

**THE PROGRAM
OF
THE NINETY FOURTH ANNUAL MEETING
OF**



**The American
Broncho-Esophagological
Association**

**WEDNESDAY AND THURSDAY
MAY 14-15, 2014**

**CAESARS PALACE
LAS VEGAS, NEVADA**

Contents

Purpose.....	7
Educational Objectives	7
Disclosure.....	8
Accreditation Statement	8
AMA PRA Category 1 Credits™	8
Officers, Council Members, Committee Chairs, and Representatives 2013-2014	8
ABEA Past Presidents	11
President's Circle	13
List of Contributors:	13
President's Circle:	13
Leadership Funds:	13
ABEA COSM 2014 Program Committee.....	14
Wednesday, April 14, 2014	
Agenda at a Glance.....	15
Presidential Welcome.....	16
Moment of Silence.....	17
Presidential Citations Guests of Honor	18
Presidential Keynote Address.....	21
SESSION I:	
Speak Up!.....	22
PANEL I:	
Occupational.....	29
Voice Disorders.....	29
BREAK WITH EXHIBITORS	
SESSION II:	
Hard To Swallow.....	31
SESSION III:	
Advances in Cancer Management	37

SESSION IV:

Bench to Bedside 43

Thursday, MAY 15, 2014

Agenda at a Glance..... 48

Chevalier Jackson Award 2014 49

Chevalier Jackson Award Recipients.....50

Chevalier Jackson Lecture: 51

SESSION V:

Is It Real or Is It Simulated?..... 52

PANEL II:

What Can Smart People Learn From Dummies? 55

BREAK WITH EXHIBITORS

ABEA:

Where We Are and Where We Are Going 57

SESSION VI:

Pediatric Airway 58

Foreign Body:..... 65

SESSION VII:

Airway Challenges..... 69

Introduction of New President..... 78

Broyles-Maloney Award Recipients 79

Steven D. Gray Resident Award Recipients 82

Foreign Body Case Award Recipients 83

Scientific Poster Session 85

A-00186

A-00287

A-00388

A-00489

A-00590

A-00691

A-00792

A-008	93
A-009	94
A-010	95
A-011	96
A-012	97
A-013	98
A-014	99
A-015	100
A-016	101
A-017	102
A-018	103
A-019	104
A-020	105
A-021	106
A-022	107
A-023	108
A-024	109
A-025	110
A-026	111
A-027	112
A-028	113
A-029	114
A-030	115
A-031	116
A-032	117
A-033	118
A-034	119
A-035	120
A-036	121
A-037	122
A-038	123
A-039	124
A-040	125
A-041	126
A-042	127
A-043	128
A-044	129
A-045	130

A-046 131
A-047 132
A-048 133
A-049 134
A-050 135
Membership in the ABEA 136
FUTURE MEETING DATES:..... 145

Purpose

The purpose of this program is to provide Otolaryngologists-Head and Neck Surgeons, Pulmonologists, Gastroenterologists and other interested physicians, clinicians and scientists with an opportunity to update their knowledge of diseases involving the upper aerodigestive tract.

Educational Objectives

- The aim of these scientific sessions is to provide physicians, other clinicians and scientists with up-to-date information pertinent to:
- The clinical evaluation and endoscopic management of laryngeal, tracheobronchial, and esophageal disorders.
- Advanced understanding of current issues regarding the diagnosis and management of complex swallowing disorders, voice disorders, airway disorders and operative procedures used in the management of disorders of the upper aerodigestive tract.
- Advanced knowledge and techniques enabling participants to compare and refine their medical and surgical skills to include best practice performance and optimize patient outcomes, as well as, introduce them to deficits in current knowledge and future research needs.

Disclosure

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

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 American Broncho-Esophagological Association. 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 7.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



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- 2011** Gregory Postma, MD
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- 2012** Peter J. Koltai, MD
-
- 2013** Ellen Deutsch, MD

President's Circle

The ABEA is fortunate to count among its leadership those who have supported our science through the creation of the President's Circle and Leadership Funds.

Here, we recognize those whose gifts will ensure the ABEA's preeminent representation of advances in the science of laryngology and broncho-esophagology.

For further information on how you can also make a difference, please contact Michael Benninger, MD, at benninm@ccf.org

List of Contributors:

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Wednesday, May 14, 2014

Agenda at a Glance

7:15am	ABEA Business Meeting (Members Only)
8:00-8:10am	Presidential Welcome Introduction of Program and Guests Presidential Citations Moment of Silence
8:10-8:35am	Presidential Keynote Address
8:35-9:18am	Session I: SPEAK UP!
9:18-10:00am	Panel I: Occupational Voice Disorders
10:00 -10:15am	Break with Exhibitors
10:15-10:51am	Session II: Hard to Swallow
10:51-11:27am	Session III: Advances in Cancer Management
11:27-11:57am	Session IV: Bench to Bedside
11:57-12:00pm	Closing Comments/Adjourn
12:15pm	Annual ABEA Member Photograph

Presidential Welcome

Ellen S. Deutsch, MD, FACS, FAAP

Philadelphia, PA

8:00-8:10 AM

WEDNESDAY, MAY 14, 2014

Moment of Silence

Linda Brodsky, MD

Robert Toohill, MD

Charles Vaughn, MD

8:00-8:10 AM

WEDNESDAY, MAY 14, 2014

Presidential Citations

Guests of Honor

Ellen Friedman, MD, FACS

Peter Koltai, MD, FACS

8:00-8:10 AM

WEDNESDAY, MAY 14, 2014

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2014 Peter Koltai, MD, FACS - Stanford, CA

8:10-8:35AM

WEDNESDAY, MAY 14, 2014

Presidential Keynote Address

It's OK To Be Curious;
It's Not OK To Be Cruel....
A True Story of Courage and
Accomplishment!

Speakers: Kennedy Hubbard
 Jamie Hubbard

8:35-9:18 AM

WEDNESDAY, MAY 14, 2014

SESSION I:

Speak Up!

Moderators: James Burns, MD
Stacey Halum, MD

8:35-9:18 AM

WEDNESDAY, MAY 14, 2014

VOICE OUTCOMES AFTER ENDOSCOPIC TREATMENT OF LARYNGOTRACHEAL STENOSIS

Marc Remacle, MD, Presenter and Co-Author

Devora Kiagiadaki, MD, Co-Author

George Lawson, MD, Co-Author

Vincent Bachy, MD, ENT, Co-Author

Sebastien Van Der Vorst, MD, ENT, PhD, Co-Author

YVOIR BELGIUM

Objectives: Presentation of our experience of using relaxation thyroplasty for the treatment of high-pitched voice disorders.

Methods: 11 male patients, underwent relaxation thyroplasty between 2000-2012, were retrospectively studied. The cause of high-pitch voicing was mutational falsetto voice and functional hyperkinetic dysphonia. All patients had failed to achieve normal pitch voicing either after speech therapy or other surgical interventions. The operation was performed under either general anesthesia or sedation, with perioperative endoscopic monitoring. All patients underwent complete voice assessment pre- and post-operatively with acoustic, aerodynamic measurements, as well as perceptual and subjective symptom evaluation with Grade-Roughness-Breathiness-Asthenia-Strain-Instability (GRBASI) scale and the Voice Handicap Index (VHI) questionnaire, respectively.

Results: Post-operatively, a normal pitch voicing was achieved with the average fundamental frequency decreasing significantly ($P < 0.05$). The G parameter was also improved significantly, as well as VHI grading. Vocal efficacy was moderately disturbed as indicated by the increase in intraoral (subglottic) pressure. No significant changes were observed in acoustic measures. The results were maintained up to 15 months post-operatively.

Conclusions: Relaxation thyroplasty was proven an efficient surgical method for normalizing pitch, in males with high-pitch voice disorders, where conservative methods fail, with long lasting results.

PHONIATRIC AND RESPIRATORY ASPECTS RELATED TO SURGICAL TREATMENT FOR BILATERAL VOCAL CORD PARALYSIS

Markus Gugatschka, MD, Presenter, Co-Author

Christoph Arens, MD, Co-Author

Orlando Guntinas-Lichius, MD, Co-Author

Ruth Lang-Roth, MD, Co-Author

Andreas Muller, MD, Co-Author

Tadeus Nawka, MD, Co-Author

Christian Sittel, MD, Co-Author

Gerd Fabian Volk, MD, Co-Author

GRAZ AUSTRIA

Objective: Endoscopic enlargement of the glottis has been established as standard therapy for treatment of bilateral vocal cord paralysis (BVCP). A variety of surgical methods exists differing in site and extent of resection. However the outcomes have not yet been critically evaluated in terms of quality of voice, breath and life. Currently, we are performing a prospective longitudinal study exploring these aspects by comparing the pre-operative vs. post-operative patients' conditions before and after endoscopic glottic enlargement.

Methods: Twelve clinical study sites recruited 31 patients suffering from BVCP. Patients underwent standardized screening examinations before being included in the study. Several respiratory and phoniatic tests as well as quality-of-life questionnaires were completed pre-operatively, as well as 1, 3 and 6 months after the surgical intervention.

Results: A significant improvement was observed for expiratory flow parameters, while inspiratory parameters remained stable. Voice quality determined through the RBH test worsened, while patients' self-perception of their voice quality improved significantly. Most phoniatic parameters were below normal ranges and did not improve during the 6 month follow-up.

Discussion: The study showed that endoscopic glottic enlargement is an effective treatment for BVCP. Respiratory parameters improved significantly, despite remaining below normal levels. Patients' self-perceived voice quality improved, although specialist evaluation through RBH failed to confirm.

8:35-9:18 AM

WEDNESDAY, MAY 14, 2014

SMALL INTESTINAL SUBMUCOSA FOR THE TREATMENT OF VOCAL FOLD SCAR, SULCUS AND ATROPHY

Jonathan Cabin, MD, Presenter and Co-Author

Michael Pitman

Codrin Jacob, MD

NEW YORK, NY

Objectives: To evaluate the safety and effect of grafting porcine-derived small intestinal submucosa (SIS) into the vocal fold superficial lamina propria (SLP), for the potential treatment of vocal fold scar, sulcus and atrophy.

Methods: SIS was implanted into the right vocal fold SLP of six mongrel dogs. The left vocal fold served as a normal control in two animals and a sham surgical control in four. At two, four and six weeks post-operative the larynges were excised and bilateral vocal fold specimens were subjected to histologic staining with alcian blue, mucicarmine and hematoxylin eosin. Particular attention was paid to the presence and character of inflammation and fibrosis, as well as evidence of SIS remodeling.

Results: Histology of the normal and sham vocal folds were identical. At two and four weeks SIS-implanted vocal folds demonstrated inflammation varying between mild to moderate with evidence of both acute and chronic inflammation. At six weeks, inflammation is mild and chronic. In both six-week specimens, there is diffuse newly generated superficial lamina propria inside the graft without evidence of new fibrosis.

Conclusions: In the canine model, SIS appears safe to graft into the SLP. It results in newly generated SLP without fibrosis. SIS has the potential to be used in the treatment of diseases with deficient SLP such as of vocal fold scar, sulcus and atrophy. Additional studies evaluating the effect of SIS implantation on vocal fold function and mucosal wave are required.

VOICE REST AND PHONOSURGERY VOICE OUTCOME: PRELIMINARY RESULTS OF A PROSPECTIVE RANDOMIZED STUDY

Marc Remacle, MD, Presenter and Co-Author

Devora Kiagidaki, MD, ENT, PhD, Co-Author

Vincent Bachy, MD, ENT, Co-Author

George Lawson, MD, ENT, Co-Author

Sebastien Van Der Vorst, MD, ENT, PhD, Co-Author

YVOIR BELGIUM

Objectives: According to literature, voice rest after phonosurgery, recommended in clinical practice, varies between 3 and 7 days. However, up to present, no randomized trial exists to compare a voice rest of short and long duration.

Methods: This is an ongoing prospective randomized study, comparing the voice outcome of phonosurgery, relative to a strict voice rest of 5 or 10 days. In a 5 months' period, 22 patients operated with benign laryngeal lesions were randomized. Eighteen of them completed the pre- and post-operative assessment, which included perceptual voice quality (Grade-Roughness-Breathiness-Asthenia-Strain-Instability scale), Voice Handicap Index score and voice analysis with acoustic and aerodynamic measurements. Additional factors as smoking, vocal abuse reflux and preoperative speech therapy were also taken into account.

Results: 10 patients were randomized with a 5 and 8 with a 10 days' voice rest. Statistical analysis showed no significant differences between the two groups, neither in pre- nor in post-operative measurements. However, a statistical significant improvement was observed in favor of the 10 days' group, for G, I, Maximum Phonation Time and Phonation Quotient. Multi-linear regression analysis for the effect of voice rest on post-operative values, confirmed the results for the same measurements.

Conclusions: Preliminary results showed a more favorable rehabilitation procedure after phonosurgery, concerning voice quality and aerodynamic measurements, in favor of the 10 days' voice rest.

8:35-9:18 AM

WEDNESDAY, MAY 14, 2014

VOICE OUTCOMES AFTER ENDOSCOPIC TREATMENT OF LARYNGOTRACHEAL STENOSIS

Jeanne Hatcher, MD, Presenter and Co-Author

C. Blake Simpson, MD, Co-Author

SAN ANTONIO, TEXAS

Objectives: To assess the voice outcomes after endoscopic surgical management of patients with posterior glottic stenosis (PGS) and those with subglottic or tracheal stenosis (SG/TS).

Methods: Patients that underwent endoscopic laser treatment with/without balloon dilation for laryngotracheal stenosis and had voice outcomes data were studied. Histories of malignancy, cricotracheal resection, and vocal fold lesions or paralysis were exclusion criteria. The mean Voice Handicap Index – 10 (VHI-10) was compared over the study period (2005-2013). Of those with SG/TS, the distance from the vocal folds to the proximal portion of the stenosis was obtained and compared to the VHI-10.

Results: 44 patients met inclusion criteria. The mean VHI-10 for all patients with laryngotracheal stenosis was 14.6. Fifty percent were dysphonic (VHI-10 > 11). The mean VHI-10 for PGS patients was 22.4 and 10.9 for SG/TS ($p = 0.0035$). Of those with PGS, 78.6% were dysphonic while only 36.7% of SG/TS patients had VHI-10 greater than 11. For stenosis within one cm of the vocal folds, the mean VHI-10 was 14.1. This improved to 8.5 for stenosis originating between 1-2 cm distal to the vocal folds, and 4 for stenosis greater than 2cm distal to the vocal folds.

Conclusions: Following endoscopic management of stenosis, those with PGS have poorer voice outcomes compared to those with SG/TS. The majority of those with SG/TS are not dysphonic. Vocal outcomes improve proportional to the distance from the vocal folds for those patients with SG/TS.

RADIOFREQUENCY-INDUCED THERMOTHERAPY (RFITT) FOR THE TREATMENT OF ADDUCTOR SPASMODIC DYSPHONIA

Marc Remacle, MD, Presenter and Co-Author

Mohd Sayuti Razali, ENT, Co-Author

Devora Kiagidaki, MD, ENT, PhD, Co-Author

Vincent Bachy, MD, ENT, Co-Author

George Lawson, MD, ENT, Co-Author

Sebastien Van Der Vorst, MD, ENT, PhD, Co-Author

YVOIR BELGIUM

Objectives: Spasmodic dysphonia (SD) is a voice disorder of still unclear aetiology. Adductor spasmodic dysphonia (ADSD) affects close to 90% of spasmodic dysphonia patients and is characterized by uncontrolled voice spasms during speech. The gold standard treatment remains the injection of botulinum toxin, directed mostly towards the symptomatic relief of the vocal spasms. However, the need of repetitive injections has turned the interest to the development of surgical approaches in order to achieve longer lasting symptomatic control.

Methods: 13 patients treated with coagulation of the terminal branches of the recurrent nerve by bipolar radiofrequency-induced thermotherapy (RFITT) between the years 2004-2013, were retrospectively studied. Pre- and post-operative assessment included objective voice analysis, perceptual voice evaluation with the Grade-Roughness-Breathiness-Asthenia-Strain-Instability (GRBASI) scale, self-evaluation with the VHI (Voice Handicap Index) questionnaire and flexible laryngoscopy.

Results: Post-operatively, in all patients a hypomobility of the coagulated vocal fold was observed. Perceptual voice quality in terms of G (3.1 to 1.6) and I (1.5 to 1.1) was significantly improved, as well as the VHI total score (71.5 to 56.8) ($P < 0.05$). No post-operative complications were observed and the patients maintained a good voice quality for up to 2 years post-operatively.

Conclusions: RFITT technique was proved to be an effective alternative to botulinum toxin injections, for the treatment of ADSD.

9:18-10:00 AM

WEDNESDAY, MAY 14, 2014

PANEL I:

Occupational

Voice Disorders

Moderator: Robert Sataloff, MD

Panelists: Michael Benninger, MD
Jackie Gartner-Schmidt, PhD
Michael Johns, MD
Peter S. Popolo, PhD

10:00-10:15 AM

WEDNESDAY, MAY 14, 2014

BREAK WITH EXHIBITORS

10:15-10:51 AM

WEDNESDAY, MAY 14, 2014

SESSION II:

Hard To Swallow

Moderators: Gregory Grillone, MD, FACS
Albert Merati, MD, FACS

CORRELATIONAL OUTCOMES OF EAT-10 VERSUS PENETRATION ASPIRATION SCALE

Diane Cheney, BA, Presenter and Co-Author

Juliana Litts, CCP-SLP, Co-Author

Peter C. Belafsky, MD, Co-Author

SACRAMENTO, CA

Objective: The purpose of this study is to evaluate the ability of the Eating Assessment Tool (EAT-10) to predict objective swallowing function in patients with dysphagia.

Methods: This study involved a retrospective chart review of 405 patients who presented to the UC Davis Center for Voice and Swallowing with complaints of dysphagia. Data collected for analysis included EAT-10 score, Penetration Aspiration Scale (PAS) score, and underlying diagnoses. Bivariate linear correlation analysis, sensitivity and specificity values, and positive and negative predictive values were calculated.

Results: The mean age of the entire cohort (N=405) was 64.40 (+/- 14.75). 46% was female. There was a linear correlation between the total EAT-10 score and the PAS for the entire cohort ($r= 0.289$, $p<0.001$). There was no association between diagnostic category and EAT-10/PAS correlation, although small sample size in certain sub-categories provided limited power. Sensitivity of an EAT-10 score greater than 15 in predicting aspiration was 72.0%. Specificity was 53.17%. An EAT-10 score of greater than 15 has a positive predictive value of 25.84% and a negative predictive value of 89.34%.

Conclusion: There is a positive correlation between EAT-10 and PAS scores. There is no association between this correlation and diagnostic categories of dysphagia. An EAT-10 score of more than 15 has poor positive predictive value, but strong negative predictive value in predicting aspiration.

10:15-10:51 AM

WEDNESDAY, MAY 14, 2014

ENDOSCOPIC STAPLE DIVERTICULOSTOMY FOR ZENKER'S DIVERTICULUM: REVIEW OF EXPERIENCE IN 337 CASES

Reason Wilken, MD, Presenter and Co-Author

Chad Whited, MD, Co-Author

Richard Scher, MD, Co-Author

DURHAM, NC

Objectives: Surgical treatment of Zenker's diverticulum (ZD) has evolved over the previous two decades to a predominantly endoscopic approach. As endoscopic surgical treatment for ZD has become more widespread it is possible to evaluate long-term outcomes, complication and recurrence rates. In this study, we review our experience with endoscopic staple diverticulostomy (ESD) for treatment of ZD from 2002-2011.

Methods: Retrospective chart review of 359 primary and revision ESD procedures performed on 337 unique patients between September 2002 and December 2011. Data was tabulated for age, gender, size of diverticulum, time to symptom recurrence, complications and relief of symptoms at first postoperative visit.

Results: Of 337 attempted primary ESD procedures, 3.9% (N=13) were aborted due to inadequate exposure. Of 324 patients who underwent ESD, 94% (N=305) reported improvement of dysphagia symptoms. There was a 4.9% (N=16) significant complication rate (including esophageal laceration, mediastinitis and neck abscess). 12.3% (N=40) of primary ESD patients developed recurrent symptoms during the follow up period, but recurrence was not significantly associated with diverticulum size (P=0.07) or specific time interval following surgery (P=0.78). 21 patients underwent revision ESD, with 95% of these patients reporting improvement and 4.7% developing recurrent symptoms. There were no significant complications reported for revision ESD patients.

Conclusions: Primary and revision ESD were shown to have similar success at relieving the symptoms of ZD, with low procedure abandonment and complication rates. The size of the original diverticulum and postoperative time interval did not significantly affect the tendency for recurrence.

LATERAL PHARYNGEAL PULSION DIVERTICULA ARE COMMON AMONG ELDERLY INDIVIDUALS

Maggie Kuhn, MD, Presenter and Co-Author

Omid Mehdizadeh, MD, Co-Author

Peter C. Belafsky, MD, Co-Author

SACRAMENTO, CA

Objective: Pharyngoesophageal diverticula represent an uncommon yet often modifiable cause of dysphagia. Description of lateral pulsion diverticula (LPD) of the pharynx is limited to case reports and small series. LPD have been recognized as an acquired condition, more commonly found in older individuals. As the proportion of our elderly population grows, we expect to encounter more individuals with dysphagia. We aim to clarify the incidence and describe the characteristics of LPD.

Method: Retrospective cross-sectional review

Result: Consecutive videofluoroscopic swallow studies from 85 elderly individuals without dysphagia were reviewed. LPD were observed in 38 individuals (44.7%). Their mean age was 76.4 years (+/- 5.3) and 58% was female. Twenty (52.6%) LPD were unilateral with 13 (65%) left-sided and 7 (35%) right-sided. Bilateral diverticula were identified in 18 (47.4%) individuals. LPD originated from the tonsillar fossa in 7 (25%), vallecula in 30 (78.9%) and piriform sinus in 2 (5.3%). In 24 (63%) individuals, the LPD emptied contrast immediately. LPD emptying was delayed in 8 (21.0%), and residue remained in 6 (15.8%) cases.

Conclusion: Our findings suggest that LPD of the pharynx represent a more common abnormality than has previously been described. Over one-third of asymptomatic elderly patients have LPD. Though many of these will remain clinically-silent, our awareness of LPD is important for those who may later develop dysphagia. LPD may be a site of threatening residue or atonic pharyngeal area.

POSTDEGLUTITIVE RESIDUE IN ASSOCIATED LARYNGEAL PARALYSIS VS. UNILATERAL VOCAL FOLD PARALYSIS ALONE

Yoshihiko Kumai, MD, Presenter and Co-Author

Yasuhiro Samejima, MD, Co-Author

Yuta Kamenosono, BSc, Co-Author

Narihiro Kodama, BSc, Co-Author

Eiji Yumoto, MD, Co-Author

KUMAMOTO, JAPAN

Objectives: To quantitate postdeglutitive pharyngeal residues in patients with associated unilateral laryngeal paralysis (AULP) and determine its association with high vagal nerve paralysis.

Methods: Twenty nine AULP patients were included. The patients were divided into two groups. I) Isolated vagus nerve paralysis (N=15), II) Vagus nerve combined with hypoglossal nerve paralysis (N=14). The other 26 patients with isolated recurrent laryngeal nerve paralysis (RLNP) served as control. All subjects underwent videofluoroscopic swallow studies. Pyriform sinus (PS) residues in the anterior-posterior view were analyzed quantitatively using video editing software. The symmetry of the affected versus non-affected sides among three groups were statistically compared.

Results: The affected PS of groups I, II demonstrated significantly increased residue ($p < 0.01$) as compared with the non-affected PS. Same comparison demonstrated no significant difference in control group. When compared with control, both groups showed significantly increased residue on the affected PS ($P < 0.01$). When compared with group I, and II showed no significantly different residue on the affected PS.

Conclusions: AULP patients were more likely to demonstrate increased residue and asymmetry in the affected PS as compared with RLNP patients, suggesting that high vagal nerve damage may cause significantly increased residue in PS. Moreover, hypoglossal nerve paralysis might enhance relatively little on residue in PS.

DOES A TOTAL LARYNGECTOMY AND/OR RADIOTHERAPY INCREASE LARYNGOPHARYNGEAL REFLUX

Blake LeBlanc, MD, Presenter and Co-Author

Ellen Lewis, MD, Co-Author

Gloria Caldito, MD, Co-Author

Cherie-Ann Nathan, MD, Co-Author

SHREVEPORT, LA

Objectives: 1. To determine if pharyngeal reflux increases in patients with total laryngectomy. 2. To determine if pharyngeal reflux scores are higher in patients with prior radiotherapy.

Methods: Twenty four patients with head and neck cancer were enrolled in the prospective study and underwent 24 hour pharyngeal pH monitoring using Restech's Dx-pH Probe. The Ryan score (degree of reflux) was the main measured determinant.

Results: Three enrolled patients did not undergo a total laryngectomy (two were noted to be unresectable, one underwent partial laryngectomy). Ten out of the 24 patients underwent post laryngectomy pH probe monitoring. The mean age of those completing the study was 61.2 (47-84). When analyzing those who completed the post laryngectomy pH study (n=10), the mean pre-operative upright Ryan score was 106.3 compared to a post-operative score of 209.0 (p=.04). The mean supine preoperative Ryan score in this group was 3.9 compared to 8.1 postoperatively (p=.13). The mean upright Ryan score for patients with prior radiotherapy was 238.4 (n=8), compared to 22.0 (n=16) in those without prior radiotherapy (p=0.02). The supine score was 12.7 in the radiotherapy group compared to 2.7 in those without radiotherapy (p=0.12).

Conclusion: Both total laryngectomy and a history of prior radiotherapy increase pharyngeal reflux scores.

10:51-11:27 AM

WEDNESDAY, MAY 14, 2014

SESSION III:

Advances in Cancer Management

Moderators: Joel Blumin, MD
Dale Ekbohm, MD

NARROW BAND IMAGING DELINEATES SUPERFICIAL MARGINS DURING TRANSORAL LASER SURGERY

Sabrina Garofolo, MD, Presenter and Co-Author

Cesare Piazza, MD, Co-Author

Saleh Jasem, MD, Co-Author

Francesca Del Bon, MD, Co-Author

Stefano Mangili, MD, Co-Author

Giorgio Peretti, Co-Author

BRESCIA, ITALY

Objective: Even though a great effort should be taken to achieve resection within free margins at the first attempt in transoral laser microsurgery (TLM), the high rate of positive margins reported in the literature remains a challenging problem. Aim of this study was to investigate the efficacy of intraoperative examination by Narrow Band Imaging (NBI) in reducing the rate of positive superficial margins in patients affected by early glottic cancer and treated by TLM.

Methods: Between 2012 and 2013, 70 untreated patients affected by early glottic cancer (Tis-T1a without anterior commissure involvement) were treated by means of excisional biopsy (Type I or II cordectomies according to the European Laryngological Society classification) (Group A). Intraoperative NBI evaluation was routinely performed by 0° and 70° telescopes. Specimens were oriented marking the superior edge with black ink and sent to a dedicated pathologist. We compared superficial positive margins rate of this group with a matched historical cohort of 152 patients treated by the same surgeons without the intraoperative use of NBI (Group B).

Results: Results: In Group A, definitive histopathology showed negative (> 1 mm) superficial margins in 60 patients, close (<= 1 mm) in 1, and positive in 3. The rate of positive superficial margins was 4.3% in Group A, while 23.7% in Group B (p<0.001 at chi-squared test).

Conclusion: The routine use of intraoperative NBI resulted in a significant reduction of positive superficial margins after TLM for early glottic cancer.

10:51-11:27 AM

WEDNESDAY, MAY 14, 2014

THE USE OF CRYOTHERAPY FOR PAPILOMA AND EARLY LARYNGEAL CANCERS: LONG-TERM RESULTS

Adeeb Derakhsham, BS, Presenter and Co-Author

Claudio Milstein, PhD, Co-Author

Michael Benninger, MD, Co-Author

CLEVELAND, OH

Objective: The use of cryotherapy in conjunction with traditional surgical modalities has been proposed to improve clinical outcomes and voice after surgery. This study investigates the utility of cryotherapy in the management of early laryngeal cancer and laryngeal papillomatosis.

Methods: Patients with either early glottic cancer or laryngeal papillomatosis that received cryotherapy as part of their surgical regimen were investigated. All patients were seen within a ten year window and retrospectively reviewed. Recurrences of the laryngeal cancer were noted, as was the duration of time between successive papillomatosis operations.

Results: The charts of 54 glottic cancer and 28 papillomatosis patients that received cryotherapy were reviewed. 16 (30%) of the laryngeal cancer patient experienced a malignant recurrence and the 5 year disease-free survival was 74%. The use of adjuvant cryotherapy in the treatment of laryngeal papillomatosis extended the duration of time between surgeries by an average of 79 days ($p = 0.23$) in comparison to the interval of time between cases when these same patients did not have cryotherapy.

Conclusion: The use of adjuvant cryotherapy in the treatment of early glottic cancer results in a similar proportion of recurrences when compared to cryotherapy-free techniques reported in the literature. Cryotherapy does not result statistically significant increases in disease-free intervals for laryngeal papilloma patients, although the observed increase interval may be clinically meaningful.

A NOVEL ORTHOTOPIC MOUSE MODEL OF LARYNGEAL SQUAMOUS CELL CARCINOMA

Jacob Cohen, MD, Presenter and Co-Author

Moran Amit, MD, Co-Author

Yoav Binenbaum, MD, Co-Author

Ziv Gil, MD, PhD, Co-Author

Shorook Naara, MD, Co-Author

HAIFA, ISRAEL

Background: Despite significant advances in treatment, the survival of patients with Laryngeal squamous cell carcinoma (LSCC) has declined during the last two decades. To date, there is no animal model for LSCC that recapitulates the biological and clinical behavior of this disease.

Objective: To develop an orthotopic murine model of LSCC.

Methods: We developed a dedicated laryngoscope to be used in mice and rats models of cancer. The human LSCC cell line, JHU-O11 (105 cells), was orthotopically injected to the supraglottis of immunodeficient (Balb/c) mice. Tumor growth was evaluated weekly by direct laryngoscopy and MRI. After 3-weeks, the neck structures, liver and lungs were harvested for histopathological evaluation. Immunohistochemical staining was used to evaluate the level of proliferation (anti-Ki67) and angiogenesis (anti-WV factor) of the tumors.

Results: All mice developed supraglottic/transglottic tumors including: T1-2 (isolated supraglottic), T3 (pre-epiglottic space invasion) or T4 (thyroid cartilage invasion) tumors. Tumor volume, proliferation and vessel density correlated to the disease in human. The rate of regional and distant metastasis and survival also reliably recapitulates the behavior of tumor in patients.

Conclusions: We describe the first animal model of LSCC. This model offers an inexpensive, reliable and reproducible system for pre-clinical testing of new treatment regimes.

Broyles-Maloney Award Winner

ONCOLOGIC EFFICACY OF ANGIOLYTIC KTP LASER TREATMENT OF EARLY GLOTTIC CANCER

Steven M. Zeitels, MD, Presenter and Co-Author
James Burns, MD, Co-Author

BOSTON, MA

Objective: Angiolytic KTP laser removal of early glottic cancer with ultra-narrow margins was introduced in a pilot study 5 years ago as an innovative new surgical treatment strategy to better preserve vocal function. Subsequently, in a report of >90 patients, enhanced voice outcomes were achieved and there was diminished need for post-treatment phonosurgical reconstruction. However, the initial pilot study had a limited number of patients and most did not have 3-year follow-up. Consequently, further analysis of the oncologic efficacy is valuable.

Method: Retrospective review

Results: 94 patients (T1a-57, T1b-11, T2a-6, T2b-20) underwent KTP laser treatment of early glottic cancer with a minimum 3-year follow up (average: 51 months). The 'b' designation delineated bilateral disease. Disease control for T1 and T2 lesions was 97% (66/68) and 73% (19/26) respectively. All 9 recurrences were treated with radiotherapy. Fifty-five percent (5/9) were controlled with radiotherapy, 1/9 was salvaged with a total laryngectomy, 1/9 died of unrelated causes with resectable disease, and 2/9 died of disease. Larynx preservation and survival were achieved 98% (67/68) with T1 disease and 88% (23/26) with T2 disease.

Conclusion: This investigation provides further evidence that angiolytic KTP laser treatment of early glottic cancer with ultra-narrow margins is an effective surgical treatment strategy. Radiotherapy was preserved as an oncologic option in 90% of patients and effectively salvaged a majority of endoscopic failures.

ESOPHAGEAL STENOSIS AFTER CHEMORADIATION THERAPY: MANAGEMENT CONSIDERATIONS AND OUTCOMES

Jonathan Salinas, MD, Presenter and Co-Author

Darshni Vira, MD, Co-Author

Dinesh Chhetri, MD, Co-Author

LOS ANGELES, CA

Objective: To review the etiology of esophageal stenosis after chemoradiation therapy (CRT) for Head and Neck Cancer (HNC), technical considerations in management, and swallowing outcomes after treatment.

Methods: Retrospective analysis of a case series over a five-year period. Patients with a history of CRT alone for HNC who developed esophageal stenosis, presenting with dysphagia were included. Pre and post-operative swallowing function was assessed with the Swallowing Performance Scale (SPS). A standard initial dilation protocol involving a series of two dilations 1 to 2 weeks apart was used. Mitomycin-C was used in all cases. Esophageal assessment during dilation was done using a trans-nasal esophagoscope (TNE).

Results: Of the 16 patients who met inclusion criteria, 13 had adequate pre- and post-operative swallowing data for analysis. Average pre- and post-operative SPS scores were 6.5 and 3.8, respectively ($p < 0.01$). The average number of dilations was 5 (range of 1 to 16, median of 3). Nine of 13 patients were initially G-tube dependent (Score 7). After treatment, all except 1 patient became G-tube independent; 5 patients were on regular diet (Score 2). There were no major complications.

Conclusion: Dysphagia may affect up to 64% of patients after CRT for HNC and esophageal stenosis contributes significantly. This study presents a paradigm for management and technical considerations, including the use of the TNE, which is versatile for diagnostic and therapeutic maneuvers during treatment of esophageal stenosis.

11:27-11:57 AM

WEDNESDAY, MAY 14, 2014

SESSION IV:

Bench to Bedside

Moderators: Peter Belafsky, MD
Nazaneen Grant, MD

Broyles-Maloney Award Winner

STEM CELL-DERIVED TISSUE ENGINEERED CONSTRUCTS FOR HEMILARYNGEAL RECONSTRUCTION

Stacey Halum, MD, Presenter and Co-Author
Khadijeh Bijangi-Vishehsaraei, PhD, Co-Author
Hongji Zhang, MD, Co-Author
John Sowinski, BS, Co-Author
Marco Bottino, DDS, MSc, PhD, Co-Author

INDIANAPOLIS, IN

Objective: While a tissue engineered larynx from autologous stem cells may be the ideal laryngeal replacement option, we currently have no methods to tissue engineer viable, innervated laryngeal muscle. The aim of this study is to compare three strategies for creating tissue engineered muscle on polymer-based constructs for hemilaryngeal reconstruction.

Method: Primary muscle progenitor cell cultures were derived from syngeneic F344 rat skeletal muscle biopsies. Cartilage-mimicking polymer was developed from electrospun poly (D,L-lactide-co- ϵ -caprolactone (PCL). Twenty F344 rats underwent resection of the outer hemilaryngeal cartilage with underlying laryngeal adductor muscle. Defects were repaired with muscle stem cell (MSC) derived muscle-PCL constructs (n=5), myotube (MT) derived muscle-PCL constructs (n=5), motor endplate-expressing (MEE) muscle-PCL constructs (n=5) or PCL alone for controls (n=5). Outcomes at one month included animal survival, muscle thickness, and innervation status.

Result: All study animals survived the one month implant period with appropriate weight gain. The MEE group demonstrated the greatest muscle thickness, and strongest innervation based on EMG activity and the percentage of motor endplates with nerve contact.

Conclusion: Engineered muscle expressing motor endplates prior to implantation demonstrates more viable muscle and enhanced innervation, suggesting this novel approach may be useful in the development of a tissue engineered laryngeal replacement.

11:27-11:57 AM

WEDNESDAY, MAY 14, 2014

VOLUMETRIC MRI ANALYSIS PRE AND POST TRANSORAL ROBOTIC-ASSISTED POSTERIOR GLOSSECTOMY & UPPP FOR OSA

Rebecca Chiffer, MD, Presenter and Co-Author

Richard Schwab, MD, Co-Author

Erica Thaler, MD, Co-Author

PHILADELPHIA, PA

Objective: To quantitatively measure volumetric changes in upper airway & soft tissue structures using MRI pre & post transoral robotic (TOR)-assisted posterior glossectomy & UPPP for OSA.

Methods: Patients with OSA undergoing TOR-assisted posterior glossectomy & UPPP had upper airway MRIs pre & post-op. Structure volumes from the hard palate to base of tongue were measured using Amira software; percent change in volume for each structure was calculated between pre/post-op MRIs. Mean changes were correlated with surgical outcome using pre/post-op PSG.

Results: Nineteen pre/post-op MRIs & 18 pre/post-op PSGs were analyzed. Total airway (retropalatal [RP] + retroglottic [RG] + retroepiglottic) volume increased by 19.4% ($p=0.030$). Soft palate & tongue volumes decreased by 18.3% ($p=0.002$) & 5.8% ($p=0.013$), respectively. The RP & total lateral wall (RP+RG) volumes decreased by 49.8% ($p=0.0001$) & 17.9% ($p=0.008$), respectively. Volume changes in other structures were not statistically significant. 11 patients had surgical success (AHI decrease $\geq 50\%$ & final AHI < 20) with a mean AHI decrease of 81.6%; 7 patients were non-successes with a mean AHI increase of 0.35% ($p=0.0005$). Decrease in RP lateral wall volume correlated with a decrease in post-op AHI.

Conclusion: Airway, tongue, soft palate & lateral wall volumes change significantly after TOR-assisted posterior glossectomy & UPPP. These volumetric changes may correlate with surgical outcome. Volumetric upper airway MRI may be a helpful tool to predict surgical success.

XENOGRAFT MODEL FOR THERAPEUTIC DRUG TESTING IN RECURRENT RESPIRATORY PAPILLOMATOSIS

Simon Best, MD, Presenter and Co-Author

Julia Ahn, BS, Co-Author

Jennifer Woo, MS, Co-Author

Belinda Akpeng, Co-Author

Steven Zeitels, MD, Co-Author

Sara Pai, MD, PhD Co-Author

BALTIMORE, MD

Introduction: Identifying effective treatment for papillomatosis is limited by a lack of animal models and there is currently no pre-clinical model for testing potential therapeutic agents. We hypothesized that xenografting of papilloma may facilitate in vivo drug testing to identify novel treatment options.

Methods: Case report

Results: A biopsy of fresh pulmonary papilloma was xenografted into a NSG (NOD-scid-IL2Rgammanull) mouse. The xenograft began growing after 5 weeks and was serially passaged over multiple generations. Each generation showed a consistent log-growth pattern and in all xenografts the presence of the HPV genome was confirmed by PCR. Histopathologic analysis demonstrated that the squamous architecture of the original papilloma was maintained in each generation. In vivo drug testing with bevacizumab (5 mg/kg i.p. twice weekly for three weeks) showed a dramatic therapeutic response compared to saline control.

Conclusions: We report here the first successful case of serial xenografting of a pulmonary papilloma in vivo with a therapeutic response observed with drug testing. In severely immunocompromised mice, the HPV genome and squamous differentiation of the papilloma can be maintained for multiple generations. This is a feasible approach to identify therapeutic agents in the treatment of papillomatosis.

11:27-11:57 AM

WEDNESDAY, MAY 14, 2014

LARYNGOPHARYNGEAL IGG4 RELATED DISEASE: A CASE SERIES AND LITERATURE REVIEW

Lindsay Reder, MD, Presenter and Co-Author

Matthew Mori, MD, Co-Author

Phillip Song, MD, Co-Author

BOSTON, MA

Objectives: IgG4-related disease (IgG4-RD) is a recently identified entity characterized by tumor-like growths, storiform fibrosis, and dense lymphoplasmacytic infiltrate with IgG4-positive plasma cells. After the pancreatobiliary system, the head and neck (HN) is the second most common site for manifestations of IgG4-RD. HN manifestations encompass several previously described disorders such as chronic sclerosing sialadenitis (Küttner tumor) and Mikulicz disease involving parotid and lacrimal glands. Since the identification of IgG4-RD, there have been reports of other HN subsite involvement including one report of long-standing laryngeal involvement. However, there have been no reports of pharyngeal involvement. Here we describe the diagnosis, clinical course, and treatment of 3 patients that presented with primary laryngopharyngeal IgG4-RD.

Methods: The presentation, diagnosis and management of three patients who were ultimately diagnosed with laryngopharyngeal IgG4-RD are described and followed by a literature review.

Results: Three patients presented to the senior author with various complaints including pharyngeal discomfort, cough, dysphagia and hoarseness. Flexible endoscopy revealed mucosalized soft tissue deposits in various laryngopharyngeal subsites and microdirect laryngoscopy with biopsy was performed for each patient. Although initial pathology results were unclear, immunohistochemistry eventually revealed positivity for IgG4. All patients were referred to rheumatology and treated systemically with improvement of symptoms.

Conclusions: IgG4-RD can present in a variety of locations in the HN. Laryngopharyngeal manifestations can be quite variable and diagnosis depends on clinical and histopathological analysis. This is a new entity that should be considered in patients with unclear pathologic diagnoses.

Thursday, MAY 15, 2014

Agenda at a Glance

12:00-1:00pm	ABEA Business Meeting Presentation of New Members (Members Only)
1:00-1:03pm	Presidential Welcome
1:03- 1:06pm	Chevalier Jackson Award Presentation
1:06- 1:46pm	Chevalier Jackson Lecture
1:46- 2:03pm	Session V: Is It Real or Is It Simulated?
2:03-2:45pm	Panel II: What Can Smart People Learn From Dummies?
2:45-3:00pm	Break with Exhibitors
3:00-3:20pm	ABEA: Where are We and Where We Are Going
3:20-3:56pm	Session VI: Pediatric Airway
3:56-4:11pm	Foreign Body Case Presentations and Award
4:11-4:59pm	Session VII: Airway Challenges
4:59-5:00 pm	Presidential Close/ Introduction of New President
5:00pm	Adjourn

1:03-1:06PM

THURSDAY, MAY 15, 2014

Chevalier Jackson Award 2014:

Michael Rothschild, MD

Chevalier Jackson Award Recipients

1959-2014

1959	Louis H. Clerf, MD	1991	William Montgomery, MD
1960	(no award)	1992	John A. Tucker, MD
1961	Herman J. Moersch, MD	1993	Gerald B. Healy, MD
1962	Paul H. Holinger, MD	1994	Vincent J. Hyams, MD
1963	Edwin N. Broyles, MD	1995	Lauren D. Holinger, MD
1964	Leroy A. Schall, MD	1996	Stanley M. Shapshay, MD
1965	Herbert W. Schmidt, MD	1997	Robert H. Ossoff, MD
1966	Paul G. Bunker, MD	1998	John Frederickson, MD
1967	Joel Pressman, MD	1999	Eiji Yanagisawa, MD
1968	Verling K. Hart, MD	2000	William Montgomery, MD
1969	Joseph P. Atkins, MD	2002	Jack L. Gluckman, MD
1970	Anderson C. Hilding, MD	2003	Ellen M. Friedman, M.D.
1971	Robert M. Lukens, MD	2004	Robin T. Cotton, M.D.
1972	Charles M. Norris, MD	2005	Charles W. Vaughn, MD
1973	Arthur M. Olsen, MD	2006	Andrew Blitzer, MD, DDS
1974	Charles F. Ferguson, MD	2007	Gayle E. Woodson, MD
1975	Shigeto Ikeda, MD	2008	Robert J. Toohill, MD
1976	Blair W. Fearon, MD	2009	Peter Koltai, MD
1977	Francis W. Davidson, MD	2010	Clarence T. Sasaki, MD
1978	Seymour R. Cohen, MD	2011	Peak Woo, MD
1979	M. Stuart Strong, MD	2012	Frederick McGuirt Sr, MD
1980	DeGraff Woodman, MD	2013	Seth Pransky, MD
1981	Albert H. Andrews Jr., MD	2014	Michael Rothschild, MD
1982	Gabriel F. Tucker, Jr., MD		
1983	Howard A. Andersen, MD		
1984	Paul H. Ward, MD		
1985	Bruce N. Benjamin, MD		
1986	Loring W. Pratt, MD		
1987	Robert S. Fontana, MD		
1988	Charles Cummings, MD		
1989	Bernard R. Marsh, MD		
1990	David R. Sanderson, MD		

1:06-1:46PM

THURSDAY, MAY 15, 2014

Chevalier Jackson Lecture:

Robotics: Haptics and Beyond!

Katherine Kuchenbecker, PhD

SESSION V:

Is It Real or Is It Simulated?

Moderators: Seth Dailey, MD
Maya Sardesai, MD

1:46-2:03PM

THURSDAY, MAY 15, 2014

SIMULATION MODEL FOR TRANSCERVICAL LARYNGEAL INJECTION PROVIDING REAL-TIME FEEDBACK

Tiffany Ainsworth, MD, Presenter and Co-Author

James Kobler, MD, Co-Author

James Burns, MD, Co-Author

BOSTON, MA

Objectives: To develop and evaluate a model to facilitate skill acquisition in transcutaneous laryngeal injections.

Methods: Laryngeal cartilage models were cast in resin from molds of a cadaver larynx. The internal laryngeal tissues were cast separately in gelatin. Thyroarytenoid (TA) 'muscles' were simulated by coating conductive electrodes with wax and embedding them in gelatin. This 'soft tissue' block inserted into the resin framework. Paired gel/wax posterior cricoarytenoid (PCA) 'muscles' were shaped and stuck to the cricoid lamina. Gel covered the model to simulate neck tissues and an elastic suspension imparted realistic laryngeal mobility. Wires connected muscles to a circuit incorporating a cell phone and speaker. A needle electrode completed the circuit when inserted in the target muscle, resulting in audible sound. Face validation by the senior author confirmed appropriate tactile feedback and anatomical realism. Otolaryngologist's pilot tested the model, completing before/after questionnaires.

Results: The models were constructed using readily available supplies. They provided tactile and audio feedback during needle placement, simulating EMG-guided injections. Five of six otolaryngologists demonstrated higher likert-scale scores on questions regarding comfort with injections after using the model.

Conclusion: This is the first study to describe a simulator for training transcervical injection skills required for botulinum toxin therapy. Otolaryngologists reported increased comfort with transcervical injection.

PILOT TESTING OF A NOVEL SURGICAL SIMULATOR FOR ENDOSCOPIC ZENKER'S DIVERTICULOTOMY

John Paul Giliberto, MD, Presenter and Co-Author

Nathan Wiebracht, Co-Author

Charles Myer, MD, Co-Author

Keith Casper, MD, Co-Author

Meredith Tabangin, Co-Author

Kalaan Johnson, Co-Author

CINCINNATI, OH

Objective: Restrictions on resident work hours and the increasing purview of otolaryngology reduce the efficacy of the traditional surgical training model. With the limited patient numbers and specialized instrumentation of endoscopic Zenker's diverticulotomy (EZD), simulation may be useful to improve training. The purpose of this study is to develop and evaluate a surgical simulator for EZD.

Method: An EZD model was designed using an intubation trainer and disposable diverticulum inserts. Performance of otolaryngology residents on multiple simulations was evaluated with an objective structured assessment tool and time to completion. Pre and post-encounter surveys were completed.

Result: More experienced trainees (PGY3-5, n=11 vs. PGY1-2, n=6) had shorter times to completion ($p<.001$) and higher assessment scores on initial attempts ($p=.006$). Both groups showed significant improvements from initial to final attempts on 30 point scales for global rating by 6.2 ± 4.2 (mean \pm SD, $p<.001$), and for task specific performance by 5.4 ± 5.9 ($p<.002$). Time to completion decreased by 64.9 ± 28.2 seconds ($p<.001$). Surveys showed confidence improved 2 points on a 5-point scale ($p<.001$), and 94% agreed that the model would improve resident performance with actual EZD.

Conclusion: Pilot testing of an EZD simulator demonstrated acceptability and construct validity. All levels of trainees showed improved confidence, time to completion, and objective assessment scores. This simulator appears to improve EZD training and warrants further evaluation.

2:03-2:45PM

THURSDAY, MAY 15, 2014

PANEL II:

What Can Smart People Learn From Dummies?

Moderator: Ellen S. Deutsch, MD, FACS, FAAP

Panelists: James Kearney, MD
Milan Amin, MD
Vinay Nadkarni, MD

2:45-3:00 PM

THURSDAY, MAY 15, 2014

BREAK WITH EXHIBITORS

3:00-3:20PM

THURSDAY, MAY 15, 2014

ABEA:

Where We Are and Where We Are Going

Committee Updates

Difficult Airway Committee:

Karen Zur, MD, Chair

New Technology Committee:

Paul Willging, MD, FACS, Chair

Oncology Committee:

Michael Hinni, MD, Chair

Research and Education Committee:

Seth Dailey, MD, Chair

3:20-3:56PM

THURSDAY, MAY 15, 2014

SESSION VI:

Pediatric Airway

Moderators: Scott Rickert, MD
Dana Thompson, MD, FACS

3:20-3:56PM

THURSDAY, MAY 15, 2014

PEDIATRIC DRUG-INDUCED SLEEP ENDOSCOPY (DISE): INDICATIONS AND SURGICAL OUTCOMES

Connie Kuo, MD, Presenter and Co-Author

Maida Chen, MD, Co-Author

David Horn, MD, Co-Author

Sanjay Parikh, MD, Co-Author

SEATTLE, WA

Objectives: DISE can identify site(s) of upper-airway obstruction not otherwise detectable on routine physical exam in pediatric patients with sleep-disordered breathing (SDB). Our aims are to describe the indications for DISE and the likelihood of DISE-directed interventions for different indications in children with SDB.

Methods: Retrospective chart review of sleep endoscopy findings and DISE-directed interventions was performed in 61 children undergoing DISE. DISE-directed intervention was defined as performing obstruction-relieving surgery excluding primary adenotonsillectomy or deciding to forgo surgery for medical management of SDB based on DISE findings.

Results: Of the 61 subjects undergoing DISE (54% male, mean age 4.7±4.1 years), 41% had comorbidities (i.e., obesity, chromosomal abnormalities, craniofacial anomalies). Three primary indications for DISE emerged: Group A (clinically small tonsils, N=38), Group B (residual OSA after adenotonsillectomy, N=14), and Group C (tonsillar hypertrophy with additional risk factors for multilevel obstruction, N=9). Overall, 93% of sleep endoscopies revealed positive findings of upper-airway obstruction. Sites of obstruction included: adenoid (44%), oropharyngeal (34%), base of tongue/lingual tonsil (49%), and/or laryngomalacia (38%). Multilevel obstruction was present in 74%. Compared to Group A, higher rates of DISE-directed interventions occurred in Group B subjects and approached significance (86% vs. 63%; OR 4.7 [95th% CI: 0.77-28.6, p=0.09]), while Group C subjects showed significantly lower rates of DISE-directed interventions (22%; OR 0.14 [95th% CI: 0.02-0.86, p=0.03]), when adjusted for age, gender, and comorbidities.

Conclusions: Rates of DISE-directed intervention varied significantly by indication. These findings may serve to direct surgical planning and treatment guidelines for pediatric SDB.

INDICATION FOR DISE	Small tonsils on exam (Referent group)	Persistent OSA after T&A	Large tonsils with risk factors for multilevel obstruction
% UNDERGOING DISE-DIRECTED INTERVENTION	63%	86%	22%
ODDS RATIO	--	4.7	0.14
CI	--	0.77-28.6	0.02-0.6
P-VALUE	--	0.09	0.03

3:20-3:56PM

THURSDAY, MAY 15, 2014

Seymour R. Cohen Award Winner

INTER-ARYTENOID SODIUM CARBOXYMETHYLCELLULOSE GEL INJECTION FOR MANAGEMENT OF PEDIATRIC ASPIRATION

David Horn, MD, Presenter and Co-Author

Kimberley DeMarre, MD, Co-Author

Sanjay Parikh, MD, Co-Author

SEATTLE, WA

Objective: Investigate the role of interarytenoid injection laryngoplasty (IL) in the management of pediatric aspiration.

Method: Patients with chronic aspiration based on videofluoroscopic swallowing study (VFSS), who underwent suspension laryngoscopy and IL were included. Clinical improvement was defined as successful advancement of feeds to thinner consistencies.

Results: Twenty-five patients (mean age at intervention = 34.4 months) were identified, 5 who had a Type-1 Posterior Laryngeal Cleft (PLC-1). Of 23 patients with sufficient follow-up, clinical improvement was observed in 13 (56.5%). Children who improved after IL were no more likely to have a PLC-1 than children who did not improve. Serious comorbidities were more prevalent in children who improved after IL than in children who did not improve. Presence of a PLC-1 was associated with older age and higher GERD prevalence relative to absence of PLC-1. All PLC-1 patients and 25% without PLC-1 who improved after IL demonstrated recurrence of symptoms within 3 months. Three patients underwent endoscopic repair. Repair was successful in 2 patients who improved after IL but not in the patient who did not improve after IL.

Conclusion: Dysphagia can improve after IL even in patients with normal anatomy. IL can be performed to improve selection of PLC-1 patients for definitive endoscopic repair. Further prospective research is needed to understand whether interarytenoid incompetence plays a role in some patients with dysphagia, whom do not have a PLC-1.

SURGICAL MANAGEMENT OF PEDIATRIC POSTERIOR GLOTTIC DIASTASIS

Douglas Sidell, MD, Presenter and Co-Author

Stephani Zacharias, PhD, SLP, Co-Author

Karthik Balakrishnan, MD, MPH, Co-Author

Micheal Rutter, MD, Co-Author

Alessandro de Alarcon, MD, Co-Author

CINCINNATI, OH

Objective: Glottic incompetence is a main component of dysphonia in patients who have undergone prior airway reconstruction or have sustained neonatal intubation trauma. Frequently this occurs in the posterior glottis and is called Posterior Glottic Diastasis” (PGD). The purpose of this investigation is to report our experience using endoscopic posterior cricoid reduction and endoscopic posterior arytenoid flap reconstruction for the treatment of PGD in the pediatric patient and young adult. Each procedure is described in detail and voice outcomes are reported.

Methods: All patients undergoing surgical correction of PGD between 2010 and 2014 are reviewed. In addition to extracting standard demographics, outcomes reviewed include pre-and postoperative acoustic and aerodynamic voice data, the Pediatric Voice Handicap Index (PVHI), the consensus auditory perceptual evaluation of voice (CAPE-V) and videostroboscopy.

Results: There were a total of 6 patients with a history of LTR who underwent surgical correction of PGD. 3 patients underwent Endoscopic posterior cricoid reduction, two patients underwent endoscopic posterior arytenoid flap, and one patient underwent open posterior cricoid reduction. Subjective and Objective voice outcomes were noted to improve for all patients in this study.

Conclusion: Endoscopic management of PGD can be an effective means by which posterior glottic incompetence can be managed in patients with a history of prior airway reconstruction or traumatic neonatal intubation.

3:20-3:56PM

THURSDAY, MAY 15, 2014

PEDIATRIC TRACHEOSTOMY: TIMING OF FIRST TUBE CHANGE AND SURVEILLANCE FOR SUPRASTOMAL GRANULOMA

Nicholas Van Buren, MD, Presenter and Co-Author

Evan Narasimhan, BS, Co-Author

Jonathan Curtis, BS, Co-Author

Harlan Muntz, MD, Co-Author

Jeremy Meier, MD, Co-Author

SALT LAKE CITY, UT

Objectives: No consensus exists on appropriate timing for the first tracheostomy tube change or the necessity for long-term surveillance bronchoscopy. The purposes of this study are to: 1) Evaluate the safety of early tracheostomy change, 2) Evaluate patterns of surveillance bronchoscopy, 3) Evaluate age and ventilation dependency as risk factors for granulomas.

Methods: A retrospective review was conducted of all children undergoing tracheostomy at a tertiary children's hospital between 2008-2013.

Results: A total of 179 children undergoing tracheostomy were identified. The average age was 4.3 ± 5.7 yrs. The initial tracheostomy tube change occurred on postoperative day 3 (POD#3) in 74 children (41.3%) safely without any complications. Rigid bronchoscopy was performed 127 times in 73 patients. Bronchoscopy identified suprastomal granulation in 32 of 77 (42%) procedures when the patient was asymptomatic, compared to 46 of 50 (92%) of bronchoscopies when granulation was suspected. Patients <1 year old had a higher prevalence of suprastomal granulation (44%) compared to those >1 year of age (28%), $p < 0.05$. Ventilator dependency did not increase the risk for suprastomal granulation formation.

Conclusions: Early tracheostomy tube change was safely performed in a significant portion of this population. Routine tube change on POD#3 in many children could save resources by reducing the length of ICU and hospital stays. While young age was a risk factor for suprastomal granuloma formation, ventilator dependency was not.

NEGATIVE BRONCHOSCOPIES: CAN WE LOWER THE RATE? AN ANALYSIS OF AIRWAY FOREIGN BODY MANAGEMENT

Benjamin Anthony, MD, Presenter and Co-Author

Ellen Friedman, MD, Co-Author

HOUSTON, TX

Objectives: To identify characteristics in patients who undergo positive and negative bronchoscopy for a suspected airway foreign body (AFB).

Methods: Retrospective review of children with suspected AFB between 2008 and 2012. Characteristics of the cohort with an actual AFB on bronchoscopy were then compared to those with a negative bronchoscopy.

Results: There were 145 patients who went to the operating room for suspected AFB during the study period. Only 92 patients were found to have an AFB, resulting in a negative bronchoscopy rate of 37%. The specific findings of choking, asymmetric breath sounds, and wheezing were statistically more common in those with an AFB. There were patients without positive physical findings in both cohorts; however, this was statistically more common in those without an AFB. Chest roentograms (CXR) were of limited value with a sensitivity and specificity of 62% and 57%, respectively. Although only 20 patients had a chest computed tomography (CT) scan in the work up, 100% were clinically significant. 4 CT scans were diagnostic of an AFB and 16 patients avoided bronchoscopy after CT ruled out AFB.

Conclusions: The negative bronchoscopy rate was 37%. CXR alone is not helpful in ruling in or out AFB as a diagnosis. Our data indicate that CT scans of the chest have a sensitivity of nearly 100% and can be utilized in stable patients without specific clinical indicators to decrease the number of negative bronchoscopies. This may shift the paradigm in the work up of these patients.

3:56-4:11PM

THURSDAY, MAY 15, 2014

Foreign Body:

Case Presentations and Presidential Citation for Foreign Body Management

Moderator: Gresham Richter, MD

FOREIGN BODY CASE PRESENTATION #1

MANAGEMENT OF POLISHED STONES/ RIVER ROCKS AS AERODIGESTIVE FOREIGN BODIES

Stanley Voigt, MD, Presenter and Co-Author

Andrew Scott, MD, Co-Author

BOSTON, MA

Objective: To present our management of two difficult pediatric aerodigestive foreign bodies

Methods: We present two cases of pediatric foreign bodies in the form of polished stones removed from the aerodigestive tract. The first case involved an 8 year-old male with a retained radio-opaque bronchial foreign body confirmed on plain film imaging. He was promptly taken to the OR for Microdirect Laryngoscopy with Rigid Bronchoscopy. The smooth rock within the main stem bronchus could not be removed initially with peanut optical forceps or toothed graspers. At this point, decision was made to pass a small Fogarty catheter through the suction port of the bronchoscope and past the rock. The balloon was inflated and the rock was successfully retrieved. A second case involved a polished rock in the esophagus that could not be delivered past the cricopharyngeus with toothed graspers. The foreign body was pushed into the stomach and placed into a Roth net then withdrawn successfully. A brief review of the history of pediatric foreign body retrieval is also discussed.

Result: Successful retrieval of two Polished River rocks after initial failure with conventional instruments

Conclusion: Both cases highlight the difficulty of retrieving polished rocks with conventional instruments and suggest alternative means of retrieval.

3:56-4:11PM

THURSDAY, MAY 15, 2014

FOREIGN BODY CASE PRESENTATION #2

IN-OFFICE ENDOSCOPIC REMOVAL OF EXTRUDING CALCIUM HYDROXYLAPATITE (CAHA) VOCAL FOLD IMPLANT

Libby Smith, DO, Presenter and Author

PITTSBURGH, PA

A 95-year old man presented with dysphonia and thin-liquid aspiration following hip replacement. Laryngeal exam showed bilateral vocal fold (VF) atrophy and hypomobility. He had a remote history of external beam radiation (XRT) for T1 laryngeal cancer. Vocal fold augmentation was offered. He preferred to avoid general anesthesia (GA) and have just one procedure. He underwent uneventful in-office bilateral VF injection with CAHA. After injection, his dysphagia resolved, but his voice progressively worsened. Four weeks later, his left VF became immobile and erythematous, treated unsuccessfully with steroids and antibiotics. At 2 months, he developed new-onset cough. Flexible laryngoscopy demonstrated left VF CAHA implant extrusion.

The patient was prepared for an in-office procedure with nasal and topical laryngeal anesthesia. With visualization from flexible videolar- yngoscopy, various instruments were used for urgent removal of the foreign body (FB), including per-oral Abrams cannula, per-oral cup forceps, and transnasal endoscopic forceps. The extruding implant was delivered through the superior surface of the left VF (VIDEO). The patient tolerated the procedure well. The patient's cough resolved, but his dysphonia persisted.

Previous XRT may have been a factor in this complication. The safety of a laryngeal CAHA implant in an irradiated field needs evaluation. The development of new technology allows for removal of some airway foreign bodies in the office, thus avoiding GA and the airway FB risks associated with GA.

PRESIDENTIAL CITATION FOR FOREIGN BODY MANAGEMENT

IN-REMOVAL OF A WIRE BRISTLE FROM THE HYPOPHARYNX USING SUSPENSION, MICROSCOPE AND FLUOROSCOPY

Matthew Naunheim, MD, MBA, Presenter and Co-Author

Matthew Dedmon, MD, PhD, Co-Author

Matthew Mori, MD, Co-Author

Ahmad Sedaghat, MD, PhD, Co-Author

Jayne Dowdall, MD, Co-Author

BOSTON, MA

Objective: To present a case of extraction of a wire bristle from the pharynx using multiple modalities of localization, review techniques of foreign body removal from the upper aerodigestive tract, and discuss the public safety hazard of wire grill brushes.

Method: Retrospective review of a case of removal of a bristle from the pharynx using suspension microlaryngoscopy and C-arm fluoroscopy. Radiographic findings are shown and discussed. A literature review on methods of foreign body removal is presented.

Result: A 40-year-old woman presented to the emergency room with throat pain after eating chicken prepared on a grill. Computed tomography showed a 12.3cm x 0.1cm linear structure embedded in the posterior pharyngeal wall, approximately 8.5mm from the internal carotid artery. The patient was taken urgently to the operating room. Direct microscopic visualization did not show a site of entry. Fluoroscopy was used to locate the bristle by visualizing a blunt metallic probe through both the operative microscope and C-arm display simultaneously. A mucosal incision was made, a small flap was raised, and the bristle was removed.

Conclusion: Concomitant use of microlaryngoscopy and C-arm fluoroscopy is a novel approach to foreign body removal. By leveraging multiple techniques for visualization, surgeons may be able to avoid open exploration. Additionally, this case highlights the importance of regulatory oversight and consumer awareness of the hazards of wire grill brushes.

4:11-4:59PM

THURSDAY, MAY 15, 2014

SESSION VII:

Airway Challenges

Moderators: Edward Damrose, MD, FACS
Newanmegha Young, MD

COMPARATIVE STUDY OF CRICOTRACHEAL RESECTION AND STAGED LARYNGOTRACHEOPLASTY FOR SUBGLOTTIC STENOSIS

Harry Ching, BS, Presenter and Co-Author

Abie Mendelsohn, MD, Co-Author

Isabelle Liu, MD, Co-Author

Jennifer Long, MD, PhD, Co-Author

Dinesh Chhethri, MD, Co-Author

Gerald Burke, MD, Co-Author

LOS ANGELES, CA

Objective: Cricotracheal resection (CTR) and laryngotracheoplasty (LTP) are open surgical treatments for severe subglottic stenosis. This study aims to compare the applications and outcomes of these techniques.

Method: Patients with subglottic stenosis at a tertiary academic institution from 2000-2012 were identified by diagnosis codes. Patients who underwent LTP or CTR were included. Records were reviewed for treatment data and outcomes. Patients with a history of head and neck malignancy or stenosis without cricoid involvement were excluded.

Result: 61 and 20 patients underwent LTP and CTR, respectively, with a mean follow-up of 3.8 years. When comparing patients receiving LTP and CTR, there was a significant difference in stenosis etiology ($p=0.014$). All 19 patients with stenosis due to trauma or autoimmune disease were offered LTP. The groups were similar in Cotton-Meyer grade ($p=0.102$). At last follow-up, 80.3% of LTP patients and 90.0% of CTR patients were decannulated. On multivariate analysis, there was a significant association between stenosis grade and decannulation in the LTP group ($p=0.01$). Decannulation was not associated with stenosis grade in the CTR group. In both groups, there was no significant association between decannulation and age, gender, stenosis etiology, or stenosis length.

Conclusion: CTR and LTP have both shown excellent long-term decannulation rates. Etiology and stenosis grade are likely to be determining factors when recommending specific surgical interventions for subglottic stenosis.

COMPLICATIONS AFTER CRICOTRACHEAL RESECTION AND ANASTOMOSIS FOR INFLAMMATORY AND NEOPLASTIC STENOSES

Cesare Piazza, Presenter and Co-Author

Giorgio Peretti, Professor, Co-Author

Francesca Del Bon, MD, Co-Author

Paola Grazioli, MD, PhD, Co-Author

Stefano Mangili, MD, Co-Author

Alberto Paderno, MD, Co-Author

Piero Nicolai, Professor, Co-Author

BRESCIA, ITALY

Objective: To compare the complication of crico-tracheal resection and anastomosis (CTRA) for treatment of inflammatory versus neoplastic stenoses.

Methods: We retrospectively evaluated 135 patients submitted to CTRA: 47 (35%) for neoplastic stenoses (15 thyroid papillary cancer and 6 other thyroid histotypes, 11 chondrosarcomas, 3 minor salivary gland tumors, and 12 others) (Group A), and 88 (65%) for inflammatory airway stenoses (Group B).

Results: In Group A we observed 15 (32%) early postoperative complications (within 15 days), 9 of whom major: 2 anastomotic dehiscence, 2 bleeding, 2 laryngeal oedema requiring tracheotomy, 1 pulmonary embolism, 1 respiratory insufficiency, and 1 bilateral pneumothorax. Late complications were 7, 5 of whom major: 1 heart failure, 2 late dehiscence with tracheoesophageal fistula, and 2 respiratory insufficiency. Permanent tracheotomy was required in 3 (6%) patients. In Group B we encountered 46 (52%) early complications, 23 of whom major: 7 anastomotic dehiscence, 4 bleeding, 3 bilateral vocal fold palsy, 3 acute myocardial infarction, 2 heart failure, 2 respiratory insufficiency, 1 oedema requiring prolonged intubation, and 1 perioperative death. Late complications were 22, 2 considered as major: 2 tracheo-esophageal fistulas requiring revision surgery. Permanent tracheotomy was needed in 2 (2%).

Conclusion: Even though in this series the success rate of CTRA is high (94% and 98%), it should be always regarded as a major surgical procedure with a not negligible prevalence of complications.

THE ROLE OF PFTS IN THE EVALUATION AND MANAGEMENT OF IDIOPATHIC SUBLGLOTTIC STENOSIS

Shannon Kraft, MD, Presenter and Co-Author

Joshua Schindler, MD, Co-Author

Kevin Sykes, MPH, Co-Author

KANSAS CITY, KS

Objective: Examine our experience with endoscopic management of idiopathic subglottic stenosis (iSGS), identifying pulmonary function test (PFT) values that can be used to quantify outcomes.

Methods: Retrospective chart review

Results: Twenty-five patients with a new diagnosis of iSGS were seen between 2006 and 2012. Median age at surgery was 45.3 years (IQR = 38.5-67.0), and median BMI 28.7 kg/m² (IQR = 23.5-32.1). 45 procedures were performed. Median pre-operative stenosis as determined by CT was 56.8% (Cotton-Meyer grade 2). Intra-operatively, typical stenoses began 15 mm below the true vocal folds and was 12 mm long. Median follow-up was 21.4 months (IQR = 5.1 – 43.1). For patients receiving multiple dilations, median time between the first and second procedure was 23.7 months. Three patients proceeded to open resection. Seventeen patients had pre- and post-operative PFTs. Four parameters demonstrated a statistically significant improvement: 1) PEF (absolute change = 2.54 L/s, percent change = 56.7% , p = < 0.001), 2) PIF (absolute change = 1.57 L/s, percent change = 66.8% , p = 0.001), 3) FEV1/PEF (absolute change = 0.44, percent change = 56.0%, p = 0.001) and 4) FIF50% (absolute change = 1.71, percent change = 92% , p = 0.001). FEV1, FVC, FEV 25-75% and PEF/PIF did not change significantly. PIF was the only parameter impacted by using a larger balloon (p = 0.047).

Conclusions: PEF, PIF, FEV1/PEF and FIF50% are common PFT values that can be used to quantify operative results in patients with iSGS.

4:11-4:59PM

THURSDAY, MAY 15, 2014

EFFECT OF DIAGNOSING AND TREATING PARADOXICAL VOCAL FOLD MOTION DISORDER ON ASTHMA MEDICATION USE

Laura Matrka, MD, Presenter and Co-Author

Scott Kramer, MD, Co-Author

Brad DeSilva, MD, Co-Author

L. Arick Forest, MD, Co-Author

COLUMBUS, OH

Objectives: The objective is to determine whether the diagnosis and/or treatment of paradoxical vocal fold motion disorder (PVFMD) may lead to decreased use of asthma medication.

Study Design: Prospective observational study.

Methods: Patients newly diagnosed with PVFMD at the JamesCare Voice and Swallowing Disorders Clinic at Ohio State were recruited to participate. Medication questionnaires were completed at the initial visit, at the first return visit for laryngeal control therapy, and at six months.

Results: Forty-four patients have been recruited thus far (of a total of 200), and 35/44 patients presented initially on some sort of asthma medication. Thirteen of 44 have completed follow-up questionnaires. Two of 13 showed decreased medication use after diagnosis alone. Seven of 13 showed decreased medication use after a partial therapy course, and 2/13 after a complete therapy course. Only 1/13 showed no change in medication use after diagnosis, and this was before therapy. Of those completing a questionnaire, 1/13 patients was never on asthma medication.

Conclusions: Diagnosis and treatment of PVFMD may lead to a decline in or cessation of unnecessary asthma medication, foregoing potential harmful side effects and decreasing patient cost. This is the first study, prospective or otherwise, to demonstrate a decrease in health care utilization with diagnosis and treatment of PVFMD.

ONSET, PROGRESSION AND TREATMENT OF ACEI INHIBITOR-RELATED ANGIOEDEMA

Norman Chan, MD, Presenter and Co-Author

Adaeze Chikwem, BS, Co-Author

Ahmed Soliman, MD, Co-Author

PHILADELPHIA, PA

Objective: To determine the time of onset, progression, and treatment of angioedema after initiating angiotensin converting enzyme inhibitor (ACEI) therapy.

Method: Retrospective chart review

Result: We identified 73 patients with ACEI-related angioedema who presented to a tertiary care hospital between 1/1/12 and 12/31/12. There was a female preponderance at 62.5%. Patients presented anytime from 1 day to 20 years after starting an ACEI with about half of the patients (50.6%) presenting after taking an ACEI for ≥ 1 year. Affected areas included the face in 12.5% of patients, lips (60.2%), tongue (39.7%), floor of mouth (6.8%), soft palate/uvula (17%), and larynx (28.4%). Twenty-eight patients (31.8%) required airway intervention with 27 intubated and 1 requiring a cricothyroidotomy. Sixty-eight percent of patients with laryngeal edema were intubated; 6 patients (8%) were intubated after progression was noted on serial laryngoscopy. The majority of patients were treated with steroids, H1 and H2 blockers.

Conclusion: Angioedema may occur at any time after initiating ACEI use with more than 50% of cases presenting after 1 year of medication use. Laryngeal involvement occurs in a minority of patients but most required airway intervention.

4:11-4:59PM

THURSDAY, MAY 15, 2014

IMPACT OF DILATION AND LEVEL OF STENOSIS ON VOICE QUALITY IN LARYNGOTRACHEAL STENOSIS

Selmin Karatayli Ozgursoy, MD, Presenter and Co-Author

Alexander T. Hillel, MD, Co-Author

Paulette Pacheco-Lopez, MD, Co-Author

Kristine Teets, SLP, Co-Author

Heather Starmer, SLP, Co-Author

Simon R. Best, MD, Co-Author

Lee M. Akst, MD, Co-Author

BALTIMORE, MD

Objectives: To characterize voice quality in patients with laryngotracheal stenosis (LTS) related to level of stenosis, and assess impact of endolaryngeal dilation.

Methods: Retrospective chart review identified LTS patients who underwent endolaryngeal dilation from 2010-2013. Voice-related quality-of-life (V-RQOL) and GRBAS scores were compared pre- and post-operatively.

Results: Forty-nine patients were identified: 7 glottic, 11 subglottic, 19 proximal tracheal, and 12 multilevel (glottic plus subglottic or tracheal). Thirty-two had both pre- and post-operative VRQOL. Pre-operative VRQOLs for proximal tracheal/subglottic stenoses (mean 80.7, 78.1) were higher than glottic/multilevel stenoses (62.0, 40.7 respectively, $p=0.0003$). Among all patients, VRQOL improved following dilation (68.0 pre-operatively vs 79.5 post-operatively, $p=0.0042$). VRQOL improved within each subsite as well; only multilevel stenosis group alone reached statistical significance (40.7 vs 57.1, $p=0.043$). Pre- and post-operative GRBAS data for 13 available patients revealed improvement in all parameters following surgery – G: 1.88 to 1.58; R: 1.46 to 1.27; B: 1.00 to 0.96; A: 0.65 to 0.58 and S: 1.15 to 0.96.

Conclusion: Laryngotracheal stenosis is associated with dysphonia; glottic and multilevel stenosis impart greater voice handicap than tracheal or subglottic stenosis. Endoscopic dilation improves voice in patients with laryngotracheal stenosis, and degree of improvement relates to severity of initial dysphonia.

Table 1: VRQOL scores for Laryngotracheal stenosis patients

	N – total	N – with pre/ post VRQOL	Pre-dilation VRQOL	Post-dilation VRQOL
Overall	49	32	68.0 ± 24.7 *	79.5 ± 23.9 *
Multilevel	12	7	40.7 ± 13.7 ^	57.1 ± 22.6 ^
Glottic	7	5	62.0 ± 14.5	84.2 ± 12.3
Subglottic	11	9	78.1 ± 24.6	87.2 ± 26.8
Tracheal	19	11	80.7 ± 20.1	87.1 ± 19.0
Multilevel/Glottic	19	12	49.8 ± 17.3 #@	67.4 ± 21.8 #∞
Subglottic/Tracheal	30	20	79.4 ± 21.7@	87.1 ± 22.2 ∞

* p=0.0042

^ p=0.043

p=0.003

@ p=0.0003

∞ p=0.0176

4:11-4:59PM

THURSDAY, MAY 15, 2014

SAFETY OF OUTPATIENT AIRWAY DILATION

Yen-Bin Hsu, MD, Presenter and Co-Author

Edward Damrose, MD, Co-Author

STANFORD, CA

Objective: To evaluate the safety of outpatient airway dilation for adult patients with subglottic or tracheal stenosis.

Method: The records of patients treated with airway dilation between 2003 and 2013 by a single surgeon were reviewed. Outcomes of patients who underwent dilation as inpatients versus outpatients were compared. Three safety indicators were reported from administrative data for 30 days: emergency room visits, readmission, and 3 or more primary care physician visits. Postoperative hemorrhage, airway edema, tracheal rupture, reintubation, tracheostomy, or pneumothorax was also reviewed.

Result: One hundred fourteen dilations performed in 53 patients with airway stenosis were included. Outpatient dilation was performed in 93 (82%); 21 (18%) underwent the procedure in the inpatient setting. Complication rates among both groups were low. There were no major complications observed.

Conclusion: Outpatient airway dilation is a safe and feasible procedure. It can be routinely performed on an ambulatory basis.

5:00PM

THURSDAY, MAY 15, 2014

INTRODUCTION OF NEW PRESIDENT

ABEA ANNUAL MEETING

Broyles-Maloney Award

The Broyles-Maloney Award was established to encourage advancement of the art and science of bronchoesophagology and closely related subjects. Competition for the award is limited to persons whose abstracts are submitted for inclusion in the Annual Scientific Program. The award is given for outstanding manuscript, thesis or accomplishments in bronchoesophagology, laryngology or related science.

RECIPIENTS OF THE BROYLES-MALONEY AWARD

- | | |
|-------------------------------------|------------------------------------|
| 1988 Richard A. Kosarek, MD | 2000 Asif Amirali, MD |
| 1989 (no award) | Greg Tsai, MD |
| 1990 Thomas F. Dowling, MD | Nicole Schrader, MD |
| Jamie Koufman, MD | Donald Weisz, PhD |
| 1991 (no award) | Ira Sanders, MD |
| 1992 (no award) | 2001 (no award) |
| 1993 Jos. van Overbeek, MD | 2002 Shin-ichi Kanemaru |
| 1994 Steven D. Gray, MD | Hisayoshi Kojima, MD |
| 1995 Jonathan E. Aviv, MD | Akhmar Magrufov, MD |
| John H. Martin, PhD | Koichi Omori, MD |
| Ralph Sacco, MD | Yasuyuki Hiratsuka, MD |
| Beverly Diamond, PhD | Shigeru Hirano, MD |
| Andrew Blitzer, MD, DDS | Juichi Ito, MD |
| 1996 (no award) | Yasuhiko Shimizu, MD |
| 1997 Ira Sanders, MD | 2003 Ira Sanders, M. |
| Liancai Mu, PhD | 2004 Clarence T. Sasaki, MD |
| 1998 Nancy M. Bauman, MD | 2005 Tomoko Tateya, MD |
| Degiang Wang, MD | Ichiro Tateya, MD, PhD |
| Eric S. Luschei, PhD | Diane M. Bless, PhD* |
| Debra M. Jaffe, MD | 2006 (No award) |
| 1999 Robert Berkowitz, FRACS | 2007 J. Scott McMurray, MD |
| Qi-Jian Sun, PhD | Charles N. Ford, MD |
| 1999 Robert Berkowitz | Nadine P. Conner, MD |
| Qi-Jian Sun, PhD | |
| John Chalmers, PhD | |
| Paul Pilowsky, PhD | |

ABEA ANNUAL MEETING

RECIPIENTS OF THE BROYLES-MALONEY AWARD

- 2008** Tina L. Samuels, MS
Ethan Handler*, BS
Michael L Syring, BS
Joel H Blumin, MD
Joseph E Kershner, MD
Nikki Johnston, PhD
- 2009** Nikki Johnston, PhD
Clive W. Wells
Tina Samuels, MS
Joel Blumin, MD
- 2010** Sandeep Karajanagi, PhD
Gerardo Lopez-Guerra, MD
Hyoungshin Park, PhD
James B. Kobler, PhD
Daryush D. Mehta, SM
Yoshihiko Kumai, MD, PhD
James T. Heaton, PhD
Victoria L. M. Herrera, MD
Robert E. Hillman, PhD
Steven M. Zeitels, MD
- 2011** Mikhail Wadie, MD
Juan Li, MD
Clarence T. Sasaki, MD
- 2012** Satoshi Ohno, MD
Shigeru Hirano, MD, PhD
Shin-ichi Kanemaru, MD,
PhD
Masanobu Mizuta, MD
- 2013** Tina Samuels, PhD
Nikki Johnston, MD
Gary Stoner, MD
- 2014** Steven M. Zeitels, MD
James Burns, MD
Stacey Halum, MD
Khadijeh
Bijangi-Vishehsaraei, PhD
Hongji Zhang, MD
John Sowinski, BS
Marco Bottino, DDS, MSc,
PhD

ABEA ANNUAL MEETING

The Seymour R. Cohen Award

The Seymour R. Cohen Award for Pediatric Laryngology and Bronchoesophagology is presented to any resident, fellow or practicing physician who submits the best original paper in either basic research or clinical investigation pertaining to pediatric laryngology and bronchoesophagology.

RECIPIENTS OF THE SEYMOUR R. COHEN AWARD FOR PEDIATRIC LARYNGOLOGY AND BRONCHESOPHAGOLOGY

- | | |
|------------------------------------|-----------------------------------|
| 1979 Timothy A. Lim, MD | Gene Rider |
| 1980 Lauren D. Holinger, MD | Sylvan E. Stool, MD |
| 1981 Bruce N. Benjamin, MD | 2000 (no award) |
| 1982 John A. Tucker, MD | Scott M. Milkovich, PhD |
| 1983 John S. Supance, MD | Daniel Stool |
| 1984 Judson R. Belmont, MD | Gene Rider |
| Kenneth M. Grundfast, MD | Sylvan E. Stool, MD |
| 1987 Ellen M. Friedman, MD | 2001 (no award) |
| 1990 Glenn C. Isaacson, MD | Nancy M. Bauman, MD |
| 1991 Eric Mair, MD | Deqiang Wang, MD |
| Davis D. Parson, MD | Erich Luschei, MD |
| 1992 (no award) | (no award) |
| 1993 Steven C. Marks, MD | Robert G. Berkowitz, MD |
| Bernard Marsh, MD | 2002 No Award |
| 1994 (no award) | Ravindra G. Elluru, MD |
| 1995 John P. Bent, III, MD | Jeffrey A. Whitsett, MD |
| William Smits, MD | 2003 (no award) |
| Richard J. H. Smith, MD | 2004 James M. Ridgeway, MD |
| Nancy M. Bauman, MD | 2005 Richard D. Werner, MD |
| John W. Kim, MD | Robert A. Weatherly, MD |
| 1996 (no award) | Michael S. Detamore, PhD |
| 1997 Robert F. Ward, MD | Kiminori Sato, MD, PhD |
| Max M. April, MD | Hirohito Umeno, MD |
| Dimitry Rabkin, MD | Tadashi Nakashima, MD |
| 1998 Brian S. Jewett, MD | Satoshi Nonaka, MD |
| Raymond D. Cook, MD | Yasuaki Harabuchi, MD |
| Kenneth L. Johnson, MD | 2010 (no award) |
| Thomas C. Logan, MD | 2011 (no award) |
| Kristina W. Rosbe, MD | 2012 (no award) |
| Suresh K. Mukherji, MD | 2013 Kevin Huoh, MD |
| William W. Shockley, MD | Peter Koltai, MD |
| 1999 Ryan R. Stevens, MD | 2014 David Horn, MD |
| Geoffrey A. Lane, MD | Kimberley DeMarre, MD |
| Scott M. Milkovich, PhD | Sanjay Parikh, MD |
| Daniel Stool | |

ABEA ANNUAL MEETING

Steven D. Gray Resident Award

The Steven Dean Gray Resident Award was established as part of the continuing legacy of Dr. Gray in order to recognize excellence in resident research in both laryngology and bronchoesophagology.

Recipients Of The Steven D. Gray Resident Award

- 2003** Sarah Hodges, MD
- 2003** Randal Leung, MBBS
- 2004** Seth Cohen, MD
- 2004** Jonathan P. Lindman, MD
- 2005** Grace SY Yang, MD
- 2006** None
- 2007** Tsunehisa Ohno, MD
- 2008** J. Matthew Dickson, MD
- 2009** Wataru Okano, MD
- 2010** None
- 2011** Richard Turley, MD
- 2012** Koshi Otsuki, MD
- 2013** Mitsuyoshi Imaizumi, MD
- 2014** None

ABEA ANNUAL MEETING

Foreign Body Case Award

This award is given to an accepted abstract in recognition of excellence in innovation, skill and education in the management of aero-digestive foreign bodies. It is intended to encourage continued leadership in the art of endoscopic foreign body management.

Recipients of the Foreign Body Award:

- | | |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 1997 Ellen S. Deutsch, MD, FACS,
FAAP
Garth M. Good, MD | 2011 Michael Joshua Wilhelm MD
Benjamin Westbrook, MD
Joseph Shvidler, MD |
| 1998 Ian Jacobs, MD
Kevin E. McLaughlin, MD | 2012 Corbin Sullivan, MD
Maria Wittkopf, MD
William Clarke, MD
Stephen Conley, MD |
| 1999 James Stankiewicz, MD | 2013 David Rosow, MD
Si Chen, MD |
| 2000 Aaron Chidekel, MD
Ellen S. Deutsch, MD
John W. Moore, MD | 2014 Matthew Naunheim, MD
Matthew Dedmon, MD
Matthew Mori, MD
Ahmad Sedaghat, MD, PhD
Jayme Dowdall, MD |
| 2002 Benjamin B. Cable, MD
Dawn Boswell
Eric Mair, MD | |
| 2003 Glenn Isaacson | |
| 2004 Joseph Kerschner, MD | |
| 2005 Matthew Bolinger, MD
Stacey L. Hallum, MD
Gregory N. Postma, MD | |
| 2006 Thomas Andrews, MD
James Quintessenza, MD
Jeffrey Jacobs, MD
Richard Harmel, MD | |
| 2007 Aaron D. Friedman, MD
Keiko Hirose, MD
Peter J. Koltai, MD | |
| 2008 Glenn Isaacson, MD
Jeffrey Bedrosian | |
| 2009 Steven Feinberg, MD
Gerardo Lopez Guerra, MD
Steven M. Zeitels, MD | |
| 2010 Vartan A. Mardirossian, MD
Timothy Anderson, MD
Joyce Colton-House, MD | |

ABEA ANNUAL MEETING

Rules Concerning the Presentation of Papers at the Annual Meeting

- The reading of any paper shall not extend beyond the time allotted by the Program Committee. The exact time for presentation will be allotted by the Program Committee. This shall include presentation of slides, pictures and video demonstrations.
- Copies of the manuscript must be submitted prior to podium presentations. If the presenter does not comply with this rule, the paper may not be presented. Manuscripts for poster presentations are optional. One copy of the manuscript should be submitted to *The Annals of Otolaryngology, Rhinology & Laryngology* and one should be uploaded through the online submission format through the ABEA website process. ABEA will distribute your manuscript copies to the session moderator and program director. Additional instructions for those seeking awards are posted on the ABEA website.
- All papers become the property of the ABEA.
- The Annals Publishing Company reserves the right to publish articles in the *Annals of Otolaryngology, Rhinology, and Laryngology*. The author may publish a paper elsewhere only if the paper is not accepted for publication in the *Annals*. Written permission must be obtained from the Editor of the ABEA.
- Only original and unpublished papers may be submitted for consideration. The same or similar abstract should not be submitted simultaneously to any other meeting or publication.

5:30PM

THURSDAY, MAY 15, 2014

Scientific Poster Session

All registrants and guests are invited. Scientific Posters will be attended by authors.

Abstracts of ABEA submissions to the Scientific Poster Session appear on pages (86-136) of this program booklet.

A-001

EVALUATING THE QUALITY AND READABILITY OF SWALLOWING TREATMENT RESOURCES ON THE INTERNET

Amanda Hu, MD Presenter and Co-Author

Ashley O'Connell, MD, Co-Author

PHILADELPHIA, PA

Objective: Patients search online for health information, especially for chronic conditions like dysphagia. The Internet, however, is not peer-reviewed. The goal of this study was to assess quality and readability of online swallowing treatment resources.

Method: A Google search for “swallowing treatment” was conducted. The first fifty websites were analyzed using DISCERN, Flesch Ease of Reading Score (FRES), and Flesch Kincaide Grade Level (FKGL). DISCERN is a 16-item questionnaire used to assess quality of written health information. FRES and FKGL are used to assess readability of written information. Websites were divided into major vs. minor and patient vs. professional targeted for analyses.

Result: Overall, DISCERN score was 1.61 ± 0.61 ; FRES was 39.0 ± 19.0 ; FKGL was 11.8 ± 3.4 . There were significant differences between patient and professional-targeted websites on FRES (44.0 ± 16.9 and 27.0 ± 19.1 , respectively; P-value 0.01) and FKGL (11.1 ± 3.1 and 13.8 ± 3.7 , respectively; P-value 0.04) and no significant difference on DISCERN scores. Significant differences between major and minor websites on DISCERN scores (1.79 ± 0.61 and 1.26 ± 0.44 , respectively; P-value 0.002) were noted. FRES and FKGL scores were not significantly different.

Conclusion: Online swallowing treatment resources are of suboptimal quality. Information was written at a level too difficult for the average American adult to read comfortably. Patient-oriented websites were written at a lower reading level and major websites had higher quality information.

A-002

ORIGIN OF VOCAL FOLD STELLATE CELLS IN THE HUMAN MACULA FLAVA- ARE THEY BONE MARROW DERIVED CELLS?

Kiminori Sato, MD, Presenter and Co-Author

Shun-ichi Chitose, MD, Co-Author

Takashi Kurita, MD, Co-Author

Hirohito Umeno, MD, Co-Author

Tadashi Nakashima, MD, Co-Author

KURUME, JAPAN

Objectives: There is growing evidence that vocal fold stellate cells (VFSCs) in the maculae flavae (MFe) are somatic stem cells of the human vocal fold, and that the MFe may be a candidate for a stem cell niche which is a microenvironment nurturing a pool of VFSCs. The origin of the VFSCs in the human MFe, especially regarding the relationship with bone marrow derived cells, was investigated.

Methods: Five adult vocal fold mucosae were investigated. Immunoreactivity to antibodies directed to cytokeratin, Desmin, GFAP, Vimentin, CD34, and CD45 was investigated. The VFSCs were subcultured and morphological features were assessed.

Results: Cultured human VFSCs formed a colony-forming unit, indicating VFSCs are mesenchymal stem cells or stromal stem cells in the bone marrow. The VFSCs expressed hematopoietic markers (CD34, CD45), which are the major makers for bone marrow derived circulating fibrocyte. The cultured VFSCs expressed epithelium-associated (cytokeratin), muscle-associated (desmin), neural-associated (GFAP), and mesenchymal cell-associated (vimentin) proteins, indicating the VFSCs are undifferentiated and express proteins of all three germ layers.

Conclusions: The human VFSCs arise from the differentiation of bone marrow cells. The VFSCs are likely a circulating fibrocyte-related cell. The human VFSCs are undifferentiated cells derived from the bone marrow. The results of this study are consistent with the hypothesis that the VFSCs are somatic (mesenchymal) stem cells of the human vocal fold.

A-003

IS PARTIAL LARYNGECTOMY SAFE FOREVER?

Kenneth Bagwell, MD, Presenter and Co-Author

Steven Leder, MD, Co-Author

Clarence Sasaki, MD, Co-Author

NEW HAVEN, CT

Objective: Over past decades, function-preserving surgery has been found oncologically effective for specific types of laryngeal cancer. Safe short-term swallow function has been reported, but swallow safety during long-term survival has received less attention. The purpose of this report is to bring consideration to potential consequences of late dysphagia and chronic aspiration after partial laryngectomy.

Method: A retrospective case series was performed. The head and neck cancer database from Yale-New Haven Hospital identified 3 patients requiring completion laryngectomy due to chronic aspiration 11-15 years after oncologically successful partial laryngectomy. Demographics, presentation, treatment, and course are included.

Result: Primary treatment was open supraglottic laryngectomy with adjuvant radiation therapy (n=2) and vertical hemilaryngectomy (n=1). Swallow function was preserved for >10 years postoperatively. Due to late dysphagia and chronic aspiration, two patients required completion laryngectomy 11 and 15 years postoperatively and the third patient will require this 14 years postoperatively, despite locoregional control.

Conclusion: Successful swallowing after function-preserving laryngeal surgery may not last forever. Three patients presented with aspiration 11-15 years after partial laryngectomy who required definitive completion laryngectomy. This observation may affect preoperative counseling and consideration for longer post-operative follow-up. The data encourage a larger sample size.

A-004

COMPARATIVE RETROSPECTIVE STUDIES: IMPACT OF EARLY INJECTION LARYNGOPLASTY ON OPEN LARYNGOPLASTY

Zubin Wala, MD, BS, Presenter and Co-Author

William Young, MD, Co-Author

Seth Dailey, MD, Co-Author

MADISON, WI

Objectives: Temporary Injection Laryngoplasty (IL) in the acute setting of unilateral vocal fold paralysis (UVFP) may decrease the progression to open permanent medialization laryngoplasty (OL). We sought to show a decrease in OL in patients undergoing early versus late IL.

Methods: Via a retrospective review at a single academic tertiary center, a cohort of 100 patients who underwent IL, OL, or OL with Arytenoid Adduction for a diagnosis of UVFP were identified. Exclusion criteria included unclear timing of the onset of paralysis or IL, failure to receive IL as the initial treatment. The included patients were divided into early (<3 months) IL versus late (>3 months) IL. Injection type and timing relative to paralysis was recorded for the first and any subsequent ILs as well as any progression to OL.

Results: Of the 100 identified patients, 70 met exclusion criteria. The remaining 30 patients were separated into an early IL (n = 12) and late IL (n = 18) groups. Average time between the paralysis and initial IL was 1.63 months (early group) and 13.23 months (late group). All patients that received an IL eventually pursued OL, irrespective of timing for their UVFP. Average time between paralysis and OL was 11.06 months (early group) and 24.31 months (late group).

Conclusions: The indications for OL following IL for UVFP remain unclear. Both swallowing and voicing concerns are in play and the demands of the individual patient must be considered. Prospective studies with clear indications for OL may prove helpful.

A-005

A CHALLENGING CASE OF AN UNUSUAL AIRWAY FOREIGN BODY

Laura White, MD, Presenter and Co-Author

Kevin Motamedi, MD, Co-Author

Michael Johns, III, MD, Co-Author

ATLANTA, GA

Objective: Case report of a 28-year-old schizophrenic male prisoner who presented to the Emergency Department after attempting to swallow a sprinkler head that he had ripped from the ceiling of his jail cell. The patient presented in no acute airway distress. His only complaint was pain with swallowing.

Method: Report of an unusual case

Result: Two-view plain neck films demonstrated the foreign body overlying the epiglottis with one 'arm' of the sprinkler head resting in his vallecula. Flexible fiberoptic examination demonstrated the additional 'arm' of the sprinkler head resting in his left pyriform sinus and the sprinkler head overlying, but not obstructing the laryngeal inlet. The patient requested removal of the object; however, he refused all medications, including topical anesthetic, and would not consider surgical removal under anesthesia.

Conclusion: Awake removal was performed in a monitored setting using flexible trans-nasal laryngoscopy for visualization, and trans-oral extraction with a tonsil clamp. The patient's tongue was extended out of his mouth and secured with gauze, and the patient was asked to pant to promote superior displacement of the foreign body. After several attempts and much encouragement, the foreign body was successfully removed trans-orally and no mucosal injury was noted. The patient was then transferred to the psychiatric ward for further evaluation.

A-006

TRACHEOSOPHAGEAL FOREIGN BODY PRESENTING MEDIASTINAL ABSCESS

Kavita Dedhia, MD, Presenter and Co-Author

Stefan Scholz, MD, Co-Author

Cuneyt Alper, MD, Co-Author

PITTSBURG, PA

Objectives: To describe delayed diagnosis of an underlying aerodigestive foreign body in an infant presenting with a mediastinal abscess.

Method: We report the case of a 15 month old female intubated for respiratory distress and transported to our institution. A computed tomographic scan and magnetic resonance imaging showed a mediastinal abscess. The abscess was drained by interventional radiology on hospital day 1. Upon failure to improve for 10 days and failed extubation attempt otolaryngology was consulted and the patient was brought to the operating room for extubation and panendoscopy. Bronchoscopy showed almost complete posterolateral tracheal compression from ongoing mediastinal abscess and tip of a foreign body in the posterior wall of mid trachea. On esophagoscopy there was an area of healing area without a mucosal defect. A neck and upper mediastinal exploration revealed a 2x3 cm hard plastic foreign body was identified within the abscess between the trachea and esophagus and was removed.

Results: Patient was extubated on post-operative day 7, a chest x-ray and esophagram were normal and she was discharged home. Follow up panendoscopy is in 1 month.

Conclusions: Mediastinal abscess can be a grave condition, if not appropriately managed. One should have high clinical suspicion for an aerodigestive foreign body in a healthy infant presenting with a mediastinal abscess, with negative radiologic studies. Patients with such findings should undergo a thorough upper aerodigestive tract evaluation. Purpose: A videoendoscope has a small diameter and a small CCD (charge-coupled device) chip built into the tip that provides a clear image. This report concerns office-based esophageal foreign body extraction using transnasal videoendoscopy and advantages of this intervention.

A-007

COSTS AND BENEFITS OF OFFICE-BASED TRACHEOSCOPY

Samuel Helman, MD, Presenter and Co-Author
Melin Tan, MD, Co-Author

BRONX, NY

Objectives: Office-based tracheoscopy represents a favored alternative to the use of the operating room (OR). This article examines the cost effectiveness of performing in-office tracheoscopy on selected patients at a large tertiary referral center.

Methods: Patients were selected using a database review of all patients undergoing office-based and OR-based tracheoscopy during December 2012 to July 2013. Patients were matched for age, race, insurance coverage, medical comorbidities, indication for surgery, and operative course. Operative reports, demographic, medical and financial data were reviewed.

Results: A significant difference in expenditures was discovered between office-based and OR-based patients. Office-based patients were charged \$1,478.4 USD less than controls and reimbursements for office-based endoscopy were roughly four times greater than OR procedures, with average reimbursements per procedure of \$196.5 and \$50.2 respectively. The mean insurance bill for OR-based patients was \$2310.3 (SD = 665.6) whereas office-based patients were billed a mean of \$831.9 (SD = 781.3, $p=0.003$). In terms of amounts reimbursed for individual tracheoscopies, the mean reimbursements were \$50.2 (SD = 72.31) for OR-based patients and 196.5 (SD = 176.6) for office-based patients ($p=0.077$).

Conclusion: Our study, while limited by patient number, illustrates the reimbursement advantage of office-based tracheoscopy.

A-008

TRACHEOBRONCHIAL FOREIGN BODY IN AN EXTREMELY PREMATURE NEONATE: AN UNCOMMON PREDICAMENT

Laura Dominguez, MD, Presenter and Co-Author

Adirenne Childers, MD, Co-Author

Seema Pai, MD, Co-Author

Pankaj Kumar, MD, Co-Author

Patricia Lange, MD, Co-Author

Rajanya Petersson, MD, Co-Author

RICHMOND, VA

Objectives: To review a case of a tracheobronchial foreign body in an extremely premature neonate, including instrumentation required and planning strategies to minimize risk to the infant.

Methods: Case report and literature review.

Results: A 33-hour-old, 26-week gestation premature infant, weighing 640 grams underwent endoscopic removal of an airway foreign body, a 7.5 centimeter long portion of a sheared off intubating stylet sheath, in a controlled operating room setting. Radiographic imaging showed this to extend from the level of the glottis to the right lower lobe. The infant had been transferred from an outside institution with a 2.5 endotracheal tube in place, and stable from a respiratory standpoint on arrival less than 24 hours after birth. The infant was extubated two days after foreign body removal to non-invasive positive pressure ventilation, and was doing well at last follow-up.

Conclusions: While every patient presents unique challenges in management, it is important to have well developed strategies for airway foreign bodies in these extremely premature neonates, who have anatomic constraints and poor pulmonary reserve. Airway foreign bodies are highly unusual occurrences in neonatal intensive care units, and are typically iatrogenic in nature. Early identification and multidisciplinary planning, including transfer to an appropriate institution if necessary, is key to successful removal with minimized mortality and morbidity to the infant. It is imperative to be knowledgeable of endoscopic equipment available in one's facility in the event of an aerodigestive foreign body in this fragile population, and to develop appropriate alternative treatment plans if unsuccessful.

A-009

LARYNGEAL HISTOPLASMOSIS MIMICKING SQUAMOUS CELL CARCINOMA

Gregory Kelts, MD, Presenter and Co-Author

Nathan Hales, MD, Co-Author

Thomas Willson, MD, Co-Author

SAN ANTONIO, TX

Objective: Squamous cell carcinoma is often the first consideration in patients presenting to a head and neck surgeon with a history of smoking, hoarseness and an exophytic laryngeal lesion. However, granulomatous disease of the larynx can mimic the presentation of laryngeal squamous cell carcinoma. We present the case of a 53 year old male with a long history of smoking, hoarseness, and a laryngeal lesion concerning for SCCA. His history was remarkable for daily walking of his dog next to an egret park over many years.

Methods: Retrospective chart review.

Results: Surgical biopsy and workup demonstrated histoplasmosis of the glottic larynx, without evidence of distant systemic disease, successfully treated with antifungal therapy. No recurrence after 2 years follow up.

Conclusions: Laryngeal lesions are common in a head and neck oncology practice, with squamous cell carcinoma being the most common malignancy. Patients with a history of smoking and a laryngeal lesion merit increased suspicion of squamous cell carcinoma in the setting of persistent hoarseness or voice changes. While it is important to rule out squamous cell carcinoma, it should not be assumed, as a thorough history and consideration of other etiologies of laryngeal disease, including granulomatous pathologies, is important. With this consideration, these lesions can be identified and treated effectively with medical therapy, sparing unnecessary surgery and preserving vocal function.

A-010

ACUTE VOCAL FOLD SCAR RESTORATION WITH INJECTABLE BASIC FIBROBLAST GROWTH FACTOR HYDROGEL

Toshiki Kobayashi, MD, Presenter and Co-Author

Shigeru Hirano MD, PhD, Co-Author

Masanobu Mizuta MD, Co-Author

Nao Hiwatashi MD, Co-Author

Yo Kishimoto, MD, PhD, Co-Author

Juichi Ito MD, PhD, Co-Author

KYOTO JAPAN

Introduction: There continue to be therapeutic challenges in the management of vocal fold scarring. We previously showed that basic fibroblast growth factor (bFGF) injection have therapeutic potential for vocal fold scarring. However the working time of bFGF is very short, and multiple injections were required in many cases to obtain the regenerative effect. An efficacious delivery system for bFGF has yet to be established. We designed a method of sustained delivery of bFGF by using a gelatin hydrogel. Hydrogel have been developed for targeted delivery and controlled release of bFGF. Hydrogel of the particle type is also injectable and commercially available.

The current study aims to investigate the effects of a single injection of bFGF-DDS on acute vocal fold scarring using a canine model.

Methods: Vocal folds from eight beagles were unilaterally scarred by stripping the entire layer of the lamina propria. One month after hydrogels (0.5ml) containing 10 μ g of bFGF were injected into the scarred vocal folds of four beagles (FGF-hydrogel group). Saline (0.5ml) were injected into the other four beagles (sham group). Histological and vibratory examinations on excised larynges were performed for each group 5 months after treatment.

Result: Vibratory examinations demonstrated significant better vibrations in the FGF-hydrogel group. Histological examination of the FGF-hydrogel group showed restoration of hyaluronic acid in lamina propria. Comparative analysis with previous data by FGF solution injection suggested stronger effects of the current drug delivery system.

Conclusions: A single injection of bFGF hydrogel has the regenerative effect for acute vocal fold scar.

A-011

TOXIC EPIDERMAL NECROLYSIS ESOPHAGEAL AND HYPOPHARYNGEAL STENOSIS MANAGED WITH SINGLE STAGE PROCEDURE

Gregory Kelts, MD, Presenter and Co-Author

Nelson Howard, MD, Co-Author

SAN ANTONIO, TX

Objectives: Toxic Epidermal Necrolysis (TENS) is a severe epidermal reaction involving >30% of the body surface area and is often preceded by a medication administration. We present the case of a patient with TENS and severe hypopharyngeal (HPx) and esophageal scar formation managed with endoscopic lysis of adhesions and esophageal dilation.

Methods: Records review at a tertiary care hospital

Results: 37 year old female was admitted with TENs and 80% body surface area involvement following treatment with Lamotrigine for chronic headaches. The patient required extensive resuscitation and ENT was consulted for worsening dysphagia. Stroboscopic examination, Video Fluoroscopic Swallow Study, bronchoscopy and esophagoscopy demonstrated near complete esophageal stenosis and left pyriform sinus scar band obliterating the left pyriform sinus. Direct laryngoscopy and esophagoscopy, balloon dilation of the esophageal web, and lysis of the HPx scar bands was performed. Postoperative exam was notable for 95% improvement in swallowing and the ability to tolerate solid foods. Follow-up examination demonstrated minimal left pyriform stenosis.

Conclusions: Patients afflicted with TEN's have multisystem disease to include the upper aerodigestive tract. Although strictures within the upper digestive tract are common, stenosis of the pyriform sinus and HPx are not. Management of these patients requires multidisciplinary intervention. We describe the management of a severe case of TENS induced stenosis in a single stage procedure.

A-012

FLOWERING PLANT MATTER IN THE RIGHT LOWER LOBE BRONCHUS OF A 7-MONTH OLD: A UNIQUE FOREIGN BODY

Eleanor Kiell, MD, Presenter and Co-Author

Daniel Kirse, MD, Co-Author

WINSTON SALEM, NC

Objective: To discuss the management of a unique foreign body (FB) which evaded diagnosis by first-line care providers and required modification of commonly used instrumentation for successful removal. We also describe, using illustration and intraoperative video, the unique interplay of the characteristics of this FB and normal bronchial dynamics which served to propel and impact the foreign body to the deepest extent of the infant's airway and caused a rarely seen complication - a pneumatocele.

Method: Endoscopic removal of a 5cm long foxtail weed from a segmental bronchus of the right lower lobe. The cephalad end of the weed was barely visible at the entry of the segment and very nearly evaded endoscopic visualization. Since traditional instrumentation for retrieval was far too large to reach this distal area due to the patient's small size, tiny optical cup forceps typically used for mucosal biopsy were used to remove the foxtail weed.

Result: Endoscopic retrieval of the FB was achieved safely and successfully. Due to the nature and position of the FB which ruptured the bronchus, the child experienced a pneumatocele, followed by a prolonged stay in the PICU. He was successfully treated with decompression using a pig tail catheter.

Conclusion: This case demonstrates how the unique properties of a foreign body can create a challenging clinical management scenario. This situation required creative use of available instruments and mutli-disciplinary care in the treatment of a rare complication of an aspirated FB.

A-013

DELAYED PRESENTATION OF COMPLETE TRACHEAL RINGS IN ADULT USE AMONG OTOLARYNGOLOGISTS

Peter Hoekman, MD, Presenter and Co-Author

Keith Wilson, MD, Co-Author

CINCINNATI, OH

Objective: In this case report, we describe a case of delayed presentation of complete tracheal rings in a 55-year old female.

Study Design: Case report

Methods: We describe a case of delayed presentation of tracheal stenosis due to complete tracheal rings in an adult and briefly review similar reports in the national and international literature.

Results: A 55-year old female with a lifetime of exertional dyspnea and unrelated tracheotomy following a motor vehicle accident at 18 years of age presented for preoperative clearance after an earlier difficult intubation with inability to pass an appropriately-sized endotracheal tube. Upon endoscopic evaluation, the patient was found to have a tortuous and stenotic trachea due to long-segment complete tracheal rings. Subsequent review of previous imaging obtained for investigation of her symptoms also demonstrated evidence of complete tracheal rings and a minimal tracheal diameter of 12mm. Previous attempts at dilation were complicated by bilateral pneumothoraces but did provide short term symptom relief. No surgical intervention has been performed due to her limited activity and relative tolerance of her symptoms.

Conclusion: This case represents the oldest known age at initial identification of complete tracheal rings abnormality.

A-014

ANTICHOLINERGIC USE IS A MAJOR RISK FACTOR FOR GLOBUS

Sunny Haft, MD, Presenter and Co-Author

Nikki Thompson, MD, Co-Author

Natasha Mirza, MD, Co-Author

Melin Tan, MD, Co-Author

PHILADELPHIA, PA

Objectives: Globus pharyngeus has previously been linked to salivary hypofunction. We hypothesize that much of the globus experienced by patients is due to a drying effect secondary to anticholinergic medication use, and we aim to determine their association.

Methods: A case-control study evaluating 270 patients presenting to a laryngology practice was conducted over a 6 month time period. All subjects rated globus sensation on a 5 point severity scale, with controls set at a score of 0. Subjects were excluded if they had a likely cause of globus such as structural anomaly (nodules, polyps, granulomas), smoking, neck radiation, Sjogren's, or recent surgery. Scores were then compared with subjects' medication lists, age, and gender and evaluated using logistic regression via Odds Ratios (OR), with Confidence Intervals set at 95%.

Results: Any subject taking at least two anticholinergic medications has a 2.89 increased odds (CI 1.81-8.48) of experiencing globus. Subjects taking a single anticholinergic medication do not have a higher odds of experiencing globus. Polypharmacy is also an independent risk factor (OR 2.00, CI 1.02-3.92), as is female gender (OR 2.11, CI 1.11-4.01).

Conclusions: This study suggests that much idiopathic globus is due to anticholinergic use, and this is the first study to our knowledge that implicates medication use as a major risk factor for globus. An awareness of this association is invaluable when attributing cause to globus and when considering treatment options.

A-015

PRIMARY TRACHEOESOPHAGEAL PUNCTURE IN STAPLER-ASSISTED TOTAL LARYNGECTOMY

Edward Damrose, MD, Presenter and Co-Author

Jennifer Bergeron, MD, Co-Author

STANFORD, CA

Objective: To report clinical experience with primary tracheo-esophageal puncture (TEP) in the setting of stapler-assisted total laryngectomy. Stapler-assisted total laryngectomy (SATL) allows concurrent laryngectomy with pharyngeal closure, which can simplify the technique of total laryngectomy. It affords an easily-reproducible closure which minimizes salivary contamination of the neck and shortens operative time. However, because the pharynx is sealed in the process of laryngectomy, cricopharyngeal myotomy and TEP may be challenging. We report our experience with a hybrid device that allows concurrent puncture and valve placement in a simple and efficient manner.

Methods: Case-controlled retrospective review of patients who underwent stapler-assisted total laryngectomy and concurrent TEP.

Results: 7 patients were identified who underwent SATL and simultaneous TEP. Using a pharyngeal protector inserted into the pharynx and a novel hybrid device, a cricopharyngeal myotomy and concurrent TEP with placement of a voice prosthesis was successful in all patients. All patients achieved fluent tracheoesophageal speech. There were no complications.

Conclusion: Concurrent TEP with achievement of fluent TE speech is readily attainable in patients who undergo stapler-assisted total laryngectomy. Although the pharynx is closed during the process of laryngectomy, TEP and cricopharyngeal myotomy can be efficiently accomplished and does not need to be deferred to a secondary procedure.

A-016

CHONDRONECROSIS OF THE LARYNX FOLLOWING GENERAL ANESTHESIA VIA LARYNGEAL MASK AIRWAY

Edward Damrose, MD, Presenter, Co-Author

Jennifer Bergeron, MD, Co-Author

STANFORD, CA

Objective: To report the first report of a case of chondronecrosis following general anesthesia via laryngeal mask airway.

Method: Case Report and Literature Review.

Results: A 69 year old male underwent radiation therapy for squamous cell carcinoma of the larynx. Four years later he underwent general anesthesia for elective orthopedic surgery using the laryngeal mask airway. He subsequently developed necrosis of the posterior cricoid plate, bilateral vocal fold immobility and aspiration secondary to the development of a pharyngo-laryngeal fistula. He required tracheostomy and gastrostomy tube placement. With prolonged intravenous antibiotics, hyperbaric oxygen therapy, and endoscopic repair of his fistula using a laterally-based postcricoid mucosal flap, his larynx was preserved. Vocal fold function returned and the patient was ultimately decannulated.

Conclusion: We report the first case of chondronecrosis following use of the laryngeal mask airway. The use of the device requires caution in patients who have undergone prior laryngeal irradiation. Pharyngo-laryngeal fistulas, while rare, may be amenable to endoscopic repair using local advancement flaps.

A-017

NOVEL MANAGEMENT OF CHRONIC ASPIRATION IN THE SETTING OF LARYNGEAL STENOSIS

William Young, MD, Presenter and Co-Author

Seth Dailey, MD, Co-Author

MADISON, WI

Objective: Discuss a unique management technique for laryngeal stenosis in the setting of persistent aspiration.

Method: Case report with pre- and postoperative imaging. A literature search was completed, investigating other similar surgical management options.

Result: The patient was a 76-year-old female that, despite a remote history of thyroidectomy for goiter, required multiple surgeries for papillary thyroid carcinoma. Her resulting bilateral vocal fold hypomobility required tracheostomy placement in two separate instances. She later developed solid and liquid dysphagia with an immobile right vocal fold and severely hypomobile left vocal fold. A modified barium swallow evaluation demonstrated aspiration when swallowing large, but not small, volumes of liquids despite postures or maneuvers.

Due to her desire to continue an oral diet, a bilateral medialization laryngoplasty was offered to close her glottis gap, improve her phonation ability, and improve her swallow. Despite the understanding that her tracheostomy would be permanent, she elected to proceed. Her modified barium swallow evaluation completed 14 days postoperatively revealed no evidence of aspiration with thin liquids with a chin tuck and left head turn. By 5 months postoperatively, she was able to tolerate thin liquids using only a Passy-Muir valve.

Conclusion: Chronic aspiration in the setting of laryngeal stenosis from bilateral recurrent laryngeal nerve injury is a rare clinical scenario. While postoperatively tracheostomy tube dependence is ensured, bilateral medialization laryngoplasty is a unique reversible management strategy that can improve swallow and voice function and improve their quality of life.

A-018

KTP PULSED LASER EFFECTS ON EGG ALBUMIN USING TOUCH VS. NON-TOUCH TECHNIQUE

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Introduction: Office based angiolytic lasers can have variable effects based on whether it is applied by touch or non-touch technique and by the color of the tissue. This experiment tests the thermal versus photo-thermal effects of the KTP-535 laser to better define the effects of tissue contact and of color.

Material and Methods: Experimental study using KTP laser and egg white. Egg white was treated by laser in a translucent mixture or colored with red food dye and India ink. 200 Joules were delivered at 2 mm from tissue in non-contact mode and in contact mode. Photographs were recorded and analyzed with image analysis of the coagulum.

Results: Photo-coagulation occurs 4X faster with red color with a coagulated spot size of 3mm+/- 2 mm. Black and translucent tissue has less tissue effect. Touching the surface resulted in a smaller spot size and more intense smoke indicating vaporization of tissue at the contact point. There were no differences between colors on using the contact technique.

Conclusion: Color of the lesion is an important consideration in use of KTP laser. Both thermal and photo-thermal effects can be used in the office setting by using non-touch techniques for photo-angiolytic effects while touch techniques may be used for pure thermal laser effects.

A-019

IN VITRO CULTURE OF VOCAL FOLD STELLATE CELLS

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Objectives: Vitamin A-storing vocal fold stellate cells (VFSC) reside in the macula flavae (MF) and are hypothesized to play an important role in vocal fold mucosal biology; however, most studies to date have focused on histological descriptions using in vivo systems. Here, we isolated and cultured human VFSCs in vitro, and compared their features to VF fibroblasts and hepatic stellate cells.

Methods: MF were microdissected from human VFs at autopsy or following total laryngectomy. VFSCs were obtained following matrix digest and cultured with/without vitamin A supplementation. Cells were analyzed via growth rate calculations, flow cytometry (vitamin A autofluorescence), cytology for lipid droplets and vitamin A (oil red O; gold chloride) and immunocytochemistry for VFSC-specific intracellular markers (glial fibrillary acidic protein [GFAP]; vimentin).

Results: Vitamin A supplementation resulted in increased cell proliferation and intracellular vitamin A storage. VFSCs and hepatic stellate cells were oil red O+, gold chloride+, GFAP+ and vimentin+. Interestingly, VF fibroblasts also exhibited vitamin A storage capacity in vitro.

Conclusions: VFSC culture is feasible and promises to be a useful tool for further study of stellate cell biology. While VFSCs are the sole repository of VF vitamin A in vivo, both VFSC and VF fibroblasts can uptake and store vitamin A in vitro.

A-020

GENETIC LINEAGE TRACING OF MACULA FLAVAE GENESIS IN MOUSE VOCAL FOLD

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Objectives: The vocal fold macula flavae (MF) are populated by stellate cells (VFSCs), which have been hypothesized to play a role in lamina propria development and maintenance. VFSCs express vimentin, desmin and glial fibrillary acidic protein (GFAP) in vivo. Previous work has reported the morphological features of MF/VFSCs in human children and adults; however, there are no experimental studies of MF/VFSC development. Here, in an attempt to characterize MF/VFSC morphogenesis, we used Lox-Cre recombination technology to trace the lineage of GFAP+ cells in the postnatally developing mouse.

Methods: We crossed GFAP-Cre transgenic mice with LacZ reporter mice and harvested larynx at ages 2 and 4 weeks. Serial axial frozen sections of the larynx were stained using the following techniques: H&E staining for general morphology, GFAP immunostaining to detect VFSCs, and LacZ staining to detect GFAP lineage cells.

Results: At 2 weeks, anterior and posterior MFs were not present. LacZ+ cells were identified in the arytenoid and thyroid cartilages. At 4 weeks, the posterior MFs were identified as cell-dense regions populated by GFAP+ VFSCs. The anterior MFs were not present. LacZ+ positive cells were identified in the arytenoid and thyroid cartilages, and had expanded to the arytenoid perichondrium and posterior MF.

Conclusion: In mouse, posterior MF develops after age 2 weeks. Our lineage tracing data raise the possibility that VFSCs arise from chondroblasts or dedifferentiating chondrocytes during postnatal development.

A-021

IDENTIFICATION OF SLOW CYCLING CELLS IN THE MACULA FLAVA OF RAT VOCAL FOLD

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Purpose: As in other organs, cell therapy is one of the promising treatments in restoring the injured vocal folds (VFs). Indeed some cells including mesenchymal stem cells were used in attempt to restore scarred tissue or to prevent scarring, showing their potential in experimental models. Considering the ethical issues in the cell transplantation, the tissue specific stem cells which reside in the VFs are expected to be a potent option in the establishment of therapeutic strategies for VF scarring, however tissue specific stem cells in the VF has not been identified so far.

Stem cells normally proliferate at a slow rate in adult organs, and the slow cycling cells of some organs are recognized as stem cells. Slow cycling cells in the VFs have not been well documented and represent an important subject for investigation. Purpose of this study was to clarify the distribution of slow cycling cells in rat VFs.

Materials and Methods: Adult SD rats were administered with intraperitoneal injections of exogenous proliferation marker, 5'-bromo-2'-deoxyuridine (BrdU). After a certain period, VFs were harvested and double-stained with BrdU and a second endogenous proliferating marker Ki-67 in order to exclude the cell populations which stopped proliferation just after the injections.

Results: BrdU / Ki67 double positive cells were identified in the macula flava of the VFs, while they were rarely observed in other part of the VFs.

Conclusion: The presence of putative stem cells were suggested in the macula flava of the VFs.

A-022

INFLAMMATORY AND JUNCTIONAL COMPLEX GENE EXPRESSION DURING EARLY WOUND REPAIR AFTER ACUTE PHONOTRAUMA

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Objective: It is unknown how prolonged phonation affects vocal fold epithelial tight junctions, adherens junctions, and inflammatory mediators. Our aim was to characterize vocal fold inflammatory and junctional complex gene expression after acute phonotrauma.

Methods: 35 New Zealand white breeder rabbits received 120 minutes of modal intensity phonation or control (vocal fold approximation without phonation). Vocal folds exposed to modal intensity phonation were harvested at 0 hours, 4 hours, 8 hours, 1 day, 3 days, or 7 days after phonation and compared to control vocal folds. Real-time polymerase chain reaction was used to evaluate the mRNA expression of occludin, zonula occluden-1 (ZO-1), -catenin, E-cadherin, interleukin 1 (IL-1), and cyclooxygenase-2 (COX-2).

Results: Gene expression of occludin, ZO-1, and E-cadherin decreased significantly at 4 hours, 8 hours, 24 hours, and 3 days, compared to control. Expression returned to control levels by day 7. IL-1 and COX-2 levels peaked at 8 hours and gradually decreased by 7 days.

Conclusions: Results revealed time-dependent changes in the regulation of vocal fold inflammatory and junctional complex gene expression after prolonged vibration exposure. These data may provide significant insight into vocal fold tissue recovery after acute phonotrauma.

A-023

DETERMINING THE UTILITY OF CELL VIABILITY ASSAYS FOR USE WITH EXCISED VOCAL FOLDS

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Objective: Determining the viability of excised vocal folds is of interest for in vitro experiments that seek to investigate the effect of clinically relevant challenges on vocal fold function. Histology is often considered a standard assessment of tissue viability; however, alone may not be able to accurately detect changes in cell function. The objective of this study is to determine the utility of two cell culture viability assays, MTT and Live/Dead staining, for use with excised vocal folds.

Methods: Larynges from domestic pigs were obtained from local abattoirs. Vocal folds were excised and incubated for one hour in pollutant (acrolein; 400 μ M), acid (hydrochloric acid; pH3), or sham (distilled water) challenge. Tissue viability was assessed using an MTT assay, Live/Dead staining, and hematoxylin-eosin histological staining.

Results: Both the MTT assay and Live/Dead staining demonstrated that acid, but not pollutant challenge reduced vocal fold viability as compared to the sham challenge. This was evidenced by significantly reduced absorbance (MTT, $p < 0.01$) and increased dead cell count (Live/Dead, $p < 0.01$) following acid challenge. No histological changes were observed following any challenge.

Conclusions: We successfully adapted two common viability assays for use with excised vocal folds. MTT assay and Live/dead Staining were able to discriminate between experimental challenges and appear to be more sensitive than histological evaluation in determining the viability to excised vocal folds.

A-024

LARYNGOTRACHEAL STENOSIS AS A COMPLICATION OF PHOTODYNAMIC THERAPY

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Objective: Photodynamic therapy (PDT) has been proposed as an effective treatment for mucosal carcinomas such as early-stage laryngeal squamous cell carcinoma. Its advantage over other conventional modalities of surgery, radiation, and chemotherapy lies in its ability to treat disease while preserving the function and structure of the larynx without systemic toxicity. While not FDA-approved in the United States, it is used in some countries as a treatment for laryngeal cancer. This report documents a severe complication of tracheostomy-dependent laryngotracheal stenosis resulting from PDT.

Methods: Case report and review of the literature.

Results: A 65-year-old male presented with severe stenosis of the larynx and infraglottis following successful treatment of his laryngeal carcinoma with PDT. His presentation, staged airway reconstruction, and outcome are detailed.

Conclusion: PDT is a minimally invasive technique which is touted to be as effective as other conventional therapies for the treatment of early squamous cell cancers of the head and neck. It uses a photosensitizing agent which is retained by tumor cells, allowing for the selective destruction of neoplastic cells with preservation of normal tissue. Permanent sequelae following treatment have rarely been reported, as the most commonly described adverse effects include transient pain, edema, and hoarseness; however, our case report discusses the potential for significant laryngotracheal stenosis requiring tracheostomy and airway reconstruction following PDT.

A-025

TARGETED DEPLETION OF MONOCYTE-LINEAGE CELLS ATTENUATES VOCAL FOLD SCAR FORMATION IN MICE

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Purpose: Monocytes (MO), and their macrophage (MQ) progeny, are key players in the inflammatory wound response, acting to deliver cytokines and phagocytose dead cells and wound debris in the early phase (M1 MQs), and participate in the transition from inflammation to tissue repair in the later phase (M2 MQs). The purpose of this study was to evaluate the role of these cells during vocal fold (VF) wound healing using a loss-of-function paradigm, via targeted depletion of MO-lineage cells expressing the CD11b cell surface marker.

Materials and Methods: We used CD11b-DTR transgenic mice containing the human diphtheria toxin (DT) receptor sequence inserted into the CD11b promoter region, allowing targeted depletion of CD11b-expressing MOs via systemic DT delivery. After characterizing the time course of post-DT MO depletion and spontaneous recovery in circulating blood, and the peak expression of M1 and M2 MQs in injured VF, we prepared separate DT dosing schedules to deplete M1 and M2 MQs, respectively. We then created unilateral VF injuries and evaluated the effect of targeted MQ depletion on healing outcomes, using qRT-PCR and immunohistochemistry.

Results: M1 MQ depletion resulted in reduced scar formation characterized by reduced collagen transcription and protein abundance. M2 MQ depletion had no effect on healing outcome.

Conclusions: These data suggest that MO-lineage cells, particularly M1 MQs, contribute to scar formation in injured VFs. The M1 MQ may be a therapeutic target for scar attenuation following injury.

A-026

HUMAN INDUCED PLURIPOTENT STEM CELLS (HIPS) WITH HA-HYDROGELS FOR VOCAL FOLDS TISSUE ENGINEERING

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Objective: One prospective option for severe vocal fold scarring is to regenerate with a tissue-engineered scaffold containing induced pluripotent stem (iPS) cells. As a first step toward this goal, we investigated the feasibility of utilizing human-iPS cell (hiPS) in an injectable hyaluronic acid (HA) scaffold for the regeneration of the vocal fold in an athymic nude rat injury model.

Methods: Three types of injectable scaffolds were prepared – HA hydrogel scaffold, HA hydrogel scaffold containing hiPS and HA hydrogel scaffold containing hiPS with epidermal growth factor (EGF). After 1 and 2 weeks injection into nude rat vocal folds, tissues were excised for histology, immunohistochemistry and FISH.

Results: HA hydrogel were confirmed in the vocal folds after 1 and 2 weeks. FISH analysis confirmed the presence and viability of hiPS. A mixed germ cell-like tumor was characterized in one larynx. HA hydrogel scaffold seeded with EGF demonstrated less fibrosis as measure by EVG and collagen staining.

Conclusions: hiPS survived in injured rat vocal folds and in the presence of HA hydrogel with EGF improved fibrosis. Further work is necessary to optimize hiPS differentiation and to determine safety for future clinical applications.

A-027

THE IMPACT OF HIGH-FAT DIET INDUCED OBESITY ON A MURINE MODEL OF SUBGLOTTIC STENOSIS

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Objectives: We have recently shown that obesity is significantly associated with subglottic stenosis (SGS). SGS is a consequence of dysfunctional wound healing, and obese individuals have prolonged inflammation and delayed healing. We aimed to further clarify the histologic and molecular consequences of obesity within our murine model of SGS.

Methods: Five high-fat diet induced obese mice and five normal weight mice underwent caustic airway injury using hydrochloric acid. Both injured and uninjured tracheas were explanted into the dorsum of matched recipient mice and harvested 3 weeks later. The laryngotracheal complexes (LTCs) were then analyzed histologically by a blinded pathologist. IL-1 and TGF-beta mRNA expression levels were also compared between each group.

Results: Injured LTCs of obese mice had significantly increased lamina propria thickness as compared to injured LTCs of control mice (26.2 vs 13.8 mm, $p=0.003$). The obese native tracheas also had increased areas of blunted cilia and flattened epithelium. There was no increase in TGF-beta expression above control in obese injured LTCs (0.90, $p=0.82$), while IL-1 expression was decreased in obese LTCs (0.38, $p=0.04$).

Conclusions: This preliminary study suggests that there are histologic changes between obese and normal weight tracheas that may be exacerbating stenosis. Contrary to our prediction, particular inflammatory markers were decreased in obese tracheas, and further studies are required to elucidate the impact of this change on SGS development.

A-028

SUPERIOR THYROID CORNU SYNDROME: AN UNUSUAL CAUSE OF NECK AND THROAT PAIN

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Objectives: Ossification and malpositioning of the superior thyroid cornu has been shown in case reports and small case series to commonly cause the symptoms of dysphagia, odynophagia, and globus sensation. We will describe a patient presenting with left-sided neck pain, throat pain, and odynophagia.

Method: Single subject case report

Result: This case report details the diagnosis and treatment of a 43 year old male presenting to clinic with 3 months of left neck pain, throat pain, and odynophagia. On flexible laryngoscopy, the patient was found to have a left-sided submucosal mass just above the left pyriform sinus at the level of the aryepiglottic fold that came into view with phonation. A CT scan of the neck showed an asymmetry to the superior thyroid cornua, with the left being elongated and malpositioned. The patient was taken to the operating room for endoscopic removal. The pathologic specimen revealed cartilage, fibroadipose tissue, as well as a 0.9cm segment of bone. At two weeks postoperatively, the patient's symptoms had improved with swallow and had completely resolved at rest.

Conclusion: This is the first report of throat pain and one of the few presenting with unilateral neck pain at rest in a patient with the superior thyroid cornu syndrome. Careful attention should be made to evaluate the lateral pharyngeal walls during flexible laryngoscopic examination in order to screen for this etiology.

A-029

ECTOPIC INTRATRACHEAL THYROID PARATHYROID TISSUE PRESENTING WITH AIRWAY OBSTRUCTION

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WASHINGTON, DC

Objective: To review a case highlighting the presentation, diagnosis, and treatment of ectopic intratracheal thyroid and parathyroid tissue with airway obstruction.

Methods: Case report.

Results: We present the case of a 56-year-old man who was evaluated for respiratory difficulty and found to have an intratracheal mass consistent with thyroid tissue upon biopsy. Based upon his pathology and imaging, the patient was initially thought to have a thyroid malignancy invading the trachea. He underwent total thyroidectomy but tracheal resection was not performed when no communication was found between the thyroid and trachea and frozen sections were benign. Final pathology demonstrated a benign orthotopic thyroid gland and benign ectopic thyroid and parathyroid tissue from the tracheal mass. The patient ultimately underwent successful endoscopic CO₂ laser excision of the ectopic thyroid tissue and balloon dilation of the trachea. He has now been successfully decannulated.

Conclusions: Ectopic intratracheal thyroid is a rare condition, with fewer than 140 cases reported. This is the sole reported case of both intratracheal thyroid and parathyroid tissue. Surgical management is the treatment of choice, with open, endoscopic, or combined technique depending upon the case. Ectopic intratracheal thyroid is an important entity to keep in mind, as it can easily be mistaken for malignant invasion of the trachea by a thyroid carcinoma. When causing respiratory difficulty, this ectopic tissue can be treated endoscopically with success.

A-030

OFFICE VS. O.R. MANAGEMENT OF RRP: A COMPARISON OF PATIENT CHARACTERISTICS AND DISEASE SEVERITY

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Objective: The management of recurrent respiratory papillomatosis (RRP) in adults has evolved to include office-based laser techniques. The aim of this study is to determine whether demographic or disease characteristics differ between patients undergoing office-based (OF) vs. traditional operating room (OR) surgical approaches.

Method: Chart review of adult RRP patients treated from 2011 to 2013 at a tertiary medical center. Age, gender, weight, age of diagnosis of RRP, comorbidities and average Derkay severity score were compared between patients receiving predominantly OF and predominantly OR treatment.

Result: Of 57 patients (47 male, 10 female, mean age 53) meeting inclusion criteria during a two-year period, 34 patients underwent predominantly office management and 23 patients were treated predominantly in the OR. Age, gender and body weight were not statistically significantly different between the two groups ($p > 0.05$). Patients in the OR group had earlier onset of disease ($p = 0.005$), and significantly higher Derkay score ($p = 0.002$). There were no statistically significant differences in comorbidities between the two groups except for diabetes mellitus, which was more common in the OR group ($p = 0.034$).

Conclusion: In this large cohort of adult RRP patients, there were no age or gender differences detected between those patients who were treated in the office compared with those treated in the OR. Patients with earlier age of onset of their disease and higher disease severity were more likely to be managed in the OR.

A-031

LATE ONSET RADIATION-INDUCED CRANIAL NEUROPATHIES IN NON-NASOPHARYNGEAL HEAD AND NECK CANCERS

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Objective: Discuss a single institution's experience in managing late complications associated with radiation-induced nerve damage.

Methods: Retrospective review of 3 patients presenting for management of voice and swallowing disorders with onset more than 3 years after treatment of non-nasopharyngeal head and neck cancer.

Results: Patient 1 was treated for T2N0M0 squamous cell carcinoma (SCCA) of the oropharynx 8 years prior to complaining of dysarthria and dysphagia. Physical exam in conjunction with electromyography diagnosed palsies of cranial nerves V, IX, XII and 3 years later recurrent laryngeal nerve palsy. Patient 2 was treated for unresectable non-small cell lung cancer in the right lung apex. Three years later, he presented with dysphagia requiring multiple dilations and therapy for aspiration pneumonia. Within 3 years, he required tracheotomy due to bilateral recurrent laryngeal nerve injury. Patient 3 was treated for TxN2bM0 SCCA with chemoradiotherapy. He presented 3 years later with profound pharyngeal weakness and labile blood pressure. He is completely gastrostomy tube dependent and home bound due to blood pressure instability.

Conclusion: Risk to cranial nerves in radiation for nasopharyngeal cancers is well-documented as treatment fields necessarily include skull base structures. Less well-described are late-onset complications of radiation for laryngeal, oropharyngeal and other neck cancers. Esophageal dilation, tracheostomy, and swallow therapy may be necessary years after chemoradiation.

A-032

TRACHEAL DIVERTICULUM AND REFLUX DISEASE: EARLY SIGNS OF IDIOPATHIC TRACHEAL IDIOPATHIC SUBGLOTTIC AND TRACHEAL STENOSIS

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Objectives: To describe the findings of a tracheal diverticulum and positive pepsin biopsy in two patients with early idiopathic tracheal stenosis (ITS)

Methods: Patients with idiopathic tracheal stenosis were identified over a six-year period. The flexible tracheobronchoscopies at clinic visits, radiographic studies, and exam findings were described. The medical records of each were reviewed and the following recorded: presenting symptom(s), and results of pepsin biopsy obtained during operative intervention.

Results: Twenty-seven patients were identified, all of whom were women. In sixteen of the twenty-seven, a distinct stellate scar pattern was identified along the anterior tracheal wall in the proximal portion of the stenosis. Two of these 16 with mild stenosis were found to have a shallow diverticulum at the proximal portion of the stenosis by CT scan, with collection of chronic inflammatory mucoid material, and positive pepsin biopsies. Both of these patients presented with a several year history of chronic cough prior to development of dyspnea or stridor.

Conclusions: The majority of patients with ITS have a distinct anterior tracheal stellate scar pattern. In two cases of early stenosis an anterior tracheal diverticulum with chronic inflammation and evidence of reflux was present, and suggests this may be a potential precursor to the development of symptomatic ITS.

A-033

EVALUATION OF THE POLY (LACTIC ACID-CO-GLYCOLIC ACID) FOR INJECTION LARYNGOPLASTY IN VIVO STUDY

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Objective: Poly(lactic acid-co-glycolic acid) (PLGA) is an aliphatic polyester and one of the most commonly used synthetic biodegradable polymers for tissue engineering. Objectives were to evaluate the augmentation effect of PLGA/Pluronic F127 and the biodegradability without inflammatory tissue reactions, which hinder a mucosal wave of the paralyzed vocal fold.

Methods: We used 18 New Zealand white rabbits, which were divided into 5% PLGA (n=9) and 10% PLGA (n=9) groups. Five and ten percentage PLGA were injected into the left vocal fold. Laryngoscopic exams were performed at 1, 4 and 8 weeks after implantation. At 8 weeks when the larynx specimens were sampled, vibratory examination of injected vocal fold was performed for functional analysis. We investigated histologic changes for inflammatory tissue reactions.

Result: All animals survived until the scheduled period. Laryngoscopic analysis showed that both 5% and 10% PLGA maintained after 8 weeks after injection without inflammatory response. On functional analysis, vocal fold gap decreased and asymmetric vocal fold movement. Histologically, no significant inflammation was observed in the epithelium, lamina propria, and muscle layer of the injected vocal fold.

Conclusion: As a vocal fold injection material, PLGA showed a good bio-compatibility and effective augmentation results. Further experiment will follow to elucidate its role for drug or gene delivery into the paralyzed vocal fold.

A-034

USE OF IMAGING TO EVALUATE COURSE OF CAROTID ARTERY IN SURGERY FOR VELOPHARYNGEAL INSUFFICIENCY

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Objectives: 1) To describe syndromes in which preoperative imaging may be essential to determine the course of the carotid arteries for surgery for velopharyngeal insufficiency (VPI), and 2) To review the indications and contraindications for particular surgical procedures for VPI.

Methods: Records of all children who underwent surgery for VPI between May 1, 2012 and October 31, 2013 at a tertiary care pediatric otolaryngology center were reviewed. Data collected included age at operation, pre- and postoperative nasometry values, presence of underlying genetic disorders, and imaging findings.

Results: 25 patients underwent 33 surgeries for VPI, with 1 posterior pharyngeal wall augmentation, 6 Furlow palatoplasties, 11 sphincter pharyngoplasties, and 15 pharyngeal flaps. 7 syndromic children were identified, with 3 diagnosed with 22q11.2 deletion syndrome. All 3 of these children were found to have medially displaced carotids. Of the 4 additional syndromic children, 2/4 (50%) were found to have medial carotid arteries. One was diagnosed with neurofibromatosis 1, and the other with Prader-Willi syndrome. Overall rate of medialized carotids was 20% (5/25). These findings led to Furlow palatoplasties for these children.

Conclusions: 22q11.2 deletion syndrome has been recognized as an entity in which medially located carotid is common, but other syndromic children may also demonstrate vascular variability. Vascular imaging in these patients should be considered for surgical planning and prevention of complications.

A-035

CORRELATION OF CT WITH PULMONARY FUNCTION AND INTRAOPERATIVE DATA IN IDIOPATHIC SUBGLOTTIC STENOSIS

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Objectives: To assess the accuracy of computed tomography (CT) measurements of idiopathic subglottic stenosis (iSGS) and to evaluate for correlations with CT findings and pulmonary function tests (PFT) data.

Methods: Retrospective chart review

Results: Between 2006 and 2012, 25 patients with newly diagnosed idiopathic subglottic stenosis were evaluated at our institution. Of these, 15 obtained preoperative CT scans. Median age of this cohort was 63 years (IQR 52-73) and body mass index (BMI) was 30.5 (IQR 23.9-34.2). Median cross sectional area of the patent airway was 65.7 mm² (IQR 48.8-89.9 mm²), percent stenosis was 58.6% (IQR 49.9-69.7). By CT, the stenotic lesion typically began 13.6 mm (IQR 10.8-16.0 mm) below the vocal fold and was 18.1 mm long (IQR 15.1-19.4 mm). Twelve patients had PFTs obtained preoperatively. CT data showed no correlation with PFTs, including PEF, PIF, FEV1/PEF, or FIF50%. Sub-analysis of four patients with cross sectional area <50 mm² also demonstrated no correlation with PFT values. Intra-operatively, distance below vocal folds was measured at 14 mm (IQR 12-16 mm) and length of stenosis at 10 mm (IQR 8.5-16.5 mm). CT measured values of length of stenosis and distance below vocal folds did not correlate with intraoperative measurements (p=0.72, p=0.77, respectively).

Conclusion: Although valuable in assessing cartilage integrity, airway measurements using standard CT are a poor predictor of changes in pulmonary function values in iSGS.

A-036

A NOVEL RECONSTRUCTION FOR POSTERIOR CRICOID RESECTION

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Objective: To understand a new technique to reconstruct a posterior cricoid defect with tracheal advancement and rotation.

Method: We present a case of a 65 year old male with hoarseness for 2 years, and noted to have a submucosal mass of the left posterior subglottis with ipsilateral vocal cord immobility and superior displacement of the vocal process. CT demonstrated an expansile mass of the left posterior cricoid.

Surgical Technique: After the laryngeal complex was exposed, the intraoperative biopsy obtained was most suspicious for chondrosarcoma. The left cricoartenoid joint was disarticulated and the left hemicricoid with 1 cm of the right posterior cricoid was resected, leaving both vocal cords, the anterior commissure and the right cricoartenoid joint intact. The trachea was mobilized, rotated approximately 90 degrees and then freed from the esophagus and the right recurrent nerve. The left arytenoid was pexied to the most superior tracheal ring, leaving the left cord in an ideal paramedia position with height match to the right cord. The posterior tracheal wall was split and sutured to the free edge of the posterior cricoid and inferior aspect of the left cord. Finally, the remaining superior tracheal rings were sutured to the anterior aspect of the thyroid cartilage.

Result and Conclusion: Final pathology revealed a Grade 1-2 chondrosarcoma with negative margins. Post operatively the right cord has normal mobility and the left is sitting in such a position to allow for adequate vocalization.

A-037

PREVALENCE OF POSITIVE LABORATORY FINDINGS IN NEWLY DIAGNOSED SUBGLOTTIC STENOSIS PATIENTS

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Objective: The etiology and outcomes for patients with acquired subglottic stenosis (SGS) are highly variable. This study aimed to 1) identify risk factors for SGS, and 2) identify patient characteristics that would help predict long-term clinical outcomes.

Methods: A retrospective chart review was performed on 62 patients with SGS and 62 age-matched controls from the same laryngology practice. Patient demographics and clinical characteristics were compared using an unpaired student's T-test. SGS patients were further grouped according to tracheostomy status: 1) never required a tracheostomy 2) initially required tracheostomy but since decannulated 3) tracheostomy-dependent. Patient factors from these three SGS groups were then compared to evaluate risk factors for long-term tracheostomy dependence.

Results: Compared to controls, patients with SGS had a significantly higher Body Mass Index (25.9 vs 30.9, $p < 0.001$) and were more likely to have diabetes ($p = 0.02$). Within the SGS group, those who remained tracheostomy-dependent also had significantly higher BMIs (36.6 [8.1] vs. 29.9 [11.8], $p = .044$). Age, gender, socio-economic status, etiology of subglottic stenosis, and other comorbidities were not found to correlate with outcome.

Conclusion: Obesity is both a significant risk factor for acquiring subglottic stenosis as well as a predictor of prolonged tracheostomy dependence. Weight loss should be an integral part in these patients' management.

A-038

CALCIFICATION PATTERNS OF THE LARYNX: HISTORICAL AND CURRENT CLINICAL IMPLICATIONS

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The larynx develops in the embryonic period (1-8 weeks) from the respiratory primordium in the ventral wall of the pharynx by the end of this period the arytenoid, thyroid and cricoid are chondrified. The only segment of the laryngeal framework that is calcified at birth is the hyoid. After birth laryngeal calcification is consistent and is both gender and age related; however, the degree and pattern of this process is unpredictable.

Most of the laryngeal skeleton is hyaline cartilage and is subject to calcium mineralization. Calcium deposition in the larynx begins at age 18 years in females and 21 years in males. It begins in the posterior superior aspect of the cricoid or the posterior inferior aspect of the thyroid. In forensic medicine this fact is the basis for using the larynx to estimate the age of individuals.

The posterior location of the calcium deposition process, at the level of the cricopharyngeus muscle is a source of erroneous readings by Radiologists of a foreign body in the pharyngo esophageal region.

We present cases of adult patients with Head and Neck symptoms caused directly by rare heavy calcium deposition in different sites of the laryngeal skeleton. Illustrative endoscopic, imaging and gross anatomic findings will be presented.

A-039

VOCAL FOLD IMMOBILITY OUTCOMES: COMPARISONS BETWEEN TWO DATABASES

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Objectives: Vocal fold immobility (VFI) is commonly encountered in clinical practice yet epidemiology and outcomes for this disorder are not well described in relation to the type of providers or database utilized. The purpose of the study was to compare national epidemiologic and outcome data with those collected from a tertiary care database.

Methods: Comparisons were made between the National Ambulatory Medical Care Survey and Survey-Outpatient (NAMCS/NHAMCS-OPD) and a tertiary care Voice and Swallowing Database (VSD) over a period of 15 years. Age, gender, geographical criteria, comorbidities, exposure to tobacco, symptoms specific to voice and swallow, associated diagnosis were collected and compared.

Results: Visit prevalence for UVFI and BVFI were significantly greater for VSD. Overall prevalence of UVFI increased significantly with age in both databases, peaking at 61-80 years ($p=0.001$). Male to female prevalence was not significantly different ($p=0.9028$). Patients with UVFI in the VSD had significantly more diabetes ($p=0.005$), hyperlipidemia ($p=0.007$), heart disease ($p=0.0438$), depression ($p=0.0039$) and cerebrovascular disease ($p=0.01$). Those in the national database had increased dysphagia and dysphonia with age. Differences between databases relative to etiology of paralysis were also significant ($p<0.0001$).

Conclusions: Differences in epidemiologic data associated with VFI were identified. Type of database utilized provided significantly different conclusions.

A-040

CHARACTERIZATION OF THE EFFORTFUL SWALLOW USING DYNAMIC MAGNETIC RESONANCE IMAGING

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Objective: The effortful swallow was designed to improve posterior tongue base mobility and increase pharyngeal pressures to improve bolus clearance. Dynamic magnetic resonance imaging (dMRI) was employed to characterize both the temporal characteristics of this maneuver as well as alterations to the pharyngeal area in the axial plane.

Methods: As previously described by our group, dMRI images of the oropharynx were obtained in the axial plane at a rate of 8.8 frames/second during both normal and effortful swallowing of pudding consistency boluses in young, healthy female subjects. In total, 90 sequential images were acquired for each of three swallows. Images were then analyzed with respect to time of oropharyngeal closure, anteroposterior and transverse distance between the oropharyngeal walls, and area of the oropharynx before and after closure.

Results: Pharyngeal area prior to swallow initiation was significantly reduced in effortful swallows compared to normal swallows ($p=0.0183$). In addition, pharyngeal closure duration was also prolonged in effortful swallows compared to normal ($p<0.0001$). No other statistically-significant differences were noted between the two swallow types. Inter- and intra-rater reliability for all measures was excellent.

Conclusion: Although the effortful swallow has been established as a key rehabilitation strategy for patients with dysphagia, the current study is the first to characterize the pharyngeal mechanics in the axial plane associated with this maneuver. These data can provide a physiological framework for enhanced rehabilitation strategies for this challenging patient population.

A-041

ONCOCYTIC CYSTADENOMAS MASQUERADING AS LARYNGOCELES

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Sunita Bhuta, MD, Co-Author

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Objectives: Cystic laryngeal lesions are an uncommon cause of hoarseness or globus sensation. Two such patients, clinically diagnosed with internal laryngoceles, were discovered to have laryngeal oncocytic cystadenomas. Herein we summarize the clinical presentation and current recommendations for treatment.

Methods: A retrospective chart review of two patients with laryngeal oncocytic cysts was performed.

Results: Two female patients aged 69 and 71 presented with progressive dysphonia and globus. Physical examination revealed a cystic structure arising from the posterior vestibule and a fullness of the aryepiglottic fold, respectively; these findings were confirmed on cross-sectional imaging. Each patient underwent endoscopic CO₂-laser assisted resection. In both cases, pathological analysis revealed oncocytic cystadenoma with clear margins.

Conclusions: Oncocytes are cells with eosinophilic, granular cytoplasm. They are found in a variety of lesions presenting in the head and neck, including oncocytomas, Warthin tumors, Hürthle cell lesions, granular cell tumors, and paragangliomas. In particular, oncocytic cystadenomas have been described in the larynx, and are typically cystic or complex on imaging. Clinical presentation and imaging may be consistent with laryngocele, and a conservative approach at complete excision is both diagnostic and therapeutic. Although laryngoceles and malignancies are more commonly seen in this population, oncocytic cystadenomas should remain in the differential of a cystic or complex laryngeal mass.

A-042

CHANGING PATTERNS IN REFLUX CARE: 10-YEAR COMPARISON OF ABEA MEMBERS

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Objective: To compare patterns of laryngopharyngeal reflux (LPR) diagnosis and management over time by American Broncho-Esophagological Association (ABEA) members

Methods: ABEA members completed an online questionnaire focused on LPR evaluation and management. Responses were compared to a similar 2002 study

Results: 63 respondents completed the survey. In both 2012 and 2002 time periods throat clearing, heartburn and globus were considered highly related to LPR. Similarly, arytenoid edema and erythema were exam findings regarded as highly related to LPR in both time periods. Pachydermia laryngis (66% vs. 43% $p=0.005$), subcordal edema (47% vs 21% $p=0.0005$) and ventricular obliteration (52% vs 20% $p=0.0001$) were considered to be more highly related to LPR in 2012. Management in 2012 differed as respondents more commonly treated LPR empirically without ordering adjunctive tests (82% vs 56% $p=0.0358$). When adjunctive testing was ordered, double pH probe studies were less utilized in 2012 (62% vs 78% $p=0.0297$) while esophagogastroduodenoscopy (EGD) was ordered more (64% vs. 42%, $p=0.0201$). Dual pH probe was regarded as most sensitive and specific for LPR in both surveys, while the perceived sensitivity/specificity of EGD in 2012 was half that seen in 2002 (28% vs 56%, $p=0.0028$)

Conclusion: Empiric treatment of LPR is significantly more common over the last decade. Though ABEA members had similar opinions concerning the signs and symptoms of LPR attitudes towards empiric treatment and adjunctive tests over the past 10 years have evolved.

A-043

EXPLOSIVE BAROTRAUMATIC LARYNGEAL FRACTURE REQUIRING OPEN REDUCTION AND INTERNAL FIXATION

Katherine Green, MD, MS, Presenter and Co-Author

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Ted Leem, MD, Co-Author

AURORA, CO

Objective: To describe the first reported atraumatic laryngeal fracture to require surgical repair.

Method: Case report and review of the current literature

Result: Laryngeal fracture is a rare but potentially life threatening injury, which is commonly associated with direct external trauma to the neck. The two most common mechanisms of injury are motor vehicle accidents and attempted strangulations or hangings. Rare case reports have described “spontaneous” laryngeal fracture following an episode of coughing or sneezing, and all of these published cases have been resolved with conservative medical management. We present a case of an otherwise healthy 31 year old man who sustained an explosive barotraumatic laryngeal fracture from coughing, which was identified clinically and radiographically. He failed conservative management. The patient was taken to the operating room for a neck exploration and an acute anterior thyroid ala fracture was found, which was successfully repaired with open reduction and internal fixation.

Conclusion: This is the first reported case of a laryngeal fracture in the absence of trauma with intraoperative confirmation of an acute fracture requiring surgical repair. Although previous case reports have labeled these as “atraumatic” or “spontaneous,” explosive barotrauma is a more accurate description of the mechanism of injury. A high index of suspicion is required when considering laryngeal fractures, as there is significant morbidity and mortality if not properly identified and treated.

A-044

CURRENT POST-OPERATIVE VOICE REST PRACTICES AMONG LARYNGOLOGISTS

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ST. LOUIS, MO

Objective: Most clinicians prescribe some form of post-operative voice rest (VR) following vocal fold microsurgery. A 2003 survey of the general AAO-HNS membership by Behrman and Sulica showed a broad range in the length and types of prescribed VR regimens. This study sought to revisit this question by focusing the survey on clinicians who primarily limit their practice to laryngology.

Method: A 15-question electronic survey was sent via e-mail to the ABEA membership and was tailored towards laryngologists who treat primarily adult. Multiple choice and free-form responses were tallied in a spreadsheet.

Results: There were 41 respondents. The median age was 54 years and 52.2% of respondents had practiced >20 years. All the laryngologists prescribe some form of voice rest (either relative or complete). A majority (14.6%) prescribed 7 days of complete VR, but the length of complete VR ranged from 0-14 days. The most common reason cited for varying their standard practice is the size of the lesion. A majority of respondents utilize the services of a speech pathologist in transitioning from complete to relative voice rest and to normal voice during the post-operative period. Five respondents prescribed 0 days of complete VR, but all prescribed at least relative VR. The most common reason given for using voice rest is to allow atraumatic post-operative healing of the vocal fold.

Conclusion: There is a wide range of current practice among laryngologists regarding the use of postoperative voice rest. An evidence-based approach is needed to assess the utility of voice rest.

A-045

THE OTOLARYNGOLOGIST'S ROLE IN THE DIAGNOSIS OF GPA WHEN SEROLOGY AND BIOPSIES ARE NEGATIVE

Daniel Cox, MD, Presenter and Co-Author

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SALT LAKE CITY, UT

Objective: Granulomatosis with polyangiitis (GPA, formerly Wegener's Granulomatosis) is a potentially fatal condition which often manifests itself in the head and neck region in the early stages of the disease. Currently, diagnosis relies on serology testing (c-ANCA and PR3) and mucosal biopsy. A significant proportion of patients with the limited form of GPA are seronegative, and biopsy also lacks sensitivity. This study evaluates the role for a clinical diagnosis of GPA in the absence of positive laboratory findings.

Methods: Retrospective review of 59 patients treated in otolaryngology clinic for known or suspected GPA from 1998-2013. C-ANCA/PR3 status at time of initial presentation, biopsy results, time to initiation of treatment, and response to treatment were analyzed.

Results: 15 patients (25%) were both sero- and biopsy negative at initial presentation. Two patients (0.03%) were seropositive but had negative biopsies. Delay in treatment of patients with a negative laboratory workup ranged from 0-60 months. All patients who were either seronegative, biopsy negative, or both at presentation responded clinically to immunosuppressive therapy.

Conclusion: GPA often presents in the form of upper respiratory tract disease, and the diagnosis in this limited form is not always straightforward. The results of this study suggest that the diagnosis of GPA should be made on clinical grounds, and empiric therapy encouraged, when GPA is suspected despite a negative workup in order to prevent delay in treatment.

A-046

IS NEBULIZED LIDOCAINE ADEQUATE ANESTHESIA FOR TRANSNASAL TRACHEOBRONCHOSCOPY?

Giriraj Sharma, MD, MS, Presenter and Co-Author

Sunil Verma, Co-Author

IRVINE, CA

Objective: Transnasal tracheobronchoscopy (TNT) is a well-established method for office-based examination of the airway. Previous accounts of this technique describe laryngotracheal topicalization with a 2% or 4% lidocaine drip or “gargle” to supplement nasal and nebulized anesthetic. It was noted, however, that some patients did not tolerate the laryngeal “gargle” well. Thus, an alternative regimen was employed using only nasal anesthetic and inhaled nebulized lidocaine. The objectives were to evaluate if nebulized lidocaine provided adequate anesthesia for TNT and compare patient preference to laryngeal gargle.

Methods: A retrospective chart review was performed at a university voice and swallowing center. All patients who underwent TNT from 2012-2013 were identified. Indication for procedure, ability to complete procedure and patient preference for anesthetic administration were recorded.

Results: TNT was performed on 18 patients for evaluation of subglottic stenosis. All patients received one nasal spray of 2% lidocaine/0.5% phenylephrine solution followed by inhalation of 4 cc of nebulized 4% nebulized lidocaine. All 18 TNTs were completed without complication. 12 of the 18 patients had undergone previous TNT utilizing nebulizer in addition to laryngeal “gargle”. All 12 patients preferred nebulizer alone without laryngeal “gargle”.

Conclusion: Nebulized lidocaine alone appears to provide sufficient anesthesia prior to TNT for subglottic stenosis. It is preferred by patients over nebulizer and laryngeal gargle.

A-047

CAROTID STENT EXTRUSION FOLLOWING CAROTID BLOWOUT

Nicole Aaronson, MD, Presenter and Author

NEW HAVEN, CT

Objective: To describe an unusual foreign body- a carotid stent extruded into the upper airway

Method: Single patient case review

Result: Our patient is a 59 year old female treated for T3N2aM0 (stage IVa) squamous cell carcinoma of the L tonsil who experienced a carotid blowout treated by carotid stent placement with subsequent carotid coiling and vessel takedown. Patient had a persistent ulceration of her L tonsil fossa which was being closely monitored. Approximately ten months later, the patient coughed and expelled approximately 3 cm of tubular stent-appearing material into her airway causing stridor and dysphagia. CTA and XR showed the distal and proximal stent in proper position without evidence of extravasation. She was taken to the OR where the stent was accessed transorally showing the distal end of the carotid to be patent and covered by fibrin within its lumen. No hemorrhage occurred. The patient did well following transoral foreign body retrieval and was discharged home on post-operative day 1.

Conclusion: Carotid stents are a valuable tool in cases of carotid blowout. However, long-term data on how patients do post-procedure is lacking. These patients must be closely monitored as the foreign body response triggered by stent placement can cause dislodgement of the stent. The potential for stent extrusion is greatest with patients who have preexisting ulceration or who have undergone radiation, both common in head and neck cancer patients.

A-048

NEONATAL RETROPHARYNGEAL ABSCESS WITH COMPLICATIONS: APNEA AND CERVICAL OSTEOMYELITIS

Jennifer Alyono, MD, MS, Presenter and Co-Author

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STANFORD, CA

Objective: Retropharyngeal abscess is rare and potentially life threatening in the neonate. We present two cases to illustrate potential complications and discuss management strategies.

Methods: Retrospective chart review and literature review.

Results: We report two cases of neonatal retropharyngeal abscess: one complicated by cervical osteomyelitis and spinal cord instability and the other presenting with apparent life threatening events. A 6 week old female underwent transoral drainage of a retropharyngeal abscess, growing methicillin sensitive *Staphylococcus aureus*. She had a prolonged recovery and developed osteomyelitis of the dens and atlas with spinal cord instability. She underwent rigid collar fixation and 14 weeks of IV antibiotics. In the second case, a 2 month old female had multiple apparent life threatening events with apnea and pallor. Direct laryngoscopy showed a bulging retropharyngeal abscess, which was drained transorally and grew multiple organisms including methicillin resistant *Staphylococcus aureus*.

Conclusions: Uncommon in infants, retropharyngeal abscess can present in this age group without fever, and is more likely to have airway complications than in older children. In cases with prolonged recovery, additional investigation is recommended to rule out rare complications such as osteomyelitis. Emphasis in such complex cases is placed on taking a multidisciplinary approach to patient care, coordinating neonatologists, infectious disease specialists, neurosurgeons and otolaryngologists.

A-049

FOREIGN BODY INGESTION OF A GOLD STAR STICKER

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Ashutosh Kacker, MD, Co-Author

NEW YORK, NY

Objectives: Illustrate the potential complications of ingesting a foreign body with pointed edges and adhesive backing.

Methods: Case report

Results: An 8-month-old boy presented to the emergency department with fever, decreased oral intake, emesis, and drooling. Additional history was concerning for foreign body ingestion 3 days earlier while playing on the ground. Physical examination revealed mild right neck fullness and pooling of secretions in the pyriform sinuses. Contrast-enhanced CT demonstrated a 3.6 x 2.2 cm multispacial fluid and gas collection involving the right parapharyngeal space. The child was taken to the operating room, where a gold star sticker was retrieved from his right pyriform sinus. Transcervical incision and drainage of the right parapharyngeal abscess was performed. A barium esophagram on postoperative day #3 revealed contrast extravasation from the right pyriform sinus. The patient was managed with intravenous antibiotics and enteral feeds. Repeat barium esophagram on postoperative day #9 demonstrated interval resolution of the pharyngeal perforation, and the patient was restarted on an oral diet.

Conclusions: Star-shaped stickers may become lodged in the pyriform sinus because of their pointed edges and adhesive backings. Pharyngeal foreign bodies should be considered in the differential diagnosis of a parapharyngeal abscess. After removing an infected pharyngeal foreign body, radiographic evaluation should be performed to rule out perforation.

A-050

EXTENDED PHARYNGO-ESOPHAGEAL MYOTOMY FOR CRICOPHARYNGEAL DYSPHAGIA

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Objective: High-risk patients with dysphagia caused by cricopharyngeal muscle hypertrophy complicated by other factors may achieve definitive resolution of the obstruction by undergoing an extended pharyngo-esophageal myotomy.

Method: A 100 year-old female presented with a ten-year history of dysphagia. The initial VFSS identified a Zenker's diverticulum without aspiration; surgical intervention was deferred. Upon re-presenting, VFSS showed a larger diverticulum, esophageal regurgitation into the oral cavity with aspiration, a tortuous esophagus, and herniation of the entire stomach. The GI consultant deferred to ENT.

Result: General anesthesia was deemed necessary whether she underwent G-tube placement or an open-neck procedure. She opted for "the chance to eat rather than a feeding tube". Intra-operatively, the wide-neck diverticulum was adherent to multiple structures. After identifying the superior laryngeal nerve and externally guiding a bougie passed trans-orally, a myotomy was performed from the inferior constrictor, through the cricopharyngeus muscle, and along the length of the cervical esophagus. A diverticulopexy was not performed to avoid tethering. An esophagram on POD#2 revealed free passage of the contrast material sufficient to permit resumption of an oral diet.

Conclusion: A myotomy extending from the hypopharynx to the thoracic inlet facilitates passage of food and liquid directly to the thoracic esophagus in complex cases of Zenker's diverticulum, reducing the risk of aspiration.

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Dr. Clark A. Rosen (1998)

Dr. Frederick S. Rosen (2013)

Dr. Richard M. Rosenfield (1999)

Dr. Douglas A. Ross (2004)

Dr. Michael Rothschild (1998)

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Dr. Michael J. Rutter (2004)

Dr. Alain Sabri (2003)

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Dr. Akihro Shiotani (2006)

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Dr. M. Lee Williams (1965)

Dr. Eiji Yanagisawa (1979)

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Dr. Anthony J. Yonkers (1973)

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FUTURE MEETING DATES:

AAO-HNSF ANNUAL MEETING & OTO EXPOS

SEPTEMBER 21-24, 2014
ORLANDO, FLORIDA

COSM 2015

APRIL 22-26, 2015
SHERATON BOSTON
BOSTON, MASSACHUSETTS

COSM 2016

MAY 18-22, 2016
HYATT REGENCY CHICAGO
CHICAGO, ILLINOIS

COSM 2017

APRIL 26-30, 2017
MANCHESTER GRAND HYATT
SAN DIEGO, CALIFORNIA

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