significantly increased length of hospitalization and hospital related

costs, with vascular catheter associated infection and foreign object after surgery associated with the greatest increase in length of stay and costs. **Conclusions:** HACs are uncommon events in HNCA surgical patients. Because prediction of HACs is poor and the potential for human error crosses demographic, geographic and structural boundaries, universal innovative measures to reduce the occurrence of HACs are needed.

8:19 **Current Incidence of Duplicate Publication in Otolaryngology**

Veronique G.S. Wan Fook Cheung, MDCM BSc(Hons), Vancouver, BC Canada; Gilbert O.A. Lam, Vancouver, BC Canada; Yun Fan Wang, Vancouver, BC Canada; Neil K. Chadha, MBChB(Hons) MPHe BSc(Hons) FRCS, Vancouver, BC Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the current incidence of duplicate publications in three otolaryngology journals in North America and Europe to that in 1999.

Objectives: Duplicate publication, deemed highly unethical, is the reproduction of substantial content in another article by the same authors. In 1999, Rosenthal et al. identified an 8.5% incidence of duplicate articles in two otolaryngology journals. We explored the current incidence in three otolaryngology journals in North America and Europe. **Study Design:** Retrospective review of literature. **Methods:** Index articles in 2008 in Archives of Otolaryngology-Head and Neck Surgery, Laryngoscope and Clinical Otolaryngology were searched using MEDLINE. Potential duplicate publications in 2006-2010 were identified using the first, second and last authors' names. Three authors independently investigated suspected duplicate publications, classifying them by degree of duplication and otolaryngology subspecialty. **Results:** Of 358 potential articles screened, 75 (20.9%) index and 121 (33.8%) suspected duplicate publications were identified. Review of 119 full text versions of the 121 suspected duplicates revealed a total of 40 duplicates (33.6% of reviewed articles), involving 27 index articles (7.5% of potential articles); 1 (0.8%) dual publication (identical or nearly identical data and conclusions to the index article); 3 (2.5%) suspected dual publications (less than 50% new data and same conclusions); and 36 (30.3%) salami slicing (portion of the index article data repeated) were obtained. Further analysis compared likelihood of duplicate publication by study source and subspecialty within otolaryngology. **Conclusions:** This study identified an increased trend in the prevalence of duplicate articles published in otolaryngology compared to a decade ago. The detection and elimination of redundant publication is a laborious task, but is essential in upholding the quality of medical journals and research integrity in otolaryngology.

8:26 **Use of Computational Fluid Dynamic Modeling (CFD) to Predict Responses to Genioglossal Advancement in Patients with Obstructive Sleep Apnea**

Aaron M. Fletcher, MD, Iowa City, IA; Majed A. Awadalla, PhD, Iowa City, IA; Jiwoong C. Choi, PhD, Iowa City, IA; Ching-long C. Lin, PhD, Iowa City, IA; Eugene E. Chang, MD, Iowa City, IA

Educational Objective: At the conclusion of this presentation, the participants should be able to better understand the impact of genioglossal advancement on airflow dynamics within the hypopharyngeal airway.

Objectives: To utilize computational fluid dynamics to investigate changes in airflow within the hypopharynx following genioglossal advancement in a cadaveric model. **Study Design:** Computational and physiologic study. **Methods:** Genioglossal advancement was performed on a lightly preserved cadaver, with the mandible advanced in graded fashion to 1mm (control) and 9mm (intervention). High resolution computed tomography (CT) scans were taken and used for CFD analysis. We performed analysis in both laminar and large eddy simulation (LES) models. We utilized normal breathing parameters with a tidal volume of 500ml, a period of 4.8 seconds, and a low and high flow rate of 151 ml/sec and 342 ml/sec. The isosurface pressure distribution was 2 m/sec and 5 m/sec at low and high flow rates. Using these parameters, we developed a three dimensional model of the hypopharyngeal airway that was used to calculate the effect of genioglossal advancement on flow characteristics throughout the airway. **Results:** In the CFD laminar flow model, we noted increase in airway velocity and decrease in airway pressure as the mandible was advanced from 1mm to 9mm. In the CFD LES simulation, pressure was reduced in the 9mm model, denoting decreased resistance. Viscosity was also reduced in the 9mm model, secondary to increased airway diameter and less abrupt changes in airway geometry. **Conclusions:** These results suggest that genioglossal advancement is effective in increasing laminar flow and airway velocity while decreasing airflow turbulence. These findings support the use of genioglossal advancement to address hypopharyngeal obstruction in OSA.

8:33 **Snoring and Carotid Artery Intima Media Thickness**

Robert H. Deeb, MD, Detroit, MI; Paul A. Judge, MD, Omaha, NE (Presenter); Ed A. Peterson, PhD, Detroit, MI; Judith A. Lin, MD, Detroit, MI; Kathleen A. Yaremchuk, MD*, Detroit, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate the relationship between primary snoring and intima media thickness of the carotid arteries.

Objectives: Snoring is generally regarded as a social nuisance rather than a disease process. A growing body of evidence indicates

that primary snoring (PS) may adversely affect health. Individuals with a diagnosis of PS were evaluated to determine if there is a relationship between snoring and intima media thickness (IMT) of the carotid arteries. **Study Design:** Prospective blinded cohort study. **Methods:** The sleep center database within our institution was queried for patients between the ages of 18 and 50 who had a diagnostic sleep study between December 2006 and January 2012 showing an apnea-hypopnea index (AHI) less than 5. Subjects underwent a diagnostic carotid artery duplex ultrasound measuring the IMT of the bilateral carotid arteries at 4 separate points. Additionally a validated snoring outcomes survey (SOS) was completed. Snorers and non-snorers were compared using a Wilcoxon two sample test. **Results:** 913 patients met the inclusion criteria. 54 patients completed both the carotid duplex ultrasound and the SOS. There were no significant differences in IMT regardless of history of diabetes, hypertension or smoking. Compared to non-snorers, snorers were found to have a significantly greater IMT at two points along the left internal carotid artery and one point on the right side. Additionally, when averaging all 8 points there was significantly greater IMT in the snorers. **Conclusions:** This study shows a relationship between PS and IMT of the carotid arteries. As IMT is widely regarded as a precursor to atherosclerosis, this finding demonstrates that snoring has the potential for adverse health outcomes.

8:40 **Otolaryngology-Head and Neck Surgery: How We Got to Where We Are and Lessons Learned from Loring Pratt**

Kenneth M. Grundfast, MD*, Boston, MA; Ameer T. Shah, MA, Boston, MA (Presenter)

Educational Objective: At the conclusion of this presentation, the participants should have an understanding of how otolaryngology-head and neck surgery has achieved its current status, as well as lessons learned from Dr. Loring Pratt.

Objectives: There was a time when otolaryngologists did not do major head and neck cancer surgery. The journey from the era when head and neck surgery was done largely by general surgeons to the modern era when otolaryngologists are acknowledged to be the foremost experts in head and neck surgery has been a circuitous and arduous one. Along the way, there were several prominent otolaryngologists who made known the special expertise of otolaryngologists in head and neck surgery and served as the advocates capable of bringing about changes. Dr. Loring Pratt, who died in March 2012, was an early president of the American Head and Neck Society and first president of the American Academy of Otolaryngology-Head and Neck Surgery. Dr. Pratt played a key role in bringing head and neck surgery into the purview of otolaryngologists. This presentation provides a concise history of head and neck surgery within the United States, pays homage to Dr. Loring Pratt, and highlights some of the major accomplishments and little known facts about Dr. Pratt's lengthy career as an otolaryngologist practicing in the town of Waterville, Maine, as a leader in otolaryngology, as a regent of the American College of Surgeons, as a medical ethicist, and as an exemplary role model for all otolaryngologists. Also included is a never previously shown video clip of Dr. Pratt talking about the devastating case that prompted him in 1960 to gather nationwide data on morbidity and mortality from tonsil and adenoid surgery. **Study Design:** Review of the literature and writings of Dr. Pratt. **Methods:** N/A. **Results:** N/A. **Conclusions:** Medicine today poses many challenges to the physician. What is important is that we respond with the same vigor and persistence as our predecessors, and remember the patient always comes first. If we keep with Dr. Pratt's spirit we will surely carry the art of medicine into the future and preserve the gift that is caring for those around us.

8:47 **First Place Richard J. Bellucci, MD Resident Research Award - Eastern Section**
Evaluation of a Teaching Tool to Increase the Accuracy of Pilot Balloon Palpation for Measuring Tracheostomy Tube Cuff Pressure

Nancy Jiang, MD, New York, NY; Anthony Del Signore, MD, New York, NY; Alfred M. Iloreta, MD, New York, NY; Emilia Bagiella, PhD, New York, NY; Benjamin D. Malkin, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe and implement a simple, novel teaching tool to improve the healthcare provider's ability to inflate tracheostomy tube cuffs to the appropriate pressures.

Objectives: The purpose of this study was to evaluate the efficacy of a novel teaching tool to improve healthcare providers' ability to inflate tracheostomy tube cuffs to the appropriate pressure. **Study Design:** Single blinded, randomized, controlled trial. **Methods:** Subjects were randomized to a control and study group. The control group viewed a video about inflating tracheostomy tube cuffs to safe pressure levels. The study group viewed the same video and also got to palpate the pilot balloons of tracheostomy tube cuffs inflated to 3 different pressures. All subjects inflated tracheostomy tube cuffs to pressures they believed to be appropriate based on palpation of the pilot balloon pre-intervention, and immediately, 2 weeks and 3 months post-intervention. **Results:** 49 healthcare providers participated in the study. There was no significant difference in the mean pre-intervention cuff inflation pressures between the 2 groups (36 cm H2O vs. 38 cm H2O, $p=0.4888$), with both initially over-inflating. Post-intervention, the study group inflated the cuffs to significantly lower pressures than the control group, closer to the ideal of 25 cm H2O (26 cm H2O vs. 35 cm H2O, $p<0.0001$). This difference was also observed 2 weeks (28 cm H2O vs. 37 cm H2O, $p<0.0001$) and 3 months (28 cm H2O vs 36 cm H2O, $p<0.0001$) after the intervention. **Conclusions:** The novel teaching tool evaluated in this study is simple, easily reproducible and low cost. Its use leads to long lasting improvement in healthcare providers' ability to more accurately inflate tracheostomy tube cuffs.

Q&A

9:00 - 10:00 **THE MANY FACETS OF GERIATRIC OTOLARYNGOLOGY**

Moderator: David E. Eibling, MD*, Pittsburgh, PA
Panelists: Marc Bennett, MD, Nashville, TN
Karen M. Kost, MD*, Montreal, PQ
Steven M. Parnes, MD*, Albany, NY
Robert T. Sataloff, MD DMA*, Philadelphia, PA

Q&A

10:00 - 10:30 ***Break with Exhibitors/Poster Viewing - TRAILBLAZER BALLROOM***

10:30 - 12:15 CONCURRENT SESSION
Laryngology and Otology
Kierland Ballroom 1

MODERATOR: Peak Woo, MD*, New York, NY

10:30 **Vibrant Soundbridge in Aural Atresia: How Does Atresia Severity Matter?**

Mario E. Zernotti, Cordoba, Argentina; Jessica M. Van Beek-King, MD, Augusta, GA (Presenter); Rudolf Hagen, Wurzburg, Germany; Robert Mlynski, Wurzburg, Germany; Milan Profant, MD PhD, Bratislava, Slovak Republic; Brian J. McKinnon, MD MBA*, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of aural atresia grading, compare the safety and efficacy of utilizing BAHA and vibrant soundbridge in patients with aural atresia who are not candidates for conventional atresiaplasty, and discuss possible future metrics for patient selection for the aforementioned modalities.

Objectives: Congenital aural atresia (CAA) poses significant challenges to surgical remediation. Only half of those patients meet criteria for conventional atresiaplasty. Both bone anchored hearing aids (BAHA) and the vibrant soundbridge (VSB) have been considered as alternatives or adjuncts to conventional atresiaplasty. While a consensus statement on VSB implantation in children and adolescents has recommended against implanting in those with a Jahrsdoerfer score of 7 or less, more recent publications suggest that patients with Jahrsdoerfer scores between 3-7 can achieve good outcomes though not all of those include detailed descriptions of the atresia's severity. **Study Design:** Retrospective review. **Methods:** A retrospective review of data (patient's demographic, clinical, implant and audiological information) from 4 collaborating centers that have performed VSB implantation in CAA and review outcomes based on severity of the atresia using the Jahrsdoerfer and Yellon scoring systems. **Results:** Data from 28 patients from the 4 centers revealed no iatrogenic facial nerve injuries nor change in bone thresholds. Postoperative speech threshold and speech recognition was respectively 39 dB and 94%. Jahrsdoerfer and Yellon scores ranged from 4-9 and 4-12 respectively. The severity of the scores nor individual elements of the scores did not correlate or predict outcomes. **Conclusions:** Atresiaplasty and BAHA in the management of CAA are not complete solutions. VSB seems to offer another option in these surgically complex patients for achieving amplification, though better metrics for patient selection need to be developed.

10:37 **Third Place James Harrill, MD Resident Research Award - Southern Section**
Recall of the Nucleus N5 CI512 Cochlear Implant Device; Cumulative Device Failure Rate at a Major Cochlear Implantation Center

Douglas M. Hildrew, MD, New Orleans, LA; Timothy B. Molony, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should have a working knowledge of the current listed device failure rates for the recalled Cochlear Nucleus CI512 implant, and appreciate that the actual incidence of device failure, in our experience, is over 5-fold higher than previously reported by Cochlear Limited.

Objectives: To compare the cumulative failure percentage (CFP) for the Cochlear Nucleus CI512 implant observed, both before and after the voluntary recall of all unimplanted devices, to those of the Cochlear Nucleus Freedom implant. **Study Design:** Retrospective review of 402 patients implanted with either the Nucleus Freedom or the Nucleus CI512 device. **Methods:** Cochlear implantation was performed in standard fashion. A database was created in a retrospective manner by amalgamating information obtained from the surgeons' operative case logs, an integrated clinical electronic medical records system, and an external database of devices maintained by Cochlear Limited. **Results:** Of the 274 implants of the Nucleus Freedom device at our institution, the cumulative failure percentage (CFP) was 0%. There were 128 implants of the Nucleus CI512 device at our institution: 76 were performed before the time period now

associated with manufacturer related performance defects and 52 were performed afterwards. Of the 76 performed before the production of affected devices there were two failures, while the 52 performed afterwards were associated with seven failures. **Conclusions:** It is possible that the data on the cumulative failure percentage (CFP) of the Cochlear Nucleus CI512 implant is not fully appreciated. While the CFP of the Nucleus Freedom implant was 0%, it was 7.4% for the Nucleus CI512 implant. With further data stratification, the CFP in the time period not affected by manufacturer related performance defects was 2.6%. The time period of reduced product reliability produced a 13.5% CFP - indicating a rate of failure over 5-fold higher than the company published value of 2.4%.

10:44 **Effectiveness of the Interarytenoid Spatial Relationship in Determining Sidedness of Vocal Cord Adductor Paresis**

Sanjeev M. Balamohan, BA, Indianapolis, IN; Ahmed S. Sufyan, MD, Indianapolis, IN; C. Blake Simpson, MD*, San Antonio, TX; Catherine Rees, MD, Winston Salem, NC; Stacey L. Halum, MD*, Indianapolis, IN

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the interarytenoid spatial relationship and use this concept to aid in identifying sidedness of adductor paresis in patients with mobile vocal folds.

Objectives: As abductor motion is often preserved in cases of adductor vocal fold paresis, determining the sidedness of adductor paresis can be difficult without electromyography (EMG). The goal of this study is to determine if assessment of the interarytenoid spatial relationship (IASR) on videostroboscopy can be used to reliably identify the sidedness of adductor paresis in individuals with mobile vocal folds. **Study Design:** Three member panel review of videostroboscopy examinations to determine the positive predictive value of the IASR. **Methods:** Twenty consecutive patients who presented with symptoms of glottic insufficiency (dysphonia, vocal fatigue, increased voicing effort), had undergone laryngeal EMG, and had normal vocal fold mobility (abduction) on videostroboscopy were included in the study. Three faculty laryngologists reviewed the patients' recorded videostroboscopy examinations. They were instructed to predict the paretic side based on the IASR alone and rate the adductor paresis (left sided paresis, right sided paresis, bilateral or no paresis). **Results:** Results suggest the IASR may have a role in identification of sidedness in cases of isolated adductor vocal fold paresis, but results vary depending on the presence/absence of coexistent paretic laryngeal muscles such as the cricothyroid. **Conclusions:** The IASR may have utility in predicting sidedness of adductor paresis in some cases of adductor paresis, but laryngeal electromyography (EMG) remains the gold standard.

10:51 **Restructuring the Vocal Fold Lamina Propria with Endoscopic Microdissection**

Rebecca S. Bartlett, MA, Madison, WI; Henry T. Hoffman, MD FACS MS*, Iowa City, IA; Seth H. Dailey, MD*, Madison, WI; Jonathan M. Bock, MD, Milwaukee, WI; Sarah A. Klemuk, PhD, Iowa City, IA; Susan L. Thibeault, PhD, Madison, WI

Educational Objective: At the conclusion of the presentation, participants will be able to report the preclinical justification (including histologic and rheologic data) for microendoscopy of Reinke's space (MERS). Also, participants will be able to discuss the future clinical applications of MERS.

Objectives: Purposes of this preclinical study were to investigate histologic and rheologic outcomes of microendoscopy of Reinke's space (MERS)-guided minithyrotomy and to assess its instrumentation. **Study Design:** Human cadaveric and animal study. **Methods:** Three human cadaveric larynges were treated with MERS-guided placement of Radiesse® VoiceGel and immediately evaluated histologically for biomaterial location. In the second study, two scarred porcine larynges were treated in vivo with MERS-guided placement of Carbylan-GSX and rheologically evaluated six weeks later. Student t tests determined differences in viscoelastic properties of treated/untreated vocal folds. Sialoendoscopes and laryngoscopes were subjectively compared for their visualization capacity. **Results:** MERS clearly imaged the undersurface of the epithelium and the vocal ligament and guided both tissue dissection and biomaterial positioning. Sialoendoscopes provided adequate visualization and feature incorporated working channels. Enhanced image clarity was created in a gas filled (i.e., laser) rather than saline filled environment, per rater judgment. Histological analysis revealed desirable biomaterial positioning with MERS. Rheological analysis revealed that viscoelastic properties of the MERS treated porcine vocal folds were not statistically different than uninjured vocal folds six weeks following treatment. **Conclusions:** MERS-guided laryngoplasty using sialoendoscopes yielded satisfactory biomaterial positioning in the short term and normalized rheologic tissue properties in the long term, contributing to proof of concept for MERS in the treatment of scarring. The primary advantages of MERS include direct, real time visualization of Reinke's space and an ability to manipulate surgical instruments parallel to the vocal fold edge while maintaining an intact epithelium. In future work we will explore the clinical utility of MERS for addressing scarring, sulcus vocalis and other intracordal processes.

10:58 **The Role of Laryngopharyngeal Reflux in Benign Vocal Fold Lesions**

Scott V. Larson, MD, Morgantown, WV; Jason P. McChesney, MD, Morgantown, WV; Ryan H. Livengood, MD, Morgantown, WV; James E. Coad, MD, Morgantown, WV

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the types of benign vocal

fold lesions, the role of pepsin in laryngopharyngeal reflux (LPR), known risk factors for benign vocal fold lesions, and role of LPR in these lesions.

Objectives: Discuss the types of benign vocal fold lesions, the role of pepsin in laryngopharyngeal reflux (LPR), known risk factors for benign vocal fold lesions, and role of LPR in these lesions. **Study Design:** Retrospective study with chart review and analysis of previously collected tissue samples. **Methods:** Samples were identified by performing a pathology database search using the words vocal fold or cord and nodule, polyp, cyst, leukoplakia, Reinke's edema, and polypoid corditis. Control group samples were obtained from total laryngectomy specimens for supraglottic disease in which the vocal fold tissue was normal. Immunohistochemical staining was performed on the formalin fixed, paraffin embedded tissue samples using a polyclonal rabbit antibody to human pepsin. Positive and negative samples (gastric mucosa, salivary gland, skeletal muscle, smooth muscle, and blood vessel) were used to verify the antibody stain. Slides were then reviewed for the presence or absence of pepsin. A chart review was also performed to obtain subject information including history of smoking, alcohol, and reflux. **Results:** Seven control group and 54 experiment samples were analyzed. Subgroup numbers were 5 nodules, 22 polyps, 8 Reinke's edema, 11 leukoplakia, and 1 cyst. The average age was 51.89 (28-54) with 62.96% being male. Chart review revealed 74.04% of subjects had a tobacco history and 74.07% of subjects had been on reflux medications. None of the control group or experimental samples was positive for pepsin. **Conclusions:** Many patients with benign vocal fold lesions are placed on reflux medications despite lack of definite evidence for causation. This study suggests that LPR has a limited role in the etiology of benign vocal fold lesions.

11:05 **Biochemical Basis of Vocal Fold Mobilization after Microflap in a Rabbit Model**
Joshua R. Mitchell, MD, Nashville, TN; Tsuyohsi Kojima, MD PhD, Nashville, TN; Hongmei Wu, MD, Nashville, TN; Gaelyn C. Garrett, MD*, Nashville, TN; Bernard Rousseau, PhD, Nashville, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the phonation related changes seen in the post-microflap vocal fold and how this relates to the optimal type (relative vs. absolute) and length of time of postoperative voice rest.

Objectives: To investigate extracellular matrix (ECM) changes in the vocal fold lamina propria of phonated rabbit vocal folds following microflap surgery. Results will provide empirical data regarding recommendations for postoperative voice rest. **Study Design:** Prospective animal study. **Methods:** Twenty-four New Zealand white rabbits were used. Alterations in vocal fold ECM pro-inflammatory and pro-fibrotic gene and protein expression were measured using qPCR and immunohistochemistry (IHC) from a microflap control and separate groups undergoing experimentally induced phonation on post-microflap days 0, 3, and 7. **Results:** Gene expression results revealed a significant increase in inflammation as measured by fibronectin in vocal folds phonated on postop day (POD) 3 compared to POD 0 in both microflap control and phonatory groups. No alterations in inflammation were observed as measured by COX-2, IL-1B, and TGF-B1 across study groups. IHC demonstrates highest concentration of CD45 in vocal folds on POD 0 and is absent by POD 7 in both control and phonatory groups. Fibronectin IHC was maximal around the microflap incision by POD 7. **Conclusions:** Following laryngeal microflap surgery, molecular data from the current study demonstrates post-surgical inflammation is stabilized by POD 3 and absent by POD 7 reinforcing resuming phonation by POD 7 is safe. These data suggest absolute voice rest may not be necessary, but rather relative voice rest allowing up to 30 minutes of conversational phonation may be safe as early as POD 3 as phonation at this time point does not prolong the inflammatory phase of wound healing in this study.

Q&A

11:15 - 12:15 **TOUGH CASES IN LARYNGOLOGY: WHEN THE STAKES ARE THE HIGHEST**
Moderator: Michael S. Benninger, MD*, Cleveland, OH
Panelists: Mark S. Courey, MD*, San Francisco, CA
Michael M. Johns III, MD*, Atlanta, GA
Albert L. Merati, MD*, Seattle, WA

Q&A

12:15 ***Adjourn Scientific Sessions***

12:30 - 2:00 **TRIOLOGICAL SOCIETY THESIS SEMINAR *(candidates and prospective candidates)* - POWELL**

12:30 - 2:00 **RESIDENT BOWL - KNOWLEDGE MATCH *(support and cheer for the team of residents from your institution) - KIERLAND BALLROOM 1***

Free Afternoon/Free Evening

10:30 - 12:15 CONCURRENT SESSION
Head & Neck and Rhinology
Kierland Ballroom 2

MODERATOR: Douglas A. Girod, MD*, Kansas City, KS

10:30 **Incidence of Malignancy in Thyroid Nodules Classified as Atypia of Undetermined Significance**
Allen S. Ho, MD, New York, NY; Kunal S. Jain, MD, New York, NY; Oscar Lin, MD, New York, NY; Ashok R. Shaha, MD*, New York, NY; Jatin P. Shah, MD, New York, NY; Luc G.T. Morris, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the atypia of undetermined significance category in the Bethesda System for Reporting Thyroid Cytopathology, compare the estimated versus actual rates of malignancy, and discuss its clinical implications for observation versus surgical intervention.

Objectives: The Bethesda System for Reporting Thyroid Cytopathology has standardized the classification of thyroid nodules undergoing fine needle aspiration (FNA). For the atypia of undetermined significance (AUS) category, a 5-15% incidence of malignancy was estimated, but the true malignancy rate remains unknown. Our objective was to analyze management patterns and the incidence of malignancy in AUS nodules at a comprehensive cancer center. **Study Design:** Retrospective cohort analysis. **Methods:** The management of 201 patients with AUS nodules presenting between 2007-2011 was analyzed. Clinicopathologic predictors of immediate surgery were determined using multivariable logistic regression. Among patients undergoing surgery, biopsied nodules were correlated with surgical pathology to determine the malignancy rate. Incidental thyroid cancers were also recorded. **Results:** Among all thyroid FNAs performed during this period, 9% were AUS. Of patients with AUS on initial FNA, 68% (126/201) underwent immediate surgery, 20% (41/201) had repeat FNA, and 12% (24/201) were observed. Repeat FNA revealed AUS in 39% (16/41) and was benign in 42% (17/41). In multivariable analysis, the only predictor of immediate surgery was calcifications on ultrasound (OR=3.8, p=.02). Among all AUS nodules, the malignancy rate was 27%. Among AUS nodules triaged to surgery, the malignancy rate was 35%. There were separate incidental thyroid cancers in 23% of patients, increasing the total malignancy rate in resected specimens to 58%. **Conclusions:** Between 27-35% of AUS nodules were malignant, while an additional 23% of glands harbored incidental cancers. These malignancy rates are higher than traditionally estimated. Emerging molecular assays may help to more effectively triage AUS nodules to observation or surgery.

10:37 **Subgroup Analysis of Head and Neck Cancer Risk Factors in an at Risk Urban Population**
John M. Carter, MD, New Orleans, LA; Ryan Winters, MD, New Orleans, LA; David Z. Cai, BS, New Orleans, LA; Rosa Lipin, MS, New Orleans, LA; Sarah Lookabaugh, BS, New Orleans, LA; Paul L. Friedlander, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate the relative prevalence of head and neck cancer risk factors between different subgroups in the African American community in an inner city urban setting. The listener/observer should also be able to understand that the homeless group represents a particularly vulnerable subpopulation and may deserve closer attention to head and neck cancer surveillance through future cancer screenings.

Objectives: To compare a subset analysis of head and neck risk factors and basic demographic data between different socioeconomic subgroups in the African American community in an urban population. **Study Design:** Prospective cohort study. **Methods:** A prospective cohort study was approved by our institutional review board. A review of 365 surveys of demographic data, risk factors and physical exam findings from head and neck cancer screening events. Screening events were categorized one of three ways: church affiliated events, social events and community outreach events. Community outreach events are defined as those that targeted the homeless inner city population. Church affiliated events are defined as events hosted or sponsored by urban churches. Social events were those sponsored by local musicians and/or community social organizations. Statistical analysis was performed using a one tailed ANOVA test. **Results:** Significantly lower proportion of uninsured patients in the social group when compared to either the church or outreach groups ($P < 0.05$). No significant difference in proportion of uninsured patients between church and outreach groups. Significantly higher proportion of patients with private insurance in social group when compared to either church or outreach groups ($P < 0.05$). No significant difference in proportion of patients with private insurance between church and outreach groups. No significant difference in proportion of black/African American patients between the social and church groups. There was a significantly smaller proportion of black/African-American patients in the outreach group compared to either the social or church groups ($P < 0.05$). The outreach group had significantly fewer patients with a PCP than either the church or social groups ($P < 0.05$). Additionally, the church group had significantly fewer patients with a PCP than did the social group ($P < 0.05$). No significant difference in proportion of tobacco users between the social and church groups. There was a significantly higher proportion of smokers in the outreach group compared to the social and church groups ($P < 0.05$). No significant difference in proportion of patients consuming >1 drink/day between the social and church groups. There was a significantly higher proportion of patients in the outreach group that consumed >1 drink/day, compared to either the social

or church groups (P < 0.05). No significant difference in proportion of street drug users between the social and church groups. There was a significantly higher proportion of street drug users in the outreach group compared to the social and church groups (P < 0.05). Patients in the social group were significantly less likely to report a barrier to accessing care than were patients in either the church or outreach groups (P < 0.05). There was no significant difference in proportion of patients reporting a barrier to accessing care between the church and outreach groups. **Conclusions:** The homeless and urban church groups represent an at risk subpopulation due to lower socioeconomic status combined with actual/perceived barriers to care. The homeless group represents a particularly vulnerable group secondary to increased head and neck cancer risk factors. This is a population that may deserve closer attention to head and neck cancer surveillance through future cancer screenings in this underserved population.

10:44 **Fluorescently Labeled Therapeutic Antibodies for Margin Assessment in Melanoma**

Kristine E. Day, MD, Birmingham, AL; Lauren N. Beck, BS, Birmingham, AL; Nicholas L. Deep, BS, Birmingham, AL; Kurt R. Zinn, PhD DVM, Birmingham, AL; Eben L. Rosenthal, MD*, Birmingham, AL

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the utility of fluorescently labeled monoclonal antibodies in the intraoperative imaging of head and neck cancer.

Objectives: Detection of microscopic disease at the primary and regional sites during surgical resection of melanoma remains a significant challenge. We seek to determine if real time optical imaging to visualize microscopic disease could improve successful resection while limiting resection of normal tissues. We propose to evaluate several FDA approved therapeutic monoclonal antibodies to determine the optimal targeting agent. **Study Design:** Melanoma cell lines (A375 and SKMEL5) were xenografted into the ears or flanks of immunodeficient mice. Bevacizumab, panitumumab, tocilizumab or a nonspecific IgG were covalently linked to a near infrared (NIR) fluorescent probe (IRDye800) and systemically injected. **Methods:** Primary tumors and regional lymph nodes were imaged and then resected under fluorescent guidance using the SPY and PEARL imaging systems. The presence of fluorescence in small tissue fragments was correlated with permanent histology. **Results:** All fluorescently labeled therapeutic monoclonal antibodies could adequately delineate tumor from normal tissue based on tumor-to-background ratios (TBR) compared to IgG-IRDye800. Tocilizumab-IRDye800 had the highest TBR during surgical resection (1.6), followed by panitumumab-IRDye800 (1.5) and bevacizumab-IRDye800 (1.4). Sensitivity and specificity of each fluorescently labeled antibody was determined. Imaging was able to detect metastatic disease to lymph nodes that was not evident on gross examination (cervical= 21, axillary= 2). **Conclusions:** Although all antibodies could accurately localize subclinical disease, tocilizumab-IRDye800 demonstrated slightly enhanced imaging characteristics.

10:51 **First Place Lester A. Brown, MD Resident Research Award - Southern Section**
The Conjugation of a Monoclonal Antibody with a Small Drug Molecule Significantly Inhibits Head and Neck Squamous Cell Carcinoma

Larissa Sweeny, MD, Birmingham, AL; Yolanda E. Hartman, BS, Birmingham, AL; Kurt R. Zinn, PhD DVM, Birmingham, AL; Tong Zhou, PhD, Birmingham, AL; James R. Prudent, PhD, Madison, WI; Eben L. Rosenthal, MD*, Birmingham, AL

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the mechanism of action of EDC22, an extracellular drug conjugate of the monoclonal antibody targeting CD147 (glycoprotein highly expressed on the membrane of HNSCC cells) conjugated with a small drug molecule which targets the extracellular kinase regulator of Na,K-ATPase. In addition, participates should be able to appreciate the potent antitumorigenesic properties of EDC22 on head and neck squamous cell carcinoma.

Objectives: Despite advances in treatment modalities, head and neck squamous cell carcinoma (HNSCC) remains a challenge to treat with poor survival and high morbidity. Therefore, a treatment modality with greater efficacy is needed. This study sought to evaluate the feasibility and potency of the extracellular drug conjugate, EDC22, in the treatment of HNSCC cells in vitro and in vivo. **Study Design:** Preclinical investigation. **Methods:** HNSCC cell lines (FADU, OSC-19, Cal27, SCC-1), were cultured in vitro and proliferation and cell viability were assessed following treatment with a range of concentrations of EDC22 (0.25-5.00 mcg/mL). Mice bearing HNSCC xenografts (OSC-19, SCC-1) were treated with either EDC22 (3-10 mg/kg), anti-CD147 monoclonal antibody, cisplatin (1 mg/kg) or radiation therapy (2 Gy/week) monotherapy or in combination. **Results:** In vitro, treatment with minimal concentration of the conjugate (0.25 mcg/mL) significantly decreased cellular proliferation and cell viability ($p<0.0001$). In vivo, systemic treatment with EDC22 significantly decreased primary tumor growth rate in both an orthotopic mouse model (OSC-19) and a flank tumor mouse model (SCC-1) ($p<0.05$). In addition, EDC22 therapy resulted in a greater reduction in tumor growth in vivo compared to radiation monotherapy ($p<0.05$) and a similar reduction in tumor growth compared to cisplatin monotherapy. Combination therapy provided no significant further reduction in tumor growth relative to EDC22 monotherapy. **Conclusions:** EDC22 is a potent inhibitor of HNSCC cell proliferation in vitro and in vivo, warranting further investigations of its clinical potential in the treatment of HNSCC.

10:58 **Cisplatin Otoprotection Using Transtympanic L-N-Acetyl-Cysteine: A Randomized Trial**

Douglas J. Angel, MD, London, ON Canada, John Yoo, MD FRCSC, London, ON Canada; Scott J. Hamilton, MD FRCSC, Peterborough, ON Canada; Lorne S. Parnes, MD FRCSC*, London, ON Canada; Kevin Fung, MD FRSCS, London, ON Canada; Jason H. Franklin, MD FRCSC, London, ON Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the mechanism of cisplatin induced ototoxicity and discuss the role of transtympanic l-n-acetyl-cysteine in preventing ototoxicity.

Objectives: To determine the efficacy of transtympanic L-N-acetyl cysteine (L-NAC) in preventing cisplatin induced sensorineural hearing loss. **Study Design:** Prospective, open label study. **Methods:** Head and neck cancer patients undergoing cisplatin therapy and with symmetric pre-treatment audiometric testing were enrolled. In each patient one ear was randomly chosen for L-NAC treatment while the other was used as the control ear. 30-60 minutes prior to receiving each of the three cycles of systemic cisplatin, patients underwent transtympanic injection of 2% L-NAC to the treatment ear only. The primary outcome was defined a priori as an asymmetric audiogram at one month following cisplatin therapy. **Results:** 11 patients were enrolled. Two patients had significantly reduced hearing loss in the ear treated with L-NAC in several frequencies as compared to the control ear. No patient had worse hearing in the treated ear. The overall audiometric differences between the L-NAC and control ears did not reach statistical significance. **Conclusions:** Transtympanic L-NAC may have the potential to prevent cisplatin induced ototoxicity. Preliminary findings from this study provide a strong basis for future research to optimize delivery technique, concentration, and timing.

11:05 **Sinonasal Lymphoma: A Rare Rhinologic Entity**

Kevin A. Peng, MD, Los Angeles, CA; Jeffrey D. Suh, MD, Los Angeles, CA; Sunita M. Bhuta, 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 discuss the presentation and differential diagnosis of a sinonasal mass and demonstrate knowledge of treatment and prognosis of sinonasal lymphoma.

Objectives: To present a case series of sinonasal lymphoma and to review the literature surrounding the diagnosis and management of this disease. **Study Design:** Retrospective chart review. **Methods:** A pathology database spanning 22 years at a tertiary care center was searched for a diagnosis of lymphoma in the paranasal sinuses or the nasal cavity. **Results:** Seventeen patients with sinonasal lymphoma were identified. The maxillary, ethmoid, and sphenoid sinuses were affected equally. Histologically, the most common type was diffuse large B cell lymphoma (53%, 9 patients), followed by extranodal NK-cell lymphoma (ENKL, 21%, 3 patients), with follicular, small lymphocytic, MALT, and mantle cell lymphoma less common (6%, 1 patient each). Presenting symptoms included nasal obstruction and rhinorrhea (53%, 9 patients) and diplopia (18%, 3 patients); radiographic imaging demonstrated a discrete mass (59%, 10 patients), sinus opacification (53%, 9 patients), and/or bony erosion (35%, 6 patients). Treatment included chemotherapy alone (71%, 12 patients), chemotherapy and radiation (6%, 1 patient), and radiation alone (6%, 1 patient); observation was recommended for one patient, and treatment for two patients was unknown. **Conclusions:** Lymphoma of the nasal cavity and paranasal sinuses is extremely rare, may mimic benign neoplasms, and may manifest either in an isolated fashion or in conjunction with systemic disease. B-cell lymphomas, a more favorable diagnosis, account for a majority of cases, while ENKL is associated with rapid disease progression and death. Chemotherapy and radiation are the main therapies. Histologic diagnosis is of paramount importance, and clinicians must remain cognizant of this entity.

Q&A

11:15 - 12:15 **SINONASAL MALIGNANCIES: STATE OF THE ART IN MANAGEMENT**

Moderator: Brent A. Senior, MD*, Chapel Hill, NC

Panelists: Alexander Guang-Yu Chiu, MD*, Tucson, AZ
Peter H. Hwang, MD*, Stanford, CA
Marc Robert Rosen, MD, Philadelphia, PA
Adam M. Zanation, MD, Chapel Hill, NC

Q&A

12:15 ***Adjourn Scientific Sessions***

12:30 - 2:00 **TRIOLOGICAL SOCIETY THESIS SEMINAR *(candidates and prospective candidates)* - POWELL**

Friday

12:30 - 2:00 **RESIDENT BOWL - KNOWLEDGE MATCH** ***(support and cheer for the team of residents from your institution) - KIERLAND BALLROOM 1***

Free Afternoon/Free Evening

SATURDAY, JANUARY 26, 2013

7:00 - 7:50 **Triological Society Business Meetings - Fellows Only**
Eastern Section - POWELL
Middle Section - MERRIAM

8:00 am **Announcements by Vice Presidents**

8:05 - 10:00 CONCURRENT SESSION
Pediatrics and Head & Neck
Kierland Ballroom 1

MODERATOR: Brian M. Nussenbaum, MD*, St. Louis, MO

8:05 **Defining Anatomical Landmarks for Robotic Facelift Thyroidectomy**
Michael C. Singer, MD, Detroit, MI; Andrew T. Heffernan, BSA, Augusta, GA; David J. Terris, MD*, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the key anatomical landmarks encountered during robotic facelift thyroidectomy and describe techniques to facilitate their identification.

Objectives: Robotic facelift thyroidectomy (RFT) is a safe and easier remote access thyroidectomy technique. While the anatomy encountered during RFT is well known to surgeons, the vector of approach during this technique may be less familiar. In order to facilitate safe and efficient performance of RFT, the relationships of key anatomical landmarks associated with this technique were determined. **Study Design:** Eight anatomical dissections were performed in cadavers which included performance of RFT and definition of discrete anatomical relationships. **Methods:** Morphologic assessments of the great auricular nerve (GAN), omohyoid muscle (OM), inferior constrictor (IC) and recurrent laryngeal nerve (RLN) were conducted. **Results:** The mean distance from the incision apex to the anterior and posterior aspects of the GAN were 3.8 ± 1.16 and 7.7 ± 0.77 cm. From the apex of the incision to the OM was 11.1 ± 1.73 cm on average. The OM was located 1.3 ± 0.5 cm inferior to an axial line drawn through the inferior aspect of the thyroid notch. The anterior branch of the RLN was identified coursing deep to the inferior margin of the inferior constrictor a mean of 1.2 ± 0.24 cm lateral to the origin of this muscle on the cricoid cartilage. **Conclusions:** Characterization of the key anatomical landmarks of the lateral neck and thyroid compartment associated with RFT, including the GAN, OM and RLN, allows for more rapid recognition of critical structures during this surgery. Surgeons learning this approach should be familiar with these relationships.

8:12 **Intravascular Human Salivary Cell Augmentation for the Treatment of Salivary Gland Hypofunction in a Rat Model**
Millie J. Surati, MD, Winston Salem, NC; Shay Soker, PhD, Winston Salem, NC; Christopher A. Sullivan, MD, Winston Salem, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to assess the long term effect of intravascular salivary cell augmentation in a rat model of salivary gland hypofunction.

Objectives: To determine the fate and functional impact of human salivary cells after intravascular augmentation in a rat model of salivary cell depletion. **Study Design:** Prospective interventional animal study. **Methods:** Submandibular duct ligation was used to deplete salivary cells in a rat model. 48 animals were randomized to age/sex matched control (C), permanent submandibular duct ligation (SDL-p), temporary SDL (SDL-t), or temporary SDL with cell injection (SDL-i) groups. SDL-p, SDL-t, and SDL-i animals underwent ligation of the right submandibular gland. SDL-t and SDL-i animals underwent reversal of duct ligation at 10 weeks; SDL-i animals received intravascular injection of labeled human salivary gland cells. Induced salivary flow volume collections were carried out pre-ligation, 10 weeks post-ligation, and 2, 4, 8, and 12 weeks post-reversal/injection. Submandibular glands were harvested for histologic analysis and acinar cell counts. **Results:** Labeled human cells were detected in the glands of SDL-i animals at all time points; acinar units were observed in 12 week SDL-i animals. All groups showed similar pre-ligation salivary flow volumes ($p>0.05$). Increased flow volumes were observed in SDL-i animals when compared to SDL-p and SDL-t animals ($p<0.05$). Acinar cell density was not significantly different between SDL-p, SDL-t, and SDL-i animals ($p>0.05$). **Conclusions:** Human salivary cells can be delivered to rat salivary tissue intravascularly with long term survival of injected cells. Acinar unit formation by human cells demonstrated the ability of a human salivary cell fraction to self assemble in vivo. Functional augmentation of salivary volume was observed in injected animals but not supported by acinar cell density.

8:19 **Benefits of Ultrasound vs. Computed Tomography Imaging in the Diagnosis of Lateral Neck Abscesses in Children**

G. Paul Digoy, MD, Oklahoma City, OK; Benjamin A. Collins, BS, Oklahoma City, OK (Presenter); Julie A. Stoner, PhD, Oklahoma City, OK

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the benefits of ultrasound and computed tomography in the diagnosis of pediatric lateral neck abscesses in order to make an informed decision regarding when to use each imaging technique.

Objectives: This case series assesses the accuracy of two popular imaging techniques used in the diagnosis of pediatric lateral neck abscesses: ultrasound and computed tomography (CT). **Study Design:** 140 children from 2005-2011 who were imaged by ultrasound or CT prior to incision and drainage of a lateral neck mass were retrospectively reviewed. **Methods:** Sensitivity, specificity, positive and negative predictive values of ultrasound and CT were determined as compared to the gold standard, incision and drainage of the suspected abscess. **Results:** Ultrasound has a high specificity (100%) but a low sensitivity (53%). The positive predictive value (96%) is high while the negative predictive value is low (16%). CT has low specificity (18%) and low negative predictive value (6%). The sensitivity is reasonable (68%). The positive predictive value of CT is 88%. **Conclusions:** It is important to carefully evaluate the decision of ultrasound or CT in children presenting with a possible neck abscess. In cases with a high clinical suspicion of an abscess that require imaging prior to drainage, CT can be useful but may add significant radiation exposure. This study demonstrates ultrasound as an equivalent and possibly superior diagnostic tool. It is a safe choice in these situations and in cases with an undetermined probability of abscess. Benefits and drawbacks of each method are discussed with the statistical results, to promote judicious and individualized use of ultrasound and CT in the diagnosis of children with neck abscesses.

8:26 **Whose Experience Are We Measuring? Epidemiology of Patient Satisfaction in Pediatric Otolaryngology**

Carrie L. Nieman, MD MPH, Baltimore, MD; James R. Benke, BS, Baltimore, MD; Stacey L. Ishman, MD MPH, Baltimore, MD; Emily F. Boss, MD MPH*, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of patient satisfaction in current practice and the disparities that exist in obtaining a representative and culturally diverse sample.

Objectives: Despite a national emphasis on patient centeredness and cultural competency, minority and low income children continue to experience disparities in healthcare quality. Patient satisfaction scores have emerged as a core quality metric. The objective of this study was to evaluate race and insurance related disparities across parent participation with pediatric otolaryngology satisfaction surveys. **Study Design:** Prospective cohort analysis of patient satisfaction survey respondents from an urban tertiary pediatric otolaryngology clinic. **Methods:** Demographics of survey respondents (Press Ganey Medical Practice©) from January to July 2012 were compared both to a control group representing the entire clinic population and also by race/insurance subgroups within the cohort using t-test and chi-square analyses. Multivariate logistic regression analyses were performed to assess likelihood to complete a survey based on race or insurance status. **Results:** 130 respondents were compared to 861 controls. The mean patient age for which the parent survey was completed was 5.7 years; 59.2% of children were <5 years old. Compared to controls, survey respondents were more often white (101/130, 77.7% vs. 495/861, 57.5%; P<0.001) and privately insured (110/130, 84.6% vs. 507/861, 58.9%; P<0.001). Similarly, after adjusting for confounders, parents of children who were white (OR 2.58, 95% CI 1.67-3.97, P<0.001) or privately insured (OR 3.84, 95% CI 2.34-6.30, P<0.001) were most likely to complete a patient experience survey. **Conclusions:** Methods to evaluate parent satisfaction did not capture a racially or socioeconomically representative distribution of the true outpatient population within this pediatric setting. This finding challenges the validity of using patient satisfaction scores, as currently measured, to indicate healthcare quality. Future efforts to measure and improve patient and family experience should be inclusive of a culturally diverse population.

8:33 **Second Place Shirley Baron Resident Research Award - Western Section**

Incremental Healthcare Utilization and Costs for Acute Otitis Media in Children

Sameer Ahmed, MD, 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 understand a contemporary analysis of the specific healthcare burden associated with the diagnosis and treatment of pediatric acute otitis media.

Objectives: Determine the incremental healthcare costs associated with the diagnosis and treatment of acute otitis media (AOM) in children. **Study Design:** Cross-sectional analysis of a national healthcare cost database. **Methods:** Pediatric patients (age < 18 years) were examined from the 2009 Medical Expenditure Panel Survey. From the linked medical conditions file, cases with a diagnosis of AOM were extracted along with comorbid conditions. Ambulatory visit rates, prescription refills, and ambulatory healthcare costs were then compared between children with and without a diagnosis of AOM adjusting for age, sex, region, race, ethnicity, insurance coverage, and Charlson Comorbidity Index. **Results:** 8.7±0.4 million children were diagnosed with AOM (10.7±0.4% annually, mean age 5.3 years,

51.3% male) among 81.5±2.3 million children sampled (mean age 8.9 years, 51.3% male). Children with AOM manifested an additional +2.0 office visits, +0.2 emergency department visits and +1.6 prescription fills (all p<0.001) per year versus those without AOM, adjusting for demographics and medical comorbidities. Similarly, AOM was associated with an incremental increase in outpatient healthcare costs of $314 per child annually (p<0.001) and an increase of $17 in patient medication costs (p<0.001), but was not associated with an increase in total prescription expenses ($13, p=0.766). **Conclusions:** The diagnosis of AOM confers a significant incremental healthcare utilization burden on both patients and the healthcare system. With its high prevalence across the United States, pediatric AOM accounts for approximately $2.74 billion in added healthcare expense and is a significant healthcare utilization concern.

8:40 **First Place Vice President's Resident Research Award - Western Section**
Effect of Intratonsillar Injection of Steroids on Palatine Tonsils in Rabbit Model
Do Yeon Cho, MD, Stanford, CA; Michael Schaller, Stanford, CA; Sidhartha Sinha, MD, Stanford, CA; Ravi Pamnani, Stanford, CA; Stephen Felt, DVM MPH, Stanford, CA; Anna H. Messner, MD*, Stanford, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand that repeated focal tonsillar injections of corticosteroids reduce the size of palatine tonsils as compared to controls.

Objectives: Nasal steroids may significantly improve nasal obstruction symptoms with a reduction of adenoid size in children but no significant impact on the size of the palatine tonsils due to the location and washout by saliva. The purpose of this study is to determine if intratonsillar injections of corticosteroids reduce the size of palatine tonsils in rabbit model. **Study Design:** Prospective animal study. **Methods:** Ten rabbits were injected with fluticasone (n=5, 1mg/0.1cc) or saline (n=5, 0.1cc). Two rabbits received single injection and the rest (n=8) were injected every three days with a total of five doses. Tonsil size was measured at each time point. After fifth injection, tonsils were harvested for histologic analysis. **Results:** A total of 16 tonsils (repeated vs single injection = 12:4) were analyzed. After five steroid injections, the reduction (-7.7 mm2 ± 4.27) in size was statistically significant when compared to reduction (6.12 mm2 ± 6.57) in saline injected group (p = 0.002). Repeated steroid injection was more potent than single injection (-3.00 mm2 ± 3.08) in reducing size (p = 0.01). In histologic analysis, tonsils after repeated steroid injections were significantly smaller than saline injected tonsils (p = 0.001). Lymphoid follicles were not well visualized in steroid injected group. **Conclusions:** Repeated focal tonsillar injections of corticosteroids significantly reduced the size of palatine tonsils as compared to saline injected controls. A single injection of corticosteroids appears to be effective, but not as effective as multiple injections. Long term followup may be needed to assess for possible regrowth of tonsils.

8:47 **The Effect of Cleft Palate Repair Technique on Hearing Outcomes in Children**
Daniel J. Carroll, BA, Minneapolis, MN; Noëlle R. Padgitt, MA CCC-SLP, Minneapolis, MN; Meixia Liu, MS, Minneapolis, MN; Timothy A. Lander, MD, Minneapolis, MN; Robert J. Tibesar, MD, Minneapolis, MN; James D. Sidman, MD*, Minneapolis, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss operative technique as a factor of hearing outcome in children with cleft palate, as well as the influence of middle ear ventilation tubes.

Objectives: Otitis media with effusion causing conductive hearing loss is a problem for many children with cleft palate. This study examined the association between palate repair technique and hearing outcomes in children at 3 and 6 years post-repair. **Study Design:** Retrospective chart review. **Methods:** A chart review was performed on patients with all types of cleft palate that were repaired between 2001-2006 at a tertiary children's hospital. Exclusion criteria included sensorineural hearing loss, ossicular chain abnormalities, and ear canal abnormalities. The primary outcome was pure tone average (PTA) from 0.5kHz-2kHz. **Results:** 69 patients (138 ears) were analyzed. 30.4% of left ears and 31.9% of right ears had an abnormal (>20 dB) PTA at 3 years; at 6 years this significantly improved to 13.0% (p=0.008) and 15.9% (p=0.011). Extent of the cleft influenced technique choice (p=0.027), but only technique choice was associated with significant differences in PTA and only at 6 years post-repair. Double reverse z-plasty was associated with the lowest median PTA of 10.0 dB (p=0.046). There was no difference in the median PTA between children with and without comorbid diagnoses (such as Pierre Robin sequence, arthrogryposis) at 3 and 6 years post-repair. **Conclusions:** The majority of children developed normal hearing by 6 years with palatoplasty and routine ventilation tube insertion. Double reverse z-plasty was associated with the best hearing outcome, but it is not ideal for hard palate clefts. Randomized controlled trials are needed to elucidate the relationship between technique, middle ear ventilation and time to recovery, irrespective of type of cleft.

Q&A

9:00 - 10:00 **COMPLETE EVALUATION OF THE CHILD SUSPECTED OF HAVING SPEECH DELAY**

Moderator: Kenneth M. Grundfast, MD*, Boston, MA
Panelists: Roland D. Eavey, MD*, Nashville, TN
Scott C. Manning, MD*, Seattle, WA
Julie L. Wei, MD*, Kansas City, KS
Peter A. Weisskopf, MD*, Phoenix, AZ
Carla M. Zimmerman, MNS CCC-SLP, Tempe, AZ

Q&A

10:00 - 10:30 ***Break with Exhibitors/Poster Viewing - TRAILBLAZER BALLROOM***

8:05 - 10:00 CONCURRENT SESSION
Rhinology and General
Kierland Ballroom 2

MODERATOR: Sigsbee W. Duck, MD*, Rock Springs, WY

8:05 **Endoscopic Sphenoid Sinus Lateral Wall Optic Nerve Canal Decompression for Vision Preservation in Rapidly Progressive Graves' Ophthalmopathy**

Larry A. Hoover, MD*, Kansas City, KS; Inessa Fishman, MD, Kansas City, KS; Nick F. Rockefeller, BS, Kansas City, KS; Rebecca A. Linquist, MD, Kansas City, KS; Jason A. Sokol, MD, Kansas City, KS; Thomas J. Whittaker, MD, Kansas City, KS

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the techniques and outcomes of "extended" decompression in rapidly progressive Graves' ophthalmopathy.

Objectives: Verify the safety and efficacy of lateral sphenoid sinus wall optic canal decompression to preserve vision in rapidly progressive Graves' ophthalmopathy. **Study Design:** We retrospectively compared 29 patients (58 eyes) with standard decompression to 11 patients (17 eyes) with extended orbital decompression. **Methods:** Fifteen degree angled self-irrigating endoscopic diamond burrs with rotation axis immediately adjacent to the burr and image guidance now make this procedure possible. Orbital decompression was achieved by a transnasal/transethmoid and sublabial/transmaxillary endoscopic removal of the medial orbital wall and inferior floor. Decompression was carried posteriorly past the orbital apex into the sphenoid sinus to decompress the bony optic canal in the lateral wall of the sphenoid sinus back to the carotid artery. Immediate nerve relaxation with swelling was noted with removal of bony covering and incision of the nerve sheath. Pre- and post-visual acuity and other test were obtained. **Results:** Improvements in visual acuity were significantly (p=0.000) greater among cases receiving the extended decompression (n=17) when compared to those receiving standard orbital wall/periosteal decompression. Five patients with marked (>20/70) and rapidly progressive visual loss returned to normal/near normal with this decompression. **Conclusions:** New endoscopic instrumentation now allows safe decompression not only in the orbital apex, but also into the lateral sphenoid optic canal where we believe muscle hypertrophy constricts the optic nerve blood supply resulting in nerve edema back into the bony optic canal. This extended decompression has resulted in rapid normalization of orbital apex/nerve canal pressure. Corresponding immediate improvement in visual acuity occurred in nearly all cases (94%).

8:12 **Third Place John J. Conley, MD Resident Research Award - Eastern Section**
The Increasing Role of Otolaryngology in the Management of Surgical Thyroid Disorders

Kyle J. Chambers, MD, Boston, MA; Neil Battacharyya, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to better understand the increasing role of otolaryngology in the management of surgical thyroid disorders.

Objectives: To determine trends in office visits and medical specialty seen for surgical diagnoses of the thyroid gland. **Study Design:** A cross-sectional analysis of a national healthcare database. **Methods:** From the National Ambulatory Medical Care Survey (NAMCS), all cases of surgical thyroid disorders (e.g., benign neoplasm of thyroid gland, malignant neoplasm of thyroid gland, multinodular goiter) were extracted for two calendar year cohorts: 1995-1999 and 2005-2009. In addition to demographic information, the medical specialty of the health care provider seen was extracted. Comparisons were conducted for the proportion of surgical thyroid cases seen between general surgeons and otolaryngologists for the respective cohorts. **Results:** In the 1995-99 cohort, there were a total of 107±13 thousand outpatient visits annually to either general surgery or otolaryngology for surgical thyroid conditions. Among these, 62.7±8.4 thousand visits (58.3±5.6%) were seen by general surgery versus 44.8±9.1 thousand (41.7±5.6%) seen by otolaryngology. In comparison, in the

2005-09 cohort, there were 218±29 thousand visits annually for surgical thyroid conditions. Among these, 88.4±17 thousand (40.5±5.4%) were seen by general surgery versus 130±21 thousand (59.5±5.4%) seen by otolaryngology. The increase in proportion of surgical thyroid patients seen by otolaryngology in the second five year cohort was statistically significant (p=0.032, chi-square). **Conclusions:** There is a national trend in the United States toward otolaryngologists seeing an increasing majority proportion of increasingly prevalent surgical thyroid conditions. These data objectively confirm the perceived increasing role of otolaryngologists in the management of surgical thyroid disorders on a national level.

8:19 **Factors Affecting Time to Revision Sinus Surgery for Nasal Polyps: A 25 Year Experience**

Arthur W. Wu, MD, Boston, MA; Jonathan Y. Ting, MD, Boston, MA; Michael P. Platt, MD, Boston, MA; Hien S. Tierney, MD, Boston, MA; Ralph B. Metson, MD*, Boston, MA

Educational Objective: At the conclusion of this presentation, participants should be able to describe those clinical factors that influence the time to revision sinus surgery in patients with nasal polyps.

Objectives: To identify clinical factors that influence the time interval to revision sinus surgery in patients with nasal polyps. **Study Design:** Retrospective. **Methods:** Records of 301 individuals who underwent two or more surgeries for the diagnosis of nasal polyps by the senior author from 1987 through 2011 were reviewed. The time between surgical interventions was compared to patient demographics, comorbidities, endoscopic examination, CT stage, extent of surgery, and pathologic findings. **Results:** The time interval between polyp surgeries ranged from 0.7 to 18.6 years (mean 4.9+3.6 years). The average time to revision surgery was shorter in smokers versus non-smokers (3.8+3.6 yrs vs. 5.3+3.9 yrs, respectively, p=.022) and longer in patients who underwent middle turbinate resection versus preservation (4.8+3.8 yrs vs. 3.9+3.2 yrs, respectively, p=.048). Kaplan-Meier survival analysis confirmed these findings, but the beneficial effect of turbinectomy appeared to dissipate after 8 years. A history of prior sinus surgery (p=.023) and a younger age at time of initial surgery (p=.0005) were both predictive of an increased number of future polypectomies. Neither a history of asthma, nor advanced CT stage, influenced the time to revision surgery. **Conclusions:** Although variations in the time course between sinus surgeries for nasal polyps may reflect intrinsic differences in the biologic activity of polyp tissue, certain modifiable extrinsic factors appear to be contributory, including smoking on the part of the patient and operative technique on the part of the surgeon.

8:26 **Frontal Sinus Drillout (Modified Lothrop Procedure): Long Term Results**

Jonathan Y. Ting, MD, Indianapolis, IN; Arthur W. Wu, MD, Los Angeles, CA; Ralph B. Metson, MD*, Boston, MA

Educational Objective: At the conclusion of this presentation, participants should be able to describe those factors which influence the long term success rate of frontal sinus drillout (modified Lothrop procedure).

Objectives: To determine the long term results of frontal sinus drillout for the treatment of advanced frontal sinus disease. **Study Design:** Retrospective. **Methods:** The records of patients who underwent frontal sinus drillout by a single surgeon at an academic medical center over a 16 year period were reviewed. Clinical factors which influenced surgical outcome were identified. Failure was defined as reobstruction of the drillout site necessitating additional frontal sinus surgery. **Results:** A total of 204 frontal drillouts (143 bilateral procedures) were performed. Mean followup was 10.2 years (range 3.1 to 16.4 years). Restenosis of the frontal drainage pathway occurred in 61 (29.9%) patients who required additional frontal sinus surgery. Drillouts performed for the indication of mucocele or tumor had significantly higher failure rate (OR=2.9, p=0.022 and OR=5.3, p=0.020, respectively). The likelihood of needing additional frontal sinus surgery following drillout was 2.27 times greater in patients with positive allergy testing (p=0.059). Clinical outcome did not correlate with age, gender, smoking, asthma, prior sinus surgery, or the presence of eosinophilic mucin. **Conclusions:** In the majority of patients who undergo frontal sinus drillout, patency of the frontal sinus outflow tract appears to be maintained for more than a decade.

8:33 **Spontaneous CSF Leak Repair: A Five Year Prospective Evaluation**

Mohamad R. Chaaban, MD, Birmingham, AL; Elisa A. Illing, MD, Birmingham, AL; Bradford A. Woodworth, MD, Birmingham, AL

Educational Objective: At the conclusion of this presentation, the participants should be able to gain knowledge on the outcomes of spontaneous CSF leak repair and perioperative intracranial pressure management.

Objectives: Mounting evidence indicates the majority of spontaneous CSF leaks are associated with intracranial hypertension. The objectives of the current study were to assess outcomes regarding spontaneous CSF leaks focusing on premorbid factors, surgical technique, and management of intracranial pressure. **Study Design:** Prospective cohort. **Methods:** Prospective evaluation of patients with spontaneous CSF leaks was performed. Data regarding demographics, nature of presentation, body mass index (BMI), location and size of defect, intracranial pressure, clinical followup, and complications were collected. **Results:** Over 5 years, 42 patients (avg. age 51) with 48 spontaneous CSF leaks were treated by a single otolaryngologist. Twenty subjects presented with recurrence of their CSF leak following previous endoscopic and/or open approaches by other physicians. Obesity was present in 79% of individuals (avg. BMI 36). Forty-four CSF leaks (92%) were successfully repaired at first attempt. With secondary repair, all CSF leaks were closed at

last clinical followup (avg. 22 months). Three patients developed late failures (>2 months) with one recurrence at a distinct location from the primary site at 8 months post-procedure (associated with ventriculoperitoneal shunt failure). Opening pressures via lumbar puncture averaged 22.8+/-7.5 cmH20, which significantly increased to 31.9+/-10.4 cmH20 ($p<0.0001$) following closure of the skull base defect(s). Management of intracranial hypertension included acetazolamide or permanent CSF diversion in 16 patients (5 revisions of failed preexisting ventriculoperitoneal shunts). **Conclusions:** While spontaneous CSF leaks have the highest recurrence rate of any etiology, prospective evaluation demonstrates high success rates with control of intracranial hypertension.

8:40 **Aspirin Sensitivity Does not Compromise Surgical Outcomes in Patients with Samter's Triad**

David W. Jang, MD, Augusta, GA; Brett T. Comer, MD, Kokomo, IN; Stilianos E. Kountakis, MD PhD*, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe surgical outcomes in patients with Samter's triad as compared to patients who are not aspirin sensitive.

Objectives: To demonstrate that quality of life outcomes after endoscopic sinus surgery are not compromised in patients with Samter's triad (asthma, nasal polyps, aspirin sensitivity) when compared to patients with eosinophilic chronic rhinosinusitis with nasal polyposis (eCRSwP) without aspirin sensitivity. **Study Design:** Retrospective review of prospectively collected data from a single institution. **Methods:** Thirty-two patients with Samter's triad were identified from a prospectively collected patient database from 2003 to 2012. Preoperative and postoperative symptom and endoscopy scores were compared to those of thirty-seven consecutive patients with eCRSwP who were not aspirin sensitive (control). Student t-test statistical analysis was performed to examine for differences between the two groups. Symptom scores were assessed using the SNOT-20 outcomes instrument. Endoscopy findings were scored according to the Lund-Kennedy methodology. **Results:** Samter's triad patients had significantly worse disease preoperatively when compared to the control group: SNOT-20 (32 vs. 22, $p=0.005$), endoscopy score (10.9 vs. 7.6, $p=0.0005$), and Lund-Mackay CT score (19.1 vs. 13.9, $p=0.0001$). Although postoperative endoscopy scores remained worse in the Samter's triad group, postoperative SNOT-20 scores were comparable to those of the control group at 3 year followup (19 vs. 18, $p=0.9$). **Conclusions:** Although Samter's triad patients present with more severe disease and are more likely to undergo revision surgery, they have postoperative quality of life outcomes that are comparable to patients with eCRSwP who are not aspirin sensitive. This is the first study to utilize a disease specific, validated outcomes instrument in comparing Samter's triad patients with a non-aspirin sensitive control group.

8:47 **Anti-IHF Enhances Biofilm Clearance from Nasopore©**

Kathleyn A. Brandstetter, BA, Columbus, OH; Joseph A. Jurcisek, BS, Columbus, OH; Steven D. Goodman, PhD, Los Angeles, CA; Lauren O. Bakaletz, PhD, Columbus, OH; Subinoy Das, MD, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should appreciate the increased potential for biofilm growth on intranasal packing materials and understand the therapeutic utility of anti-IHF in enhancing biofilm eradication from Nasopore dressings.

Objectives: Intranasal resorbable packing, such as Nasopore©, is commonly used after endoscopic sinus surgery, despite a paucity of evidence that demonstrates clinical benefit. We theorized that such packing might support bacterial biofilm formation and growth. The DNABII family of proteins stabilizes the extracellular polymeric substance of the biofilm, thus protecting bacteria from host defenses and traditional antibiotics. This study tests the hypothesis that anti-IHF antibodies (antiserum that has high affinity for DNABII family members from multiple bacterial genera) in conjunction with antibiotics would enhance biofilm eradication from Nasopore. **Study Design:** In vitro experiment. **Methods:** Non-typeable haemophilus influenzae (NTHI) biofilms were grown on Nasopore using supplemented brain heart infusion (sBHI) broth. Following 24 hour incubation, Nasopore biofilms were incubated for an additional 16 hours with: sBHI alone, naive rabbit serum, rabbit anti-IHF serum, amoxicillin/clavulanate or anti-IHF serum + amoxicillin/clavulanate. COMSTAT analysis was performed on images of biofilms obtained via confocal microscopy. **Results:** NTHI readily formed biofilms on Nasopore. Treatment with amoxicillin/clavulanate alone demonstrated an increase in biomass by 14% to 5.79 μ2 / μ3 compared to initial incubation. Treatment with anti-IHF alone reduced biomass by 78% to 1.23 μ2 / μ3. Anti-IHF + amoxicillin/clavulanate further reduced biomass by 88% to 0.66 μ2 / μ3 ($p=0.0194$). **Conclusions:** Antibiotics alone were ineffective in clearing NTHI biofilms formed on Nasopore in vitro. Anti-IHF antibodies plus amoxicillin/clavulanate therapy synergistically reduced biofilm biomass formed on Nasopore by 88%. These data support clinical studies for the use of anti-IHF therapy combined with antibiotics to reduce biofilm formation on intranasal packing used during endoscopic sinus surgery.

Q&A

9:00 - 10:00 **EVIDENCE BASED MANAGEMENT OF CHRONIC RHINOSINUSITIS**

Moderator: Robert C. Kern, MD*, Chicago, IL
Panelists: Sigsbee W. Duck, MD*, Rock Springs, WY
Ralph B. Metson, MD*, Boston, MA
John F. Pallanch, MD*, Rochester, MN

Q&A

10:00 - 10:30 ***Break with Exhibitors/Poster Viewing - TRAILBLAZER BALLROOM***

10:30 - 11:45 CONCURRENT SESSIONS
Otology Panel
Kierland Ballroom 1

10:30 - 11:45 **TINNITUS - IS THE RINGING IN MY HEAD BOTHERING YOU?**

Moderator: George T. Hashisaki, MD*, Charlottesville, VA
Panelists: Steven W. Cheung, MD*, San Francisco, CA
Alan G. Micco, MD*, Chicago, IL
Jay Piccirillo, MD*, St. Louis, MO
Michael D. Seidman, MD*, West Bloomfield, MI

Q&A

Head & Neck Panel
Kierland Ballroom 2

10:30 - 11:45 **PARATHYROID SURGERY: THE ROUTINE AND THE UNUSUAL**

Moderator: David J. Terris, MD*, Augusta, GA
Panelists: Douglas A. Girod, MD*, Kansas City, KS
Jesus E. Medina, MD*, Oklahoma City, OK
Randal C. Paniello, MD*, St. Louis, MO
David L. Steward, MD*, Cincinnati, OH

Q&A

11:45 - 1:00 ***Lunch - TRAILBLAZER BALLROOM***

1:00 - 2:30 GENERAL SESSION
Kierland Ballroom 1 & 2

1:00 - 2:30 **PAST, PRESENT, AND FUTURE BATTLES IN OTOLARYNGOLOGY**

Moderator: Paul R. Lambert, MD*, Charleston, SC
Panelists: Derald E. Brackmann, MD*, Los Angeles, CA
Richard E. Hayden, MD*, Phoenix, AZ
G. Richard Holt, MD*, San Antonio, TX
Robert H. Ossoff, DMD MD*, Nashville, TN
Steven D. Schaefer, MD*, New York, NY

Q&A

2:30 - 3:00 ***Break with Exhibitors/Poster Viewing***

3:00 - 5:05 GENERAL SESSION
Kierland Ballroom 1 & 2

3:00 - 3:30 **HOW I DO IT: NOT WHEN AND WHY, JUST HOW - VIDEO SESSION** *(4 minutes each)*

Moderator: Richard R. Orlandi, MD*, Salt Lake City, UT

Nasoseptal Flap for Endoscopic Skull Base Surgery
Adam M. Zanation, MD, Chapel Hill, NC

Septal Perforation Repair
Stephen F. Bansberg, MD*, Phoenix, AZ

Endoscopic Anterior Ethmoid Artery Ligation
Joseph K. Han, MD*, Norfolk, VA

Microflap Surgery of the Vocal Fold
C. Gaelyn Garrett, MD*, Nashville, TN

Surgical Correction of VPI
Kathleen C.Y. Sie, MD, Seattle, WA

Q&A

3:35 - 4:05 **KEYNOTE ADDRESS**

What's Love Got to Do With It? Philotechnia and Philanthropia in Otolaryngology
Daniel P. Sulmasy, MD PhD, Chicago, IL

Dr. Sulmasy is the Kilbride-Clinton Professor, Professor of Medicine and the Divinity School, and the Associate Director of the MacLean Center for Clinical Medical Ethics, all at the University of Chicago. He is a member of the Presidential Commission for the Study of Bioethical Issues. An ethicist and practicing physician, Dr. Sulmasy studies end-of-life decision-making, ethics education and spirituality in medicine. A prolific author and speaker, Dr. Sulmasy has lectured on ethics and medicine extensively throughout the US and Europe.

4:05 - 5:05 **FEATURED PANEL: CAN YOU BE FAITHFUL TO THE HIPPOCRATIC OATH IN THE 21st CENTURY?**

Moderator: Gerald B. Healy, MD*, Boston, MA
Panelists: Christine G. Gourin, MD*, Baltimore, MD
Stanley M. Shapshay, MD*, Albany, NY
Daniel P. Sulmasy, MD PhD, Chicago, IL

5:05 **Introduction of Vice Presidents-Elect by Section Vice Presidents**

5:15 - 9:00 ***MEET THE AUTHORS POSTER RECEPTION/POSTER AWARDS WRAP UP PARTY***

Allergy/Rhinology

S1. **Unilateral Transnasal Endoscopic Approach to Frontal Sinuses: Draf IIc**
Mohammed K. Al Komser, MD, San Francisco, CA; Andrew N. Goldberg, MD MSCE FACS*, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss Draf IIc procedure, its indications and advantages over standard endoscopic techniques.

Objectives: 1) Develop an important surgical option in cases of chronic or recalcitrant frontal sinus disease where access to the ipsilateral frontal recess is limited; and 2) minimize unnecessary surgical manipulation of uninvolved areas. **Study Design:** Descriptive study involving chart review for 2 patients that had Draf IIc procedure. **Methods:** Two patients requiring revision endoscopic frontal sinus surgery who underwent the Draf IIc technique were identified. Preoperative nasal endoscopy and CT scan of the sinuses in each case revealed an obstructed right frontal sinus outflow tract and persistent opacification of the right frontal sinus. There was insufficient space in the medial-lateral dimension for adequate drainage without restenosis. Revision frontal sinusotomy was performed entering the contralateral frontal sinus via a transseptal route. The contralateral frontal recess was not disturbed. Both patients received routine endoscopic sinus surgery followup. Patency of the drainage pathway and aeration of the frontal sinuses were assessed by postoperative nasal endoscopy and/or CT scans. **Results:** The postoperative course was unremarkable; most symptoms of frontal pressure and headache were resolved by the first postoperative visit and did not return. Four to six months postoperative CT scan showed well aerated frontal sinuses with a widely patent drainage pathway. Postoperative nasal endoscopy revealed normal mucosa with no exposed bone or edema. **Conclusions:** Draf IIc provides an important surgical option for chronic or recalcitrant frontal sinus disease with unilateral obstruction where space in the ipsilateral frontal recess is limited and anatomy allows transseptal drainage without manipulation of the uninvolved side.

S2. **A Retrospective Review Assessing Efficacy of Steroid Releasing Frontal Sinus Stents in Chronic Frontal Sinusitis**
Samaneh Ashktorab, MD, Washington, DC; Suzette K. Mikula, MD, Washington, DC; Milton Ng, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate knowledge in methods used to approach chronic frontal sinusitis.

Objectives: Historically, surgical treatment has emphasized obliteration of the frontal sinus over preservation of its function. Since the 1990's, emphasis in surgical care has shifted to mucosal preservation. Frontal sinus steroid eluting stenting has emerged as a unique way to dilate and promote patency of sinuses without disruption of delicate ciliated mucosa. Although it has been demonstrated to be safe, there is paucity of literature providing evidence that it is effective, especially in the long term. **Study Design:** Retrospective review of all patients (N=28) with placement of drug eluting frontal sinus stents with chronic frontal sinusitis from June 2009 to 2011 at a university hospital. **Methods:** Outcomes include presence or absence of polyps, adhesions and nasofrontal duct patency as measured by postoperative endoscopic examination. **Results:** Drug eluting stents were placed in a total of 43 frontal sinus outflow tracts in patients with findings of mucosal thickening on CT scan who had failed conservative medical and/or surgical therapy. The stents were placed for duration of 2-4 weeks. All patients had a minimum one year followup. There was an evidence of patent nasofrontal outflow tracts in 41/43 of the frontal sinuses in office nasal endoscopy at one year followup. **Conclusions:** This study provides evidence to support the use of steroid eluting stents in patients with chronic frontal sinusitis. Future studies conducted prospectively will provide greater clinical evidence to support the use of drug eluting frontal sinus stents in chronic frontal sinusitis.

S3. **Pott's Puffy Tumor and Gardner's Syndrome**
Behrad B. Aynehchi, MD, Brooklyn, NY; Jon D. Cohen, MD, Brooklyn, NY; Stephen B. Cannady, MD, Brooklyn, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the management of osteoma induced sinusitis. Additionally, the participants will have an appreciation for considering Gardner's syndrome in this disease entity.

Objectives: Pott's puffy tumor or chronic frontal sinusitis with osteomyelitis is an infrequent complication of paranasal sinus osteoma. Gardner's syndrome is an autosomal dominant disease associated with osteomas, intestinal polyps, and various soft tissue tumors. The risk of developing colon cancer in this disorder is nearly 100%. We describe the presentation and management of the first reported case of Pott's puffy tumor associated with Gardner's syndrome. **Study Design:** Case report. **Methods:** Physical examination findings, photographic and radiographic images, and operating room (OR) endoscopic findings, along with management of this unique entity are described. Additionally, a review of the literature highlighting trends in presentation and management of osteoma induced sinusitis is provided. **Results:** A 15 year old otherwise healthy male presented with acute exacerbation of a chronic frontal sinusitis with orbital and frontal cellulitis. This was associated with multiple paranasal sinus osteomas related Gardner's syndrome. The patient underwent endoscopic frontal sinusotomy, frontal osteoma excision, and external drainage of the infectious process. The symptoms resolved shortly after the procedure with aggressive nasal irrigation and systemic antibiotics. **Conclusions:** Although one case of maxillary sinusitis related to Gardner's syndrome has been reported, this is the first description of a Pott's puffy tumor or frontal sinusitis associated with this genetic entity. Despite the infrequent presentation and relative lack of familiarity with Gardner's syndrome by otolaryngologists, this disorder can have serious untoward outcomes not only from sinusitis, but from gastrointestinal complications as well. Consequently, a certain degree of vigilance should be given to diagnosing this disease when managing osteomas with or without sinusitis.

S4. **Hemostasis in Endoscopic Skull Base Surgery Using a Bipolar Sealer**

Shumon I. Dhar, BS, Stony Brook, NY; Raphael P. Davis, MD, Stony Brook, NY; Ghassan J. Samara, MD*, Stony Brook, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe techniques used to provide hemostasis during endoscopic skull base surgery, including the use of the bipolar sealer during transsphenoidal pituitary tumor resection.

Objectives: During endoscopic skull base surgery hemostasis is an important factor in determining length of operation, rate of surgery abortion, and success of tumor resection. The bipolar sealer is a relatively new device that uses a combination of radiofrequency energy and saline to seal blood vessels while maintaining temperatures <100 C. It was our objective to describe the use of a bipolar sealer in managing bleeding in endoscopic transsphenoidal resection of pituitary tumors. **Study Design:** Retrospective case series and review of the literature. **Methods:** Intraoperative data and surgical outcomes were collected from charts of patients that underwent transnasal transsphenoidal resection of pituitary tumors. All interventions used the bipolar sealer (Aquamantys Mini EVS 3.4 Epidural Vein Sealer) to provide hemostasis. **Results:** Five patients were included; three were female, with an average age of 48 years. All tumors were resected successfully with an average estimated blood loss of 49 ml and no transfusion requirements. No postoperative complications occurred during followup including hemorrhage, infection, and CSF leaks. **Conclusions:** The bipolar sealer has mainly been used for hemostasis in orthopedic procedures such as knee and hip arthroplasty. In the literature, its use has not yet been described on the dura or brain parenchyma. Ergonomically, the device was found to be well suited for endoscopic skull base surgery with its long fixed bayonet providing bipolar current without moving parts to small areas of tissue. The bipolar sealer was found to work best on the venous plexus of the dura, but was less effective on the gland itself.

S5. **Mucous Membrane Pemphigoid: An Uncommon Cause of Bilateral Nasal Valve Stenosis**

Allison M. Dobbie, MD, Sacramento, CA; Rony K. Aouad, MD, Lexington, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to use this case to demonstrate an unusual presentation of mucous membrane pemphigoid. They should be able to explain the clinical and pathologic features of the disease process. Participants should also be able to discuss treatment of the disease, specifically the surgical management of MMP related nasal valve stenosis.

Objectives: Mucous membrane pemphigoid (MMP) is a group of heterogenous autoimmune subepithelial blistering diseases most commonly involving the ocular and oral mucosa. Literature on the otolaryngologic manifestations of this disease, particularly nasal involvement, is sparse. We present a case of MMP in which initial presentation was near total nasal obstruction from bilateral nasal valve stenosis. Clinical presentation, steps in diagnosis, as well as surgical management of the nasal manifestations will be discussed. **Study Design:** Case report. **Methods:** A case report and literature review is presented. **Results:** A 42 year old woman presented with a one year history of progressive bilateral nasal obstruction. On examination, she was noted to have severe stenosis present bilaterally at the internal nasal valve, caused by dense cicatrix between the inferior turbinates and nasal septum. Our patient had no previously diagnosed autoimmune disease. She also had recently developed oral ulcers and ocular irritation. Diagnosis of MMP was made by direct immunofluorescence microscopy, which demonstrated a linear deposition of IgG and C3 along the basement membrane. In addition to systemic immunosuppressive therapy, patient underwent endoscopic lysis of nasal synechiae with topical application of mitomycin C and nasal splint placement. Splints were removed two months postoperatively, and the patient remained free of nasal obstructive symptoms in followup fifteen months later. **Conclusions:** This case describes the rare presentation of mucous membrane pemphigoid with primary nasal symptoms. Although the mainstay of treatment centers around medical immunosuppressive therapy, we describe successful endoscopic surgical management of the nasal symptoms with adjunctive use of topical mitomycin C.

S6. **Hybrid Balloon Frontal Sinus Surgery in the Endoscopic Treatment of CRS with Variant Frontal Sinus Anatomy**

Gitanjali M. Fleischman, MD MS, Chapel Hill, NC; Grace G. Kim, MD, Chapel Hill, NC; Charles S. Ebert, 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 anatomic variants of the frontal sinus and potential advantages of using balloon technology with standard frontal dissection techniques.

Objectives: Presence of high or lateral frontal cells poses unique challenges when using endoscopic approaches. We describe utilization of a balloon dilation system as an aid for functional endoscopic sinus surgery (FESS) to access the frontal sinus in cases that would traditionally require open approaches. **Study Design:** Case series and literature review. **Methods:** This is a case series of 3 patients with chronic rhinosinusitis refractive to medical management who underwent FESS with the aid of a balloon dilation system at a tertiary referral center. All patients had variant forms of frontal sinus anatomy. Surgical techniques will be described and use of the balloon system will be reviewed. **Results:** All patients (ages 13-68 years) successfully underwent fontal sinusotomies with the assistance of a balloon dilation system, which was employed in a variety of ways: to dilate the narrow infundibulum of a high intersinus septal cell, to obliterate an anteriorly located type I frontal sinus cell, and to find the natural frontal ostium in presence of excessive agger nasi pneumatization. All patients were spared an osteoplastic flap or trephination, and there were no intraoperative complications. No postoperative bleeding, infection, or CSF leak was reported. **Conclusions:** Balloon dilation in combination with standard frontal sinus dissection techniques may be beneficial for a select group of patients with complex frontal anatomy. In this series of patients, the balloon was used successfully as a tool during FESS thereby eliminating the need for open approaches.

S7. Clival Chordoma of the Nasal Septum Secondary to Surgical Pathway Seeding

John Peyton Hines, BA, Jackson, MS; Mary G. Ashmead, MD, Jackson, MS; Scott P. Stringer, MD MS, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize seeding as a form of treatment failure in transseptal resection of clival chordomas.

Objectives: The purpose is to present a case of implanted metastases in the nasal septum after a transseptal approach for resection of clival chordoma and to compare it with other reported cases in the literature. **Study Design:** Case report and literature review. **Methods:** The clinical history, radiologic imaging, and pathology of a single patient are reviewed. **Results:** A 35 year old female presented with a left intranasal mass that completely occluded the left nasal passage. The patient had a history of clival chordoma treated at an outside institution with multiple partial resections via a transseptal approach and postoperative gamma knife radiotherapy. A 2.5 cm mass in the left nasal cavity as well as a 4 cm sellar mass were identified on MRI. Biopsy of the left nasal mass confirmed the diagnosis of chordoma, which was presumed to be secondary to seeding from a previous resection attempt. The patient received no further treatment due to multiple comorbidities. **Conclusions:** Recurrence of clival chordoma due to seeding along the surgical pathway is an infrequent mechanism of treatment failure, with only rare cases documented in the literature. When deciding on the appropriate surgical approach, the surgeon must consider the risk of septal seeding during a transseptal approach. The emergence of transnasal endoscopic skull base approaches may reduce the likelihood of surgical pathway tumor seeding.

S8. Physician Inquiry of Secondhand Tobacco Smoke Exposure in Chronic Rhinosinusitis Patients: A Population Based Case Control Study

Carrie L. Nieman, MD MPH, Baltimore, MD; Ana Navas-Acien, MD PhD, Baltimore, MD; Sandra Y. Lin, MD, Baltimore, MD; Douglas D. Reh, MD, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the importance of secondhand smoke exposure in chronic rhinosinusitis and discuss the currently missed opportunities otolaryngologists may play in screening and patient education.

Objectives: Chronic rhinosinusitis (CRS) is a prevalent and costly disease that adversely impacts quality of life. Smoking and secondhand tobacco (SHS) exposure have been shown to be important risk factors for CRS. However, little is known about the role that physicians play in educating their sinusitis patients about this preventable association. The objective of this study was to characterize physician participation in SHS exposure screening and education. **Study Design:** The authors conducted a community based, case control study of patients with CRS and matched controls. **Methods:** The cohort included 100 cases with CRS and 100 controls matched for age, sex and smoking status. We interviewed participants utilizing a validated questionnaire that included questions on physician inquiry and recommendations pertaining to smoking and SHS exposure. **Results:** Over 80% of participants with CRS recalled their physician inquiring about their current smoking status, whereas only 27% recalled being asked by their physician about SHS exposure and only 23% reported that their physician recommended avoiding SHS. This is in contrast to asthma, in which more physicians inquired about SHS exposure (39.6%, although the difference was only borderline significant p=0.I2) and recommended reducing SHS exposure (45.8%, p=0.005). **Conclusions:** Despite the known association between SHS exposure and CRS, relatively few physicians inquire about SHS and provide recommendations on SHS avoidance. This is in contrast to primary care physicians, where greater than 75% of PCPs advise their patients against SHS exposure. Brief physician inquiry increases success of smoking cessation and represents a missed opportunity for otolaryngologists to alter disease outcome related to SHS.

S9. Renal Cell Carcinoma Presenting with Metastasis to the Clivus

Amit A. Patel, MD, Newark, NJ; Arjuna B. Kuperan, MD, Newark, NJ; Chirag R. Patel, MD, Newark, NJ; James K. Liu, MD, Newark, NJ; Jean A. Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the presentation of clival lesions and the variable nature of renal cell carcinoma.

Objectives: Renal cell carcinoma is an uncommon malignancy which accounts for approximately 3% of all adult malignancies. Metastasis from renal cell carcinoma generally occurs in locoregional lymph nodes, lungs, liver, bones, and the brain. Other sites of spread have been described, but are increasingly infrequent. We describe a rare metastasis of renal cell carcinoma to the clivus causing multiple cranial nerve neuropathies treated by purely endoscopic resection with complete resolution of symptoms. Renal cell carcinoma and histopathologic diagnosis of clival lesions is discussed. This is the first report of clival metastasis due to renal cell carcinoma in the English literature. **Study Design:** Case report. **Methods:** Case report with literature review. **Results:** A 59 year old female with a medical history notable for hypertension and mental retardation presented to an outside hospital with progressive headaches, acute onset ptosis, diplopia and V2 hypoesthesia. CT and MRI scans revealed a large clival lesion with extension into the sphenoid sinuses and encasement of the left carotid artery. Endoscopic endonasal extended approach of this anterior skull base tumor was successfully performed with near complete resection. Intraoperative frozen section was concerning for sarcoma, however, final pathology showed renal cell carcinoma. Postoperatively the patient had complete resolution of her symptoms. Followup CT of the abdomen revealed a large left renal mass. **Conclusions:** This case aims to increase awareness of this infrequently encountered disease of the skull base/clivus and offers insight into the diagnosis and treatment of this rare entity.

S10. Revision Endoscopic Transorbital Decompression—A Single Institution's Experience

Christopher J. Rizzi, BS, Philadelphia, PA; Mindy R. Rabinowitz, MD, Philadelphia, PA; Edmund A. Pribitkin, MD*, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the basic principles of revision endoscopic transorbital decompression and to recognize them as safe and effective procedures.

Objectives: Endoscopic transorbital decompressions have proven to be a safe and effective method for the treatment of several orbital processes, particularly thyroid related eye disease. However, revision endoscopic outcomes are scantly reported in the current literature. The objective of this study was to report outcomes for revision endoscopic transorbital decompressions performed at a single institution. **Study Design:** Case series from single academic institution. **Methods:** Retrospective review of all patients undergoing endoscopic transorbital decompression between 1999-2012. **Results:** Records were searched encompassing endoscopic transorbital decompressions from 1999 to 2012. Of 213 patients, 5 (2.4%) patients met the criteria for revision surgery. 5/5 patients (100%) underwent primary surgery for thyroid eye disease, none experienced postoperative complications. Reasons for revision surgery included persistent proptosis with progressive visual loss in 3/5 (60%) patients. Reason for revision was not reported for 2/5 (40%) patients. The average time period between primary and revision surgeries was 9 months. All revision surgeries were performed in the standard endoscopic fashion. At a mean of 10 months followup, there were no complications and complete resolution of symptoms was reported. **Conclusions:** Although poorly represented in current literature, revision endoscopic transorbital decompression is supported by our series as a safe and effective method for relief of persistent orbital symptoms after primary endoscopic orbital decompression for thyroid eye disease.

S11. Nasal Septal Perforation: Review of Etiology and the Role of Biopsy in Diagnostic Workup

Patrick Scheffler, BA, Boston, MA; Josef Shargorodsky, MD MPH, Boston, MA; Stacey T. Gray, MD, Boston, MA

Educational Objective: At the conclusion of this presentation participants should understand the common presenting symptoms, etiologies, and evidence based diagnostic workup of nasal septal perforation (NSP).

Objectives: To investigate 1) the etiology, presentation, and evaluation of NSP; and 2) the diagnostic usefulness of biopsy in NSP. **Study Design:** Retrospective case series. **Methods:** Medical records of 162 patients presenting to a large tertiary care center with NSP were reviewed for relevant medical history (history of trauma or sinonasal surgery, previous medical history, cocaine use, intranasal medication use), presenting symptoms, diagnostic testing utilized (laboratory, imaging, and biopsy), and etiology. **Results:** Patients presented with nasal congestion (58%), facial pressure or pain (31%), epistaxis (29%), crusting (26%), postnasal drainage (23%), rhinorrhea (19%), hyposmia (12%), and whistling (11%). The most common etiologies were previous surgery (43%), cocaine use (19%), nasal sprays (14%), and trauma (7%). 29 patients (18%) underwent rheumatological laboratory testing, 15 of which had a positive test (10 elevated ESR, 3 ANA, 2 ACE). 28 patients (17%) underwent septal biopsy, 5 of which were positive (4 neoplasms were identified, and 1 biopsy was consistent with granulomatosis with polyangiitis (Wegener's granulomatosis)). **Conclusions:** Sinonasal surgery and cocaine use were the most common etiologies of NSP in our practice. Although cases suspicious for a neoplastic process warrant biopsy, our data showed that for evaluation of potential systemic causes, biopsy yielded predominantly nonspecific results and should only be employed in cases of high clinical suspicion.

S12. COX-2 Expression in Sinonasal Inverted Papilloma

Jeffrey D. Suh, MD, Los Angeles, CA; Marilene B. Wang, MD*, Los Angeles, CA; Fernando F. Palma-Diaz, MD, Los Angeles, CA; Bhuta Sunita, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able identify COX-2 overexpression in sinonasal inverted papilloma.

Objectives: Inverted papilloma (IP) is a benign, but locally aggressive neoplasm of the nasal cavity and paranasal sinuses. The mainstay of treatment of IP is surgical resection, but high rates of tumor recurrence have been reported. We present two cases of sinonasal inverted papilloma with positive cyclo-oxygenase-2 (COX-2) staining. The goal of this research is to document COX-2 overexpression in select cases of IP. **Study Design:** Case series. **Methods:** 2 consecutive patients with IP underwent complete endoscopic tumor resection. Hematoxylin and eosin stain confirmed the diagnosis of IP. Immunohistochemical staining was performed with COX-2 antibodies. The intensity of staining was then evaluated as 1+ (weak) and 2+ (strong). For each immunostained section, appropriate positive and negative controls were used. **Results:** Both patients demonstrated COX-2 overexpression in the tumor specimen. There was no evidence of dysplasia or malignancy in these cases. **Conclusions:** This report documents COX-2 overexpression in two cases of sinonasal inverted papilloma. Given the prevalence of COX-2 in papillomas of other sites, such as in recurrent respiratory papillomatosis, it may also be commonly overexpressed or activated in IP. These preliminary results prompt consideration of COX-2 inhibitors for select cases of unresectable or recurrent tumors.

S13. Current Trends in Sinus Surgery

Mark S. Toma, MD, Albany, NY; Steven M. Parnes, MD*, Albany, NY; Jonathan A. Levy, MS, Albany, NY; Bashar J. Yalldo, BS, Albany, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss current sinus surgery

techniques used by otolaryngologists and compare these techniques with the demographics of otolaryngologists currently performing endoscopic sinus surgery today.

Objectives: With the recent advent of new techniques in endoscopic sinus surgery, such as balloon sinuplasty, multiple surgical options exist as alternatives to the traditional sinus surgery. This study will discuss current sinus surgery techniques used by otolaryngologists and compare these techniques with the demographics of otolaryngologists currently performing endoscopic sinus surgery today. **Study Design:** An anonymous and voluntary online survey of practicing members of the American Academy of Otolaryngology-Head and Neck Surgery in our state inquiring about their current sinus surgery practices as well as preferred tools and techniques. **Methods:** The survey addressed the use of the different techniques for sinuplasty, as well as other components of sinus surgery such as in-office sinuplasty versus sinuplasty in the operating room, inferior turbinate cauterization versus submucosal reduction, and the use of image guidance. The survey also included the demographic data of the responding otolaryngologists. **Results:** Balloon sinuplasty is becoming a more relatively accepted technique amongst otolaryngologists regardless of fellowship and the number of years in practice with similar trends amongst all demographics. Also, the large majority (>75%) of respondents regardless of fellowship and the number of years in practice utilize image guidance on virgin sinuses. **Conclusions:** The current study was designed to investigate the current trends in sinus surgery amongst a representative sample of otolaryngologists. The data suggests that balloon sinuplasty as well as the use of image guidance are relatively accepted techniques for sinus surgery.

S14. Bony Erosion in Patients with Allergic Fungal Sinusitis

Lauren C. White, MD, Augusta, GA; David W. Jang, MD, Augusta, GA; Stilianos E. Kountakis, MD PhD*, Augusta, GA

Educational Objective: To compare bony erosion patterns in the initial presentation of allergic fungal sinusitis (AFS), and to determine how extent of erosion correlates with demographics as well as preoperative clinical parameters.

Objectives: To investigate bony erosion patterns in the initial presentation of allergic fungal sinusitis (AFS), and to determine how extent of erosion correlates with demographics as well as preoperative clinical parameters. **Study Design:** Retrospective review of prospectively collected data. **Methods:** Seventy-one patients with a histopathologic diagnosis of allergic fungal sinusitis were identified. Preoperative CT scans were reviewed to determine the number of anatomic subsites with bony erosion. Subsites included medial maxillary wall, lamina papyracea, skull base, posterior table of frontal sinus, and posterior and lateral walls of sphenoid sinus. SNOT-20, endoscopy, and Lund-Mackay CT scores were compared between patients with and without bony erosion. Patients with bony erosion were further classified based on the extent of erosion. Statistical analysis was performed using the Student's t-test for averages and chi-squared for variables presented as frequencies. **Results:** Of the seventy-one patients, forty-two (59%) had bony erosion, whereas twenty-nine (31%) did not. Patients with bony erosion were found to be significantly younger (30.0 vs. 37.3 yrs, p=0.043). Preoperative CT scores correlated with the presence and extent of bony erosion (p=0.0002). Sex, race, number of previous surgeries, and SNOT-20 and endoscopy scores did not correlate significantly. **Conclusions:** Patients with bony erosion from AFS were found to be younger than patients without bony erosion, suggesting that younger age is associated with more aggressive disease. As expected, higher Lund-Mackay scores correlated with the severity of erosion. The lack of correlation between SNOT-20 scores and bony erosion suggests the insidious nature of this destructive disease.

Facial Plastic & Reconstructive

S15. Dentigerous Cyst Presenting with Facial Deformity and Maxillary Sinusitis: A Study of Two Cases

Karam W. Badran, BS, Irvine, CA; Yuk Yee Yau, MD, Irvine, CA; Anton Hasso, MD, Irvine, CA; Lauren Tracy, BS, Irvine, CA; Naveen Bhandarkar, 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 the risks of an expanding dentigerous cyst and management strategies.

Objectives: A dentigerous cyst is the most common developmental odontogenic cyst and is characterized by the accumulation of fluid enclosed around the crown of an unerupted tooth. While often asymptomatic when small, significant expansion may cause facial pain, nasal obstruction, sinusitis, and facial deformity. We aim to describe two interesting cases of massive maxillary dentigerous cysts. **Study Design:** Retrospective case study. **Methods:** A series of 2 cases are presented with management options discussed and literature review performed. **Results:** In both cases, computed tomography (CT) revealed a large, expansile soft tissue density filling the entire maxillary antrum, similar to a mucocele, with thinning of the sinus walls. Expansion extended inferiorly into the palate in one case, while the other deviated the medial maxillary wall into the nasal cavity causing nasal obstruction. Magnetic resonance imaging of cystic fluid demonstrated homogeneous low and high signal intensity on T1 and T2 respectively. Histology demonstrated a cyst wall with fibrous tissue and squamous keratinized epithelium, consistent with dentigerous cyst. In one case, a sublabial approach was utilized for excision and reconstruction was performed using autologous bone with titanium plates. In the other case, endoscopic excision via medial maxillectomy was performed with residual bone allowed to remodel. Examination and CT at 3 months post-excision demonstrates no recurrence, and both patients had restoration of facial symmetry. **Conclusions:** It is important to consider large dentigerous cysts in the differential diagnosis of maxillary sinus opacification. Treatment can involve open or endoscopic resection with reconstruction performed at the surgeon's discretion.

S16. The Implicit Perception towards Patients following Facial Plastic Surgery

Courtney T. Chou, BA, Charlottesville, VA; Stephen S. Park, MD FACS*, Charlottesville, VA; J. Jared Christophel, MD, Charlottesville, VA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the difference between explicit and implicit perceptions, discuss the utility of implicit measures in quantifying perception, and describe the effect of facial plastic surgery on the implicit perceptions of patients by others.

Objectives: To evaluate the impact of facial cosmetic surgery on the perception of patients by others. Many patients seek aesthetic surgery in hopes that it will positively affect the opinions of the people they interact with and thus, improve aspects of their professional and social lives. This study aims to confirm that these goals are achieved at the subconscious level. **Study Design:** Previous studies have shown that postoperative cosmetic surgery patients are more highly rated along both intellectual and social domains. These studies have utilized questionnaires to assess explicit perceptions. This study, however, utilizes a validated tool in social and behavioral science research, an Evaluative Priming Task (EPT), to assess peoples' implicit, subconscious perceptions of cosmetic surgery patients. **Methods:** An EPT was designed to assess the public perceptions of preoperative and postoperative photographs of facial cosmetic surgery patients. The perceptions assessed were characterized into intellectual, social, and romantic domains reflecting three common areas of concern to patients undergoing cosmetic surgery. Patients who had undergone facial cosmetic surgery were randomly chosen for analysis and their preoperative and postoperative photographs included in the EPT design. Subjects were recruited and independently presented with the EPT. The subjects were blinded to the pre or postoperative status. **Results:** We hypothesize that this study will show that even the implicit perception of the public, a subconscious opinion, is impacted by facial cosmetic surgery. **Conclusions:** Findings that corroborate those of previous studies would further demonstrate that facial plastic surgery improves the impression a patient makes on others.

S17. A Unique Approach to Total Nasal Reconstruction

Lauren A. Hansen-Welches, MD, Indianapolis, IN; Taha Z. Shipchandler, MD, Indianapolis, IN

Educational Objective: At the conclusion of this presentation, the participants should be able to compare and discuss different novel techniques to address total nasal reconstruction.

Objectives: Nasal reconstruction surgery is one of the more challenging procedures within facial plastic reconstructive surgery. The goal is to create an aesthetically and functionally sound reconstruction that will allow the patient to socially interact with minimal self-consciousness. Various techniques have been described to aid in achieving this result. Our objective was to reconstruct a total nasal defect, including internal lining, provide a structural framework, and provide an external lining. **Study Design:** A case report and review of the literature. **Methods:** The patient underwent a near total rhinectomy for a large nasal septal high grade mucoepidermoid carcinoma. Resection required through and through defects of entire nasal septum, sidewall subunits, dorsum, tip and right lower lateral crura. Intact nasal structures that were preserved solely were comprised of columellar skin. **Results:** Various techniques were employed in order to achieve the patient's result. These included bilateral turbinate mucosal flaps for internal lining, rib cartilage for the caudal strut and upper lateral cartilages, and a paramedian forehead flap for external lining. In addition, the patient required a cheek turn flap and extensive midface plating for stabilization. **Conclusions:** An example of combining multiple academic principles and techniques of nasal reconstruction on a patient suffering a near total rhinectomy due to mucoepidermoid cancer of the nasal septum.

S18. The Osteomusculocutaneous Submental Flap for Midface Reconstruction

Richard E. Hayden, MD*, Phoenix, AZ; Thomas H. Nagel, MD, Phoenix, AZ (Presenter); Carrlene B. Donald, PA-C, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the anatomy and surgical utility of this flap and to compare its use with established techniques.

Objectives: To evaluate a new pedicled osteomusculocutaneous flap for midface and mandible reconstruction. **Study Design:** Prospective evaluation of 12 consecutive flaps performed at one institution. **Methods:** The submental flaps in this series were harvested differently to include 2X6 cm of anterior inferior mandible together with overlying submental skin but also to include bilateral anterior digastric bellies and bilateral mylohyoid muscles as a single unit. The bone was used for midfacial (maxilla) or mandible replacement. The skin and muscle paddles were used synchronously to repair associated facial and/or sinonasal defects. **Results:** All 12 flaps were transferred successfully with complete survival of the bone and cutaneous paddles. One flap suffered partial loss of the muscle paddle. **Conclusions:** This new pedicled composite flap is: relatively easy to harvest; reliable; available within the surgical field and provides sufficient bone stock, skin and muscle for most midface and some oromandibular defects. It provides an attractive alternative to free flap reconstruction for these defects.

S19. Endoscopic Ultrasonic Dacryocystorhinostomy for Recurrent Dacryocystitis following Rhinoplasty

Nadia K. Mostovych, MD, Philadelphia, PA; Mindy R. Rabinowitz, MD, Philadelphia, PA; Jurij R. Bilyk, MD, Philadelphia, PA; Edmund A. Pribitkin, MD*, Philadelphia, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of

the risk of lacrimal canal injury from osteotomies performed during rhinoplasty.

Objectives: The lacrimal sac is the structure most vulnerable to injury when performing osteotomies for rhinoplasty. When performed in a low lateral position or along the frontal process of the frontal maxillary suture, osteotomies have the potential to tear the medial canthal ligament and injure the underlying lacrimal sac resulting in dacryocystitis. Herein, we report a case of dacryocystitis following primary rhinoplasty repaired with endoscopic dacryocystorhinostomy using a Sonopet® ultrasonic bone aspirator. **Study Design:** Case report at a single institution. **Methods:** Retrospective review. **Results:** A 19 year old male presented with recurrent episodes of pain, tearing, and discharge from his left eye following primary rhinoplasty. Evidence of obstruction of the lacrimal system secondary to a low lateral osteotomy with an impinging bone fragment was seen on imaging. Endoscopic dacryocystorhinostomy was performed using a Sonopet® ultrasonic bone aspirator under image guidance to remove those bone fragments posing risk of further injury to the lacrimal sac and orbit. Patency of the nasolacrimal duct was achieved and the patient continues to be symptom free at 6 months followup. **Conclusions:** This report describes the first case of recurrent dacryocystitis following rhinoplasty requiring treatment by an endoscopic dacryocystorhinostomy (DCR). Endoscopic DCR provides several advantages over open DCR, including the lack of an external incision. Additionally, the use of an ultrasonic bone aspirator helps to minimize risk to adjacent orbital soft tissue anatomy and to prevent further injury to the lacrimal system.

S20. A Ten Year Objective Assessment of Safety and Outcomes of Silastic Augmentation Mentoplasty

Rusha Jayesh Patel, MD, Salt Lake City, UT; Chelsi B. Briem, RN, Salt Lake City, UT; Mobley R. Steven, MD, Salt Lake City, UT

Educational Objective: At the conclusion of this presentation, the participants will learn about the nuances of silicone augmentation mentoplasty and will be better prepared to select appropriate implants and to handle complications.

Objectives: To review our experience using silicone implants in augmentation mentoplasty and to determine outcomes and complications from these procedures. **Study Design:** A retrospective chart review over a decade at our academic institution. **Methods:** All patients undergoing augmentation mentoplasty with silicone implants were reviewed from 01/01/2002 to 01/01/2012. The type, size, and use of intraoperative modification were recorded for each implant. All implants were inserted via a submental approach. Complications and management were divided into “major” and “minor” groups based on literature review and degree of harm. The former included infection and permanent nerve damage, and the latter included cosmetic dissatisfaction, prolonged and temporary pain or numbness after surgery. **Results:** Over the study period, 55 patients underwent chin augmentation. 17 implants were modified at the time of surgery, most commonly with anterior shaving. Five patients (9%) had documented “minor” postoperative complications; no patients had a “major” complication. Of those with “minor” complications, two patients had postoperative asymmetry, one had persistent pain, and one had temporary hypoesthesia. One patient had subsequent orthognathic surgery and required implant removal due to change in mandible position. Of the implant types, the Flowers Mandibular Glove was used in 4 of the 5 patients with complications. **Conclusions:** Silicone augmentation mentoplasty is a safe and beneficial procedure for select patients. With appropriate pre and postoperative care, patient complications can be managed conservatively and “major” complications are rare. Interestingly, certain types of implants may be more prone to “minor” complications. Further study should be done on appropriate implant selection to prevent complications.

S21. Intraoperative Indocyanine Green Fluorescence Angiography: Early Experience with a Versatile Tool in Head and Neck Microvascular Reconstruction

Ryan D. Winters, MD, New Orleans, LA; Brian A. Moore, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the variety of uses for intraoperative indocyanine green fluorescence angiography in microvascular head and neck reconstruction.

Objectives: While clinical parameters and the judgment of an experienced microsurgeon remain the gold standard for assessing free flap viability, intraoperative indocyanine green (ICG) fluorescence angiography can provide additional information to the surgeon regarding the status of the flap microcirculation and tissue perfusion. It was used at the time of flap harvest to ensure adequate perfusion before pedicle division, to assess the viability of irradiated bone, soft tissue and skin at the recipient site, as well as in flap revision; allowing determination of viability of bone, soft tissue and skin components of osteocutaneous flaps. **Study Design:** Case series. **Methods:** Retrospective review of all cases of intraoperative ICG angiography during head and neck microvascular reconstruction by a single surgeon. **Results:** Eleven patients met inclusion criteria. Eight patients underwent myofasciocutaneous flap reconstruction, and three underwent osteocutaneous flap reconstruction. Change in management based on ICG occurred in the one revision case, with ICG confirming perfusion of bone and soft tissue in a clinically questionable free fibula flap. **Conclusions:** ICG used intraoperatively can provide the surgeon with valuable information both at the time of flap harvest, to ensure adequate blood supply before final division of the pedicle, as well as when flap viability is in question. Further investigation is ongoing to identify formal clinical indications for the use of this technology.

S22. Reconstruction of Massive Osteocutaneous Defects of the Head and Neck Using Three Simultaneous Microvascular Free Flaps

Ryan D. Winters, MD, New Orleans, LA; Samuel Moak, BA, New Orleans, LA; Meghan Garstka, BS, New Orleans, LA; Brian A. Moore, MD, New Orleans, LA; Hugo St. Hilaire, DDS MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the use of three simultaneous microvascular free flaps for a functional unit based reconstruction of massive head and neck defects.

Objectives: To describe the use of three simultaneous microvascular free flaps for a functional unit based reconstruction of massive head and neck defects. **Study Design:** Case series. **Methods:** Two patients presented with large complex defects comprising oral tongue and hemimandible, as well as skin, status post-resection of squamous cell carcinoma. One patient presented with shotgun blast to the face that obliterated most of the mandible and maxilla, as well as soft tissue and skin of mentum and lower lip. A functional unit based approach was undertaken for reconstruction with each free flap used to reconstruct a single functional unit, such as tongue, mandible/intraoral mucosa, midface, lip, and skin. **Results:** Patient 1 required an anterolateral thigh (ALT) flap for tongue reconstruction, an osteocutaneous free fibula for mandible and mucosal reconstruction, and a second ALT for external skin coverage after resection of T4N2b floor of mouth tumor. Patient 2 required an ulnar forearm flap for tongue reconstruction, mandible and mucosal reconstruction with an osteocutaneous deep circumflex iliac artery flap, and ALT for neck skin after salvage resection of persistent T2N0 oral tongue tumor complicated by osteoradionecrosis and orocutaneous fistula with prior free fibula flap failure. Patient 3 required midface reconstruction with a free fibula flap, mandible reconstruction with a second free fibula flap, and an ALT for lower lip reconstruction after shotgun blast. **Conclusions:** Multiple simultaneous free flaps utilized in a functional unit based reconstruction can provide needed tissue coverage in large defects and can optimize postoperative function of complex structures.

General/Clinical Fundamentals/Sleep Medicine

S23. Difficult Airway Simulation for Novice Physicians: A Randomized Trial Comparing Traditional Laryngoscopy and Video Assisted Laryngoscopy

Art A. Ambrosio, MD, San Diego, CA; Matthew T. Brigger, MD MPH, San Diego, CA; Travis J. Pfannenstiel, MD, San Antonio, TX; Christopher B. Cornelissen, DO, San Diego, CA; Kevin Bach, MD, San Diego, CA; Cory P. Gaconnet, MD, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand differences in intubation success using traditional and video assisted laryngoscopy by novice physicians.

Objectives: Detect a difference in intubation success and total intubation times between novice physicians using either a Macintosh style laryngoscope or a video assisted laryngoscope (GlideScope®) on a difficult airway simulator. **Study Design:** Prospective, randomized trial. **Methods:** 40 first year residents across a variety of disciplines with less than five total live intubations were recruited for the study. Testing took place during orientation prior to commencement of clinical duties. The entire group was provided training by faculty otolaryngologists and anesthesiologists using both laryngoscope types on a manikin airway simulator in a standard intubating scenario. Subjects were then randomized into two testing groups, using either a Macintosh laryngoscope or video assisted laryngoscope in a difficult intubation scenario. The difficult airway simulation entailed oral cavity/oropharyngeal obstruction utilizing inflation of the tongue, as well as cervical spine immobilization with a rigid collar preventing extension and elevation of the head. Success was described as a confirmed endotracheal intubation by the testing instructor in 120 seconds or less. **Results:** The Macintosh laryngoscope group (n=19) had an intubation success rate of 52.63% with a mean intubation time of 68.95 (19.6-120.0) seconds. The video assisted group (n=21) demonstrated a significantly higher success rate of 100%, (p<.0001) and a decreased mean intubation time of 23.1 (7.6-48.0) seconds (p<.0001). **Conclusions:** Novice physicians with little to no prior intubation experience showed significantly higher intubation success with lower intubation times using a video assisted laryngoscope in a difficult airway manikin simulator.

S24. A Cloud Based Media Archive and Diagnostic System for Otolaryngology Imaging

Michael S. Benninger, MD*, Cleveland, OH; Michael J. Chandler, MD, Chicago, IL; Denver M. McKelheer, BA, Redmond, WA; Neil R. Cherian, MD, Cleveland, OH; Philip C. Goetz, BFA, Brooklyn, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand 1) the technology that allows for a cloud based media and archive system for otolaryngology images and videos; 2) technical aspects of deploying a cloud based collaborative image archive system, obstacles to overcome and some clinical applications of this technology; 3) the essential security and privacy related issues that need to be addressed to meet patient and regulator standards.

Objectives: Describe the development and implementation of a cloud based image archive and diagnostic system. **Study Design:** Creation and deployment of a cloud based image archive and diagnostic system. **Methods:** Describe the process to build and deploy a cloud based imaging system. **Results:** Imaging has become a major component in the assessment and treatment of otolaryngology patients and the specialty has benefited from the introduction of imaging technology including computerized radiology and endoscopic imaging. Media archive systems extend this benefit by allowing comparative review of serial examinations and facilitate image review by otolaryngologists in locations that are connected through these systems. Cloud based media storage offers a method to provide collaborative diagnostic capabilities using a patient s recorded and archived diagnostic images and videos, while providing accessibility to

the patient and potentially to multiple providers in multiple locations. This functionality is achieved through use of a computer based digital media acquisition platform, which captures, encodes, and encrypts the recorded imagery, then transfers the secure encrypted media file to the cloud storage repository. Once in the cloud the encrypted file can be accessed for viewing and collaboration via a password protected web browser based application accessible from any computer with internet access. **Conclusions:** A cloud based image archive and diagnostic system can be developed to facilitate patient information and image exchange and assist patient care.

S25. Incision Site Planning for Thyroid Compartment Surgery: Relevance of Patient Positioning

Carrie M. Bush, MD, Augusta, GA; Michael C. Singer, MD, Augusta, GA; Angela Haskins, BS, Augusta, GA; David J. Terris, MD*, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the importance of patient positioning in planning a surgical incision site for thyroid compartment surgery.

Objectives: The ideal incision site for thyroid compartment surgery has long been debated. In most instances, surgeons mark the incision site with the patient supine on the operating table. Our aim was to investigate the change in location of the preferred incision site resulting from marking the patient in different positions. **Study Design:** Prospective observational. **Methods:** Data was collected prospectively on patients presenting for thyroid or parathyroid surgery. The optimal incision site was marked in the sitting position prior to surgery. The distance from the sternal notch to this mark was measured. This distance was then remeasured with the patient supine on the operating table and again following surgical positioning. Data analysis was performed with SPSS software. **Results:** 42 patients were included. 83% (N=35) of patients were women. Mean age was 53.1 years +/- 12 years. The mean BMI was 32.6 +/- 8 units. 31 patients (73%) underwent thyroidectomy and the remainder parathyroidectomy. The mean distance from the sternal notch to the preferred incision site in the sitting position was 3.55mm. This distance changed significantly ($p<0.001$) from patients in the supine and surgical position (mean 17.26mm and 31.60mm, respectively). No significant difference was detected based on age, gender or BMI. **Conclusions:** Ideal incision site placement in endocrine surgery is subjective. To best estimate appearance of the scar in social settings, placement of the incision should be determined with the patient in the upright position. Patient anatomy is significantly altered in the supine and surgical position, which may lead to poor surgical incision planning.

S26. IgG4 Related Otolaryngic Disease: An Under-Recognized Clinical Entity?

Rachel B. Cain, MD, Phoenix, AZ; Naresh P. Patel, MD, Phoenix, AZ; Vijayan Balan, MD, Phoenix, AZ; Thomas V. Colby, MD, Phoenix, AZ; Devyani Lal, MD, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the salient features of IgG4 related otolaryngic disease, and also become familiar with its diverse clinical presentation, diagnostic tools and treatment.

Objectives: Describe otolaryngic manifestations of IgG4 related disease (IgG4RD) with illustrative case series. **Study Design:** Case series and literature review. **Methods:** Review of otolaryngic IgG4RD cases at our institution was conducted. **Results:** We present the first otolaryngic case series of IgG4RD from the United States. IgG4RD, a recently described entity affecting multiple organs/sites, is typically characterized by tumefactive lesions, fibrosis, lymphoplasmacytic infiltrate and possible elevated serum IgG4. Clinically, IgG4RD may mimic malignancy or inflammatory processes but histopathology is often nonspecific. The disease usually responds to long term glucocorticosteroid and immunosuppressant therapy. Presentation in our IgG4RD patients was initially suspicious for malignancy or invasive infection. Clinical suspicion and repeat pathology review were critical in establishing IgG4RD diagnosis. Patient #1 presented after multiple nondiagnostic biopsies for cervical lymphadenopathy. MRI for recent retroorbital pain showed unilateral enhancing cavernous sinus mass. Review of previous pancreatectomy histopathology revealed IgG4RD (known cause of autoimmune pancreatitis). Review of prior lymph nodes biopsies also confirmed IgG4RD. Patient #2 presented with fever, headache, diabetes and an enhancing, infiltrative petroclival mass. Osteomyelitis was initially suspected on biopsy. Repeat pathology review showed polyclonal plasmacytosis with increased IgG4 positive plasma cells. Patient #3 presented with massive destruction of the nasal septum and ethmoid sinuses. Lymphoma and vasculitis were suspected. Biopsies showed only inflammation and fibrosis. Repeat review and staining revealed increased IgG4 positive plasma cells. Once corticosteroid/immunosuppressant therapy was initiated for IgG4RD, all patients showed clinic radiographic improvement. **Conclusions:** Otolaryngic IgG4RD may be under-recognized. A high index of suspicion is required to expedite diagnosis, minimize morbidity from multiple biopsies and initiate treatment.

S27. Anesthesia Utilization in FNAB:Redux

Robert M. Cannon, MD, Flowood, MS; William H. Replogle, PhD, Jackson, MS; C. Ron Cannon, MD*, Brandon, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to have an understanding of 1) different anesthetic techniques used in FNAB; 2) know which patients may benefit from anesthesia during FNAB; 3) describe situations in which anesthesia is not helpful.

Objectives: The pain associated with fine needle aspiration biopsy (FNAB) is generally compared to that of venipuncture. However some patients' perception of pain may be significantly greater. A previous study found some benefit to use of anesthesia in selected FNAB patients. The current study reports on further experience in use of anesthesia in patients undergoing FNAB. **Study Design:** Prospective study of 147 patients undergoing FNAB. Patients randomly assigned into one of three study groups. **Methods:** In group 1 no anesthesia was used, in group 2 topical ethyl chloride spray, and in group 3 use of infiltrative anesthesia into the local FNAB site.

Results: There were no statistically significant differences among the groups in the level of pre-FNAB apprehension (p=0.61), patient perception of pain (p=0.14), or overall patient perception of the procedure (p=0.33). As regards the operator rated ease in the neck, parotid, or thyroid there was no difference between the three sites (p=0.610. The operator rated ease of FNAB was however significantly correlated with the size of the mass (p=0.001). **Conclusions:** Several clinical caveats have emerged. In the nervous patient, anesthesia—particularly in the form of ethyl chloride anesthesia is beneficial. Lidocaine infiltration should be used with caution in smaller masses as it may serve to obscure the mass.

S28. Use of the Glidescope in Patients Undergoing NIM Thyroidectomy

Robert M. Cannon, MD, Flowood, MS; C. Ron Cannon, MD*, Brandon, MS; William H. Replogle, PhD, Jackson, MS; Ralph A. Didlake, MD, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the value of using the GlideScope to assure proper tube and electrode placement in patients undergoing thyroidectomy using the nerve integrity monitor (NIM).

Objectives: Thyroidectomy using the nerve integrity monitor requires proper placement of the endotracheal tube with the electrodes aligned correctly within the larynx. The purpose of this study is to ascertain the percentage of patients who require endotracheal tube adjustment prior to beginning the thyroidectomy. **Study Design:** A prospective study of 33 patients undergoing NIM thyroidectomy is reported. **Methods:** The GlideScope (Verathon Medical) is a curved blade intubation device with attached video camera allowing visualization on a monitor. After routine general orotracheal intubation, the GlideScope was utilized to check the position of the tube in two planes: depth of tube placement and rotation of the tube within the larynx to properly align the electrodes prior to initiation of surgery. **Results:** Tube adjustment was required in 69.7% of the patients. In 33% of the patients, tube retraction to a proper depth was needed. Tube rotation was required in 15% of the patients. In 21% of the patients both adjustment of tube depth and tube rotation for proper electrode alignment was required. **Conclusions:** After the anesthesiologist places the NIM endotracheal tube, tube adjustment is frequent prior to initiation of thyroidectomy. The GlideScope is readily available in the OR, its use adds little time to the procedure, and assures proper NIM tube placement. Use of the GlideScope is recommended.

S29. Transoral Microsurgical Resection of a Retropharyngeal Benign Cyst

Sergio S. Cervantes, MD, Phoenix, AZ; Michael L. Hinni, MD*, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to compare traditional and transoral excision of retropharyngeal cysts.

Objectives: The authors aim to review the presentation, evaluation, and treatment of benign head and neck cysts and demonstrate a novel technique for transoral excision of retropharyngeal lesions. **Study Design:** The authors report a case of an adult with a benign retropharyngeal cyst requiring surgical intervention. Our approach is compared to traditional open techniques reported in the literature. **Methods:** Retrospective review of patient undergoing transoral laser microsurgical (TLM) excision of a retropharyngeal cyst. **Results:** A 60 year old male with a right sided 1.5 x 3.0 cm cystic lesion in the retropharynx presented to our clinic with a two year history of a known lesion. Surgical excision was eventually pursued and because of its location in the retro and parapharynx at the level of the base of tongue, a transoral laser microsurgical approach was utilized. The patient did have ipsilateral lymphadenopathy and thus excisional biopsy of the neck node was also performed. Primary closure of the pharyngeal wall was performed at the conclusion of the case. **Conclusions:** Transoral surgery is well accepted for pharyngeal and laryngeal epithelial lesions, however TLM resection of parapharyngeal and retropharyngeal lesions has not yet been described. TLM is a viable option for localized, appropriately selected cystic lesions of the parapharynx and retropharynx. Our approach may be advantageous with lower morbidity and postoperative stays.

S30. Effect of Tablet Computers on Otolaryngology Resident Education

Anthony G. Del Signore, MD, New York, NY; Alfred Marc C. Iloreta, MD, New York, NY; Benjamin D. Malkin, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the effect of the distribution of tablet computers to otolaryngology residents on their overall reading habits, compare the use of digital versus print media in resident education and discuss the effect on performance on the otolaryngology training examination.

Objectives: To discuss the effect of the distribution of tablet computers to otolaryngology residents on overall reading habits, compare the use of digital versus print media in resident education and examine the effect on performance on the otolaryngology training examination. **Study Design:** Prospective survey. **Methods:** As part of a departmental education project, iPad tablet computers were distributed to all residents in July 2011. A survey was distributed before and at two time points after distribution. Questions were directed at overall reading habits, barriers to reading, location of reading and media format utilized. **Results:** Fifteen residents completed the prospective study, representing four levels of post-graduate education. Sixty percent of residents reported completing more than 2 hours of reading a day versus 40% before implementation of the program. Residents devoted the majority of their reading time to textbooks, while utilizing otolaryngology specific journals and websites less often. Between time intervals, the residents' most used reading platform shifted from home personal computers to tablet computers. The percentage of reading time that occurred at work doubled, while home reading decreased slightly. The number of residents with regimented reading schedules showed no significant change. When compared

to the previous year's performance, otolaryngology training examination group stanine scores increased 2.7%. **Conclusions:** As iPads and other portable computing devices become ubiquitous in both medical education and practice, it is imperative to have an understanding of how they affect resident education. The results of this study suggest that residents can successfully incorporate tablet computers and digital media into their study regimen.

S31. Parotid Sialadenitis: Correlation of Findings from Multiple Diagnostic Modalities
Aaron M. Fletcher, MD, Iowa City, IA; Martin A. Potash, 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 identify the findings characteristic of parotid sialadenitis from various diagnostic modalities including CT, sialogram, sialendoscopy and pathologic analysis of the parotidectomy specimen.

Objectives: The objective of this study was to identify and correlate the characteristic findings of parotid sialadenitis from multiple diagnostic modalities. **Study Design:** A single case report with review of the literature. **Methods:** We performed workup, diagnosis and treatment of parotid sialadenitis in a 43 year old female with history of recurrent right parotid swelling. A sialogram, CT and sialendoscopy were each performed to confirm the diagnosis of sialadenitis. We reviewed the results of each study, and the findings from each study were then correlated with the findings identified upon review of her final pathology. **Results:** On sialogram, we identified a high grade stricture at the origin of the main parotid duct measuring 6 cm from the duct orifice causing diffuse sialectasis of the right intraglandular parotid ducts. CT demonstrated normal parotid glands and ducts bilaterally with no clear evidence of pathology. The parotidectomy specimen revealed areas of atrophy with increased interstitial fibrosis within the parotid. The parotid duct showed periductal fibrosi and chronic inflammation. **Conclusions:** We present the first report correlating the characteristic radiographic, endoscopic and pathologic findings in parotid sialadenitis. This report will hopefully improve our understanding of the constellation of diagnostic findings in the condition and allow us to determine the degree of correlation between each of the available diagnostic and treatment modalities. Sialogram appears to provide superior delineation of parotid duct pathology as compared to CT and can be more accurately correlated with findings of sialadenitis on final pathology.

S32. Familial Bilateral Second Branchial Cleft Fistulae in a 72 Year Old Female: An Unusual Cause of Chronic Phlegm
David K. Gallegos, MD, Iowa City, IA; Raymond W. Kung, BS, Los Angeles, CA; Henry T. Hoffman, MD*, Iowa City, IA

Educational Objective: At the conclusion of this presentation, participants should be able to recognize the possibility of bilateral second branchial cleft fistulas in elderly individuals, identify patterns of branchial anomalies and have understanding of operative management.

Objectives: Branchial cleft anomalies are uncommon head and neck defects arising from abnormal persistence of the branchial apparatus. Among these, branchial cleft fistulas, which have internal and external openings, are even less common, especially when presenting in adults bilaterally. We report a familial case of bilateral second branchial cleft fistulas in a 72 year old female. **Study Design:** Case report. **Methods:** Patient chart analysis and literature review. **Results:** A 72 year old Caucasian female presented with a one year history of a right neck mass and complaints of chronic phlegm production. An overview of branchial anomalies, causes of chronic phlegm and operative management of branchial anomalies are reviewed with pertinent intraoperative photo and video documentation of this unusual case. **Conclusions:** Though exceedingly rare, bilateral second branchial cleft fistulas may present in elderly individuals. Bilateral presentations appear to have a familial component, which should arouse clinical suspicion for underlying genetic disorders.

S33. Current Practices in Venous Thromboembolism Prophylaxis in Otolaryngology-Head and Neck Surgery
Frank G. Garritano, MD, Hershey, PA; Eric J. Ahlers, BS, Hershey, PA; Genevieve A. Andrews, MD, Hershey, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of venous thromboembolism prophylaxis in the otolaryngology patient population and explain some of the practices that are commonly employed.

Objectives: To examine current trends regarding the use of venous thromboembolic (VTE) prophylaxis among practicing otolaryngologists. **Study Design:** Prospective survey study. **Methods:** A survey of 26 questions was e-mailed to 4,376 otolaryngologists whose contact information was obtained from the American Academy of Otolaryngology-Head and Neck Surgery (AAOHNS) website. An initial survey invitation was sent to all participants with two followup survey invitations sent to those failing to respond. **Results:** 4,376 surveys were sent and 676 were returned for a response rate of 15.4%. 345 respondents (51%) were in academic practice and 310 (45.9%) were in private practice. 547 respondents (80.9%) had guidelines for thromboembolism prophylaxis at their institution. 528 of these respondents (96.5%) routinely, often, or occasionally follow their institutional guidelines. The most common reasons for failure to adhere to these guidelines included low risk of developing VTE, cited by 141 (69.1%), and high risk for bleeding, cited by 84 (41.2%). Intraoperative VTE prophylaxis was used by 535 (83%) respondents, either with intermittent pneumatic compression (91.8%), compression stockings (35.9%), or low molecular weight heparin (12.3%). Postoperative VTE prophylaxis was used by 540 respondents (85.4%), either with early ambulation (87.8%), intermittent pneumatic compression (85.4%), compression stockings (43.3%), or low molecular weight heparin (42.4%). The vast majority (88.3%) stated they would find thromboprophylaxis guidelines released by the AAOHNS to be helpful. **Conclusions:** Current practices in venous thromboembolism prophylaxis vary among otolaryngologists. A set of clear specialty specific guidelines may be helpful in improving consistency across the specialty.

S34. A Prospective, Randomized, Double Blind Study Comparing the Efficacy of Topical Anesthetics in Nasopharyngeal Endoscopy

Gabriel C. Gaviola, BA, Washington, DC; Viola J. Chen, BA, Washington, DC; Stanley H. Chia, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the efficacy of atomized 2% tetracaine vs. 4% lidocaine as topical anesthetics for nasopharyngeal endoscopy.

Objectives: Transnasal endoscopy is commonly performed in an outpatient otolaryngology setting. Patients are typically administered a topical anesthetic and decongestant prior to this procedure to alleviate discomfort and improve visualization. There is no consensus on which topical anesthetic is most effective in optimizing patient experience during the procedure. The objective of the study was to determine whether there is a difference in the efficacy between atomized 2% tetracaine and 4% lidocaine as a topical anesthetic prior to nasopharyngoscopy. **Study Design:** Prospective, randomized, double blinded study. **Methods:** A total of 99 patients received oxymetazoline and were randomized to receive either 2% tetracaine or 4% lidocaine prior to nasopharyngoscopy. Immediately following the procedure, participants completed a survey assessing level of discomfort and other adverse symptoms pertaining to the procedure using a 10 point visual analog scale (VAS). **Results:** There were no significant differences in VAS scores between the lidocaine and tetracaine groups. There were also no significant differences between genders in overall VAS scores and in the lidocaine and tetracaine subgroups. Older patients demonstrated significantly less discomfort or a sensation of bad taste overall. In contrast to patients receiving lidocaine, older patients receiving tetracaine experienced significantly less overall pain and discomfort, unpleasant taste, and dyspnea. **Conclusions:** In patients undergoing transnasal endoscopy, use of either 2% tetracaine or 4% lidocaine has similar effect. Tetracaine may be a better choice in older patients, however.

S35. Revision Septoplasty: A Prospective Disease Specific Outcome Study

Grant S. Gillman, MD, Pittsburgh, PA; Carlos M. Rivera-Serrano, MD, Pittsburgh, PA; Ann M. Egloff, PhD MPH, Pittsburgh, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) discuss validated outcomes of revision septoplasty; 2) recognize sites of likely failure in primary septoplasty to improve techniques and decrease need for revision surgery; and 3) understand the enormous potential economic benefit to patients with decreased need for medications to address symptoms of nasal obstruction.

Objectives: 1) Measure disease specific quality of life outcomes after revision septoplasty; 2) measure secondary outcomes (satisfaction; medication use); 3) analyze variables linked to success or failure after revision septoplasty; and 4) study site of structural failure of prior surgery. **Study Design:** Prospective, nonrandomized single academic center study consecutive eligible revision septoplasty patients (June 2009—December 2011, n=40). **Methods:** Preoperative/postoperative (3 month, 6 month) completion of validated outcome measure of nasal obstruction (NOSE scale), and Likert scales for patient satisfaction/nasal breathing/medication use. Analysis of independent demographic variables influencing degree of improvement in nasal obstruction. Intraoperative documentation/analysis of site of prior surgical failure. **Results:** Wilcoxon signed rank test revealed a significant improvement in NOSE scores from baseline to 3 months and 6 months postoperatively for revision septoplasty ($p<0.0001$). Three month results were statistically stable at 6 months. Multivariate analysis of clinical/demographic variables revealed that the severity of baseline NOSE score independently predicts for greater reduction of NOSE scores postoperatively. Secondary outcome analysis reveals a very high level of patient satisfaction. A dramatic decrease in the need for medications to control nasal obstruction is observed. Site of failure was most commonly localized to the dorsal septum (nasal valve) and caudal septum. **Conclusions:** This first ever study using validated measures to examine outcomes for revision septoplasty demonstrates the potential for significant improvement in nasal obstruction with a high degree of patient satisfaction. A substantial secondary economic benefit from diminished need for medication is identified. Site of failure has important implications for primary (non-revision) surgery.

S36. A New Treatment Paradigm for Trigeminal Neuralgia Using Botulinum Toxin Type A

Elizabeth A. Guardiani, MD, New York, NY; Babak Sadoughi, MD, New York, NY; Andrew Blitzer, MD DDS*, New York, NY; David A. Sirois, DMD PhD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand the antinociceptive properties of botulinum toxin; and 2) recognize the role of botulinum toxin in the treatment of trigeminal neuralgia.

Objectives: 1) To review the clinical characteristics and current treatments of trigeminal neuralgia; and 2) to propose a new treatment paradigm for trigeminal neuralgia using botulinum toxin type A (BoNT-A). **Study Design:** Descriptive study. **Methods:** The current data on BONT-A for trigeminal neuralgia was reviewed, including our own series. **Results:** Trigeminal neuralgia (TN) is an extremely painful condition involving CNV. First line therapy is typically with anticonvulsants, the efficacy of which is known to decrease with time. Invasive neurosurgical procedures have also been used with varied success, but can have significant morbidity. BoNT-A has been noted to inhibit the release of several pain mediating neurotransmitters including substance P, calcitonin gene related peptide and glutamate and has been shown to be of benefit in migraine headache and other pain conditions. These properties have recently led to the investigation of BoNT-A in the treatment of TN. In our series of 17 patients with paroxysmal TN, BoNT-A given intradermally and/or submucosally in doses of 2.5u/cm2 to allodynic areas in the V1, V2 or V3 dermatome had a significant reduction in pain intensity and frequency when compared with placebo at 12 weeks, with some having relief up to 24 weeks. Similar studies have also shown significant benefit

up to six months. Side effects are typically minor and include local ecchymosis and temporary paresis of facial musculature in some patients. **Conclusions:** BoNT-A is an effective treatment for TN and should be considered in patients who have failed, become refractory to or are unable to tolerate first line pharmacologic treatments.

S37. Is There a "July Effect" for Head and Neck Cancer Surgery?
Patrick T. Hennessey, MD, Baltimore, MD; Christine G. Gourin, MD MPH*, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the "July effect" when new trainees begin residency and its relationship to head and neck surgical care.

Objectives: A "July effect" of increased complications when new trainees begin residency has been reported widely by the media. We sought to determine the effect of admission month on in-hospital mortality, complications, length of hospitalization, and costs in patients undergoing head and neck cancer (HNCA) surgery. **Study Design:** Retrospective cross-sectional study. **Methods:** Discharge data from the Nationwide Inpatient Sample for 48,263 patients who underwent an ablative procedure for a malignant oral cavity, laryngeal, hypopharyngeal or oropharyngeal neoplasm in 2005-2008 was analyzed using cross-tabulations and multivariate regression modeling. **Results:** There were 3,812 cases admitted in July (8%). July admission was significantly associated with Medicaid payor status (OR] 1.34, 95% CI] 1.04-1.72, P=0.026), medium hospital bed size (OR 1.63, 95% CI 1.03-2.58, P=0.036) and large hospital bed size (OR 1.73, 95% CI 1.12-2.66, P=0.014). There was no association between July admission and other patient or hospital demographic characteristics. Major procedures and comorbidity were significantly associated with in-hospital death, surgical and medical complications, length of hospitalization, and costs, but no association was found for July admission, July through September discharge, or teaching hospital status and short term morbidity or mortality. Teaching hospitals and large hospital bed size were additional predictors of length of hospitalization and costs, and private, for-profit hospitals were associated with increased costs. No interaction between July admission and teaching hospitals was found for any of the outcome variables studied. **Conclusions:** These data do not support evidence of a "July effect" or an increase in morbidity or mortality at teaching hospitals providing HNCA surgical care.

S38. Pseudoarticulations in Eagle Syndrome: A Unique Radiologic Finding
John Peyton Hines, BA, Jackson, MS; Tara L. Rosenberg, MD, Jackson, MS; Karen T. Pitman, MD FACS*, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the clinical presentation and radiologic findings of Eagle syndrome caused by an enlarged styloid process or calcified stylohyoid ligament.

Objectives: To review an interesting case of Eagle syndrome and its radiologic findings to compare it with other reported cases in the literature. **Study Design:** Case report and literature review. **Methods:** The case of a forty-two year old male with a long history of globus sensation, dysphagia, headaches, and documented elongated left styloid process is reviewed. The clinical history, physical exam, and radiologic imaging of this patient are examined to allow for discussion and comparison with other reported cases. **Results:** Computed tomography (CT) of the neck demonstrated an elongated left styloid process and calcified stylohyoid ligament, with multiple pseudoarticulations extending to the lesser cornu of the hyoid. On physical exam, a firm bony mass could be palpated in the left tonsillar fossa as well as externally in the left neck. The patient underwent partial resection of the calcified stylohyoid ligament using an external approach. **Conclusions:** Eagle syndrome is an uncommon group of symptoms caused by an elongated styloid process or calcified stylohyoid ligament. Symptoms may include recurrent throat pain, globus sensation, dysphagia, and possible facial pain. The treatment for Eagle syndrome is primarily surgical, with the elongated portion of the styloid process or calcified stylohyoid ligament removed through either transpharyngeal/transoral or external approach. Understanding the clinical presentation and radiologic findings of Eagle syndrome is imperative for inclusion in the differential diagnosis and initiation of appropriate management.

S39. Intraoperative Tracheotomy Tube Customization
Anne F. Hseu, MD, Cleveland, OH; Zain Ul Abedeen Sobani, MS, Karachi, Pakistan; Joseph Scharpf, MD, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to describe a novel technique to make a customized tracheostomy tube utilizing standard operating room equipment when a commercially customized tracheostomy tube is not readily available.

Objectives: Essential for long term airway management, tracheotomies are amongst the most common neck procedures performed. Although often straightforward, the procedure can be technically challenging in patients with unfavorable anatomy. Subsequently, ill fitting tubes are more prone to dislodgement and associated with increased morbidity and mortality. Here we present a simple yet effective technique to modify standard Air-Ion tracheostomy tubes immediately in the operating room setting. **Study Design:** Case report. **Methods:** Chart review. **Results:** A 73 year old female was seen in our clinic for management of a recurrent invasive paraganglioma of the thyroid. She underwent a total laryngopharyngectomy, cervical esophagectomy, and anterolateral thigh free flap reconstruction followed by postoperative radiation. In followup, the patient presented with dyspnea related to two areas of stenosis, one at the level of the stoma and one related to granulation tissue in the distal trachea. She was therefore taken to the OR urgently for dilation. Standard tracheotomy tubes were ill fitting as each one either abutted the granulation tissue or was too narrow to allow comfortable ventilation. In order to custom create a tracheostomy tube, we used a standard rib shearer to shorten a #6 Air-Ion by 2cm. The edges were further smoothed and beveled using sand paper and a diamond burr drill. The finished product was a wide diameter tube with a custom length

suited to our patient. **Conclusions:** Albeit a simple solution, the use of a rib shearer provides a quick and feasible solution to creating a custom length tracheostomy tube in situations where custom length tubes are needed yet unavailable.

S40. Tongue Ulceration and Necrosis in Giant Cell Arteritis: A Case Report

Raymond W. Kung, BS, Iowa City, IA; Nathan M. Schularick, MD, Iowa City, IA (Presenter); J. Robert Schleiffarth, MD, Iowa City, IA; Henry T. Hoffman, MD*, Iowa City, IA

Educational Objective: At the conclusion of this presentation, participants should be able to recognize the less known symptoms of GCA as tongue ulceration with necrosis and non-throbbing extratemporal headaches. Participants should also be able to understand the risk of frontalis palsy with temporal artery biopsy in the "danger zone".

Objectives: This case report aims to facilitate the clinician in prompt diagnosis of giant cell arteritis (GCA) by recognizing its less known symptoms of ulcerative tongue necrosis and non-throbbing extratemporal headache. This study also serves to alert the surgeon to the risk of frontalis palsy with temporal artery biopsy in the "danger zone". **Study Design:** Illustrative case report and literature review. **Methods:** A 66 year old Caucasian female presented to the ER with a painful, burning, non-healing tongue ulcer with concurrent episodes of transient right sided vision loss. She reported a one month history of nonpulsatile, predominantly occipital headache with scalp tenderness along veins while combing her hair. She was found to have elevated LFTs, ESR and CRP. **Results:** The patient was started on Solu-Medrol followed by prednisone taper therapy for presumptive GCA, later confirmed by right temporal artery biopsy. The biopsy was taken close to the "danger zone" for frontalis palsy previously described. Fortunately, the patient had no signs of frontalis weakness. Ten days after initial presentation, she had a 0.5x1x1cm healed defect of the tongue tip at the site of initial ulcer. **Conclusions:** Tongue ulceration with necrosis, a rare complication of GCA, can be its first symptom. GCA does not always consist of throbbing temporal headaches and should therefore be considered in elderly patents presenting with headaches of any characteristics. Surgeons performing temporal artery biopsies should take into consideration the potential course of the frontal branch to prevent frontalis palsy.

S41. The Role and Utilization of Electronic Medical Records in Ambulatory Otolaryngology

Hossein Mahboubi, MD MPH, Irvine, CA; Ara A. Salibian, BSc, Irvine, CA (Presenter); Edward C. Wu, MD MBA, Irvine, CA; Madhukar S. Patel, MD MBA ScM, Irvine, CA; Hamid R. Djalilian, MD, Irvine, CA; William B. Armstrong, MD*, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand the adoption and implementation of electronic medical records (EMRs) in ambulatory otolaryngology practice; (2) understand the current role and usage of EMRs in these practices; and (3) compare the status of EMR use in ambulatory otolaryngology to other surgical specialties.

Objectives: To assess the prevalence of electronic medical record (EMR) usage in ambulatory otolaryngology and compare utilization between otolaryngologists and physicians in other specialties. In light of healthcare reform and incentive programs for adoption and implementation of EMRs, results may provide important information on the relative progress of otolaryngology. **Study Design:** Cross-sectional analysis of U.S. representative data from the National Ambulatory Medical Care Survey (NAMCS). **Methods:** The 2005-2009 NAMCS databases were analyzed for whether patient records in otolaryngology practices were completely electronic, partly electronic, or not electronic. The trend of EMR utilization in the studied period was compared between otolaryngology and other specialties. Furthermore, the usage of different EMR functions (e.g., ordering tests, viewing labs, etc.) was also evaluated. **Results:** The percentage of ambulatory otolaryngology practices utilizing completely electronic records increased from 9.2% in 2005 to 43.1% in 2009 and was projected to increase to about 94.4% in 2015. The percentage of offices without any EMR decreased from 74.7% to 42.3% from 2005-2009. Otolaryngology had greater use of EMRs (completely and partly) in 2009 compared to other specialties (57.7% vs. 51.3%, $p<0.001$). Additionally, otolaryngology offices demonstrated a higher usage of different EMR functions compared to other specialties. **Conclusions:** The increasing utilization of EMRs in ambulatory otolaryngology is an important marker of progress in compliance with healthcare reform. Despite this upward trend, however, less than 50% of ambulatory offices had adopted EMRs in 2009 and it remains to be seen how the field will adapt to the evolving challenge of EMR adoption and implementation.

S42. Intraoperative CT Scan Localization of a Migrating Foreign Body of the Head and Neck

Amit Arun Patel, MD, Newark, NJ; Brian E. Benson, MD, Hackensack, NJ; George J. Ferrone, MD, Hackensack, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss and explain the use of different types of imaging studies for localization of foreign bodies.

Objectives: Foreign bodies of the upper aerodigestive tract are common and can migrate as a result of muscle contractions. We report an unusual case of migrating lingual foreign body that was removed using intraoperative CT guidance. To our knowledge, this is the first reported case of CT guided removal of a migrating foreign body in the head and neck. **Study Design:** Case report. **Methods:** Case report, literature review. **Results:** A 60 year old male presented with left base of tongue pain after eating food prepared on a gas grill. CT scan localized a 1 mm x 20 mm foreign body within the musculature of the tongue above the geniohyoid muscle. Despite palpation, surgical exploration, and fluoroscopy, the foreign body could not be localized. Postoperative CT revealed the foreign body had migrated several centimeters to the anteroinferior intrinsic tongue musculature. The patient was treated with antibiotics and serial examinations. Ten days later, the patient developed erythema and tenderness in the right submental region. CT revealed the foreign body superficial to the anterior belly of the right digastric muscle. The patient underwent CT guided needle localization of the foreign body.

Surgical exploration of the submental space was undertaken under local anesthesia with sedation. Using the needle localization, a thin wire was removed from the digastric muscle. The wire was identical to the wires comprising the brush used to clean the patient's grill. **Conclusions:** Migrating foreign bodies in the head and neck present unique surgical challenges. CT guided intraoperative localization may be a helpful tool in the surgical management of migrating foreign bodies.

S43. Suspension Microlaryngoscopy and Percutaneous Dilational Tracheostomy in the Critically Ill Obese Patient
James David Phillips, MD, Birmingham, AL; Kirk Withrow, MD, Birmingham, AL; Paul F. Castellanos, MD, Birmingham, AL

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the outcomes of patients receiving bedside percutaneous tracheostomy between obese and non-obese patients.

Objectives: To evaluate the outcomes of bedside suspension laryngoscopy, percutaneous dilatational tracheostomy (SL-PDT) performed in obese patients in the intensive care unit (ICU) setting. **Study Design:** Retrospective chart review. **Methods:** Review of 164 patients who underwent SL-PDT between April 2006 and May 2009 at our institution was performed. Data gathered included patient demographics, BMI, anatomical conditions, ventilator settings, intraoperative findings, the presence of coagulopathy or anti-coagulation, and complications. **Results:** 36% of patients reviewed were obese (n=60). Obese patients required significantly higher ventilator settings than the non-obese controls. A slightly higher though statistically insignificant complication rate of 18.3% was noted in obese patients compared to 13.5% in non-obese patients ($p < 0.05$). The majority of the complications observed were considered minor. Risk for complication was significantly worsened by "morbid" obesity or BMI > 40 kg/m2 ($p < 0.05$). Transient, clinically insignificant oxygen desaturation was seen at a greater rate in the obese group than the non-obese controls. **Conclusions:** The complication rates of SL-PDT were comparable to those reported for both open tracheostomy and traditional percutaneous dilational tracheostomy (T-PDT). SL-PDT is a safe and effective means of bedside airway management in critically ill, obese patients in the ICU setting. This new technique offers several advantages over T-PDT and standard, open tracheostomy in this population.

S44. Etiology of Dysphagia among Different Age Groups: A Systematic Review of the Literature
Dylan F. Roden, BS, New York, NY; Kenneth W. Altman, MD PhD*, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should 1) understand the differential diagnosis for a patient presenting with dysphagia; 2) develop an appreciation for how that differential diagnosis changes depending on a patient's age; and 3) direct the workup with an understanding of the most common causes of dysphagia in each age group.

Objectives: Dysphagia is a common problem that has the potential to result in severe complications such as malnutrition and aspiration pneumonia. Based on the complexity of swallowing, there may be many different etiologies. We hypothesize that there are different comorbid disease associations with dysphagia based on age. **Study Design:** A systematic literature review. **Methods:** A review was conducted on PubMed utilizing our specific search criteria for age and epidemiologic associations with dysphagia. 2511 articles were identified, of which 197 were included for analysis. The prevalences of dysphagia in various disease processes, as well as demographic data were compared. **Results:** The etiologies of dysphagia are different depending on age, affecting between 1.7-11.3% of the general population. Causes of dysphagia in infancy and childhood include neurodevelopmental delay and acute infectious etiologies. Gastroesophageal and immunologic etiologies are more common in the middle aged population (30-60), while neurologic and oncologic causes are more likely to affect the elderly population (>60). There is great deal of variability in the criteria used to diagnose dysphagia. Subjective measurements, such as questionnaires, seem to under report the true prevalence of dysphagia when compared to more objective measures that incorporate a clinical assessment or an imaging modality. This is particularly apparent in Parkinson's disease (15-52% subjective, 41-87% objective), Alzheimer's disease (7% subjective, 13-29% objective), and frontotemporal dementia (19-26% subjective, 57% objective). **Conclusions:** Dysphagia can be a symptom representative of pathology pertinent to any specialty of medicine. This review can be used to aid in the diagnosis of patients presenting with the complaint of dysphagia.

S45. Sialography in the Management of Parotid Foreign Bodies
Nathan M. Schularick, MD, Iowa City, IA; Michael M. Reed, MD, Iowa City, IA; Jack C. Kademian, DDS 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 competently discuss the causes and compare the current minimally invasive treatments of salivary gland obstructions of a traumatic etiology. The participants will be aware of the role for sialography in selective cases of salivary gland disorders.

Objectives: We report the value of sialography in the management of parotid sialadenitis following a welding injury through the cheek skin. **Study Design:** Illustrative case report and literature review. **Methods:** A 75 year old male presented with delayed parotid swelling after a work accident involving metal shrapnel to his cheek. CT scans identified a periparotid metallic density. A sialogram and sialendoscopy were performed. **Results:** The sialogram identified a metallic object in the parotid duct that moved from the hilum to the narrowed duct orifice. Post-obstructive changes were present. Subsequent sialoendoscopy permitted basket retrieval of the mass identified as consistent with welding slag. Dilation of the duct orifice with stenting permitted normal salivary flow and resolution of symptoms. Followup one year later identified no further salivary swelling or pain. **Conclusions:** Sialography is a valuable tool for use in selective cases of salivary swelling. Sialendoscopy permits successful organ function preserving management of selective salivary disorders that previously would have required sialadenectomy.

S46. Random Ciliary Orientation as a Cause of Chronic Sinopulmonary Infections: Case Report and Review of the Literature

Fareeda Taher Nazer Hussain, BS, Rochester, MN; Brian C. Gross, MD, Rochester, MN; Shelagh A. Cofer, MD, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) list the different ciliary structural defects associated with primary ciliary dyskinesia; 2) define random ciliary orientation based on electron microscopy of ciliary brush biopsies; and 3) understand why random ciliary orientation results in chronic sinopulmonary infections.

Objectives: To present the case of primary ciliary dyskinesia resulting from random ciliary orientation. **Study Design:** Case report and review of the literature. **Methods:** Case report and review of the literature. **Results:** An eight year old male presented with a history of neonatal respiratory distress, recurrent otitis media, chronic otorrhea, recurrent sinusitis, and a chronic productive cough. Tests for cystic fibrosis, seasonal and environmental allergies, and immunodeficiencies were normal. On two separate occasions, tracheal and nasal ciliary biopsies revealed normal ciliary ultrastructure, including intact outer and inner dynein arms and radial spokes. The mean ciliary angle was measured on electron microscopy. The actual ciliary beat pattern deviated from the mean ciliary angle by greater than 50 degrees, supporting the diagnosis of primary ciliary dyskinesia resulting from random ciliary orientation. **Conclusions:** This is a report of a rare type of primary ciliary dyskinesia with normal ciliary ultrastructure and random ciliary orientation. Although uncommon, this ciliary abnormality should be considered in patients who present with chronic, recurrent sinopulmonary infections.

S47. Sporadic Gagging following Uvulopalatal flap Uvulopalatopharyngoplasty

Jessica M. Van Beek-King, MD, Augusta, GA; Jimmy J. Brown, MD DDS*, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the reasons for using the uvulopalatal flap, recognize a previously unreported side effect of this technique, explain the rational as to why this complication occurs and develop an alleviating treatment paradigm.

Objectives: Sleep disordered breathing is a spectrum of disorders ranging from snoring to obstructive sleep apnea (OSA). Surgical treatment at the palatal level is addressed with uvulopalatopharyngoplasty (UPPP). Risks of surgery at the palatal level include significant discomfort, bleeding, infection, stenosis, and velopharyngeal incompetence (VPI). As VPI can be debilitating, Riley and Powell developed the reversible uvulopalatal flap (UPF) procedure to minimize VPI risk. There are few reported complications in the literature specifically related to this procedure. The objective of this presentation is to review a case of sporadic gagging, a previously unreported complication of the UPF. **Study Design:** Case report. **Methods:** A single case (BW) was reviewed with a complication of sporadic gagging following UPF with treatment and eventual resolution. BW is a 34 year old female with a ten year history of recurrent tonsillitis and heroic snoring. Exam revealed a BMI of 34.8, 2+ cryptic tonsils and an elongated soft palate. She underwent UPPP with UPF and tonsillectomy. **Results:** Three weeks following surgery, sleep was improved and her palate was well healed. She returned five months later with globus sensation and intermittent, spontaneous gagging. Gagging was thought to be resulting from the turning out of palatal nasal mucosa during the UPPP. She was placed on concentrated salt water rinses to help shrink mucosa and Benadryl to suppress gagging. Over the next several months adaptation and desensitization occurred. By nine months postop her gagging had resolved. **Conclusions:** It is well established there is a higher density of gag receptors on nasal versus oral mucosa. Most patients undergo relatively rapid desensitization. BW experienced a unique complication of the UPF with appropriate resolution previously unreported in the literature.

S48. Salivary Endoscopy for Idiopathic Obstructive Sialadenitis

Rishi Vashishta, MD, Charleston, SC; Nicholas Y. Gallagher, BS, Charleston, SC; M. Boyd Gillespie, MD MSc, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the diagnostic and therapeutic roles of salivary endoscopy for the management of chronic idiopathic obstructive sialadenitis.

Objectives: To describe the findings and therapeutic role of salivary endoscopy for idiopathic obstructive sialadenitis. **Study Design:** Retrospective case series. **Methods:** The records of 258 consecutive patients who underwent salivary endoscopy between November 2008 and May 2012 were reviewed. Included cases presented with recurrent inflammation and swelling of a single major salivary gland, without any identifiable etiology on examination and imaging. **Results:** A total of 56 cases (21.7%) were identified. These patients had a mean (SD) age of 50.0 (16.0) years and 57.1% were female. The mean (SD) duration of symptoms was 21.8 (28.8) months, with the majority of cases (75%) involving the parotid gland. The primary imaging modalities used were ultrasound (61.5%) and computed tomography (30.8%). Most common findings on imaging included ductal dilation (42.3%), enlarged lymph nodes (23.1%), normal glandular imaging (15.4%), and possible but not obvious sialoliths (13.5%). All patients underwent diagnostic salivary endoscopy, with 75% requiring therapeutic ductal dilation. The main salivary duct was the most common site of pathology. The most common endoscopic findings included stenosis (57%), strictures (27%), and inflammatory debris (18%). Occult sialolithiasis was the cause of sialadenitis in only 4 (7.1%) cases. Excision of the major salivary gland was ultimately required in 6 (11%) patients. Ductal perforation was the only complication observed, occurring in 2 (4%) patients. **Conclusions:** Salivary endoscopy is a minimally invasive technique that is effective in the management of idiopathic obstructive sialadenitis in cases refractory to conservative medical therapy. It provides diagnostic information in most patients and offers a therapeutic intervention allowing for gland preservation.

S49. Lymphadenopathy: What Defines a Palpable Lymph Node?

Jason J. Xu, BHSc, London, ON Canada; Kevin Fung, MD, London, ON Canada (Presenter); Gordon Campbell, PhD, London, ON Canada; Hussain Alsaffar, MD, London, ON Canada; Michael G. Brandt, MD, Toronto, ON Canada; Philip C. Doyle, PhD, London, ON Canada; Jordan T. Glicksman, MD, London, ON Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate the issues and challenges pertinent to medical education with respect to physical examination of the neck and understand the relationship of examiner experience on the threshold, sensitivity, and accuracy of palpation.

Objectives: Lymph nodes under 1cm are presumed undetectable by palpation and considered occult. However, the threshold size of palpation has never been formally determined. It is also unclear whether clinical experience or educational interventions can improve the sensitivity of the examination. Our study sought to determine the threshold, sensitivity, and accuracy of node palpation and how this changes with experience. **Study Design:** Retrospective cohort. **Methods:** Eleven lymphadenopathy models made of poly-vinyl alcohol cryogel were created using previously published and validated techniques to mimic tissue tactility. Each contained a node embedded at standard depth within musculature and skin. Node diameter ranged 0.5cm to 4cm. Study subjects were medical students, otolaryngology residents, and board certified otolaryngology consultants. Models were palpated in a randomized order and repeated for reliability. Each subject provided 22 estimates of nodal size. Primary outcomes were the sensitivity, accuracy (true - estimated size), and threshold of palpation. Differences between groups were statistically compared using the Fisher's Exact Test and one way ANOVA. **Results:** Thirty subjects completed the study. Sensitivity was 60%, 74%, and 86% for students, residents, and consultants, respectively ($p<0.01$). Error was 0.88cm, 0.61cm, and 0.57cm, respectively ($p<0.05$). Threshold of palpation was 1.32cm, 0.83cm, and 0.75cm, respectively ($p<0.05$). All participants detected nodes 2cm and greater, while all consultants detected nodes 1cm and greater. There was an overall tendency to underestimate size. **Conclusions:** Palpation by medical students can detect nodes 2cm or greater. Level of experience is associated with decreased threshold, increased sensitivity, and increased accuracy. Educational interventions may benefit inexperienced learners and should target nodes less than 2cm.

Head & Neck

S50. Conservative Management of Pneumomediastinum and Retropharyngeal Air from Inferior Orbital Trauma

Terah J. Allis, MD, Omaha, NE; Jordon C. Schramm, MD, Omaha, NE; Daniel D. Lydiatt, MD*, Omaha, NE

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the deep spaces and fascial planes of the neck and the appropriate workup for suspected retropharyngeal laceration. The audience will demonstrate the algorithm for conservative management of pneumomediastinum and be familiar with the rare incidence of pneumomediastinum as a result of nose blowing from orbital fracture.

Objectives: To report a case of impressive retropharyngeal air and pneumomediastinum in a 56 year old female who fell on her face and sustained an orbital floor fracture with onset of subcutaneous emphysema after nose blowing. We would like to discuss the importance of recognition of possible associated trauma and retropharyngeal laceration and the dreaded complication of mediastinitis if not managed properly. **Study Design:** Tertiary referral center with a level I trauma center. Case report and review of the literature on orbital trauma and retropharyngeal air. **Methods:** Retrospective review of a single patient's chart and radiology. Otolaryngology was consulted and performed flexible laryngoscopy, serial neck exams and ordered laboratory, CT of the chest with contrast and water soluble esophagram. **Results:** The patient was managed conservatively and workup was negative for a retropharyngeal tear or mediastinitis. There was interval resolution of the subcutaneous air and patient was placed on a regular diet without sequela and discharged home on hospital day number three. **Conclusions:** Retropharyngeal air with pneumomediastinum caused by orbital trauma is a rare but reportable event. The complete workup should be undertaken to ensure no life threatening complications. We report a case with that resolved with conservative management.

S51. Hybrid Transoral Robotic Surgery (HyTORS): Expanding Applications of Surgical Robotics in Head and Neck Surgery

Jeremy T. Brown, BA, Stony Brook, NY; Mark F. Marzouk, MD, Stony Brook, NY; Ghassan J. Samara, MD*, Stony Brook, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the advantages of HyTORS over conventional surgical techniques and recognize the expanded patient cohort which would benefit from its use.

Objectives: Surgical robotics is a rapidly developing field and can provide significant benefits to patients of head and neck surgery. We provide a description of techniques which will promote wider use of robotics in surgical cases not currently possible by robotic technique alone. **Study Design:** Retrospective review of case series. **Methods:** Patients were selected for review based on the operative technique used in their surgical management. Electronic patient records were utilized to determine the procedural technique, as well as evaluate their hospital course. Literature review was conducted by PubMed search in addition to university e-journal subscriptions. All patients attended outpatient clinic and were patients of OHNS surgeons at a major academic university hospital. **Results:** All of the cases were successfully completed utilizing HyTORS without need for alteration of the planned procedure. Successful operative outcomes were achieved with minimal morbidity of cosmesis, speech or swallowing function. Pathologically evaluated tumor margins were

optimized without need for re-operation or re-excision. **Conclusions:** HyTORS provides reduced morbidity, increased ease of operation and improved operative outcomes over similar cases described in current literature. The use of surgical robotics can be utilized in an increased number of cases with the application of the described HyTORS techniques.

S52. Oncologic Safety of Minimally Invasive Neck Dissection

Carrie M. Bush, MD, Augusta, GA; Evan Garner, BA, Augusta, GA; Barbara Asmann, RN, Augusta, GA; John D. Prosser, MD, Augusta, GA; Lana L. Jackson, MD, Augusta, GA; Clementino A. Solares, MD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the indications, technique and outcomes of the minimally invasive neck dissection.

Objectives: Treatment of head and neck cancer is a balance between minimizing morbidity and providing best survival outcomes. Over time, the radical neck dissection has been replaced with selective and functional procedures that have proven equally efficacious. Our aim was to determine if a minimally invasive neck incision is comparable to a standard hockey stick incision for selective neck dissection. **Study Design:** Retrospective review. **Methods:** Patients having undergone a neck dissection at our institution were identified and separated into two groups based on incision type: minimally invasive (6 cm horizontal incision) and conventional (standard hockey stick incision). Demographic data, clinical notes and pathology reports were reviewed. SPSS software was used to perform data analysis. **Results:** 58 patients were included. 18(31%) were in the minimally invasive group and 40(69%) were in the conventional group. The mean age was 58 +/- 12.6 years. 58% of patients were male. 32% had previously undergone radiation therapy and 27% had received chemotherapy prior to surgery. This did not significantly differ between groups. A mean of 27 nodes levels 2-4 were excised in the minimally invasive group versus 26.32 in the conventional group. There was no statistical difference between groups ($p = 0.338$). No cranial nerve injuries were incurred in either group. **Conclusions:** In appropriately selected patients, a minimally invasive incision is comparable to a conventional incision for selective neck dissections. The minimally invasive incision allows for improved cosmetic result with equal functional and oncologic outcomes.

S53. Retropharyngeal Lipoma Presenting as Airway Obstruction

John M. Carter, MD, New Orleans, LA; Ryan B. Chastant, MD, New Orleans, LA; Brad T. Johnson, MD, New Orleans, LA; Rizwan Aslam, DO, New Orleans, LA; Paul L. Friedlander, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand, discuss and recognize the epidemiology, presentation, diagnosis and management of this unusual presentation of a retropharyngeal lipoma.

Objectives: To display an unusual presentation of a retropharyngeal lipoma including radiographic images and treatment considerations. **Study Design:** Single case report. **Methods:** Retrospective review of a single case report and literature review. **Results:** We present a case of a retropharyngeal lipoma in a 64 year old female requiring emergent operative airway intervention secondary to airway obstruction. **Conclusions:** The retropharyngeal space is a rare location for a primary tumor to originate, with less than 1% of head and neck primary neoplasms arising from this area. A lipoma in this space is recognizable by identifying the typical radiographic imaging characteristics that mirror lipomas in other anatomic locations. While these lesions are slow growing they may present as acute airway compromise with the obstructing mass being quite large. This may complicate the ease of obtaining a secure airway. Awake flexible fiberoptic intubation may be attempted initially; however the practitioner should be prepared for emergent tracheostomy if the airway cannot be secured through intubation. Thus, we find the operating room to be the safest environment to manage this potentially challenging situation.

S54. Is Neck Dissection Indicated for Early Stage T1 Oral Tongue SCCA

Alan C. Chu, MD, Los Angeles, CA; Kevin A. Peng, MD, Los Angeles, CA; Chi K. Lai, MD, Los Angeles, CA; David A. Elashoff, MD, Los Angeles, CA; Elliot E. 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 1)evaluate features that could identify patients with T1cN0 oral tongue SCC who are at increased risks of regional recurrences; and 2) examine the prognostic and therapeutic implications of elective neck dissection in such patient population.

Objectives: The study was carried out in order 1) to evaluate features that could identify patients having increased risks of regional recurrences; and 2) to examine the prognostic and therapeutic implications of elective neck dissection in patients who present with early stage oral tongue squamous cell carcinoma and clinically negative neck (T1cN0). **Study Design:** A retrospective chart review of oral tongue cancer at a single tertiary institution identified 123 patients with T1cN0 oral tongue squamous cell carcinoma who underwent surgical tumor extirpation with/without adjuvant chemotherapy and/or radiation treatment from 1990 through 2009. **Methods:** The study database was used to identify characteristics that are associated with occult lymph node metastases and measurement of patient outcomes. **Results:** Eighty-nine patients underwent elective neck dissection, of which 20 patients' specimens (22%) were found to harbor occult metastatic disease. However, no significant differences were noted in the frequency of regional recurrence according to gender, age, tumor size, the presence of perineural invasion or occult metastatic disease ($p=0.70$, 0.29, 0.54, 0.30 and 0.47, respectively). In addition, patients who underwent elective neck dissection experienced lower rate of regional recurrence, although this did not achieve a statistically significant level ($p=0.52$). **Conclusions:** Clinical observation of the clinically negative neck is justifiable for early stage T1

oral tongue squamous cell carcinoma. Elective cervical lymphadenectomy offers no benefit in preventing regional recurrence when compared to clinical observation. Furthermore, neither patient factors nor intrinsic tumor features demonstrated any prognostic significance in the setting of early stage T1 oral tongue carcinoma.

S55. Adult Presentation of Rhabdomyosarcoma of Pterygopalatine Fossa

Christopher M. Clark, BS, Jackson, MS; Tara L. Rosenberg, MD, Jackson, MS; Gustavo D. Luzardo, MD, Jackson, MS; Scott P. Stringer, MD MS, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the epidemiology, clinical presentation, and histopathology of parameningeal rhabdomyosarcomas (RMS) in adults.

Objectives: To review a case of RMS of the pterygopalatine fossa in an adult and compare it with other reported cases in the literature. **Study Design:** Case report and literature review. **Methods:** The case of a twenty four year old male who presented with a 6 week history of unilateral chin and cheek hypoesthesia, ipsilateral otalgia, hearing loss, and migraine type headaches is reviewed. The patient's clinical history, imaging, and pathology are examined to allow for comparison and discussion. **Results:** The patient underwent computed tomography (CT) of the neck and sinus, which displayed a 3 cm mass in the right pterygopalatine fossa with erosion of the skull base and extension into the ipsilateral maxillary sinus. He subsequently underwent endoscopic maxillary antrostomy for transantral biopsy of the mass. Histology revealed parameningeal RMS, spindle cell type. Spindle cell RMS is histopathologically described as rhabdomyoblasts with atypical hyperchromatic nuclei staining desmin(+), myf-4(+), S-100(-), and GFAP(-). **Conclusions:** Rhabdomyosarcoma is a rare neoplasm of soft tissue most commonly arising in the pediatric population. Adult presentation is associated with unfavorable location (parameningeal) and decreased survival. Treatment for this subtype of tumor is often resistant to conventional RMS chemotherapy but may respond to conventional adult sarcoma regimens, radiation therapy, or surgical excision. Awareness of this disease process is crucial for inclusion in the differential diagnosis and early identification of pterygopalatine masses.

S56. Voluntary Nystagmus as a Cause of Visual-Vestibular Conflict: Case Report and Literature Review

Ebony Y. Davis, BA, Seattle, WA; Douglas D. Backous, MD*, Seattle, WA

Educational Objective: At the conclusion of this presentation, the participants should be able to differentiate voluntary nystagmus from ocular flutter and opsoclonus and direct patients to an appropriate care plan.

Objectives: The objective of this presentation is to discern voluntary nystagmus from other forms of ocular oscillations such as opsoclonus and ocular flutter. We present a management paradigm for an efficient workup of these uncommon patients. **Study Design:** Retrospective case review and review of the world's medical literature from 1946 to present on MedLine (Ovid). **Methods:** A 37 year old white female presented with significant imbalance induced by a narrow visual field. She was also unsteady walking in darkness. She had a negative workup for multiple sclerosis, cardiac and autoimmune conditions, comprehensive vestibular laboratory evaluation and a negative neuro-ophthalmological evaluation. MRI of the brain and audiometric studies were normal. Her clinical oculomotor examination was unremarkable with the exception that she could replicate her symptoms of imbalance by forcibly causing a direction changing and rapid nystagmus. She was asymptomatic without the eye movements. **Results:** The presence of high frequency an allow amplitude eye conjugate eye movements, brought on by eye convergence, lasting for 20-30 seconds and initiated and terminated on command, were first described in 1949 by Duke and Elder. In one study of normal subjects, 8% of college students surveyed could produce these eye movements. In this case, causes of opsoclonus were ruled out and the patient is being treated with cognitive behavioral therapy with satisfactory resolution of her symptoms. **Conclusions:** Voluntary nystagmus should be considered in patients with unexplained visual-vestibular conflict. The clinical characteristics and differential diagnosis are outlined in this presentation.

S57. Combined Transoral Sialendoscopic Approach to a Retained Parotid Wire Basket

Shumon I. Dhar, BS, Stony Brook, NY; Mark F. Marzouk, MD, Stony Brook, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the complications of sialendoscopy and operative technique used to treat a retained wire basket in Stensen's duct.

Objectives: Interventional sialendoscopy has become a popular technique used in the treatment of symptomatic sialolithiasis with either wire basket or forceps used for stone extraction. A known complication of sialendoscopy is a retained wire basket, and this, if not handled cautiously, may lead to duct avulsion. Here we report a case describing a combined transoral approach used to retrieve a retained basket in Stensen's duct. **Study Design:** A case report and review of the literature regarding complications of sialendoscopy and recommendations for treatment. **Methods:** A 51 year old man underwent interventional sialendoscopy to treat obstructive sialoadenitis of the left parotid gland. When the wire basket was deployed within the duct we were unable to retrieve the basket with smooth traction. In order to avoid ductal avulsion a holmium YAG laser was used to attempt to fragment the stone within the duct without success. Lastly, a combined transoral sialendoscopic approach was used to successfully retrieve both the wire basket and a 6 mm stone. **Results:** Postoperatively the patient had significant swelling of the left side of his face with a stent placed in the duct draining clear saliva. No other complications, including facial nerve palsy, were noted prior to discharge and during followup. **Conclusions:** Methods for how to retrieve a retained wire basket have not been described in the literature other than conversion to a total gland excision. A combined transoral approach to retrieve a wire basket represents an additional option for management of this complication.

S58. Nasopharyngeal Carcinoma: A Local Experience

Laura M. Dooley, MD, Louisville, KY; Allen D. Tate, BS, Louisville, KY; Jeffrey M. Bumpous, MD FACS*, Louisville, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the unique nasopharyngeal carcinoma subtypes, the incidence, patient characteristics and survival of each. Participants should also be able to compare the nasopharyngeal carcinoma seen at a local institution to that which is presented in the literature from endemic areas.

Objectives: Research and survival data on nasopharyngeal carcinoma (NPC) is based on studies done in endemic countries where >95% is associated with Epstein Barr virus and nitrosamine. However, this data may not translate to populations treated in the United States as up to 37% of NPC is associated with tobacco use. Due to the histological differences and impact on prognosis we analyzed NPC presenting at our institution to gain an accurate local picture of nasopharyngeal carcinoma. **Study Design:** Retrospective review. **Methods:** Charts of NPC patients seen between 2002-2011 were reviewed for patient characteristics, tumor histology, EBV status, presenting staging, survival, and recurrence rates. **Results:** 31 new cases of NPC were seen. All three histological subtypes of NPC were represented. Keratinizing SCC prevalence was twice as common (48%) as the overall prevalence in North America (25%) as well as China (3%). The proportion of non-keratinizing undifferentiated SCC seen in our institution (42%) was much less represented than seen in endemic areas (95%). SCC type patients were older (mean 56y) and had a higher tobacco use history (55PY), this was statistically significant ($p<0.05$) when compared to the non-keratinizing group. Overall 5y survival was also significantly less in the keratinizing SCC (16m) than non-keratinizing groups (31-95m) ($P<0.05$). **Conclusions:** Keratinizing SCC is a more aggressive NPC subtype minimally represented in endemic areas. Increasing age and pack year smoking history are significant clinical factors that predispose to this more aggressive keratinizing SCC. Outcome and treatment data based on NPC populations from endemic areas will not apply to a majority of our patients.

S59. A Modular Polymer Platform for the Delivery of Cytokines Is Effective in the Treatment of Head and Neck Squamous Cell Carcinoma (HNSCC)

Victor M. Duarte, MD, Los Angeles, CA; Yuan F. Lin, BA, Los Angeles, CA; Arnold Suwarnasarn, Los Angeles, CA; Jie Luo, Los Angeles, CA; David Elashoff, PhD, Los Angeles, CA; Steven M. Dubinett, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the benefits of a modular polymer platform, which will improve the outcome for patients with advanced HNSCC.

Objectives: To evaluate the therapeutic efficacy of an immunomodulator secreting polymer platform in the treatment of HNSCC. **Study Design:** In vivo animal study. **Methods:** C3H/HeJ mice were injected with SCCVII/SF cells. After tumors reached 1 cm in size, animals then underwent surgery and were randomized to receive implantation of 1) no polymer; 2) plain polymer; 3) plain polymer with dendritic cells (DC) secreting the chemokine CCL21; 4) plain polymer with DC alone; and 5) plain polymer + daily CCL21 injection. Tumor size was measured until the mice were euthanized. At necropsy, the tumors were excised and weighed. **Results:** We were able to demonstrate that DC are viable and functionally secrete CCL21 up to 14 days in the polymer. DC-CCL21 secreting polymer effectively reduced tumor growth mice by over 16-fold ($P < 0.01$) as compared to control, plain polymer, and plain polymer + intratumoral CCL21 injection groups. Flow cytometry analysis revealed that there was a significant increase in CD4+ T cells, as well as a significant decrease in CD4+/CD25+ regulatory T cells in the tumor site, underlying the significant tumor regression observed. **Conclusions:** The major limitation for the clinical use of cytokines is the lack of an effective protocol for the sustained delivery of cytokines to the tumor milieu. We demonstrate the efficacy of a novel polymer platform in delivering DC-CCL21 to SCCA in a murine model. Our results indicate that this polymer may represent a new therapeutic modality for patients with HNSCC. Once this polymer platform is optimized we will plan for validation in the context of a prospective trial in patients with unresectable advanced or recurrent HNSCC.

S60. Oral Tongue Squamous Cell Carcinoma in Young Women: Outcomes and Clinicopathologic Comparison

Ryan P. Goepfert, MD, San Francisco, CA; Megan L. Durr, MD, San Francisco, CA; Eric J. Kezirian, MD MPH*, San Francisco, CA; Steven J. Wang, MD*, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should understand the incidence and clinicopathologic differences in patients with oral tongue squamous cell carcinoma.

Objectives: The incidence of oral tongue squamous cell carcinoma (OTSCC) is increasing among young women. Published results examining this cohort differ with regard to pathologic factors and survival. We reviewed our experience treating young patients with OTSCC to examine the clinicopathologic factors, treatment regimens, and survival outcomes of young women compared to other patients with OTSCC. **Study Design:** Retrospective analysis of women under 45 and other patients with OTSCC matched by pathologic stage. **Methods:** Review of all patients with diagnosis of OTSCC with their primary treatment at our institution over the preceding 10 years. Each woman under 45 was matched by pathologic stage with two other patients with OTSCC. Data were analyzed as categorical or continuous variables, as appropriate, using descriptive statistics. **Results:** A total of 18 women under 45 and 36 matched patients were compared. There were no differences in stage or other clinicopathologic features between the cohort of young women and the matched group. All patients underwent at least partial glossectomy. Almost all (97%) had neck dissections and 66% had adjuvant radiotherapy or chemoradiotherapy. After controlling for stage, female patients were statisically more likely to undergo radiation therapy as part of their treatment when controlling for stage. There were no differences in disease free or overall survival. **Conclusions:** This retrospective

review found no clinicopathologic or outcome differences between young women and a matched cohort with OTSCC. The results do indicate a greater likelihood for female patients to receive adjuvant therapy when adjusting for common indications.

S61. Level IIB Lymph Node Metastasis in Laryngeal and Hypopharyngeal Squamous Cell Carcinoma: Single Institution Case Series and Systematic Review of the Literature

Brian C. Gross, MD, Rochester, MN; Steven M. Olsen, MD, Rochester, MN; Jean E. Lewis, MD, Rochester, MN; Daniel L. Price, MD, Rochester, MN; Kerry D. Olsen, MD*, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to define the incidence of level IIB lymph node metastasis and factors predictive of level IIB lymph node metastasis in laryngeal and hypopharyngeal squamous cell carcinoma.

Objectives: 1) Determine the incidence of lymph node metastasis to level IIB in patients with laryngeal and hypopharyngeal squamous cell carcinoma; and 2) predict the necessity of level IIB dissection for elective and therapeutic neck dissections. **Study Design:** Retrospective cohort study and systematic review of the literature. **Methods:** 65 patients with laryngeal or hypopharyngeal squamous cell carcinoma were primarily treated with surgery at the authors' institution from 2004 to 2010. Neck dissection specimens were analyzed by the pathology department and metastases to level IIB were reported. In addition, 18 previously published studies, totaling 1,114 neck dissections were systematically reviewed. **Results:** Level IIB lymph node metastasis was present in 4% of elective neck dissections and 17% of therapeutic neck dissections. Ipsilateral IIB metastasis was more common than contralateral IIB metastasis in both elective and therapeutic neck dissection specimens. There was no statistically significant association of level IIA lymph node metastasis, level III lymph node metastasis, clinical primary tumor stage, clinical nodal stage, and pathological confirmation of extracapsular spread with level IIB lymph node metastasis in either laryngeal or hypopharyngeal SCC. **Conclusions:** The rate of occult IIB metastasis in laryngeal and hypopharyngeal squamous cell carcinoma is exceedingly low. In a clinically node negative case, both the ipsilateral and contralateral level IIB nodal packet can remain in-situ. Level IIB should be included in neck dissections for clinically node positive cases, on both the ipsilateral and, when indicated, contralateral necks.

S62. Hyalinizing Trabecular Adenoma Masquerading as Papillary Thyroid Carcinoma on Fine Needle Aspiration: A Case Report and Review of the Literature

Brittany E. Howard, MD, Phoenix, AZ; Sharon H. Gnagi, MD, Phoenix, AZ; Michael L. Hinni, MD*, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize hyalinizing trabecular adenoma as a clinical entity. Additionally, the participant should be able to discuss their natural history, pathologic findings, and the approach to their management.

Objectives: Hyalinizing trabecular adenomas are rare benign neoplasms of the thyroid gland often mistaken for papillary thyroid carcinoma on fine needle aspiration (FNA). We present a case of hyalinizing trabecular adenoma and review their natural history, pathologic findings, and management. **Study Design:** Case report and literature review. **Methods:** A case report of hyalinizing trabecular adenoma is presented with a systematic literature review. **Results:** A 57 year old female presented with a symptomatic enlarging right thyroid mass. FNA was diagnostic of papillary thyroid carcinoma. Intraoperatively a 5 cm circumscribed tan-brown mass with a thick capsule suspicious for etiology other than papillary thyroid carcinoma was encountered. Thyroid lobectomy was performed and further intervention was deferred pending final pathology. On final pathology the mass had a thick fibrous capsule with trabecular arrangements of cells and areas of hyalinization between the trabeculae. The cells had pale eosinophilic cytoplasm and numerous nuclear inclusions with scattered nuclear grooves. A diagnosis of hyalinizing trabecular adenoma was made. The patient recovered with no further intervention. Review of the literature showed hyalinizing trabecular adenoma is an almost universally benign disease and can be appropriately managed by thyroid lobectomy. **Conclusions:** Hyalinizing trabecular adenomas are rare benign tumors of the thyroid gland typified by trabecular and alveolar architecture with intratrabecular hyaline and colloid deposits. Cellular features of cytoplasmic inclusions, small nucleoli, psammoma bodies, and nuclear grooves cause it to be mistaken for papillary thyroid carcinoma on FNA. An awareness of hyalinizing trabecular adenoma as an etiology of thyroid masses is valuable to allow appropriate management and prevent overtreatment for benign disease.

S63. Electromechanical Reshaping of ex vivo Porcine Trachea

Syed F. Hussain, BS, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of EMR in its use in reshaping cartilage and compare it to alternatives currently used in practice today for reshaping cartilage.

Objectives: The objective of this study is to reshape the porcine airway using a minimally invasive and traumatic method known as electromechanical reshaping (EMR). **Study Design:** Porcine trachea is harvested and subject to EMR. Parameters varying in voltage and time will be used to quantify the degree of reshaping. **Methods:** Several ex vivo porcine trachea were used for this study. Each porcine trachea contains approximately 25 to 30 tracheal rings. Tracheal rings or cross-sections of the airway will be harvested and cut at the overlap region to maintain the entirety of each ring. The natural concavity of the ring will be reversed around a piece of cork. A pair of cathodes and anodes will be pierced through the cartilage at a distance of 3mm apart and current will be applied. The sample is allowed time to rehydrate. The results or degree of shape change will be quantified via the use of pictures before and after EMR.

Results: Of the parameters conducted, there is an increase in degree of reshaping as both voltage and time increase. A parameter of 5V3min displayed a reshaping of 31.14deg, 4V3min, 29.95deg; 3V3min, 17.30deg; 2V3min 11.83deg, compared to the control, 13.92deg. **Conclusions:** Given the significant positive correlation between voltage and degree of reshaping, EMR is a suitable method to reshape porcine tracheal cartilage.

S64. Laryngectomy for the Nonfunctional Larynx after Radiation Therapy

Alexandra E. Kejner, MD, Birmingham, AL; Larissa Sweeny, MD, Birmingham, AL; William R. Carroll, MD, Birmingham, AL; Eben L. Rosenthal, MD*, Birmingham, AL

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the option of total laryngectomy with patients who have developed a nonfunctional larynx in the face of a complete clinical response to organ preservation therapy. Additionally, they will be able to explain to these patients that their risk of postoperative complications could potentially be elevated.

Objectives: To compare quality of life outcomes for patients who underwent total laryngectomy (TL) for a nonfunctioning larynx versus for patients who underwent salvage laryngectomy for residual or recurrent disease. **Study Design:** Retrospective review. **Methods:** Patients who presented to a tertiary care center for a total laryngectomy (n=267) between 2003 and 2009 were retrospectively reviewed. Only patients with complete documentation of treatment and underwent either a salvage TL (n=20) or a TL for a nonfunctional larynx in the absence of a known primary (n=8) were included. Preoperative characteristics were compared including patient demographics, distance traveled for treatment, amount of radiation received, length of time from radiation to surgery, and preoperative tracheostomy. Postoperative characteristics were compared including new/unrelated cancers within the radiated field, gastrostomy tube dependence, fistula, stricture, and survival (2 and 5 year). **Results:** There were no significant differences with regard to demographics, distance traveled, or amount of radiation received. Length of time from radiation therapy to surgery was significantly greater in the nonfunctional larynx group (48 months) compared to salvage (13 months; p=0.002). Similarly, preoperative tracheostomy (87.5%, p=0.001) and preoperative feeding tube dependence (75%, p=0.006) occurred more frequently in patients with a nonfunctioning larynx (20% and 20% respectively). The nonfunctional larynx cohort had a higher incidence of fistula formation (p=0.002). The salvage TL cohort had higher two (60%; p=0.11) and five (40%; p=0.016) year survival compared to nonfunctional larynx cohort (25% and 0% respectively). **Conclusions:** In patients with a nonfunctional larynx, total laryngectomy is a viable option as it precludes the need for tracheostomy and, in some cases, gastrostomy tube dependence. Unfortunately it is often complicated by poor wound healing and multiple postoperative complications.

S65. Identification of Myeloid Derived Suppressor Cells in Squamous Cell Cancer of the Head and Neck

Grace G. Kim, MD, Chapel Hill, NC; Adam M. Zanation, MD, Chapel Hill, NC; Carol G. Shores, MD PhD, Chapel Hill, NC; Karen P. McKinnon, PhD, Chapel Hill, NC; Dominic T. Moore, BA MS MPH, Chapel Hill, NC; Jonathan S. Serody, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the immunosuppressive role and feasible identification of myeloid derived suppressor cells (MDSCs) in head and neck cancer.

Objectives: Patients head and neck cancer have depressed antitumor immune activity. The presence of myeloid derived suppressor cells (MDSCs) may be responsible for tumor escape and limit the effectiveness of cancer immunotherapy. In this feasibility study, we report a first large cohort identification of MDSCs in patients with squamous cell carcinoma of the head and neck (SCCHN). **Study Design:** Prospective cohort study. **Methods:** Patients with SCCHN operated at a tertiary academic center between August 2011-July 2012 were screened and enrolled into an IRB approved study. Peripheral blood mononuclear cells (PBMC) were obtained from fresh blood using Ficoll Hypaque and fresh tumor was mechanically and chemically digested with hyaluronidase, collagenase, and protease. MDSCs were identified as CD14-CD33+CD11b+ by flow cytometry immunophenotyping. Frequencies of MDSCs in peripheral blood and tumor were evaluated. **Results:** Twenty-five patients (ages 27-83 years old, 20 males) with squamous cell carcinoma of the nose/paranasal sinus (n=3), oral cavity (n=11), oropharynx (n=7), and larynx (n=4) were included in this study. CD14-CD33+CD11b+ cells were identified in 3.4% (95% CI=1-20%) of leukocytes in peripheral blood (n=24) and 14.6% (95% CI=4.4-22.8%) of leukocytes in tumor (n=8) of patients with SCCHN. **Conclusions:** This study shows the feasibility of identifying MDSCs in blood and tumors of a large cohort of patients with head and neck cancer. Characterization of MDSCs in SCCHN can have implications for therapeutic strategies including chemotherapeutic agents and immune based vaccines.

S66. Pleomorphic Lipoma of the Neck: A Benign Lesion Mimicking Liposarcoma

Irene A. Kim, MD, Los Angeles, CA; Chi K. Lai, 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 discuss the presentation and management of a pleomorphic lipoma and explain the clinical characteristics and histologic findings which differentiate it from its malignant counterparts.

Objectives: 1) Learn the clinical presentation of pleomorphic lipomas; 2) review the gross and histologic findings of pleomorphic lipomas which distinguish them from liposarcomas; and 3) discuss the management and prognosis of these subcutaneous masses. **Study Design:** Case report and review of the literature. **Methods:** The PubMed database was searched from 1977 through 2012 using the key

words: pleomorphic lipoma, liposarcoma, head, neck. **Results:** Pleomorphic lipomas are rare benign soft tissue tumors which occur most often in middle aged or elderly males. Histologically, they consist of a bland spindle cell proliferation with collagen bundles, floret type multinucleated giant cells, and adipocytes in a myxoid stroma. While resembling liposarcomas, the latter commonly display higher cellularity, anaplasia, and multivacuolated lipoblasts. We present a case of a 71 year old man who presented with a slowly enlarging, painless posterior neck mass found to be a well encapsulated pleomorphic lipoma staining positively for CD34. **Conclusions:** Pleomorphic lipomas are rare variants of lipomatous tumors. They typically occur in older males and show a tendency to develop over the posterior neck, shoulder, and back. Clinical presentation, rate of growth, and histologic features are essential in formulating the diagnosis and in distinguishing them from liposarcomas. Complete surgical excision with clear margins is curative.

S67. Occult Deep Venous Thrombosis of a Fibula Free Flap: Implications for Risk Assessment and Perioperative Antithrombotic Management

Anita Konka, MD MPH, Brooklyn, NY; Jason B. Wasserman, MD, Brooklyn, NY; Steven B. Cannady, MD, Brooklyn, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to develop an understanding of current controversies in preoperative vascular assessment for fibula free flap microsurgery and appreciate the potential implications of current evidence based antithrombotic management strategies in patients undergoing head and neck reconstruction.

Objectives: To present a case of failed fibula free flap reconstruction due to occult peroneal vein thrombosis, with a postoperative course complicated by pulmonary embolism (PE). To review the literature for relevant antithrombotic guidelines that may be useful in identifying and managing those patients at risk for DVT who are undergoing major head and neck reconstruction. **Study Design:** Case report with literature review. **Methods:** Presentation of our case's pertinent history, physical examination, intraoperative, and postoperative findings and review of PubMed, OVID, and Cochrane Database literature. **Results:** A 59 year old male with stage IV floor of mouth squamous cell carcinoma was scheduled for resection of floor of mouth and anterior mandible, bilateral modified radical neck dissections, and reconstruction with osseocutaneous fibula free flap and split thickness skin graft. Aside from malignancy, the patient had no known risk factors or clinical signs of DVT. Preoperative lower extremity arterial duplex was negative for occlusion. Intraoperatively, extensive calcified peroneal vein thrombosis was identified, preventing flap transplantation. The patient s postoperative course was also complicated by PE. Literature review demonstrates that vascular assessment prior to fibula free flap remains controversial, though prior reports of occult DVT advocate for preoperative venous imaging in patients at risk for thrombosis. Recently published clinical practice guidelines from the American College of Chest Physicians provide risk stratification and thrombophylaxis recommendations for reconstructive surgery patients. In addition, perioperative continuation of aspirin therapy in patients with cardiovascular disease is also under investigation and may have implications for DVT prevention in the head and neck reconstruction population. **Conclusions:** Preoperative vascular assessment in head and neck microsurgery remains controversial. Scales such as the Wells and Caprini scores can be used to quantify DVT risk. Recent studies in the surgical literature also investigate continuation of aspirin therapy for thrombophylaxis in at risk patients. While postoperative thrombosis of the flap itself is a major concern in microvascular surgery, we present an interesting case of a chronic peroneal vein thrombus that prevented flap transplantation and postoperative formation of a PE. Our findings parallel previous reports of occult DVT in fibula free flap patients. To further explore perioperative strategies for prevention of DVT in head and neck reconstruction patients, we present thrombophylaxis guidelines from the general surgery literature and examine their relevance to our population.

S68. A Veteran's Administration Medical Center Experience with Squamous Cell Carcinoma of the Larynx: Analysis of National Comprehensive Cancer Treatment (NCCN) Guideline Adherence

Mark W. Kubik, BS, Houston, TX; Joseph A. Malsky, BS, Houston, TX; Vlad C. Sandulache, MD, Houston, TX; Jose P. Zevallos, MD, Houston, TX

Educational Objective: To assess adherence with National Comprehensive Cancer Network (NCCN) guidelines in the multidisciplinary management of squamous cell carcinoma (SCC) of the larynx at a tertiary care Veteran's Administration (VA) medical center.

Objectives: To assess adherence with National Comprehensive Cancer Network (NCCN) guidelines in the multidisciplinary management of squamous cell carcinoma (SCC) of the larynx at a tertiary care Veteran's Administration (VA) medical center. **Study Design:** Retrospective review. **Methods:** Two hundred eleven patients with SCC of the glottic or supraglottic larynx were analyzed with regard to their compliance with NCCN guidelines. Patients were treated according to recommendations of a multidisciplinary head and neck cancer treatment planning conference consisting of head and neck surgeons, medical oncologists, and radiation oncologists. **Results:** 47% of patients presented with stage I/II disease and 53% presented with stage III/IV disease. Overall compliance was found to be 92% and 90% for glottic and supraglottic cancers, respectively. Of the patients found to have suboptimal care relative to guidelines, 1 was found to have inadequate primary surgery. Primary radiotherapy dosage was consistent with guidelines in 92% of patients with glottic SCC and 86% of patients with supraglottic SCC. Corresponding rates of compliance regarding the use of adjuvant radiotherapy in glottic and supraglottic primaries were 90% and 74%, respectively. The average interval between surgery and start of adjuvant radiotherapy was 50 days. Mean followup time was 4.48 years with 85% of patients remaining without clinical or radiologic evidence of disease at their last appointment. **Conclusions:** A multidisciplinary approach to laryngeal cancer care at the VA allows for high compliance with NCCN guidelines and excellent oncologic outcomes.

S69. Swallowing and Fistula Outcomes of Primary and Salvage Total Laryngectomy

Myriam Loyo, MD, Baltimore, MD; Matthew G. Huddle, BS, Baltimore, MD; Geraldine M. Zúñiga, MD, Baltimore, MD; Steve S. Chang, MD, Baltimore, MD; Nishant Agrawal, MD, Baltimore, MD; Jeremy D. Richmon, MD, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the difference in pharyngoesophageal stenosis and gastrostomy tube dependence rates as surrogates for swallowing as well as postoperative fistula rates between primary laryngectomy patients versus salvage laryngectomy patients.

Objectives: Compare outcomes regarding pharyngoesophageal stenosis, gastrostomy tube dependence, and postoperative fistula in patients undergoing primary versus salvage total laryngectomy. **Study Design:** Retrospective chart review of total laryngectomy patients at our institution from 2000-2008. Pharyngoesophageal stenosis, gastrostomy tube dependence, and fistula formation rates were the main outcomes. Oncologic data was collected. Total laryngopharyngectomy patients and patients with less than 6 months followup were excluded. **Methods:** A total of 116 patients were included: 58 had primary and 58 had salvage surgery. Statistical analysis included t-test and chi-square followed by logistic regression and Kaplan-Meier survival curves for time of recurrence. **Results:** The overall rate of pharyngoesophageal stenosis was 35% (41/116) with 65% of the stenotic patients undergoing dilatation. Dilation was 50% less likely to be needed in primary cases (15% vs 31%, p=0.04). Gastrostomy tubes were placed in 39% (46/116) of the patients from which 26% never had their tubes removed. No difference was seen in timing for gastrostomy tube removal or dependence between the primary and salvage total laryngectomy. The overall fistula rate was 24% (28/116) and no significant difference was seen between primary and salvage patients (20% vs 27%). However, more salvage patients required surgical closure of their fistulas than primary patients (10% vs 22%, p=0.08). Recurrence rates were not statistically different between groups. **Conclusions:** Our data suggests differences in recovery following primary and salvage total laryngectomy. Dilation was more likely in stenotic salvage patients and fistulas occurring in salvage laryngectomy patients were more likely to require surgical closure than in primary laryngectomy patients.

S70. Mid-Cheek Masses: Surgical Management and Pathologic Incidence of Accessory Parotid Gland Tumors

Frank R. Miller, MD, San Antonio, TX; Travis R. Newberry, MD, Chapel Hill, NC (Presenter); Christopher R. Kaufmann, MS, San Antonio, TX

Educational Objective: At the conclusion of this presentation, the participant should be able to discuss the surgical management of accessory parotid gland tumors and gain knowledge of the pathologic incidence and malignancy rates of these rare tumors.

Objectives: The current study presents our experience with accessory parotid gland masses and reviews the literature on accessory parotid tumor incidence and surgical management. Based on our results, we advocate a modified Blair incision with routine facial nerve dissection at the time of excision. **Study Design:** We performed a retrospective chart review and comprehensive literature review on incidence of accessory parotid gland neoplasms. **Methods:** A retrospective chart review of all patients with mid-cheek masses treated by the senior author was conducted from January 2003 to January 2009. The tumor size at presentation, FNA biopsy, pathologic diagnosis, and surgical treatment were recorded for 13 patients. **Results:** In the case series, 54% of lesions were benign (n=7) and 46% were malignant (n=6) including benign pathologies of 4 pleomorphic adenomas, 2 lymphadenitis, 1 monomorphic adenoma and malignant pathologies of 2 mucoepidermoid carcinoma, 2 B-cell lymphomas, 1 adenocarcinoma, and 1 myofibrosarcoma. Surgical intervention was performed on all patients with standard parotidectomy incision for accessory parotid mass excision after identification and tracing of facial nerve and its branches. No postoperative complications or tumor recurrences were observed. **Conclusions:** The present study provides support for a standard parotid incision with identification of the facial nerve at the time of surgical incision as this resulted in successful excision of accessory parotid tumors with favorable cosmetic results and without facial paralysis or tumor recurrence. Literature review of 152 cases of accessory parotid gland lesions revealed a pooled incidence of 70% benign and 30% malignant.

S71. Supraclavicular Thoracic Duct Cyst: A Case Report with Transcervical Surgical Intervention

Marian C. Miller, MD, Orlando, FL; Luis J. Herrera, MD, Orlando, FL; Kavita M. Pattani, MD, Orlando, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate the possibility of a supraclavicular thoracic duct cyst (TDC) as well as understand the diagnostic steps and treatment.

Objectives: Discuss the incidence, presentation, diagnosis, and treatment of a supraclavicular TDC. Describe a case report with this diagnosis. **Study Design:** Case report. **Methods:** 71 year old female with several month history of enlarging left neck mass. Workup included ultrasound, FNA and CT neck/chest. The FNA demonstrated a triglyceride level 994 and the CT revealed a cyst measuring 5.6 x 3.7 cm at the base of the left neck with mediastinal extension. Diagnosis of TDC was made and she was consented for excision via the left neck utilizing a combined approach with head and neck and thoracic surgical teams. **Results:** Removal of the cyst was successfully completed through the left neck. The thoracic duct was ligated inferior to the cyst in the superior mediastinum as well as at the communication with the subclavian vein. Pathology revealed a vascular channel consistent with the thoracic duct. The patient is now several months postop without recurrence of the cyst or any morbidity. **Conclusions:** Supraclavicular TDCs are a very rare entity with less than twenty cases being reported in the literature. Once correctly diagnosed, they can be safely removed through a transcervical approach. It is advised to have a thoracic surgical team available should the need arise for a sternotomy or intervention in the chest.

S72. Recurrent Pleomorphic Adenoma: Surgical Technique for Re-recurrence Prevention and Minimizing Facial Nerve Injury

Jennifer L. Mitchell, MD PhD, Las Vegas, NV; Andrew C. Mehta, BS, Las Vegas, NV; Annabel E. Barber, MD, Las Vegas, NV; Robert C. Wang, MD*, Las Vegas, NV

Educational Objective: At the conclusion of this presentation, the participants should be able to compare retrograde facial nerve dissection with antegrade exposure in recurrent pleomorphic adenoma parotidectomy surgery in terms of preventing future recurrences and minimizing facial nerve injury.

Objectives: 1) Demonstrate that a retrograde facial nerve dissection approach in recurrent pleomorphic adenoma (RPA) parotidectomy surgery may prevent facial nerve injury and further recurrences of tumor; and 2) discuss a case of a recurrent RPA transforming into carcinoma expleomorphic adenoma (CaPA) at separate and multiple locations. **Study Design:** Retrospective analysis of seven patients with recurrent RPA. **Methods:** Patient records were reviewed from 2000 to 2010. Patients had had up to 10 prior parotidectomies, up to six sites with recurrent nodules and an average of six years before their first recurrence. One patient had prior temporary facial nerve weakness and three patients had prior permanent facial nerve weakness. RPA surgery with retrograde facial nerve dissection with facial nerve EMG monitoring was performed on all patients. **Results:** No documented recurrences have been noted upon average followup of 42 months. No patients developed permanent facial nerve paralysis and two patients (29%) developed mild temporary facial weakness for an average of one month. One patient had their RPA transform into carcinoma at five separate locations in the parotid gland. **Conclusions:** RPAs can be prevented from re-recurring by fully resecting the tumor without further rupture and spillage. Retrograde dissection of the facial nerve during RPA surgery reduced the incidence of facial nerve damage compared to other series which reported facial weakness of up to 100% using standard antegrade facial nerve exposure. RPAs can transform into carcinoma at multiple, distinct sites in the parotid gland.

S73. The Effect of Depression on Short Term Outcomes and Cost of Care after Head and Neck Cancer Surgery

Shani J. Ortiz, BS, Galveston, TX; Christine G. Gourin, MD MPH*, Baltimore, MD (Presenter)

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the incidence and short term effects of depression in head and neck cancer surgical patients.

Objectives: Depression is common in head and neck cancer (HNCA) patients and is associated with swallowing impairment, diminished quality of life, and survival. We sought to determine if depression impacted in-hospital mortality, complications, length of hospitalization and costs in HNCA surgery. **Study Design:** Retrospective cross-sectional study. **Methods:** Discharge data from the Nationwide Inpatient Sample for 123,662 patients who underwent an ablative procedure for a malignant oral cavity, laryngeal, hypopharyngeal or oropharyngeal neoplasm in 2001-2008 was analyzed using cross-tabulations and multivariate regression modeling. **Results:** Overall, 123,662 patients underwent surgery in 2001-2008 with depression reported in 5,224 cases (4%). Patients with depression were significantly more likely to be female (OR=1.8, P<0.001), have advanced comorbidity (OR=2.0, P<0.001), laryngeal primary site disease (OR=1.2, P=0.024), a history of alcohol abuse (OR=1.6, P<0.001), and dysphagia (OR=1.4, P=0.007), but were less likely to be elderly (OR=0.7, P=0.019) and reside in the south (OR=0.7, P=0.002). Weight loss and alcohol abuse were significantly associated with an increase in postoperative complications, length of hospitalization, and costs, after controlling for all other variables. No significant interactions were found between depression and dysphagia, weight loss, or alcohol abuse. Depression was not associated with in-hospital mortality, acute medical complications, surgical complications, or hospital related costs, but was associated with a mean increase in length of hospitalization of 24 hours (P<0.001). **Conclusions:** Depression in HNCA surgical patients is significantly associated with dysphagia and alcohol abuse and may be a marker for patients at increased risk of poorer short term outcomes.

S74. Peripheral T-Cell Lymphoma Involving the Uvula

Chirag R. Patel, MD, Newark, NJ; Senja Tomovic, MD, Newark, NJ; Evelyne Kalyoussef, MD, Newark, NJ; Jean A. Eloy, MD, Newark, NJ

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss lymphoma in the differential diagnosis of neoplasms of the uvula.

Objectives: Malignant neoplasms of the uvula are rare, with squamous cell carcinoma and minor salivary gland tumors being the most common. Peripheral T-cell lymphoma is a group of Non-Hodgkin's lymphomas arising from mature T-cells. Patients commonly present with lymph node involvement, however other extranodal sites may be involved. Involvement of the uvula by this entity has not previously been described in the English literature. We present the first case of a peripheral T-cell lymphoma presenting in the uvula. **Study Design:** Case report. **Methods:** Retrospective chart review of a patient with peripheral T-cell lymphoma involving the uvula and a review of the literature. **Results:** We present the case of a 65 year old Filipino male who presented with an enlarging uvular mass over the course of one year. Excision of the mass revealed a peripheral T-Cell lymphoma. Excisional biopsy of an epitrochlear lymph node confirmed the diagnosis. **Conclusions:** Lymphoma should be considered in the differential diagnosis of a uvular neoplasm. Surgical specimens should be handled accordingly to ensure an accurate diagnosis.

S75. Five Year followup on Laryngeal Preservation Surgery for Chondrosarcoma

Kevin A. Peng, MD, Los Angeles, CA; Avraham H. Mendelsohn, MD, Los Angeles, CA; Paul A. Kedeshian, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss surgical therapy for chondrosarcoma of the larynx.

Objectives: To present a case of long term followup after larynx preserving surgical treatment of chondrosarcoma of the larynx. **Study Design:** Retrospective case review. **Methods:** A retrospective case review of a patient with chondrosarcoma of the larynx, treated with primary surgical intervention at a tertiary care center, was performed. Length of followup was five years. **Results:** An 80 year old male presented with slowly progressive dysphonia, and physical examination and computed tomography demonstrated an expansile mass in the right thyroid cartilage. Fine needle aspiration biopsy was consistent with a low grade cartilaginous lesion, and the patient underwent a right vertical partial laryngectomy and tracheostomy. Pathological analysis revealed chondrosarcoma, grade I, with negative margins. The patient was successfully decannulated prior to discharge. At five year followup, there was no evidence of disease, and the patient was tolerating a normal diet with no airway complaints. **Conclusions:** Chondrosarcoma of the larynx is a rare malignant tumor; histology is most often low grade. Laryngeal preservation surgery should be considered if anatomically feasible and oncologically sound, and, as in the current presentation, may offer cure with minimal long term morbidity.

S76. Radiographic Findings in Synovial Osteochondromatosis of the Temporomandibular Joint: Case Series in One Institution

Aron Z. Pollack, MD, New York, NY; David J. Myssiorek, MD*, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to identify typical radiographic findings seen within synovial osteochondromatosis.

Objectives: To evaluate and characterize classic radiographic findings seen within synovial osteochondromatosis (SC) of the temporomandibular joint (TMJ). **Study Design:** Retrospective chart review of all patients with SC as seen within our institution. **Methods:** Herein we report the distinctive radiologic findings of three cases of SC of the TMJ as seen within our institution over the past five years. In each case, radiographic imaging was obtained in the setting of acute trauma or altered mental status and the finding of SC was serendipitous, highlighting the progressive developmental stages of this clinical entity. **Results:** Classic radiographic findings of SC include increased dermal and subdermal auricular soft tissue, well circumscribed expansile area of prolific cartilaginous and/or ossific mineralization within or surrounding the TMJ, and TMJ space widening. **Conclusions:** SC of the temporomandibular joint is a rare benign joint disorder of unknown etiology with roughly 200 total cases reported in the literature. SC of the TMJ represents an active metaplastic phenomenon of the synovial membrane characterized by the formation of cartilaginous nodules or loose bodies within, or even beyond, the affected joint space. Typically involving the upper compartment of the joint, the most common constellation of symptoms include preauricular swelling, unilateral jaw pain, intracapsular sounds or crepitation and limitation of jaw movement. Diagnosis is often delayed or missed due to the nonspecific symptoms, progressive developmental stages and clinicians' lack of awareness of the condition. As SC may clinically mimic symptoms of many common TMJ or parotid diseases, the utility of radiographic imaging is paramount in diagnosis.

S77. Robotic and Robotic Assisted Approaches for the Surgical Management of Glottic and Supraglottic Malignancies: Technical Pearls and Associated Case Reviews

J. Drew Prosser, MD, Augusta, GA; Carrie M. Bush, MD, Augusta, GA; C. Arturo Solares, MD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the instrumentation, set-up and operative technique of the varied robotic approaches to the glottic and supraglottic larynx and discuss the limitations/complications of these approaches with strategies to reduce them.

Objectives: Glottic and supraglottic malignancies are commonly addressed through open approaches which include vertical partial, supraglottic, supracricoid and total laryngectomy. For early stage lesions, there has been a trend toward endoscopic, transoral management of these tumors, which has resulted in improved postoperative function, decreased morbidity and shorter hospital stays. Coincident with this trend has been the advancement of robotic transoral approaches for oral cavity and oropharyngeal malignancies. Herein we looked to evaluate our experience with robotic and robotic assisted approaches to the glottis and supraglottis. **Study Design:** Retrospective review of cases at a tertiary care academic medical center. **Methods:** Charts were identified and reviewed for clinical and operative details. **Results:** 3 patients were selected over a 1 year period to demonstrate the varied approaches. The mean age was 64 years. All lesions were early stage lesions (T1 or T2). Adequate exposure was obtained in each case using the FK retractor. Approaches utilized included transoral robotic supraglottic laryngectomy and robotic assisted total laryngectomy. Mean robotic resection time was 119 minutes. Estimated blood loss averaged 30 cc. Mean hospital stay was 3 days. All patients were NED at 6 months. 1 patient had a postoperative fistula. **Conclusions:** Robotic approaches to the supraglottic and glottic larynx have the advantage of improved visualization and decreased morbidity but with increased operative times. Graded approaches are feasible progressing from epiglottic to supraglottic and glottic lesions. This report describes techniques and limitations of these varied robotic and robotic assisted approaches to the supraglottic and glottic larynx based on 3 selected cases.

S78. Ansa to Recurrent Laryngeal Neurorrhaphy in the Setting of Laryngeal Nerve Sacrifice: A Cadaveric Study to Evaluate a Reconstructive Option

Karthik Rajasekaran, MD, Cleveland, OH; Timothy Haffey, MD, Cleveland, OH; Joseph Scharpf, MD, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss which patients would benefit from the ansa to recurrent laryngeal neurorrhaphy and explain the reasons why this procedure would be considered in the setting of laryngeal nerve sacrifice. Additionally they should be able to discuss the factors that need to be considered in performing the procedure as well as explaining the steps to the operation.

Objectives: In rare cases of invasive thyroid carcinoma the recurrent laryngeal nerve (RLN) can be involved requiring it to be sacrificed. In this setting it would be ideal to perform a concomitant reconstructive procedure to prevent the morbidity of vocal fold paralysis. Often when the nerve has to be sacrificed, there is not enough residual RLN to use for a reinnervation procedure, limiting the reconstructive options. The objectives of this study were to investigate the length of the distal stump of recurrent laryngeal nerve from the inferior border of the constrictor muscle (where it is typically sacrificed) to its entrance into the larynx, and determine whether this stump would be long enough for margin clearance and neurorrhaphy with the ansa cervicalis (AC). **Study Design:** Cadaveric study and case presentation. **Methods:** Recurrent laryngeal nerves were identified in fresh frozen cadavers. The inferior pharyngeal constrictor muscle was divided, revealing the distal stump of the RLN, which was mobilized and measured. **Results:** Dissection was performed in 10 cadavers (20 nerves). The average length of the right RLN from the inferior constrictor until it entered the larynx was 14 mm, and the left RLN was 15 mm. **Conclusions:** Recurrent laryngeal nerve reinnervation procedures in the setting of nerve sacrifice are not well described, likely due to the fact that often there is insufficient residual nerve for anastomosis. This study demonstrates that by splitting the inferior constrictor muscle, sufficient length can be obtained for neurorrhaphy.

S79. The Effect of Preoperative Calcium and Vitamin D Supplementation in Total Thyroidectomy

Derek J. Robinson, MD, Charlottesville, VA; David C. Shonka, MD, Charlottesville, VA; Anne K. Maxwell, BA, Charlottesville, VA; Paul A. Levine, MD*, Charlottesville, VA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the benefit of preoperative calcium and vitamin D supplementation for total thyroidectomy in terms of decreased postoperative hypocalcemia, need for calcium repletion, length of stay, readmissions, and overall cost.

Objectives: Determine the effectiveness of pre and postoperative calcium/vitamin D supplementation, compared to postoperative supplementation alone, in reducing hypocalcemia following total thyroidectomy. **Study Design:** Retrospective chart review. **Methods:** Data were collected from the experiences of all patients undergoing total thyroidectomy by a single surgeon between January 2008 and December 2011. Analysis included age, gender, diagnosis, procedure performed, pre and postoperative serum calcium levels, symptomatic hypocalcemia, IV calcium repletion, length of stay, readmissions, and estimated costs. **Results:** 65 patients underwent total thyroidectomy during the study period. Of these, 33 received preoperative calcium/vitamin D supplementation, while 32 patients did not. In the preop supplementation group, 15/33 (45%) underwent central compartment dissection and 11/33 (33%) had lateral neck dissection, compared to 16/32 (50%) and 12/32 (38%), respectively, in those without supplementation. The average measured serum calcium level (mg/dL) in those with preop supplementation vs. those without is as follows: preop, 9.4 vs. 9.6 (p=0.32); 12 hours postop, 8.6 vs. 8.3 (p=0.064); 24 hours postop, 8.5 vs. 8.4 (p=0.37), respectively. In the preop supplementation group, 2/33 (6%) became symptomatically hypocalcemic during their postop course, vs. 5/32 (16%) in the no supplement group. The average length of stay (days) was significantly shorter for those who had received preop supplementation vs. those who did not (2.9 vs. 3.8, p=0.028). Preoperative supplementation resulted in an estimated $2811 cost savings per patient undergoing total thyroidectomy. **Conclusions:** Preoperative calcium/vitamin D supplementation, in addition to routine postoperative supplementation, effectively reduces incidence of hypocalcemia, length of hospital stay, and overall costs following total thyroidectomy.

S80. Mucosal Merkel Cell Carcinoma of the Nasal Vestibule: An Atypical Presentation with a Typical Course

Babak Sadoughi, MD, New York, NY; Elizabeth Guardiani, MD, New York, NY; Andrew Blitzer, MD DDS*, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the expected clinical course of Merkel cell carcinoma of the head and neck.

Objectives: 1) To present an unusual presentation of a rare entity; and 2) to reiterate the typically aggressive course of the disease process. **Study Design:** Case presentation. **Methods:** Retrospective review of single case chart and presentation of 2 year followup outcomes. **Results:** A patient presenting with a slowly growing nasal vestibular lesion, initially managed as folliculitis, underwent outpatient biopsy and further workup studies leading to the diagnosis of Merkel cell carcinoma. No regional or distant metastasis was detectable at the time of diagnosis, however the patient developed two submental lymph node metastases within 2 weeks, while obtaining multidisciplinary consultation. A wide local excision procedure was performed with bilateral supraomohyoid neck dissection and immediate reconstruction, followed by chemoradiation. Despite the prompt management and durable local control, the disease nevertheless progressed 10 months after the completion of treatment, and the patient developed distant lumbar spine and perineal metastases, which were addressed with palliative chemoradiation. **Conclusions:** This report underlines the highly aggressive nature of Merkel cell carcinoma, which should not be underestimated even in the context of a seemingly indolent presentation. Further research is needed to

identify prognostic parameters and design validated treatment algorithms in the management of neuroendocrine malignancies of the head and neck.

S81. Pharyngocutaneous Fistula following Total Laryngectomies for Recurrent Laryngeal Cancer after Radiation Therapy

Joshua J. Sturm, BA, Pittsburgh, PA; Mark R. Gilbert, MD, Pittsburgh, PA; Seungwon Kim, MD, Pittsburgh, PA; Jonas T. Johnson, MD*, Pittsburgh, PA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the use and efficacy of pectoralis major myocutaneous and myofascial flaps in the prevention of fistula following laryngectomy in previously irradiated patients.

Objectives: Pharyngocutaneous fistula is a common complication of total laryngectomy, especially in patients who have undergone previous irradiation. Although both pectoralis major myocutaneous (PMMC) and myofascial (PMMF) flaps are commonly used to prevent fistulas, their effectiveness in these patients remains unclear. **Study Design:** Retrospective review. **Methods:** We examined 64 cases of recurrent laryngeal cancer that were treated by laryngectomy between 1998 and 2010, assessing the frequency of pharyngocutaneous fistula grouped by closure type (e.g., primary alone, PMMC or PMMF), as well as demographics such as age, cardiovascular disease, smoking history and history of alcohol use. **Results:** The overall rate of fistula was 28.1% (18/64): PMMF flaps were associated with a reduced rate of fistula (0/9, 0%) compared to PMMC flaps (4/13, 30.7%) and to primary closures (14/42, 33.3%, P=0.055). The presence of cardiovascular disease was associated with increased occurrence of fistula across closure types (P=0.025), as was increased age at time of surgery (P=0.001). Neither smoking nor alcohol use were associated with changes in fistula frequency. **Conclusions:** Pectoralis major myofascial flaps may help to prevent pharyngocutaneous fistula in laryngectomies for previously irradiated patients. Increased age and the presence of pre-existing cardiovascular disease are risk factors for fistula formation.

S82. Metastatic Breast Cancer Masquerading in the Thyroid

Mausumi N. Syamal, MD, Detroit, MI; Francis Hall, MD, Detroit, MI

Educational Objective: At the conclusion of this presentation, the participants should be able to be aware of a case of metastatic breast cancer presenting as toxic thyroid goiter.

Objectives: Present a case of metastatic breast cancer initially diagnosed via hemithyroidectomy in a patient presenting with thyroid goiter and hyperthyroidism. **Study Design:** Case report. **Methods:** Literature review of unusual and atypical presentations of metastatic breast cancer involving the head and neck. **Results:** We present a case of metastatic invasive lobular carcinoma evading identification on mammography and ultimately diagnosed by right hemithyroidectomy for toxic nodular thyroid goiter. Based on current and past literature review, this is the first documented case of metastatic lobular carcinoma diagnosed in this manner. **Conclusions:** Documentation of a case of metastatic breast cancer masquerading in the thyroid is worthy of mention as it serves as a reminder to otolaryngologists of the vast differential diagnoses of patients presenting with thyroid disease.

S83. Solitary Fibrous Tumor of the Hypopharynx: Case Report

Christopher F. Thompson, MD, Los Angeles, CA; Sunita M. Bhuta, MD, Los Angeles, CA; Elliot Abemayor, MD PhD*, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the rarity of solitary fibrous tumors in the head and neck, especially in the hypopharynx, and also be able to discuss the clinical presentation and treatment outcomes of this extremely rare neoplasm.

Objectives: To discuss the clinical presentation, prognosis and treatment of solitary fibrous tumors of the head and neck and present only the third reported case of a hypopharyngeal solitary fibrous tumor. **Study Design:** Case report with literature review. **Methods:** The PubMed database was searched from 1985 to 2012, limited to the English language, using the keywords: solitary fibrous tumor, pharynx, head, neck. **Results:** Solitary fibrous tumors are mesenchymal neoplasms most commonly arising from the pulmonary pleura. The first reported case in the upper aerodigestive tract was in 1991, and there are less than 200 reported cases in the head and neck region. The hypopharynx is an especially rare subsite with only two previous reported cases. Clinical presentation results from compression on nearby structures. We present a 74 year old female who was referred to our tertiary academic medical center for a 2x3x3cm hypopharyngeal mass that on MRI was well defined and enhancing, but abutting the carotid artery. On flexible endoscopy, the mass was obstructing greater than 50% of her airway, and she complained of dysphagia, dysphonia, and globus. Outside pathology and intraoperative frozen sections were inconclusive. Patient underwent transoral laser microsurgery and final pathology confirmed solitary fibrous tumor. She is completely asymptomatic post-treatment and followup with endoscopy and imaging will be critical. **Conclusions:** Although rare, solitary fibrous tumors should be included in the differential diagnosis of gradually enlarging head and neck neoplasms. Wide local excision is the treatment of choice. Treatment outcomes are excellent when negative margins are obtained.

S84. Innominate Artery Resection to Prevent an Impending Tracheoinnominate Fistula and to Permit Tracheotomy in a Patient with Subglottic Stenosis and High Riding Innominate

Joshua Tokita, MD, Iowa City, IA; Raymond W. Kung, MS4, Iowa City, IA; Henry T. Hoffman, MD*, Iowa City, IA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the risks and benefits of innominate artery ligation in order to prevent an impending tracheoinnominate fistula and to permit tracheotomy in a patient with subglottic stenosis and a high riding innominate.

Objectives: Tracheoinnominate fistula (TIF) is a rare but fatal complication for tracheostomy dependent patients. Resection of the innominate artery may be a viable option for patients with warning signs of an impending TIF. This study seeks to determine the long term viability of innominate artery resection and tracheotomy for a patient at high risk of developing a TIF in the setting of subglottic stenosis and a high riding innominate artery. **Study Design:** Retrospective review of patient chart. **Methods:** Analysis of a case with two year followup. **Results:** A 45 year old diabetic male with untreated obstructive sleep apnea and multiple admissions for coma and delirium tremens associated with alcohol abuse developed subglottic stenosis presumed to result from multiple intubations coupled with untreated gastroesophageal reflux. He was found to have a palpable supraclavicular pulse during preoperative examination for a tracheotomy. A CT scan revealed a high riding innominate artery at the level of stenosis along with granulation tissue and disruption of the cartilaginous trachea suggesting a high risk of impending TIF. The patient underwent a mini sternotomy approach resection of the innominate artery with closure of the distal stump with a sternohyoid muscle flap. Intraoperatively, a plane of dense adhesions between the posterior innominate artery and the trachea was dissected sharply. The anterior tracheal wall appeared calcified, however, there was no evidence of erosion of either the trachea or the artery. Six weeks later an epithelial lined tracheotomy was performed. Followup twenty-seven months after the innominate artery resection identified the absence of complication from the innominate artery resection. **Conclusions:** Resection of the innominate artery is an option for some patients to address either the warning signs of TIF or to permit a tracheotomy to be performed in the presence of a high innominate artery.

S85. Solitary Fibrous Tumor of the Tongue: Case Report and Literature Review

Jason B. Wasserman, MD, Brooklyn, NY; Behrad Aynehchi, MD, New York, NY; Steven Cannady, MD, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand that solitary fibrous tumors of the tongue are very rare, how to differentiate them from spindle cell tumors and that treatment is surgical extirpation with a low incidence of recurrence.

Objectives: Solitary fibrous tumors are rare tumors that most commonly occur in the pleura of the lungs; rarely, they can occur in the head and neck as well as other sites such as the breasts, kidneys, bladder, and spinal cord. Only six documented cases of solitary fibrous tumors of the tongue have been reported. **Study Design:** Case report. **Methods:** Case presentation with a literature review using PubMed with keywords “solitary fibrous tumor” AND “tongue” OR “oral cavity” is provided. **Results:** The patient is a 62 year old man who presented with an enlarging mass in the anterior right mobile tongue growing slowly over two years. Office fine needle aspiration was nondiagnostic and the patient did not followup. He was then admitted for rheumatoid arthritis exacerbation, and our service was consulted. A core biopsy was taken in the hospital that was suspicion for low grade salivary tumor. A partial glossectomy, selective neck dissection of level 1B and 2A for vessel identification and radial forearm free flap reconstruction was performed. Intraoperative frozen section of the mass was read as “spindle cell neoplasm favoring schwannoma”. On final pathology, the tumor was discovered to be a solitary fibrous tumor. The clinical course was unremarkable. **Conclusions:** Solitary fibrous tumors are rare tumors in the tongue with only 6 documented cases upon review of the literature. Diagnostic challenges and confusion with spindle cell tumors are common. Treatment is surgical extirpation with low incidence of recurrence. Reconstruction may be necessary when larger tumors replace portions of the tongue.

S86. Non-Inferior Laryngeal Nerve: Case Series and Literature Review

Thomas J. Willson, MD, San Antonio, TX; Nathan L. Salinas, MD, Fairbanks, AK; Jayne R. Stevens, MD, San Antonio, TX; Joseph A. Brennan, MD, San Antonio, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the incidence of nonrecurrent inferior laryngeal nerve and the typical vascular anomaly it occurs with. Additionally, this presentation highlights the rare occurrence where in spite of preoperative identification of a vascular anomaly the inferior laryngeal nerve may be found in an unexpected position.

Objectives: Nonrecurrent inferior laryngeal nerve (NRILN) is a significant risk factor for nerve injury during thyroid, parathyroid, and vascular surgeries involving the paratracheal region of the head and neck. The objective of this study is to review the association between an aberrant right subclavian artery identified on preoperative imaging and a NRILN identified intraoperatively during thyroid and parathyroid surgery. **Study Design:** Case series with literature review. **Methods:** We retrospectively reviewed 3 selected cases with preoperatively identified aberrant right subclavian arteries and determined the intraoperative position of the inferior laryngeal nerve on the right. Selected literature was reviewed to compare radiologic vascular findings with intraoperative nerve position. **Results:** NRILN is associated with the vascular anomaly of an aberrant right subclavian artery whereby the artery passes posterior to the esophagus and is easily identified by imaging with multiple modalities. In two patients undergoing thyroidectomy with aberrant right subclavian arteries, a NRILN was identified coursing horizontally into the cricothyroid joint from the vagus nerve. More importantly, one of the 3

cases demonstrated that the inferior laryngeal nerve may be found in the normal anatomic position coursing inferiorly through the tracheal esophageal (TE) groove. This anatomic finding is unexpected in a patient with preoperatively identified aberrant right subclavian artery. Additional literature review was performed to demonstrate the correlation between an aberrant right subclavian artery and the intraoperative finding of NRILN. **Conclusions:** NRILN occurs nearly always in conjunction with retroesophageal right subclavian artery. However, in a very small percentage of cases, the nerve may lie within the tracheoesophageal groove.

S87. Disparities in Thyroid Cancer Presentation and Treatment among Racial/Ethnic Groups in the United States
Yin Yiu, BS, Houston, TX; Eunji Jo, MS, Houston, TX; Charlotte H. Ahern, PhD, Houston, TX; Jose P. Zevallos, MD, Houston, TX

Educational Objective: At the conclusion of this presentation, the participants should be familiar with the distinctions in thyroid cancer presentation and management among different ethnic groups and be prepared to discuss possible factors contributing to these disparities.

Objectives: Thyroid cancer incidence has been rising in the past decades, though the rate of increase varies with ethnicity. Our objectives are to compare thyroid cancer management among ethnic groups and to identify disparities possibly attributed to decreased access to care. **Study Design:** Retrospective cohort analysis. **Methods:** Case characteristics of 9,179 patients with well differentiated thyroid cancer were extrapolated from the Surveillance, Epidemiology, and End Results (SEER) database. The chi-square test and multivariate analyses were performed to compare demographics, clinicopathologic features, and treatment among non-Hispanic white, Hispanic, black, and Asian patients. **Results:** Patients of minority ethnic groups were diagnosed with larger tumors and at later stages than white patients. After controlling for other factors, black patients were 33% less likely to have undergone total thyroidectomy (OR 0.67, p<.001), 20% less likely to have been treated with radioactive iodine (RAI) (OR 0.80, p<.02), and 65% less likely to have had lymph nodes resected (OR 0.35, p<.001) compared to white patients. There was no difference in rates of total thyroidectomy performed among white, Hispanic, and Asian patients. However, Hispanics received less RAI (OR 0.79, p<.01) and had less lymphadenectomies (OR 0.80, p<.01), while Asians underwent fewer lymphadenectomies (OR 0.73, p<.001) than whites. **Conclusions:** Despite presenting with more advanced disease, minority patients undergo less aggressive treatment compared to their white counterparts. Inadequacies in prevention, decreased access to care, and cultural preferences may all play a role. It is crucial that we address these issues to preclude poor outcomes from a highly treatable disease.

S88. Treatment of Laryngeal Cancer in the County Hospital Setting: Comparison with National Guidelines
Yin Yiu, BS, Houston, TX; Vlad C. Sandulache, MD PhD, Houston, TX; Susan A. Eicher, MD, Houston, TX; Jose P. Zevallos, MD, Houston, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the merits of a multidisciplinary approach to larynx cancer care in the county hospital setting.

Objectives: The National Comprehensive Cancer Network (NCCN) issues recommendations regarding standard of care for laryngeal squamous cell carcinoma (SCC). Compliance with these guidelines is an essential step in establishing quality care. The purpose of this study was to determine the degree of compliance for treating laryngeal SCC in a unique metropolitan population served by our academic institution's public hospital. **Study Design:** Retrospective review. **Methods:** Patient demographics, tumor characteristics, and treatment data were collected for 123 cases of laryngeal SCC diagnosed from 2005—2010 at a county hospital. Treatment plans were formulated at multidisciplinary planning conference with participation from medical oncologists, radiation oncologists, and head and neck surgeons. Compliance with NCCN guidelines was analyzed with respect to appropriate selection of primary and adjuvant treatment modalities. **Results:** The majority of patients were Hispanic (24%) or African American (43%). Most common T stage at presentation was T4 (40.7%) and 43.1% of patients had nodal involvement. Treatment of T1/T2 disease relied on unimodality treatment whereas T3/T4 disease was typically treated with multimodal therapy. Thirty-seven percent of patients underwent surgery while the remainder received nonsurgical treatment. Overall compliance with NCCN guidelines was 100% for T1, 88.2% for T2, 89.7% for T3, and 84.1% for T4 lesions. Average two year disease free survival was 65%. **Conclusions:** High quality laryngeal cancer care is achievable in the county hospital setting despite advanced stage at presentation and deficiencies in patient followup. The implementation of a multidisciplinary approach allows for strong compliance with NCCN guidelines and outcomes comparable to published series.

Laryngology/Bronchoesophagology

S89. Laryngeal Kaposi's Sarcoma in a Man with AIDS: A Case Report and Review of the Literature
Ashish A. Ankola, BS, Bronx, NY; Lowell F. Gurey, MD, New York, NY; Andrew Blitzer, MD DDS*, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize a patient with primary laryngeal Kaposi sarcoma and guide its management.

Objectives: Kaposi's sarcoma (KS) is a malignancy seen more commonly in patients with acquired immune deficiency syndrome (AIDS) or immunosuppression. KS has been linked to human herpesvirus-8 and is predominantly seen as violaceous lesions of the skin. Head and neck manifestations of KS have been reported in the literature and predominantly are seen in the skin and mucous membranes of the oral cavity. More rarely seen is laryngeal involvement of KS, with the majority presenting with airway obstruction or

hoarseness in the setting of concurrent skin lesions. We present a case report of a rare occurrence of laryngeal KS in a patient without concurrent skin lesions. **Study Design:** Case report. **Methods:** Case report and literature review. **Results:** A 37 year old male with poorly controlled AIDS presented with hoarseness without airway obstruction. Flexible laryngoscopy revealed a large vascular lesion anterior to the right true vocal cord. The patient did not have concurrent KS lesions of the skin. After tissue diagnosis by biopsy, the patient was successfully treated in the operating room with two CO2 laser excisions and with better control of his AIDS. **Conclusions:** Laryngeal KS, while uncommon, should be considered in AIDS patients presenting with hoarseness or difficulty breathing even without the presence of concurrent skin lesions.

S90. Outcomes for Endoscopic CO2 Laser Cricopharyngeal Myotomy

Jennifer Lynn Bergeron, MD, 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 use of endoscopic CO2 laser cricopharyngeal myotomy for varying indications.

Objectives: To describe a single institution's experience with CO2 laser cricopharyngeal myotomy over a 6 year period. **Study Design:** Retrospective review of case series. **Methods:** All patients surgically treated with endoscopic CO2 laser cricopharyngeal myotomy (CPM) over a 6 year period were identified. Charts were reviewed for indication for operation, initial and followup history, physical examination, and findings on endoscopic and radiographic swallow evaluations. Functional Outcome Swallowing Scale (FOSS) scores were calculated pre and postoperatively. Pre and postoperative findings were compared across groups based on surgical indication. **Results:** 87 patients underwent endoscopic CO2 laser CPM during the study period. Indications included Zenker's diverticulum (39), cricopharyngeal dysfunction due to DiGeorge syndrome (2), stroke (5), nerve injury (2), radiation (15), idiopathic (16), inability to phonate through tracheoesophageal puncture (TEP) after laryngectomy (5) or dysphagia from stricture at CP muscle after laryngectomy (3). Mean, median, and mode for time to feeding postoperatively were 1.4, 1, and 0 days respectively, and no patients developed mediastinitis. Mean, median and mode postoperative hospital stay were 1.8, 1 and 1 day respectively. Across all patients, FOSS scores improved from 2.8 to 1.8 and improvement was greatest for those treated for Zenker's diverticulum (2.4 to 1.0) and those treated for CP dysfunction from stroke or nerve injury (3.3 to 1.8). All patients undergoing CPM for inability to phonate through TEP were able to phonate through TEP postoperatively. **Conclusions:** Endoscopic CO2 laser CPM with early feeding postoperatively is a safe treatment for cricopharyngeal dysfunction of various causes, though varying swallowing outcomes may be seen depending on the surgical indication.

S91. Herpes Zoster of the Hemilarynx

John M. Carter, MD, New Orleans, LA; David Z. Cai, BS, New Orleans, LA; Brian A. Moore, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand and identify the presentation of herpes zoster involving one side of the larynx as well as be able to understand diagnostic and treatment strategies for this disease process.

Objectives: To present a case report of the herpes zoster of the hemilarynx in a 97 year old male. **Study Design:** Single case report. **Methods:** A single case report and literature review. **Results:** This case report includes endoscopic images of the larynx that reveal mucosal vesicles of the hemilarynx and a unilateral vocal cord paralysis. Viral antibody titers for IGG herpes zoster were positive. **Conclusions:** Varicella zoster is a common systemic disease that may rarely affect the larynx. The virus is known to establish a latent infection in the spinal cord or cranial nerve ganglia and reactivate secondary to various stressors. Herpes zoster of the hemilarynx may manifest as unilateral vocal fold paralysis, mucosal vesicles, dysphagia and odynophagia. The diagnosis of this disease process is largely clinical and may be supplemented by viral antibody assays and PCR. Despite definitive evidence, one can justify attempting medical therapy with antivirals and steroids with the intention of hastening the course of vesicle resolution and perhaps return of nerve function.

S92. Histoplasmosis of the Larynx

John M. Carter, MD, New Orleans, LA; Kelsye Williams, MD, New Orleans, LA; Brian A. Moore, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand and identify histoplasmosis of the larynx. This includes its epidemiology, presentation, diagnosis, and treatment considerations in this rare manifestation of a disease entity that may be easily confused with a neoplasm of the larynx.

Objectives: To present a case report of histoplasmosis of the larynx in a 72 year old female. **Study Design:** A single case report. **Methods:** A presentation of a single case report and literature review. **Results:** Endoscopic images of histoplasmosis of the larynx in a 72 year old female with bilateral vocal fold paralysis. Presentation of histology slides showing acute and chronic inflammation without dysplasia. Fungal cultures were positive for histoplasma capsulatum. **Conclusions:** Histoplasmosis is a granulomatous disease that is caused by histoplasma capsulatum which has a variety of presentations, including acute and chronic pulmonary or disseminated disease. Laryngeal histoplasmosis, a rare presentation of disseminated disease, should be considered in the differential diagnosis for certain patients presenting with hoarseness, particularly in immunosuppressed patients. Diagnosis centers on endoscopic gross appearance, histopathology and serum antigen and antibody testing. Treatment is aggressive antifungal therapy.

S93. External Diverticulectomy of a Large Recurrent Zenker's Diverticulum with Mechanical Stapler: Still a Valid Procedure

Andy M. Courson, MD, Phoenix, AZ; April M. Landry, MD, Phoenix, AZ; Michael L. Hinni, MD*, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize that external diverticulectomy with mechanical stapler can still be a valid means of treatment for large Zenker's diverticulum in which endoscopic procedures are not feasible.

Objectives: To demonstrate an indication for external mechanical stapler diverticulectomy in the modern era of endoscopic cricopharyngeal myotomy. **Study Design:** Case report with review of the literature. **Methods:** The patient is a 75 year old male who underwent an open cricopharyngeal myotomy with diverticulopexy 35 years ago. He presented with 25 years of recurrent symptoms. Swallow study showed a 6.5 x 5.0 cm diverticulum. This could be visualized and palpated externally. He was taken to the operating room and the pouch was endoscopically decompressed by removing its contents. The diverticulum was deemed too large for standard endoscopic myotomy, so we made an external incision and isolated the pouch. A cricopharyngeal myotomy was completed and a diverticulectomy was performed with a TA GI 60 stapler. The staple line was reinforced by oversewing esophageal soft tissue. A nasogastric tube was also inserted. **Results:** The patient was discharged on postoperative day three without complications. A swallow study on postoperative day five demonstrated absence of the diverticulum and no extravasation of Gastrografin. The patient resumed a normal diet with resolution of dysphagia. **Conclusions:** There have been no case reports of staple diverticulectomy in nearly 20 years. Although endoscopic laser cricopharyngeal myotomy or staple diverticulostomy have become the standard treatment for Zenker's diverticulum, this case of a large recurrent diverticulum illustrates when older techniques are superior. This large diverticulum likely would have failed endoscopic treatment. The mechanical stapler allowed for a shorter surgery time with the potential of earlier return to normal diet compared to traditional suture techniques.

S94. Current Practices in the Management of Laryngeal Neuropathy

Joseph D. Depietro, MD, Boston, MA; Nathan H. Calloway, MD, Boston, MA; Daniel J. Stein, BA, Boston, MA; J. Pieter Noordzij, MD*, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the differences in the treatment of the diagnosis and treatment of laryngeal neuropathy between fellowship trained laryngologists and general otolaryngologists.

Objectives: To evaluate differences in evaluation and workup of laryngeal neuropathy in a population of general otolaryngologists and fellowship trained laryngologists. **Study Design:** Survey. **Methods:** Members of the American Laryngology Society (ALA) and a general otolaryngologist database from the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) were surveyed. A questionnaire was emailed to 179 members of the ALA and mailed to 900 members from the AAO-HNS database. **Results:** Responses were received from 43 subjects in the ALA group (24.0%) and 90 in the AAO-HNS database (10.0%) group. Compared to the general otolaryngologists surveyed, ALA members were found to be more likely to practice in academics (79.6% vs 6.6%) and to have been fellowship trained (79.5% vs 16.5%). Among the general otolaryngologists, 44.6% reported being unfamiliar with laryngeal neuropathy compared to 0% from the ALA group (P <.0001). After accounting for the respondents unfamiliar with the condition, the general otolaryngologists reported being less comfortable in diagnosing laryngeal neuropathy (P < .0001) and were more concerned about the over-diagnosis of laryngopharyngeal reflux when compared to the ALA (P = .0030). **Conclusions:** General otolaryngologists and fellowship trained laryngologists have several differences in the knowledge, workup and treatment of laryngeal neuropathy. These differences are likely amenable to further education and interventions.

S95. Silicone Tracheal Stenting for Voice Rehabilitation in Poor Candidates for Open Airway Surgery

Neil Gildener-Leapman, MD, Los Angeles, CA; Kashif Mazhar, MD, Los Angeles, CA; Niels Kokot, MD, Los Angeles, CA; Dale Rice, MD*, Los Angeles, CA

Educational Objective: At the conclusion of the presentation, the participants should be able to discuss the management options and alternatives for patients with complete tracheal stenosis who are not candidates for open surgery.

Objectives: To present a unique case series of patients with grade IV tracheal stenosis who desired voice rehabilitation but were not candidates for open resection due to medical and psychological comorbidities. We present our surgical technique and postoperative management with an emphasis on voice outcomes. **Study Design:** Case series. **Methods:** Three patients with Meyer-Cotton grade IV cervical tracheal stenosis proximal to the tracheostoma, considered poor surgical candidates for open airway procedures were treated with endoscopic C02 laser resection of the stenotic tracheal segment followed by balloon dilation. After the airway was sufficiently dilated, a custom silicone stent 17 mm x 10 mm (Hood Laboratories) and fenestrated tracheostomy were placed. Preoperative and postoperative voicing was evaluated using the GRBAS scale. The patients were educated with the aid of speech therapy to maintain the alignment of the fenestrated tracheostomy and tracheal stent to maximize voice outcomes. **Results:** Patient #1: 33 year old male with grade IV tracheal stenosis, 1.7cm in length with history of autoimmune connective tissue disease and interstitial lung disease (Karnofsky score=70) made him a poor surgical candidate for open airway procedures. Speech was alaryngeal preoperatively and postoperatively was G0R0B1A1S0. Patient #2: 51 year old female with grade IV tracheal stenosis, 1.5 cm in length, after prolonged intubation with multiple comorbidities including morbid obesity, hypertension, and stroke (Karnofsky score=50). Preoperative speech was alaryngeal, with postoperative speech of G0R0B1A1S0. Her voice quality did become increasingly strained over several months due to gran-

ulation tissue at the site of the prosthesis; this was managed by in office debridement. Patient #3: 36 year old male grade IV tracheal stenosis, 1 cm in length after prolonged intubation, with severe emotional and psychiatric instability (Karnofsky score=80). He had functional esophageal speech G3R3B0A2S3, though wanted to improve his voice. Postoperative speech was G2R1B0A1S2 and he was very satisfied with his result. There were no intraoperative or postoperative complications. None of the patients experienced shortness of breath or readmission after stent placement neither was there any incidence of stent migration. Additionally, in office bipolar cautery was used to debride granulation tissue and maintain tracheal stent patency. **Conclusions:** Voice rehabilitation can be achieved safely through tracheal stenting in patients that are not candidates for open surgery. Alignment of tracheal stent and tracheostomy fenestration allows for improved voicing. Postoperative management of granulation tissue can be performed in the office.

S96. A Seckel Syndrome Patient with a Pediatric Sized Airway
Brian B. Ho, MD, Augusta, GA; Paul Weinberger, MD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the phenotypic presentation of patients with Seckel syndrome and be prepared to have options for their airway management.

Objectives: To discuss the rarity of Seckel syndrome and the medical literature inexperience with these types of patients airways. **Study Design:** Case report. **Methods:** Single patient at a single institution. Patient underwent an awake tracheostomy. **Results:** Seckel syndrome is an incredibly rare autosomal recessive syndrome that has been estimated to affect roughly 100-125 patients in North America. Its phenotypic hallmarks are dwarf stature, microcephaly, and a bird beak nose deformity among others. A 24 year old female diagnosed with Seckel syndrome presented to the labor and delivery department in labor. She was 38 weeks pregnant and would require a C-section. There was concern over her procedural anesthesia and the possibility of respiratory compromise and otolaryngology was consulted. The patient had the hallmarks of microcephaly, short neck and stature, and a narrow bird beak nose. On fiberoptic exam she had complete nasal obstruction due to septal deviation and exceptionally narrow left nasal passage ruling out nasal intubation. She was also severely trismic, with a maxillary mandibular incisor distance of roughly 0.5cm making oral intubation impossible. The joint decision between all three specialties was to perform an awake tracheostomy and subsequent c-section delivery. The patient was prepped with local anesthesia and dissection was carried down to the anterior tracheal wall. A 4.0 cuffed adult tracheostomy was prepared but upon palpation of the airway she was noted to have an abnormally small airway. A 5.0 pediatric tracheostomy was able to be placed and secured. **Conclusions:** On PubMed only 167 articles were identified, and to our knowledge there has been no documentation or studies performed on Seckel airway sizes. Given the above, if other physicians encounter these patients they should be mindful of the potential pediatric sized airways in case of emergency or elective cases.

S97. Solitary Juvenile Xanthogranuloma of the Larynx in an Adult: Case Report and Literature Review
April M. Landry, MD, Phoenix, AZ; Thomas H. Nagel, MD, Phoenix, AZ; David G. Lott, MD, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the differential diagnosis and histopathological features that differentiate a solitary juvenile xanthogranuloma.

Objectives: To report a very rare case of solitary juvenile xanthogranuloma of the larynx in an adult. **Study Design:** Case report and review of the literature. **Methods:** The patient's clinical course, surgical findings, pathology and the relevant literature were reviewed. **Results:** A 22 year old male presented with a one year history of hoarseness. Indirect laryngoscopy demonstrated a largely submucosal supraglottic lesion involving the vestibular fold, ventricle, and superior true vocal cord. The patient underwent KTP laser assisted resection of the mass. Histopathologic evaluation revealed an essentially solid lesion with a lobular architectural pattern composed of epithelioid and rare spindle shaped cells, admixed with multinucleated cells. Initial concern was for angiosarcoma. The epithelioid cells showed positivity for CD68, with focal CD31 positivity. Additional staining demonstrated 10% positivity for Ki-67, diffusely positive factor 13A staining, and a number of desmin positive cells. Findings were ultimately found to be consistent with the diagnosis of solitary juvenile xanthogranuloma. **Conclusions:** To the best of our knowledge, this is the first reported case of solitary juvenile xanthogranuloma in an adult larynx. Complete resection of the tumor was possible as definitive therapy leading to an excellent clinical outcome. The patient maintained laryngeal function with excellent voice results.

S98. A Novel Endoscopic Approach to a Fourth Branchial Pouch Sinus Presenting in an Adult
Kathryn L. Parker, MD, Baltimore, MD; Matthew S. Clary, MD, Denver, CO; Mark S. Courey, MD*, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the embryology of fourth branchial anomalies, as well as the advantages and technique of endoscopic excision of a fourth branchial anomaly in an adult.

Objectives: We discuss fourth branchial arch anomalies, including their presentation, diagnosis, and current management techniques, while introducing a unique approach to the surgical excision of these entities in adults. **Study Design:** Case report. **Methods:** We present a rare but clinically important case of a complicated fourth branchial pouch sinus in an adult that was resected endoscopically through the pyriform sinus. **Results:** A 24 year old woman presenting with a 7 year history of recurrent neck swelling, pain, and difficulty swallowing. A diagnosis of a fourth branchial anomaly was made and a previous attempt at open excision of the lesion failed to identify the sinus tract leading to additional recurrences. A modified barium swallow showed a tapered tract extending from the apex of the left pyriform sinus. The fourth branchial sinus was successfully excised using a transoral endoscopic approach through the apex of the pyriform sinus. Postoperative MRI shows no residual lesion and the patient has been without recurrence at over 6 months. **Conclusions:**

To our knowledge, this is the first ever report of an endoscopic excision of a fourth branchial anomaly in an adult. Endoscopic approaches to fourth branchial sinuses have been more recently described in the pediatric literature using sinus cauterization. We demonstrate that these lesions can be safely and completely excised endoscopically in adults. This technique has the advantages of tissue diagnosis as well as a theoretical decreased risk of recurrence over the endoscopic cauterization approach, while having technical and safety benefits over traditional open en bloc excision.

S99. Discrepancies in Laryngeal Diagnoses between Otolaryngologists: A Descriptive Review

Rupali N. Shah, MD, New York, NY; Kenneth W. Altman, MD PhD*, New York, NY; Peak Woo, MD*, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss discrepancies in diagnosis of voice disorders and explain why these diagnostic differences occur.

Objectives: Diagnostic discrepancies often exist in voice disorders. Our objective is to study the causes of these discrepancies through review of a clinical case series. We hypothesize diagnostic differences may be due to technology, expertise, nomenclature, or multiple diagnoses weighting. **Study Design:** Retrospective case series. **Methods:** One hundred and eighteen patients previously seen by otolaryngologist(s) with a change in their diagnosis were reviewed. Patients were grouped as: benign vocal fold lesions (BVFL), neurogenic, inflammatory, and functional disorders. Data was analyzed to determine what may contribute to these discrepancies. **Results:** After the change in diagnosis, forty-four patients (37%) had management changed by a procedure or surgical intervention. The most common diagnoses prior to our evaluation were BVFL, n=46 (39%), inflammatory, n=27 (23%), and no lesion, n=25 (21%). Of those initially diagnosed with a BVFL, 29 patients (63%) were found to have a different BVFL and 12 (26%) were found to have an inflammatory disorder. Of those initially diagnosed with an inflammatory condition, 14 patients (52%) had a BVFL and 9 (33%) had a neurogenic etiology. Our evaluation resulted in more neurogenic, n=23 (19%) and functional diagnoses, n=12 (10%), and less, n=14 (12%), inflammatory conditions. **Conclusions:** Change in diagnosis of BVFL occurs secondary to lack of uniformity in nomenclature and the optical detail provided by magnification. Neurogenic and functional diagnoses require experience with voice disorders, recognition of subtle abnormalities on laryngeal imaging and laryngeal electromyography. Discrepancies can be minimized by use of state of the art technology, referral for subspecialty care, and better nomenclature refinement.

S100. Multiple Oncocytic Cystadenomas of the Larynx

Courtney M. Tomblinson, MD, Phoenix, AZ; David G. Lott, MD, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate understanding of the clinical presentation of oncocytic cystadenoma, to identify its appearance on physical exam, to pathologically distinguish this diagnosis from other laryngeal cysts, and to discuss potential treatments for oncocytic cystadenoma.

Objectives: To report a unique case of multiple oncocytic cystadenomas in the aryepiglottic folds, ventricles, and epiglottis that presented in new locations following previous excision. Literature review compares and contrasts this unique case with other cysts presenting in the larynx. **Study Design:** Case report and literature review. **Methods:** Chart review and pathologic analysis were performed. Extensive PubMed search was performed for laryngeal cysts and oncocytic cystadenoma. **Results:** A 78 year old woman presented with a 22 year history of dysphonia that was markedly worse in the previous five months. She spoke with a strained, coarse voice with frequent phonatory breaks. Transnasal laryngoscopy revealed a submucosal fullness in the left aryepiglottic fold and two large exophytic structures in the left ventricle, preventing glottic closure. An additional cyst was noted on the epiglottis. KTP laser excision was initially performed. During followup, new lesions appeared in various locations where there was previously normal tissue. Multiple sequential KTP laser excisions were performed with significant improvement in the patient's voice. **Conclusions:** Oncocytic cystadenomas of the larynx are rare and can be misdiagnosed at initial evaluation. They are benign tumors of the larynx and typically present as a singular lesion in the supraglottis. Although benign, they have potential to translocate and recur despite surgical treatment. A distinction between Warthin's tumor and oncocytic cystadenoma can be made based on pathology, such as lymphocytic infiltration and a granular eosinophilic cytoplasm. Oncocytic cystadenoma should be considered in a patient with dysphonia and single or multiple dome shaped violet lesions in the larynx.

Otology/Neurotology

S101. Case Report: Sequential Bilateral Otitis Media and Bilateral Facial Nerve Paralysis as Presenting Symptoms of Wegener's Granulomatosis

Eric W. Cerrati, MD, New York, NY; Aaron Hartman, MD, New York, NY; Elana Opher, MD, New York, NY; Darius Kohan, MD*, New York, NY

Educational Objective: At the conclusion of this presentation, the participants should be able to understand that Wegener's granulomatosis can present with a variety of symptoms and that it must be kept on the differential diagnosis when a patient presents with common otologic complaints resistant to antibiotic therapy.

Objectives: Wegener's granulomatosis is an incurable vasculitis that can be life threatening when end organ damage occurs. Symptoms most commonly affect the nose, lungs, and kidneys. We present a case study of a 35 year old male who presented with sequential bilateral otitis media, progressive mixed hearing loss, tinnitus, otalgia, otorrhea, and later bilateral facial nerve paralysis despite aggres-

sive antibiotic intervention. The accompanying review of literature demonstrates only six other patients worldwide with these presenting symptoms. Treatment options and outcome will be discussed. **Study Design:** Case report. **Methods:** Case report. **Results:** Case report. **Conclusions:** Case report.

S102. Intratympanic Solu-Medrol for Refractory Meniere's Disease

Jeffrey M. Hotaling, MD, Maywood, IL; Sam J. Marzo, MD*, Maywood, IL

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the proposed protocol for intratympanic Solu-Medrol injection, discuss the results of patients treated according to this protocol, and compare the results obtained using this treatment protocol to alternative treatment methods for Meniere's disease.

Objectives: To review the long term symptomatic control of vertigo in patients with unilateral Meniere's disease refractory to conservative medical management using a proposed, patient directed protocol for the intratympanic injection of Solu-Medrol. **Study Design:** Retrospective chart review. **Methods:** An initial cohort of 25 patients was identified from a departmental database of patients with unilateral Meniere's disease treated according to a novel, patient and symptom directed intratympanic Solu-Medrol injection protocol. Patients were offered monthly intratympanic Solu-Medrol injections as needed based upon their subjective level of symptoms. Patients were then reviewed according to number of injections, frequency of injections, frequency of symptom exacerbations, and any alternative surgical or ablative treatments pursued. **Results:** A total of 25 patients were reviewed. Patients had an average of 1.5 years of followup. 17 had satisfactory control of vertigo with injections alone, not requiring alternative therapy. Patients had an average of 3 injections during their treatment course. The average time interval between injections increased from 73.7 to 140 days over the course of the first 4 injections. There were no complications or significant side effects throughout the total of 64 injections. **Conclusions:** Patient symptom directed administration of intratympanic steroids as defined by this protocol has a role in the treatment of patients with medically refractory Meniere's disease and provides satisfactory symptomatic control while also avoiding the side effects of alternative surgical or vestibular ablative treatments.

S103. Tympanic Membrane Perforations: Sizes in the Eyes of the Beholders

David M. Johnson, BS, Atlanta, GA; N. Wendell Todd, MD MPH FACS*, Atlanta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain: 1) otolaryngologists overestimate the size of tympanic membrane perforations, though half the time agree within 15% of other otolaryngologists' estimates; 2) otolaryngologists estimate size by gestalt; 3) neither years of experience nor foreshortened manubrium correlates with estimates of perforation size.

Objectives: The size of a perforation of the tympanic membrane is commonly described as a percentage of the area of the tympanic membrane: the observer gestalts, or envisions the sum of proportions of involved quadrants of the tympanic membrane. Interobserver agreements about sizes of perforations are debatably good, but poor in relationship to measured area of perforation. This study addressed the following hypotheses: 1) otolaryngologists well agree about sizes of perforations; 2) assessment is usually by gestalt; 3) agreements are worse if the manubrium is foreshortened; and 4) agreement improves with years of clinical experience. **Study Design:** Survey comparison of otolaryngologists' opinions, with measured areas of perforation. **Methods:** Twenty-one otolaryngologists judged ten digitized Hopkins rod images of tympanic membrane perforations. The images were then measured by digital planimetry. Agreements were assessed by Bland Altman and box plots. **Results:** Otolaryngologists greatly overestimated the areas of perforations, usually by two-fold, in comparison to computerized measurements. On half of occasions, agreement with other otolaryngologists' estimates was within 15% of area. Most assessed by gestalt. Neither foreshortened manubrium nor otolaryngologists' years of experience correlated with perforation size. **Conclusions:** Photographs of tympanic membranes with computer measurement are needed to accurately depict perforation size.

S104. Bilateral Cochlear Implantation—Do Patients with the Same Devices Perform Better Than Those with Devices from Different Manufacturers?

Jafri Kuthubutheen, MBBS FRACS, Toronto, ON Canada; Vincent Lin, MD FRCSC, Toronto, ON Canada; Lendra M. Friesen, PhD, Toronto, ON Canada; David B. Shipp, MA FAAA, Toronto, ON Canada

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the outcome of individuals sequentially implanted with bilateral cochlear implants from same manufacturer with individuals having devices from different manufacturers.

Objectives: To investigate our population of sequentially implanted bilateral adult cochlear implant patients with the same device and with different devices on each side to determine whether there is an objective and subjective difference in hearing outcomes. **Study Design:** Ongoing prospective study of our bilateral cochlear implant patients. **Methods:** Our population of bilateral cochlear implant patients underwent measurements of speech understanding and quality of life based on a standardized questionnaire. Measurements were performed before and after the second cochlear implant. **Results:** There were forty-five patients with bilateral cochlear implants in our study. Speech outcome data and subjective analysis revealed no significant difference between individuals having the same device on each side compared to those with different devices. **Conclusions:** Bilateral cochlear implantation can be extremely beneficial

even when the same device is not implanted on both sides. This finding will provide patients with a wider choice of cochlear implants when it comes to their second cochlear implant surgery.

S105. Valsalva Associated Hyperpneumatization of Skull Base Treated with Pressure Equalization Tubes
April M. Landry, MD, Phoenix, AZ; Joseph M. Hoxworth, MD, Phoenix, AZ; David M. Barrs, MD*, Phoenix, AZ

Educational Objective: At the conclusion of this presentation, the participants should be able to the participants should be able to explain the mechanism of Valsalva associated skull base hyperpneumatization, discuss the differential diagnosis of aural pressure and autophony, discuss the possible presenting symptoms/signs of skull base hyperpneumatization, and discuss the treatment for symptomatic skull base hyperpneumatization.

Objectives: To describe a case of skull base hyperpneumatization associated with frequent Valsalva maneuvers which responded to bilateral pressure equalization tube placement. **Study Design:** Case report. **Methods:** The patient's clinical course, radiographic images, audiograms, and vestibular testing, and relevant literature were reviewed. **Results:** A 39 year old female presented with a five year history of progressively worsening dizziness, headache, aural pressure, and autophony. The patient frequently performed Valsalva maneuvers to relieve her aural fullness. The degree of her autophony was so significant that it required her to hold her breath during the audiogram. A computed tomography (CT) scan did not demonstrate a semicircular canal dehiscence but did show massive aeration of the temporal bone, skull base, calvarium, and upper cervical vertebrae. She did not respond to specific treatments for migraine, Meniere's disease, or patulous Eustachian tube including a Eustachian tube catheterization. Bilateral pressure equalization tubes were inserted which relieved her ear pressure and unexpectedly resolved her dizziness, headache, and autophony. A two month followup CT scan demonstrated significant improvement of the hyperpneumatization. **Conclusions:** Hyperpneumatization of the skull base is a rare condition which can result from chronic Valsalva maneuvers. The symptoms of this abnormality may be varied and mimic a number of disorders. Pressure equalization tube placement can improve both the symptoms and imaging findings of skull base hyperpneumatization.

S106. Non-Neoplastic, Destructive Lesions of the Temporal Bone
John P. Leonetti, MD*, Maywood, IL; Samuel J. Marzo, MD*, Maywood, IL; Douglas Anderson, MD, Maywood, IL; Jeffrey M. Hotaling, MD, Maywood, IL

Educational Objective: At the conclusion of this presentation, the participants should be able to see the detail of the clinicoradiographic features and management options for these unique and challenging temporal bone disorders.

Objectives: To detail the clinicoradiographic features and management options for these unique and challenging temporal bone disorders. **Study Design:** A variety of benign and malignant epithelial, salivary gland, and vasoformative tumors can invade the temporal bone causing obvious otologic, neurologic, or cranial nerve symptoms. **Methods:** Non-neoplastic processes, on the other hand, can become massive and highly destructive prior to the onset of clinical manifestations. **Results:** Near total temporal bone destruction was observed in three cases of cholesterol granuloma, primary epidermoid, and advanced Paget's disease. **Conclusions:** This paper will detail the clinicoradiographic features and management options for these unique and challenging temporal bone disorders.

S107. Malignant Transformation of an Intracranial Epidermoid Cyst with Extension to the Jugular Foramen
Mark T. Loreen, BA, Seattle, WA; Steve W. Rostad, MD, Seattle, WA; Marc R. Mayberg, MD, Seattle, WA; Douglas D. Backous, MD*, Seattle, WA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the pathological characteristics to differentiate squamous hyperplasia and squamous cell carcinoma stemming from an intracranial epidermoid and plan definitive treatment.

Objectives: Epidermoid cysts are common dysembryoplastic lesions of the CNS. Rare examples of malignant transformations known in literature are not well documented pathologically. This case report gives detailed radiological and pathologic descriptions and outlines the management of a rare intracranial epidermoid with malignant squamous cell transformation extending locally into the lateral skull base. **Study Design:** Case report and comprehensive literature review. **Methods:** Prospective analysis of radiological studies, surgical tissue analysis, operative findings complemented by a literature review using PubMed and Ovid/Medline. **Results:** A 61 year old woman underwent 2 subtotal resections of an extensive, ruptured CPA epidermoid. Over a 6 month period her lesion continued to expand and extended locally into the jugular foramen and infratemporal fossa. Repeated pathological evaluations revealed hyperplastic squamous cells and no signs of malignancy. She had a 38 pound weight loss in 9 months, progressive dysphagia, right true vocal cord paralysis and right facial palsy. She underwent a right infratemporal fossa and jugular foramen approach with tissue biopsy for diagnosis. Multiple biopsies were positive for squamous cell carcinoma originating in the epidermoid cyst. Her treatment included chemotherapy and radiosurgery. **Conclusions:** The malignant transformation in intracranial epidermoids is a rare condition and carries a poor prognosis. Appropriate histopathologic analysis of tissue combined with results of serial imaging should be performed to optimally manage these tumors to prevent rapid growth and rupture resulting in malignant cells spilling into the leptomeninges.

S108. Wound Breakdown after Middle Cranial Fossa Craniotomy: An Unusual Complication after Rhytidectomy

Aaron C. Moberly, MD, Columbus, OH; Benjamin C. Tweel, MD, Columbus, OH; D. Bradley Welling, MD PhD*, Columbus, OH

Educational Objective: At the conclusion of this presentation, the participants should be better able to avoid wound complications in patients undergoing craniotomy.

Objectives: We describe a 64 year old female patient who underwent a left middle cranial fossa (MCF) craniotomy for resection of a small internal auditory canal (IAC) tumor with subsequent development of wound breakdown. Management of this complication is described. **Study Design:** Literature review and case report. **Methods:** We review the literature describing incisions for the MCF craniotomy and associated wound complications. A case is described of a patient who developed wound dehiscence and infection one week after a MCF approach with a modified hockey stick incision. Wound debridement, intravenous antibiotics, and coverage with a pedicled temporalis muscle flap were followed by further wound breakdown. Additional prompting of the patient elicited a history of bilateral rhytidectomy with a well concealed scar extending near the MCF skin incision creating a poorly vascularized skin pedicle. Further debridement of necrotic tissue and wound packing were performed in the operating room. Free flap reconstruction was considered, however a dermal regeneration template was placed, and the patient underwent 19 hyperbaric oxygen treatments. The patient underwent placement of a peripherally inserted central catheter and was treated with cefepime as an outpatient for 6 weeks. **Results:** Complete secondary intention healing occurred over the regeneration template during the following 3 months. Cosmetic outcome was satisfactory and no further treatment was required. **Conclusions:** Wound complications after MCF craniotomy are rare. A thorough history and physical must be performed preoperatively. A history of previous procedures, particularly with scars that may be well concealed in the operative field, must be elicited to prevent avoidable wound complications.

S109. Congenital Absence of the Incudostapedial Joint

David Shamouelian, MD, Irvine, CA; Hossein Mahboubi, MD MPH, Irvine, CA; Omar Ahmed, MD, Irvine, CA; Saman Kiumehr, MD, Irvine, CA; Hamid Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss features of the congenitally absent incudostapedial joint, its surgical management, and its embryology.

Objectives: 1) Describe features of the congenitally absent incudostapedial joint; 2) describe the surgical management of the congenitally absent incudostapedial joint with ossicular chain reconstruction and audiologic outcomes; and 3) describe possible embryological etiology for the congenitally absent incudostapedial joint. **Study Design:** Case series. **Methods:** Retrospective review of 4 patients with isolated congenital absence of the incudostapedial joint treated between 2007 and 2012 by a single neurootologist. Temporal bone computed tomography images were reviewed. Preoperative and postoperative audiograms were compared. **Results:** Patients underwent partial or total ossicular chain reconstruction and demonstrated significant improvement in hearing. No complications were observed postoperatively. **Conclusions:** To date, few cases with this condition have been reported. This study may indicate a common embryologic origin for the incus long process and stapes capitulum. Based on extent of defect, partial or total ossicular chain reconstruction may significantly improve hearing.

S110. Use and Proper Thickness of Acellular Human Dermal Allograft in Canal Wall Down Mastoidectomy

Matthew K. Steehler, MD, Washington, DC; Dennis C. Fitzgerald, MD, Washington, DC; Benjamin J. Wycherly, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to describe and understand this technique of canal wall down mastoidectomy and analyze the surgical outcome of this series of patients.

Objectives: Describe our method and results using the optimal thickness of acellular human dermal allograft in canal wall down mastoidectomy defects. **Study Design:** Retrospective consecutive case series. **Methods:** Acellular human dermal allograft (AlloDerm) with an average thickness of 0.33 to 0.76 mm was used; selecting the portions of tissue with a thickness closest to 0.5 mm to line mastoid cavity defects. We report time to healing as well as long term results including need for revision surgery and skin breakdown. **Results:** Twenty-two patients (23 ears) with long term followup had a canal wall down mastoidectomy with AlloDerm from 2003-2008. There were 18 men and 4 women with an average age of 49 (range 12 to 89). A total of 6 ears did not heal after the initial surgery and required revision. Of those, 4 of those patients had AlloDerm with thicknesses greater than 0.5 mm. The average time to heal in the remaining 17 ears was 9.4 weeks. None of these patients experienced skin breakdown at an average long term followup of 86 weeks. **Conclusions:** AlloDerm effectively minimizes the formation of granulation tissue and creates an effective subepithelial layer preventing long term skin breakdown and drainage. The thickness of the AlloDerm graft is crucial and a thickness should be selected that approaches as close to 0.5 mm as possible.

S111. Thin Film Array Electrode Insertions in Cadaveric Feline Temporal Bones

Jessica M. Van Beek-King, MD, Augusta, GA; Brian J. McKinnon, MD*, Augusta, GA; Pamela T. Bhatti, PhD, Atlanta, GA; David T. Blake, PhD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the rationale for designing

a thin film array electrode, compare the different substrates used in our study for backing the electrodes, discuss the challenge of inserting each type and identify possible areas for future improvement.

Objectives: Thin film array (TFA) electrodes for cochlear implantation have been proposed to improve functional ability and high resolution of pitch. In order for continued investigation to proceed, an electrode for possible animal testing is needed. Two proposed TFAs, one with a modified insertion electrode (IE) device backing and one with a modified insertion test device (ITD) backing were trialed in cadaveric cats. **Study Design:** Non-randomized trial. **Methods:** Four cadaveric cats weighing 3 (n=3) or 4.3 (n=1) kg were obtained. Bilateral bullae were opened to gain access to the round window. Insertions with an IE were performed on all ears. Insertions with an ITD backed TFA, IE backed TFA, one short unbacked TFA and one long unbacked TFA were accomplished on one to three ears depending on resilience of the device. **Results:** Depth of insertion with the IE was consistent within each cat and among cats of similar weight, ranging from 4.3 to 6 mm. The ITD and IE backed TFAs delaminated with a single insertion. The short TFA was effortlessly inserted but was easily damaged. Similar depth of insertion was gained with the long TFA, but was more difficult to handle. **Conclusions:** Adequate insertion depth was gained with the IE. However, pairing of the IE or ITD with a TFA increased the width of the device and delamination occurred with placement. Unbacked TFAs were inserted with more difficulty and were easily damaged. Further pilot insertions with additional modifications are necessary to develop a final design.

S112. VEMP Amplitude Intensity Function

William C. Yao, MD, Houston, TX; Nathan C. Grohmann, BS, Houston, TX; Jeffrey T. Vrabec, MD*, Houston, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to utilize the vestibular evoked myogenic potential threshold and the amplitude intensity function to help better identify patients who may have superior semicircular dehiscence syndrome.

Objectives: To evaluate VEMP amplitude intensity function as a method to select patients with higher suspicion with SCDS. **Study Design:** Retrospective chart review. **Methods:** We performed a retrospective chart review on 216 consecutive patients (432 ears). The slope of decay between cVEMP amplitudes at 100 decibels (tone burst, air conducted, 500 Hz) and threshold levels were calculated. The amplitude intensity function was compared for patients with SCDS, benign paroxysmal positioning vertigo (BPPV), Meniere's disease, those with caloric weakness from a vestibular origin and those with no evidence of vestibular pathology. **Results:** Ears with SCDS and those without vestibular pathology revealed an average amplitude intensity function of -9.57mA/dB vs -18.25mA/dB (p 0.028). Ears with unilateral caloric weakness had -11.98mA/dB (p 0.03). No significant difference was noted in patients with BPPV and Meniere's disease. In addition, using a criterion of the threshold less than 70dB and slope of decay less than -16, SCDS can be predicted with sensitivity and specificity of 90.9% and 96.1%. **Conclusions:** VEMP amplitude intensity function is an additional measure that can be applied to more accurately diagnose SCDS.

Pediatrics

S113. Growth Modeling of the Pediatric Trachea from MR Images

Richard L. Amendola, MS, Iowa City, IA; Joseph M. Reinhardt, PhD, Iowa City, IA; Yutaka Sato, MD, Iowa City, IA; Henry R. Diggelmann, MD, Iowa City, IA; Deborah S. Kacmarynski, MD, Iowa City, IA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the importance of developing accurate airway measurement techniques that minimize radiation exposure. They should also be able to discuss how an accurate growth model of the pediatric upper airway would preoperatively assist in optimizing outcomes for patients.

Objectives: The upper airways are a major site of congenital and acquired pediatric airway obstruction which can cause a significant rate of morbidity and mortality. The aim of this research is to develop a greater understanding of the growth and variation of the normal airway. The best imaging modality to measure airways has been computed tomography, but to remove the risk of radiation exposure, our software tool utilizes magnetic resonance imaging. This program can be used to model the normal growth of the pediatric trachea. We hope that a detailed growth model can assist surgeons in optimizing outcomes for patients by increasing their efficiency and accuracy. **Study Design:** Retrospective imaging review. **Methods:** Our program was optimized by comparison with previously validated software to measure airways in CT images. The program was used to measure a group of 25 normal pediatric patients. Segmentations were compared to those of three experts. The measurements were plotted against age, weight, height and body mass index and fit to a 2nd degree polynomial. **Results:** Segmentations were compared using the Dice similarity coefficient and boundary point differences. The automated segmentations correlated well with the experts. In an attempt to model growth, average cross-sectional area showed a significant correlation with age or height of the individual. **Conclusions:** The automated segmentation was not differentiable from a group of experts. There is promise to the growth models developed from age and height. There is a much smaller variation in dimensions of the trachea in younger patients.

S114. Helmet Modification for Soft Band Bone Anchored Hearing Aid Use during Cranial Orthosis

Michael F. Bonnar, CO, Boston, MA; Mauricio Ventura, CO, Boston, MA; Audrey Winans, AuD, Boston, MA; Andrew R. Scott, MD, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the indications for cranial

orthosis and the helmet modifications necessary to allow for simultaneous soft band bone anchored hearing aid use during a course of cranial molding therapy.

Objectives: To describe a means of providing aural amplification to hearing impaired children who are undergoing helmet remolding therapy for plagiocephaly or craniosynostosis. **Study Design:** Case report. **Methods:** Review of a single case. **Results:** We describe a case of a child with deformational plagiocephaly and mixed hearing loss who required both cranial orthosis and soft band bone anchored hearing aid (BAHA) amplification. A standard orthosis helmet was modified to allow for simultaneous cranial vault molding and optimal positioning of a soft band BAHA. **Conclusions:** Within this report we explain the minimal alterations necessary to allow for effective aural rehabilitation during a therapeutic course of cranial orthosis.

S115. Chiari Type I Malformation Presenting as Cough in Older Children
Kyle J. Chambers, MD, Boston, MA; Jennifer Setlur, MD, Boston, MA; Christopher J. Hartnick, MD*, Boston, MA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the workup for unusual cases of cough and discuss the clinical manifestations and diagnosis of Chiari type I malformation in children.

Objectives: To highlight an unusual central cause of cough in older children and underscore the clinical manifestations that might point toward such a diagnosis. **Study Design:** Two case reports and review of literature. **Methods:** A case report (case 1) of a 17 year old presenting to a pediatric otolaryngologist with chronic cough and mild dysphonia, and a second case report (case 2) of an 8 year old presenting with persistent cough. In each case, the patient had previously been evaluated by multiple services for common causes of cough, including reactive airway disease, gastroesophageal reflux, upper respiratory infection, rhinitis and sinusitis, with persistent symptoms despite extensive workup and treatment. **Results:** Case 1: fiberoptic examination revealed paresis of the left true vocal cord. Laryngeal electromyography (EMG) demonstrated prolonged fibrillation of the left thyroarytenoid and cricothyroid muscle and delay of the right thyroarytenoid muscle. Given evidence of bilateral cranial neuropathy, magnetic resonance imaging (MRI) was obtained and revealed Chiari type I malformation. Case 2: physical examination revealed right cranial nerve XII palsy that was most prominent during cough. Video fiberoptic examination and operative bronchoscopy were normal. MRI revealed Chiari type I malformation. In each case, surgical decompression provided symptom improvement. Pre and postoperative video fiberoptic examinations, voice recordings, laryngeal EMG and imaging are presented and pertinent literature is reviewed. **Conclusions:** Chronic cough is a rare presenting symptom in children with Chiari type I malformation. We emphasize the significance of awareness for unusual cases of cough to aide in the correct identification of Chiari type I malformation in children.

S116. Ameloblastic Carcinoma Resection in a Three Year Old Boy: Analysis of a Case and Review of the Literature
Brent A. Feldt, MD, Lackland Air Force Base, TX; Richard K. Newman, MD, San Antonio, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to define the incidence, natural history, and prognosis of ameloblastic carcinoma, as well as understand a complicated oral cavity reconstruction in a pediatric patient.

Objectives: This case report reviews the presentation, diagnosis, and treatment of a 3 year old boy who was found to have an ameloblastic carcinoma of the left mandible. This is a rare disease, not previously reported in the literature in a patient this young. A complicated resection and intraoral reconstruction and review of the literature will be discussed. **Study Design:** Case report. **Methods:** Case report and literature review. **Results:** Successful resection of ameloblastic carcinoma and intraoral free flap reconstruction of a 3 year old boy. **Conclusions:** Ameloblastic carcinoma is a very rare disease, to our knowledge not before reported in a patient this young. We describe the diagnosis and treatment of this patient as well as the natural history and prognosis and treatment of ameloblastic carcinoma.

S117. Airway Salvation after Failed Anterior Graft in a Child with Long Segment Stenosis
Brian J. Lawton, MD, Shreveport, LA; Anil A. Gungor, MD, Shreveport, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe common treatments of subglottic/tracheal stenosis and indications for airway reconstruction.

Objectives: 1) Recognize difficulties and review techniques in long segment laryngotracheal stenosis repair; and 2) contribute to increasing clinical and surgical skills in pediatric airway reconstruction through reporting our experience with a novel reconstruction technique involving use of a failed anterior graft and prolonged postoperative stenting. **Study Design:** Case report. **Methods:** Ten year old male with history of burn injury who required a tracheostomy due to prolonged intubation/inhalational injury in 2005. Subglottic/tracheal stenosis was identified and he subsequently underwent anterior costal cartilage grafting involving the thyroid cartilage, cricoid cartilage, and trachea. He remained tracheostomy dependent for six years due to failed graft and postoperative complications despite several attempts to improve the airway with CO2 laser and balloon dilation. In 2011, preoperative CT with 3D reconstruction revealed a 32mm long segment of complete stenosis. The patient underwent suprahyoid release and single stage reconstruction with cricotracheal resection and partial preservation of the anterior costal cartilage graft found in the luminal scar tissue. **Results:** Postoperatively the patient was stented with a nasal endotracheal tube for 2 weeks. Bronchoscopy showed mild tracheal collapse inferior to the site of anastomosis and granulation tissue at the site of anastomosis. Granulation tissue was removed and the subglottic anastomosis site was stented with a 2 cm Dumon stent for 6 months. The patient is currently doing well and has a good voice. **Conclusions:** The problem of long segment

stenosis after failed cartilage graft reconstruction of the airway is evaluated and a novel technique of laryngotracheal reconstruction involving a preexisting failed anterior graft and short segment stenting is described.

S118. Management of Birth Associated Nasal Trauma, Case Report and Review of the Literature

Joshua M. Levy, MD, New Orleans, LA; Lindhe J. Guarisco, MD, New Orleans, LA

Educational Objective: At the conclusion of this presentation, the participants should understand and discuss the indications and surgical options for treatment of neonatal nasal trauma with airway obstruction.

Objectives: Birth associated head and neck trauma represents a large source of perinatal morbidity, with an incidence of 9.5 events per 1,000 live births in the United States. Patency of the nasal airway is of special concern among neonates, as their respiratory function is uniquely dependent upon nasal airflow. Injury leading to nasal obstruction therefore represents an urgent surgical problem. In this study we present a novel method for reducing and postoperatively managing obstructive fractures of the neonatal nasal airway. **Study Design:** Case series with review of the literature. **Methods:** NA. **Results:** Two patients, age 5 and 11 days, were referred for evaluation of nasal deformity with stertor and feeding intolerance following difficult deliveries with cephalic presentation. Examination revealed nasal deformity with anterior tip deflection and contralateral septal deviation. Operative closed reduction was accomplished utilizing blunt septoplasty instrumentation with placement of a single Telfa roll in the previously obstructed nares. Postoperatively patients undergo airway observation, with removal of the nasal packing on postoperative day five. **Conclusions:** The management of neonatal anterior septal dislocation remains controversial, with recommendations ranging from observation to expectant bedside reduction. It is the author's opinion that symptomatic nasal obstruction and feeding intolerance are indications for closed reduction under general anesthesia. Unilateral nasal packing is utilized to hold the reduced septum in position while allowing adequate respiration through the contralateral nares. Patients do extremely well postoperatively and demonstrate no sign of respiratory distress prior to the removal of nasal packing on postoperative day five.

S119. Cervical Thymic Cyst Masquerading as Lymphoblastic Lymphoma

Beth N. McNulty, MD, Louisville, KY; Swapna K. Chandran, MD, Louisville, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the differential diagnosis of a pediatric neck mass, embryological development of the thymus gland, as well as radiological and histological findings that may lead to the misdiagnosis of a cervical thymic cyst.

Objectives: To serve as a reminder that thymic cysts must be considered in the differential diagnosis of a neck mass in both the pediatric and adult patient and that the initial flow cytometry may be misleading. **Study Design:** This case report will discuss the differential diagnosis of a pediatric neck mass, embryological development of the thymus gland, as well as radiological and histological findings that may lead to the misdiagnosis of a cervical thymic cyst. **Methods:** The case notes, imaging, and histological specimen were reviewed and a literature search was performed. **Results:** The patient was found to have a 3cm left sided level IIa mass anterior the sternocleidomastoid musculature. An excisional biopsy was performed. The initial flow cytometry studies detected an immature thymic T-cell population which was interpreted as T-cell lymphoblastic lymphoma. Gross pathological evaluation, however, revealed elements of thymus and parathyroid tissue. The final pathology was that of a benign ruptured, inflamed cervical thymic cyst with one entrapped parathyroid gland; negative for lymphoma or malignancy. **Conclusions:** Thymic cysts and remnants must be considered in the differential diagnosis of a neck mass in both the pediatric and adult patient. Cervical thymic cysts are often clinically and radiologically misdiagnosed as branchial cleft cysts. The reported case serves as a reminder that the initial flow cytometry may be misleading; immature thymocytes may be suggestive of a lymphoblastic lymphoma. The definitive diagnosis can only be made by histological analysis with the identification of thymic tissue remnants and the pathognomonic Hassal's corpuscles.

S120. Evaluation of Safety and Efficacy of Doxycycline Sclerotherapy following Treatment of Vascular Malformations with OK-432

Brent G. Nichols, MD, Milwaukee, WI; Robert H. Chun, MD, Milwaukee, WI; Roxanne T. Link, APNP, Milwaukee, WI; David C. Moe, MD, Milwaukee, WI; Joseph E. Kerschner, MD*, Milwaukee, WI

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the use and efficacy of doxycycline sclerotherapy in managing lymphatic malformations that have had previous partial response to OK-432.

Objectives: Treatment options of lymphatic malformations (LM) include sclerotherapy with agents such as picibanil (OK-432) and doxycycline as well as treatment with surgical excision. We wanted to explore the safety and efficacy of doxycycline sclerotherapy following treatment with OK-432. **Study Design:** Case series. **Methods:** Institutional database of patients with lymphatic malformations from 2008 to 2012 was reviewed to identify patients who had persistent disease after treatment with OK-432 and subsequently underwent sclerotherapy with doxycycline. **Results:** Three patients were identified. 1) 2 year old female with six previous unsuccessful OK-432 injections of macrocystic lymphatic malformation left face and neck. Post-treatment reduction was noted in macrocystic disease at 3 month followup. 2) 10 year old male with 3 previous OK-432 treatments without clinical improvement for right upper extremity and chest wall macrocystic venolymphatic malformation with associated microcystic lymphatic vesicles. At two month followup had decrease in macrocysts. 3) 3 year old male with multiple OK-432 treatments of macrocystic LM without appreciable response to the left shoulder and left neck. No response at three month followup. **Conclusions:** Treatment for macrocystic LM with OK-432 has been effective. No

published report has shown the use of other scleroscents following OK-432 therapy. During a brief moratorium on availability of OK-432, sclerotherapy with doxycycline was performed. In this limited series, some patients with lymphovascular malformations with previous partial response to OK-432 treatment responded to doxycycline sclerotherapy.

S121. Retropharyngeal Thymus: A Case Report and Review of the Literature

Jordan C. Schramm, MD MS, Omaha, NE; Ryan K. Sewell, MD JD, Omaha, NE

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the embryology of the thymus gland and recognize retropharyngeal thymus as a rare clinical entity.

Objectives: Present a case in which the initial clinical presentation was attributed to a retropharyngeal lymphatic malformation but ultimately proved to be ectopic thymus. **Study Design:** Case report and review of the literature. **Methods:** Case report and review of the literature concerning the diagnosis and management of a newborn with retropharyngeal thymus causing dynamic upper airway obstruction. **Results:** This is a case of a three day old patient born at term who presented with intermittent choking, coughing, desaturations and cyanosis with oral feeds. On flexible fiberoptic nasopharyngoscopy a nasopharyngeal mass was identified which was highly dynamic with respirations. Magnetic resonance angiography of the neck demonstrated a high retropharyngeal soft tissue abnormality with localized mass effect possibly representing an atypical venolymphatic malformation. The patient required a tracheostomy for a stable airway. After watchful waiting with repeat imaging and endoscopy, the mass was ultimately biopsied and found to be ectopic thymus gland with an associated normal appearing parathyroid gland. **Conclusions:** This case demonstrates the importance of considering ectopic thymus in the differential diagnosis for congenital neck mass, even in cases not typically associated with ectopic thymus. While the embryological path of descent of the thymus gland is classically described as beginning at the angle of the mandible and ending in the mediastinum, the present case is the second reported of ectopic thymus in the retropharynx. This suggests that the thymus may, in fact, begin its descent more cephalad and posterior than currently thought. Though rare, ectopic thymus should be considered in the differential diagnosis of congenital retropharyngeal mass.

S122. Incomplete Split Cord Malformation Presenting with Unilateral Vocal Cord Palsy and Torticollis in a Newborn

Molly J. Sullan, BA, Rochester, MN; Kathryn M. Van Abel, MD, Rochester, MN; William R. Schmitt, MD, Rochester, MN; Shelagh A. Cofer, MD, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate a better understanding of a cervical split spinal cord malformation in an infant. They should be able to discuss comparable cases within the literature and better understand the need for imaging from brain to thorax on infants presenting with vocal cord dysfunction.

Objectives: To report a rare case of spinal dysraphism resulting in incomplete spinal cord malformation (SCM) involving the brainstem and high cervical cord and to discuss the life threatening clinical impact, diagnosis, and management. **Study Design:** Case report. **Methods:** Review of the literature. **Results:** A seven day old female was transferred to our hospital due to an apparent life threatening, medically witnessed apneic event. Bedside endoscopy indicated unilateral vocal cord paresis, which was confirmed during formal sleep state endoscopy. An immature suck-swallow-breath sequence was appreciated. We identified clinically significant central hypopneas on polysomnogram, and magnetic resonance imagining revealed an incomplete SCM in the cervical cord, along with hypoplasia of the dorsolateral medulla. Genetics workup was negative and neurosurgery recommended observation. The patient was discharged home after marked improvement in apneic events and weight gain by day of life 19. At six week followup she was noted to have significant improvement in her oral feeding and decreased aspiration, however, repeat awake endoscopy revealed persistent unilateral vocal fold paresis and clinically significant torticollis. **Conclusions:** Cervical SCMs are rare abnormalities that occur due to a distinct defect during embryogenesis. There is a range of anomalies presented in the literature, which rarely involve the cervical cord. Our index patient presented with the first documented case of an incomplete cervical SCM involving the brainstem with resultant cranial neuropathies. The diagnosis is dependent on magnetic resonance imaging, and management hinges on the presence of spinal cord tethering.

S123. A Novel Technique for the Correction of Severe Septal Dislocation in the Neonate

Joshua J. Thom, MD, Rochester, MN; James Richard White, MD, Rochester, MN (Presenter); Matthew L. Carlson, MD, Rochester, MN; Laura J. Orvidas, MD*, Rochester, MN

Educational Objective: At the conclusion of this presentation, the participants should be able to describe and perform closed reduction and stenting of a neonatal septal dislocation using this new technique.

Objectives: Mild neonatal septal deformities are a relatively common complication of delivery, and often improve with time and growth of the child. However, severe septal dislocation resulting in inadequate nasal breathing and unsightly external deformity is rare and must be corrected. The aim of this paper is to describe a simple and innovative technique of closed reduction and nasal stenting of severe septal dislocation in the neonate resulting in excellent functional and cosmetic outcomes. **Study Design:** Case report with literature review. **Methods:** A neonate was born term to a primigravid with the delivery complicated by failure to progress. Following a failed traumatic delivery with subsequent caesarean section, it was evident that the neonate had a severe septal dislocation compromising nasal breathing and resulting in a profound external cosmetic deformity. The patient underwent closed reduction with septal stenting using bilaterally placed silastic nasal trumpets. Photographs are provided including before and after reduction and with nasal stents in place. The novel technique utilized is described in detail. A summary of the scant literature on neonatal septal dislocation is included.

Results: Following closed septal reduction and nasal stenting with the technique described, this patient had an excellent functional outcome with a return of normal nasal breathing. Photographs depict a good cosmetic result with appropriate correction of the nasal dorsum and caudal septum. **Conclusions:** We present a case of severe neonatal septal dislocation following traumatic delivery and describe a novel technique to correct the septum providing both outstanding functional and cosmetic outcomes.

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Arvind Kumar, MD
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Harry Zoller, MD FACS

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