The Program

of

The Eighty-Sixth Annual Meeting

of

THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION

Friday and Saturday
May 19 - 20, 2006

Hyatt Regency
Chicago, Illinois

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 with up-to-date information pertinent to the clinical evaluation and endoscopic management of laryngeal, tracheobronchial, and esophageal disorders.
- Basic and clinical studies addressing structure function, and diseases of the aerodigestive tract, and disorders of swallowing, voice, and airways will be addressed.
- Special focus will be placed on issues relevant to laryngology.
- A variety of research regarding innovative techniques and instrumentation, as well as discussions of relevant illnesses and disorders associated with broncho-esophagology, will be presented for discussion.

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 (ACS) and the American Broncho-Esophagological Association (ABEA). The ACS is accredited by the ACCME to provide continuing medical education for physicians.

EDUCATIONAL OBJECTIVES (cont.)

Disclosure

In accordance with ACCME and ACS policies, all faculty members will disclose relevant financial relationships with commercial entities and will disclose their intent to discuss drugs or devices or the uses of drugs or devices that have not been approved by the Food and Drug Administration (FDA)

Notice about Off-Label Use Presentations

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ACS is committed to the free exchange of medical education. Inclusion of any presentation in the program, including presentations on off-label uses, does not imply an endorsement of ACS of the uses, products, or techniques presented.

ACCREDITATION

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.

CME CREDIT

The American College of Surgeons designates this educational activity for up to a maximum of 7.25 Category 1 credits toward the AMA Physician's Recognition Award. Each physician should claim only those credits that he/she actually spent in the educational activity.

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12:30 PM **Friday, 19 May 2006**

BUSINESS MEETING
ABEA MEMBERS ONLY

Announcements

Introduction of New Members
- **Comments by Proposer**
- **Presentation of ABEA Pins and Certificates**

Election of New Members
- **Active Members**
- **Senior Members**
- **Corresponding Members**

Granting of Senior Membership Status
- **Charles Bluestone, MD**
- **William Friedman, MD**
- **H. Bryan Neel, MD, PhD**
- **Moses Nussbaum, MD**
- **Harvey M. Tucker, MD**
- **Eli Yanagisawa, MD**

Fifty-Year Certificates
- **William L. Barton, MD**
- **John P. Frazer, MD**
- **Myron J. Shapiro, MD**

In Memoriam –

Election of Nominating Committee

Appointment of Auditing Committee

New Business
Old Business

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1:00 PM **Friday, 19 May 2006**

PRESIDENTIAL ADDRESS:

JONATHAN E. AVIV, MD
New York, NY

1:05 PM **Friday, 19 May 2006**

INTRODUCTION OF GUEST OF HONOR

Jonathan E. Aviv, MD

1:10 PM **GUEST OF HONOR:**

HUGH F. BILLER, MD
Wells, Maine

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Friday 19 May 2006

SESSION #1: IN THE OFFICE

Moderator: Andrew Blitzer, MD, DDS

New York, NY

1:20 PM **Friday May 19 2006**

Hands-On Training Methods for Vocal Fold Injection

Clark A. Rosen MD
Pittsburgh, PA
Blake Simpson MD
San Antonio, TX
Milan Amin MD
New York, NY
Gregory N. Postma MD
Augusta, GA

PURPOSE: Vocal fold injection augmentation (VFIA) in the office setting is becoming increasingly popular, due to the time and cost savings over traditional injection in the operating room. Though the origins of the techniques of office injection are old, it has become a "lost art." Most training programs fail to educate residents in performing these injections. In this paper, we describe a novel and effective teaching tool that provides real-life simulation of VFIA for the education of residents and otolaryngologists in practice.

METHODS: Equipment was developed to allow the use of excised fresh cadaver larynges to simulate percutaneous and per-oral VFIA, using a life-sized model of the human head and neck. Each of these VFI training set-ups allows the student to perform and practice VFIA in a simulated setting with similar physical anatomic constraints and laryngeal anatomy as real life VFI. The use of fresh cadaver larynges allows the user to have a realistic feel of actual injection.

SUMMARY: The set-up and necessary equipment will be described to allow hands-on training in VFIA using the following approaches: microlaryngoscopy, thyrohyoid, percutaneous and peroral to vocal fold injection.

1:26 PM **Friday, 19 May 2006**

Thyrohyoid Approach for Vocal Fold Augmentation

Milan R. Amin, MD
New York, NY

OBJECTIVES: To evaluate the patient tolerance and clinical results of a new technique for office-based vocal fold augmentation.
STUDY DESIGN: Retrospective chart review.
MATERIALS AND MEASURES: Ten patients undergoing the thyrohyoid approach for vocal fold augmentation were asked to rate tolerance of the procedure using a ten point rating scale (1o problem", 10ery uncomfortable"). Patients also filled out a quality of life survey (VHI-10) immediately prior to and one month post-procedure. Stroboscopic findings were reviewed pre- and post-procedure. Findings analyzed included changes in wave symmetry and glottal closure, and evidence of implant migration.
RESULTS: All patients successfully underwent the procedure. Mean patient tolerance was found to be 2.1. The average VHI-10 score improved from
21.3 pre-procedure (standard deviation 23) to 7.5 post-procedure (standard deviation77). These values were compared using a paired T-test, and the difference was found to be significant, with a p-value of 0.01. Analysis of stroboscopic results revealed "improvement" or "no change" in the wave symmetry, "improvement" in glottal closure, and "no evidence of migration" post procedure in all cases.
CONCLUSIONS: The study findings demonstrate that the thyrohyoid approach can be used successfully in patients needing vocal fold augmentation, and is generally well-tolerated.

1:32 PM **Friday, 19 May 2006**

Calcium Hydroxylapatite Vocal Fold Injection: Twelve-Month Results of a Prospective Study

Clark Rosen, MD
Pittsburgh, PA
Jacqueline Gartner-Schmidt PhD*
Marc Remacle MD
Roy Casiano MD*
Tim Anderson MD*
Felcia Johnson MD*
Gary Shaw MD
Lee Reusner MD*
Richard Stasney MD*
Jean Abitbol MD
Robert Sataloff MD

Purpose: Vocal fold injection (VFI) is experiencing a renaissance because of new injection materials, improved office-based imaging and new VFI techniques/approaches. Calcium hydroxylapatite (CaHA) is an implant material that has a good track record in other body parts as a solid implant, which has recently been formulated for VFI. Little is known about the long-term results of CaHA VFI.

Design: Open-label, multi-center, prospective clinical trial of VFI with CaHA for unilateral vocal fold paralysis and glottal insufficiency with mobile vocal folds. Patient-based, clinician-based and objective vocal function measures were collected pre-VFI and at 1, 3, 6 and 12 month time points.

Results: One hundred and eight patients were enrolled in the study, 102 were treated with CaHA VFI. Thirteen patients were lost to follow-up, leaving 89 patients available for study. Twenty-eight have reached the 12-month time point and by April 1, 2006 that figure will rise to 64. Voice handicap index (VHI), voice handicap index-10 (VHI-10) and visual analog scale (VAS) of effort of phonation all demonstrated statistically significant positive results (n=28, VHI p=0.0006, VHI-10 p=0.0002, VAS p=0.006). The 12% additional surgery rate found at the six-month time point rose to 19% at the 12-month time point. No major complications occurred and the re-treatment group had no difficulty with either re-injection (lipoinjection or CaHA) or medialization laryngoplasty.

Conclusion: Vocal fold injection with CaHA is a reliable treatment method for patients with unilateral vocal fold paralysis and glottal insufficiency with mobile vocal folds at the 12-month time point.

1:38 PM **Friday, 19 May 2006**

Office-Based Videoendoscopic Laryngeal Surgery

Koichi Omori, MD
Yasuhiro Tada, MD*
Teruhisa Suzuki, MD*
Fukushima, Japan

PURPOSE: The purpose of the present study is to demonstrate techniques, indications, and limitations of office-based videoendoscopic laryngeal surgery (VLS) for a variety of laryngeal lesions under topical anesthesia.
METHOD: With this technique, a patient is seated and the nose, pharynx, and larynx are topically anesthetized. A flexible videoendoscope with a light-sensitive charge-coupled device chip built into the tip is transnasally inserted by an assistant. Specially designed fine tipped forceps, scalpels, scissors and suction tubes are transorally inserted by a surgeon. At each step of surgery, the patient's voice is perceptionaly evaluated and vocal fold vibration is monitored by stroboscopy for functional control.
RESULTS: VLS was undertaken in 323 cases with polyp, nodules, Reinke's edema, granuloma, leukoplakia, and vocal folds adhesion. In about 85% of the patients, the operation was accomplished without gag reflex. For benign vocal fold lesions, postoperative vocal function was improved by acoustic, aerodynamic, and perceptual analyses. For laryngeal tumors, biopsy of the lesion was easily undertaken. After the completion of the VLS, 3 patients were slightly intoxicated by the topical anesthesia, although they recovered 1 hour later. No complications such as post-operative bleeding or aspiration of materials were seen during the operation.
CONCLUSIONS: VLS is applicable to outpatients with office based equipment not requiring general anesthesia. By monitoring of voice and vocal fold vibration, and precise manipulation, favorable phonatory results can be obtained as functional phonosurgery. This technique is a minimally invasive surgery for a variety of laryngeal lesions.

1:44 PM **Friday, 19 May 2006**

Cost Savings of In-Office Laser Surgery

Jamie A. Koufman, MD
New York, NY
Catherine J. Rees, MD*
Winston Salem, NC
Gregory N. Postma, MD
Augusta, GA

OBJECTIVE: Advances in technology have facilitated performance of unsedated, in-office surgical procedures in Otolaryngologic practice, including pulsed-dye laser (PDL) treatment of recurrent respiratory papillomas (RRP), granulomas, leukoplakia, and polypoid degeneration. The objective of this study was to determine the magnitude of the cost savings derived by moving these procedures from the operating room to the office setting.
METHODS: In this retrospective study, the billing records of patients undergoing laser treatment for RRP in the operating room were compared to those of patients undergoing in-office PDL for RRP. For comparison, similar data are provided for the performance of tracheoesophageal puncture (TEP) procedures in the two different settings.
RESULTS: Performing these procedures (PDL and TEP) in the office results in an average cost savings of approximately $4000. Unfortunately, the costs of doing business, particularly for in-office surgery, are not reflected by current levels of reimbursement.
CONCLUSIONS: The potential cost savings of in-office surgery is tremendous; however, at present significant diseconomies and disincentives for proliferation of this technology are reflected by reimbursement issues. The driving force in the successful implementation of these exciting and cost-effective new technologies will depend upon reconciliation of cost-payment issues.

1:50 PM **Friday, 19 May 2006**

A Prospective Study of Single-Use Disposable Sheaths for Office-Based Transnasal Esophagoscopy

Thomas G. Takoudes, MD*
New Haven, CT

OBJECTIVE: A prospective study was performed on consecutive patients to evaluate the indications for, findings of, and safety of office-based transnasal esophagoscopy (TNE) using single-use disposable sheaths. A total of 20 procedures were performed on 18 patients. All patients underwent a TNE with a disposable sheath after the nose was sprayed with oxymetazoline and Pontocaine. Indications, findings and safety data were recorded. All procedures were recorded on a DVD.

RESULTS: The results demonstrated that 19/20 procedures (95%) were tolerated to completion. Indications for TNE were: laryngopharyngeal reflux with failed proton pump inhibitor therapy (n_), dysphagia without history of reflux (n, upper aerodigestive tract cancer (n, follow-up exam after treatment (n and evaluation of abnormal esophagus on a CT scan (n. Findings included normal studies (n_), candida esophagitis (n, diverticulum (n, hiatal hernia (n, patulous esophagus (n and moderate esophagitis (n.
One study could not be completed secondary to patient discomfort. No complications were noted.

SUMMARY: office-based TNE with a single use disposable sheath is safe and well tolerated. Esophageal abnormalities are easily identified in a comfortable setting without sedation.

1:56 PM **Friday, 19 May 2006**

DISCUSSION

2:03 PM **Friday, 19 May 2006**

Reflux Symptom Index (RSI) Versus Reflux Finding Score (RFS) in Laryngopharyngeal Reflux

Tamer A. Mesallam, MD, MSc*
Tarek Sobeih, MD, MSc*
Ravindhra G. Elluru
Cincinnati, OH
Joseph C. Stemple, PhD*
Lexington, KY

OBJECTIVE: Studying the correlation between the Reflux Symptom Index (RSI) and the Reflux Finding Score (RFS) in patients with laryngopharyngeal reflux (LPR) to determine the laryngeal signs and symptoms that are more significantly correlated.
DESIGN AND METHOD: Forty randomly selected patients were included in the study. A retrospective charts review was performed for those patients fitting the inclusion criteria to choose those with a RSI suggestive of LPR. For the RFS, the video stroboscopic samples for the study group were reviewed and rated by 6 experienced raters on two different occasions to evaluate the inter and intra-rater reliability. The RSI and the RFS were statistically compared regarding, both the total scores as well as the individual parameters.
RESULTS: The RFS scores ranged from 0 to 30 while those of the RSI varied from 13 to 38. There was a high agreement between the raters' scores demonstrating high inter and intra-rater reliability of the RFS (Pearson correlation coefficient ranged from 0.69 to 0.82, $p < 0.0001$).The RSI and RFS were highly correlated ($p < 0.01$). Hoarseness was highly correlated with vocal fold edema ($p < 0.001$) and thick laryngeal mucus ($p < 0.01$) while excessive throat clearing correlated significantly with thick endolaryngeal mucus ($p < 0.01$).
CONCLUSION: The study demonstrates a highly significant correlation between the RFS and RSI which strongly confirms the validity of both tests as good diagnostic instruments for LPR.

2:09 PM **Friday, 19 May 2006**

Quality of Life and Laryngoscopic Findings in Laryngopharyngeal Reflux Patients

Nora Siupsinskiene, MD, PhD*
Kestutis Adaminis, MD PhD*
Kaunas, Lithuania
Robert J. Toohill, MD
Milwaukee, WI

OBJECTIVES: To compare quality of life (QL) and laryngoscopic findings in patients with laryngopharyngeal reflux (LPR) vs. healthy persons and to determine correlation of objective findings and QL.
STUDY DESIGN: Prospective open clinical study.
MATERIAL AND METHODS. 100 out patients with LPR and 110 healthy voice persons were enrolled. QL was evaluated using self-rated individual and combined symptom indexes - laryngological, oesophageal, and total, voice related quality of life (V-RQOL), Hospital Anxiety and Depression scale, disability in social activities, and well-being in general (W-BVAS) using 100 mm visual analogue scale. Laryngeal injury was graded using laryngoscopic reflux finding index (RFI).
RESULTS: The mean scores as well as severity and occurrence of each symptom were significantly higher for clinical group patients vs. control ($p<0.05$). Symptoms with a major impact on QL include hoarseness, globus sensation, throat clearing and soreness. The mean scores of total, social-emotional and physical functioning domain subscales for V-RQOL also were found to be significantly higher in LPR group patients.
Abnormal anxiety were obtained for 30% LPR and 5.4% control group patients ($p<0.05$). LPR group patients were significantly more frequently reduced in social activities - 38.0% vs. 5.4%
($p<0.05$) and rated significantly lower W-BVAS score. Posterior laryngitis, vocal cord edema and pharyngitis were stated to be most sensitive signs for LPR. Correlation analysis showed significant relation of many QL parameters and RFI.
CONCLUSIONS. QL in patients presenting with reflux symptoms and laryngoscopic findings are impaired significantly in many aspects. The severity of symptoms and laryngoscopic findings have significant relationship with the patient's quality of life.

2:15 PM **Friday, 19 May 2006**

Respiratory Retraining Therapy and Management of Laryngopharyngeal Reflux in the Treatment of Patients with Cough and Paradoxical Vocal Fold Movement Disorder

Thomas Murry, PhD
Abtin Tabaee, MD*
Jonathan E. Aviv, MD
New York, NY

PURPOSE: To describe the outcome of patients with severe cough and paradoxical vocal fold movement disorder treated with respiratory retraining therapy and medical management of laryngopharyngeal reflux.
METHODS: 20 patients with a primary complaint of cough were diagnosed with paradoxical fold movement disorder based on clinical presentation and findings on transnasal fiberoptic laryngoscopy. All patients were treated with proton pump inhibitors for a minimum of six months followed by 3 -5 sessions of respiratory retraining therapy. Pulmonary function testing (PFT), subjective rating of cough and subjective rating of reflux (Reflux Severity Index – RSI) were performed prospectively. PFT and subjective rating of cough were performed on a control group consisting of 10 healthy volunteers.
RESULTS: 13 females and 7 males with a mean age of 54 years comprised the study group. The baseline subjective cough rating and ratio of forced inspiratory volume at 0.5 seconds to forced inspiratory vital capacity (FIV 0.5/FIVC) on PFT were significantly worse in the treatment group compared to the control group. Following therapy, 20 patients (100%) experienced subjective improvement in cough (mean 74% improvement), 19 patients (95%) experienced improvement in the on PFT and 17 patients (85%) experienced improvement in the RSI score. The pre and post objective and subjective differences were statistically significant.
CONCLUSIONS: Respiratory retraining therapy combined with medical management of laryngopharyngeal reflux is an effective treatment for patients with cough and paradoxical vocal fold movement disorder when a single modality treatment is not sufficient. The management of cough in the presence of paradoxical vocal fold motion disorder should include behavioral therapy.

2:21 PM **Friday, 19 May 2006**

Manometry Findings in Patients with Globus Sensation

Joseph R. Spiegel, MD*
Paul Didomenico, BS*
Debra Tereschuk, BS*
Philadelphia, PA

OBJECTIVES/HYPOTHESIS: The aim of this study was to investigate the manometry findings of patients with globus sensation. The etiology of globus is unknown but neuromuscular disorders of the larynx hypopharynx and esophagus have been suspected. Previous studies on this subject have yielded conflicting results. The most common manometric diagnoses cited include hypertensive upper esophageal sphincter, esophageal motility disorder, achalasia/hypochalasia, and normal.
STUDY DESIGN: Retrospective chart review.
METHODS: The results of manometry studies were collected from 38 patients who presented with globus sensation between July 2003 and July 2005.
RESULTS: A variety of different motility disorders were found with manometry. The diagnosis of nonspecific esophageal motility disorder was made in 45% (17/38) of patients, diffuse esophageal spasm in 34% (13/38), hypertensive esophageal sphincter in 34% (13/38), and hypertensive lower esophageal sphincter in 16% (6/38). None of the patients had normal findings.
CONCLUSIONS: All patients with a complaint of globus sensation had abnormal esophageal manometry. A variety of different esophageal motility disturbances were found. Most patients with UES hyperfunction did not complain of dysphagia but too few have undergone directed treatment of the UES problem to evaluate the possibility that this is the source of the globus sensation. Further studies will need to address a more accurate description of the components of the globus symptom and the relationship to dysphagia to better delineate different groups of patients. This is necessary to determine possible multiple etiologies of globus and to prospectively assess treatment.

2:27 PM **Friday, 19 May 2006**

Alterations in Sensory Thresholds During Laryngopharyngeal Sensory Discrimination Testing

Jeffrey Jordan Cunningham, MD*
Winston Salem, NC
Stacey L. Halum, MD*
Indianapolis, IN
Gregory N. Postma, MD
Augusta, GA

BACKGROUND: Laryngopharyngeal sensory discrimination testing (LPSDT) is a method used to detect sensory deficits in patients with swallowing disorders. Sensory thresholds in the laryngopharynx (LP) can be used to stratify patient risk status with regard to aspiration and guide dietary management. The aim of this study was to evaluate the inter-rater and intra-rater reliability of LPSDT among a group of examiners with differing levels of testing experience.
METHODS: Twenty seven healthy volunteers with no history of dysphagia, reflux, or swallowing disorders were enrolled in the study. Examiners included an attending otolaryngologist, a laryngology fellow, and an otolaryngology resident. With examiners blinded to test results, each subject was examined twice by one examiner and once by a different examiner in an alternating fashion to determine intra- and inter-rater reliability. Examiners rotated subject testing in a sequential manner so that all examiners performed an equal number of tests.
RESULTS: Six subjects were unable to tolerate the exams due to coughing and gagging. Five subjects had abnormal sensory thresholds (>4mmHg), including three subjects with thresholds >6mmHg. Comparing mean subject left and right LAR thresholds, Pearson correlations decreased with subsequent measurements suggesting less test reliability with repeated stimulation.
CONCLUSION: 1) With repeated stimulation, the reliability of LPSDT using LAR thresholds decreases. 2) Normal individuals may demonstrate elevated LAR sensory thresholds.

2:33 PM **Friday, 19 May 2006**

Fiberoptic Endoscopic Evaluation of Swallowing (FEES) in Intensive Care Unit Patients

Hans Edmund Eckel, MD
Andreas Neuhuber, MD*
Gert Hafner, MD*
Brigitte Schmedler, MD*
Klagenfurt, Austria

PURPOSE: Aspiration in critically ill patients frequently causes severe co-morbidity. We evaluated a diagnostic protocol using routine FEES in critically ill patients at risk to develop aspiration following extubation.

METHODS: We instructed intensive care unit physicians regarding specific risk factors for and clinical signs of aspiration following extubation in critically ill patients and offered bedside FEES for such patients.

RESULTS: Over a 45 month period, we were called to perform 913 endoscopic examinations in 553 patients. Laryngeal penetration or aspiration of the bolus was detected in 69% of patients. Prolonged non-oral feeding was initiated in 49% of these. In 11%, pre-existing tracheotomies were immediately closed, and 26% of patients with aspiration could be managed with compensatory treatment procedures.

CONCLUSIONS: FEES in critically ill patients provides a rapid and cost-effective evaluation of deglutition. It allows for the immediate initiation of targeted treatment, or for an early resumption of oral feeding.

2:39 PM **Friday, 19 May 2006**

DISCUSSION

2:45 PM **Friday, 19 May 2006**

CHEVALIER JACKSON LECTURE

STEVEN M. ZEITELS, MD
Boston, MA

3:00 PM **Friday 19, May 2006**

BREAK WITH EXHIBITORS

Friday, 19 May 2006

SESSION #2: IN THE OR

Moderator: Charles Ford, MD

Madison, WI

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3:20 PM **Friday, 19 May 2006**

Laryngoscopies in the Obese: Predicting Problems and Optimizing Visualization

Natasha Mirza, MD
Adrianna Hekiert, MD*
Jeffrey Mandell, MD*
Philadelphia, PA

PURPOSE OF STUDY: (1) To identify predictors of difficult laryngoscopies in obese patients (2) Develop strategies for efficient intubation and intraoperative visualization of the glottis (3) Develop post-operative care guidelines

DESIGN AND METHOD OF STUDY AND ANALYSIS: A retrospective study over a one year period of 10 patients undergoing elective direct laryngoscopies under general anesthesia was undertaken. Patients included had a body mass index (BMI) greater than 30 kg/m2. A history of sleep apnea was obtained as part of the routine intake form. Measurements of height, weight, neck circumference, range of neck movement, Mallampati scores and Cormack-Lehane classification of airway were noted. Problems encountered by anesthesia during induction and emergence were also identified. For the laryngologist the degree of difficulty in obtaining a binocular stereoscopic view and magnification, illumination and suspension were recorded on a visual analog scale.

SUMMARY OF RESULTS: Anatomical differences included decreased neck extension, redundant folds of tissue in the oropharynx and hypopharynx and upper airway collapsibility. High Mallampati and Cormack-Lehane scores were found in all patients although the latter was of limited value for the laryngologist. Straight blade laryngoscopes with a distal flange allowed greater depth of insertion and provided the best visualization of the glottis. In addition, airway adjustment maneuvers and changes in head positioning were also needed.

CONCLUSIONS: A history of sleep apnea and appropriate clinical exam helped predict a difficult airway. An algorithm was subsequently developed for laryngoscopies in the obese patient.

3:26 PM **Friday, 19 May 2006**

Granuloma of the Membranous Vocal Fold: A Deceptive Complication of Microlaryngoscopic Surgery

Lucian Sulica, MD
New York, NY
C. Blake Simpson, MD
C. McLaurin, BA*
San Antonio, TX

PURPOSE: Granuloma of the membranous vocal fold, as opposed to granuloma of the vocal process, or "contact granuloma," is a poorly-recognized sequela of microlaryngoscopic surgery. Such a growth can be misleading because it may mimic the initial lesion in appearance, and thus be mistaken for recurrence. This study is undertaken to better characterize membranous vocal fold granulomas.
METHOD: Fifteen cases of membranous vocal fold granuloma from two institutions were identified in a review of patients undergoing operative microlaryngoscopy.
RESULTS: In all but one case granuloma developed in the early post operative period, within 4-8 weeks. Ten followed laser resections of carcinoma, and five followed cold steel resection of benign pathology (2 papilloma, 2 cysts, 1 Reinke's edema). Technical aspects of these cases suggest that membranous vocal fold granulomas result from surgical violation of deep tissue planes. All patients were treated with proton pump inhibitors. In twelve cases, the granulomas proved self-limited, resolving over weeks to months following surgery according to a typical pattern of coalescence, pedunculation and likely auto-amputation. Three patients underwent surgical removal of the lesion, which confirmed the diagnosis. One granuloma recurred after excision and proved self-limited.
CONCLUSION: Clinicians should suspect granuloma when a mass lesion appears at the surgical site early in the postoperative course. Surgical excision is generally not necessary, and may provoke further granulomatous reaction.

3:32 PM **Friday, 19 May 2006**

Arytenoid Abduction for Dynamic Rehabilitation of Obstructing Laryngeal Paralysis

Gayle Woodson, MD
Todd Weiss MD*
Springfield, Illinois

Current treatment options for obstructing laryngeal paralysis include tracheotomy or procedures to statically enlarge the glottis, such as cordotomy or arytenoidectomy. Static enlargement of the glottis improves the airway at the expense of the voice. EMG studies suggest that paralyzed vocal folds are usually not denervated, and that there is considerable residual or regenerated innervation. 3-D motion analysis in cadaver larynges indicates that the abductor and adductor muscles rotate the arytenoid around different axes, and that external rotation about a near horizontal axis does not preclude inward rotation about a near vertical axis. We hypothesize that the adducted position of the vocal fold in laryngeal paralysis is due to a predominance of activity in adductor over abductor muscles and that externally rotating the arytenoid can improve the airway while unmasking dynamic adduction with phonation. We report the use of arytenoid rotation in 5 patients with obstructing laryngeal paralysis. A suture was passed through the muscular process of the arytenoid, and secured to the inferior cornu of the thyroid cartilage. In each case the airway was improved. Two stridorous patients had marked relief of symptoms and two of three tracheotomy dependent patients were decannulated. The third tracheotomy patient though improved, had persisting hyper-adduction of the opposite vocal fold which prevented decannulation, and she declined a second procedure. Active phonatory adduction was present in 4 of 5 patients. We conclude that arytenoid abduction shows promise for relieving obstruction due laryngeal paralysis, while preserving dynamic adduction.

3:38 PM **Friday, 19 May 2006**

Videofluroscopic Findings in Dysphagic Patients with Cricopharyngeal Dysfunction: Before and After Cricopharyngeal Myotomy

Amanda A. Munoz, MD
Lorraine Downey-Cuddy, MS, CCC-SLP*
Stephanie Misono, MD*
Jo Shapiro, MD, FACS
Neil Bhattacharyya, MD, FACS
Boston, MA

OBJECTIVE: Functional outcomes after open cricopharyngeal myotomy (CPM) for Zenker's diverticulum (ZD) and cricopharyngeal dysfunction (CPD) have not been uniformly measured using videofluorographic swallow studies (VFSS). We sought to characterize pre-operative VFSS findings in ZD and CPD, and to evaluate the effect of CPM on swallowing via post-operative VFSS.
METHODS: We retrospectively reviewed the pre- and post-operative VFSS of 50 patients (36 ZD, 14 CPD) who underwent CPM over 6 years. Semi-quantitative scales were used to assess: (1) degree of stasis/residue in the pharyngeal recesses, (2) degree of narrowing at the pharyngoesophageal sphincter (PES), (3) presence or absence of aspiration, and (4) diverticular size. Grades were compared between the groups.
RESULTS: There was no significant difference between the groups in the proportions of subjects who presented with pharyngeal stasis, narrowing at the PES, or aspiration. Both before and after CPM, CPD subjects had more severe stasis than ZD subjects (p02, 0.0002). CPM improved PES narrowing in both groups (p03, 0.06) and reduced diverticular size in ZD ($p<0.001$), but did not reduce pharyngeal stasis severity and did not change the proportion of patients with aspiration in either group.
CONCLUSIONS: CPM opens up the PES and decreases the size of a Zenker's diverticulum as measured by VFSS. The presence of pharyngeal stasis on presentation may indicate that more diffuse pharyngeal weakness is a feature of both these diseases. An increased severity of stasis in CPD subjects may help explain the variable post-CPM outcomes that have been observed in this population.

3:44 PM **Friday, 19 May 2006**

Changing Trends in the Success Rate of Anterior Cricoid Split

Robert G. Berkowitz, MD
Brian W Rotenberg MD FRCSC*
Parkville Victoria Australia

PURPOSE: Determine historical trends in the extubation success rate, defined as avoiding tracheostomy, for infants with acquired laryngotracheal stenosis (LTS) who undergo an anterior cricoid split procedure (ACS).
METHODS: Retrospective chart review of all neonates with acquired LTS treated by ACS between 1989 and 2005 in a tertiary pediatric center. Student's t-test was used for statistical analysis.
RESULTS: Thirty-one infants (13 male, 18 female) were identified. All were born prematurely with an average gestational age of 27.9 weeks. During 1989-1995 an extubation rate of 69.2% was achieved in 13 children. The extubation rate for the period 1996-2005 in 18 children was only 38.9%. Consequently, the cumulative successful extubation rate by 2005 was 51.6%. In comparing the study periods1989-1995 with 1996-2005, two factors were identified that correlated significantly with the change in extubation success rate. These were duration of pre-operative intubation (mean of 19.4 weeks during 1989-1995, 28.2 weeks during 1996-2005, p04) and average weight at time of surgery (mean of 2.9kg during 1989-1995, 3.7kg during 1996-2005, p05). Relatively higher numbers of significant neurological, respiratory and cardiac co-morbidities were also identified in the 1996-2005 period.
CONCLUSION: The success rate of ACS as a means of avoiding tracheostomy appears to be in decline over the past 10 years. Prolonged pre-operative intubation, as well as a higher incidence of significant co-morbidities, may be explanatory for this change. Revising the current criteria for ACS and conveying a more pessimistic prognosis for extubation may be warranted.

3:50 PM **Friday, 19 May 2006**

Incidence of Severe Acquired Subglottic Stenosis in Newborns

Randal Leung, MBBS*
Robert G Berkowitz MD FRACS
Melbourne, Australia

OBJECTIVE: To determine the change in the statewide incidence of severe acquired subglottic stenosis (SGS) in newborns over the past decade.
METHOD: Multicenter, statewide retrospective study of all patients under the age of 12 months who were diagnosed with acquired SGS that required surgical intervention by anterior cricoid split (ACS) or tracheostomy between 1993 and 2003.
RESULTS: There were 34 patients (19 male 15 female) with a median age of 3 months at the time of surgery. The primary surgical intervention performed was ACS 20, and tracheostomy 14. Subsequently, 6 patients who failed decannulation following ACS underwent tracheostomy. Five patients died due to reasons unrelated to their SGS, and among the 29 survivors, 8 remain cannulated. The mean annual statewide incidence of severe acquired SGS over the ten year period was 4.95 per 100,000 live births. The average annual incidence of SGS in the first five years was 4.47 per 100,000 compared with 6.42 per 100,000 live births in the second five years.
CONCLUSION: The annual incidence of acquired SGS in newborns requiring surgical intervention is in the order of 0.005% and this appears to have increased over the last 10 years.

3:56 PM **Friday, 19 May 2006**

The Utility of Esophageal Biopsy in the Diagnosis of Extraesophageal Reflux Disease (EERD) in Children

Ron Mitzner, BA*
Linda Brodsky, MD
Buffalo, NY

BACKGROUND: EERD is a recognized cause of upper airway disease in children. Direct laryngoscopy and bronchoscopy (DLB) have been shown to accurately diagnose EERD. Esophagoscopy with multi-level biopsy preformed at the time of DLB may provide the clinician with additional information to assist in management of EERD.
OBJECTIVE: To determine the role of multi-level esophageal biopsy in laryngitis secondary to EERD.
METHODS: A retrospective chart review of 180 patients who underwent 143 esophagoscopies with multi-level biopsy at the time of DLB by a single provider for evaluation of symptoms suggestive of EERD at a tertiary care children's hospital.
Histopathologic presence of esophagitis was compared to gross laryngeal findings.
RESULTS: EERD was diagnosed in 97% of patients when evaluated by DLB. Esophagitis was found in 59% of these patients. Of patients who had zero, one, two, three, four, or five positive findings on DLB, 75% (3/4), 58% (7/12), 55% (20/36), 62% (32/51), 54% (18/33), 80% (4/5) had at least one positive biopsy, respectively.
CONCLUSION: EERD that affects the pediatric larynx is associated with esophagitis in more than half the patients. The higher yield due to four level biopsy, location and extent of the esophageal findings and their implications for management will be discussed.

4:02 PM **Friday. 19 May 2006**

DISCUSSION

4:12 PM **Friday, 19 May 2006**

PRESIDENTIAL CITATION FOR FOREIGN BODY MANAGEMENT

Presenter: Jonathan E. Aviv, MD

Management of a Catastrophic Aerodigestive Foreign Body

Thomas Andrews, MD, FACS*
James Quintessenza, MD†*
Jeffrey Jacobs, MD, FACS†*
Richard Harmel[1], MD, FACS*
Saint Petersburg, FL

The patient, A.P, a nine-month-old, was brought to the operating room urgently from the emergency center. The patient could not be adequately ventilated except with a 4.5 cuffed endotracheal tube with external pressure held at the neck to prevent air escape through the esophagus. The patient's history was significant for a foreign body ingestion of a camera battery which was removed three days prior to presentation. At the time of removal the battery was grasped with a basket through flexible esophagoscopy and removed, according to history, without difficulty; however, there was note of erosive esophagitis at the site.

Upon presentation, ventilation was difficult through the existing endotracheal tube and the saturations could only be held in the 80s despite intubation. Because the patient had previously placed IV access, the endotracheal tube was removed and the patient was intubated with a ventilating 3.5 bronchoscope. The examination revealed no supraglottic or glottic abnormality; however, the distal trachea demonstrated a large posterior defect with only a small strand of tissue connecting the distal trachea with the carina, (fig 1). Copious secretions were present in the left bronchus and the right mainstem, when selectively cannulated with the ventilating bronchoscope, could not hold saturations above 80.

We then selectively intubated the right mainstem bronchus with a 3.5 cuffed endotracheal tube over a Storz-Hopkins telescope. Selective intubation on the left was problematic due to copious secretions. However, even with selective intubation on the right,

saturations did not rise above 80, and in many instances were down to a low of 47.

The pediatric cardiothoracic service was then called for consideration of emergency cardiopulmonary bypass. The cardiothoracic surgeons placed the patient on cardiopulmonary bypass via a right neck cannulation and the patient was stabilized. Via a right thoracotomy, a large defect in the posterior wall of the trachea distally was demonstrated as well as complete erosion of the esophagus at the same level. Severe mediastinitis including a large abscess was found at the site. The proximal and distal segments of the esophagus were ligated. The posterior tracheal wall was then repaired with a pedicled intercostal muscle flap.

During this, the patient had central lines placed; multiple thoracostomy tubes inserted and a proximal esophageal sump with a decompressive gastrostomy tube were completed. Three days later, the patient underwent bronchoscopy which revealed some dehiscence of the flap. Conservative therapy was initially attempted.

Ten days following the initial procedure, the patient returned with dehiscence of the initial tracheal reconstruction and underwent tracheal resection with end-to-end anastomosis of the intrathoracic trachea and a small resection of distal necrotic tracheal tissue while on cardiopulmonary bypass. The repair was done using an esophageal patch tracheoplasty.

As expected, the patient had significant problems with mediastinitis initially, but the symptoms resolved over the next two weeks. After the second repair of the tracheal injury was completed, the patient underwent a cervical esophagostomy and resection of a blind-ending proximal esophagus.

The patient has continued to do well, was discharged from the hospital and although reconstruction of the esophagus will take place at a later time, the patient has continued to have normal activity without airway symptoms. Follow-up bronchoscopy reveals redundant tissue at the repair site that looks obstructive but has not accompanying symptoms. (fig2)

This potentially fatal presentation was only averted due to the multidisciplinary work of Pediatric Cardiothoracic Surgery, Pediatric Surgery, Pediatric Anesthesia, Pediatric Intensive Care and Pediatric Otolaryngology.

4:19 p.m. **Friday, 19 May 2006**

PANEL I: OFFICE-BASED LARYNGOLOGY & ESOPHAGOLOGY

Moderator: **Albert Merati, MD**
Milwaukee, WI

Transnasal Flexible Laryngoscopy & BX
Jonathan E. Aviv, MD
New York, NY

Injection Laryngoplasty
Milan Amin, MD
New York, NY

Lasers **Steven M. Zeitels, MD**
Boston, MA

Transnasal Esophagoscopy **Gregory Postma, MD**
Augusta, GA

5:00 PM **Friday 19 April 2006**

ADJOURN

7:00 AM **Saturday, 20 May 2006**

BUSINESS MEETING
ABEA MEMBERS ONLY

Announcements

Report of Nominating Committee
Election of New Officers

Report of the Treasurer

Audit Committee Report

Report of Secretary

Report of Editor
Webmaster Report

Recognition of Departing Council Members

Old Business

New Business

Recognition of Departing Officers

Introduction of New President

RECOGNITION OF CHEVALIER JACKSON AWARD RECIPIENTS 1959-2005:

1959	Louis H. Clerf, MD
1960	(no award)
1961	Herman J. Moersch, MD
1962	Paul H. Holinger, MD
1963	Edwin N. Broyles, MD
1964	Leroy A. Schall, MD
1965	Herbert W. Schmidt, MD
1966	Paul G. Bunker, MD
1967	Joel Pressman, MD
1968	Verling K. Hart, MD
1969	Joseph P. Atkins, MD
1970	Anderson C. Hilding, MD
1971	Robert M. Lukens, MD
1972	Charles M. Norris, MD
1973	Arthur M. Olsen, MD
1974	Charles F. Ferguson, MD
1975	Shigeto Ikeda, MD
1976	Blair W. Fearon, MD
1977	Francis W. Davidson, MD
1978	Seymour R. Cohen, MD
1979	M. Stuart Strong, MD
1980	DeGraff Woodman, MD
1981	Albert H. Andrews Jr., 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 W. Cummings, MD
1989	Bernard R. Marsh, MD
1990	David R. Sanderson, MD
1991	William W. Montgomery, MD
1992	John A. Tucker, MD
1993	Gerald B. Healy, MD
1994	Vincent J. Hyams, MD
1995	Lauren D. Holinger, MD
1996	Stanley M. Shapshay, MD
1997	Robert H. Ossoff, MD
1998	John Frederickson, MD
1999	Haskins Kashima, MD
2000	Eiji Yanagisawa, MD
2001	William W. Montgomery, MD
2002	Jack L. Gluckman, MD
2003	Ellen M. Friedman, M.D.

2004	Robin T. Cotton, M.D.
2005	Charles W. Vaughn, MD
2006	Andrew Blitzer, MD, DDS

8:00 AM **Saturday, 20 May 2006**

CHEVALIER JACKSON AWARD

Presenter: Jonathan E. Aviv, MD

Recipient:

ANDREW BLITZER, MD, DDS

New York, New York

SESSION #3: IN THE LAB

Moderator: Gregory Postma, MD

Augusta, GA

8:05 AM **Saturday, 20 May 2006**

Histopathologic Changes in Laryngeal Mucosa of Extremely Low Birth Weight Infants After Endotracheal Intubation

Kiminori Sato, MD, PhD
Tadashi Nakashima, MD
Kurume, Japan

The advances of medicine allow the survival of babies with increasingly lower birth weights. Newborns with normal larynges can tolerate relatively long periods of intubation; however the potential hazards of intubation-related laryngeal injury of extremely low birth weight infants (ELBWI) (under 1,000 g) have been controversial. Histopathologic changes in the laryngeal mucosa of infants including ELBWI after endotracheal intubation were examined.

Forty-four infants of autopsy cases, who had been intubated for periods varying from 10 minutes to 138 days, were examined using whole organ serial section study. Their weights varied from 350 to 3,160 g, and were under 1,000 g in 21 newborns, 1,000 g to less than 1,500 g in 6 newborns, 1,500 g to less than 2,500 g in 10 newborns, and 2,500 g to 3,160 g in 7 newborns. All cases had normal larynges prior to intubation.

As the duration of intubation lengthened, ulceration was found to be larger and deeper. The injury at the subglottis was greater than that of other portions. In cases intubated longer than 7 days, cartilage was exposed in almost all cases. Repaired epithelium which was composed of squamous epithelium was present in 6 of 7 larynges that had been intubated 480 hours or longer, indicating that not only injury but also regeneration of the epithelium occurred during intubation. There were no obvious relationships between the degree of intubation injury and the birth weight of infants.

8:12 AM **Saturday, 20 May 2006**

The Effects of Fibroblasts Upon the Epithelial Regeneration on the Surface of the Artificial Trachea

Yukio Nomoto, MD*
Ken Kobayashi, PhD*
Teruhisa Suzuki, MD*
Yasuhiro Tada, MD*
Masao Miyake, PhD*
Koichi Omori, MD
Akihiro Hazama, MD*
Fukushima, Japan
Tatsuo Nakamura, MD*
Kyoto, Japan

PURPOSE: In order to accelerate the epithelial regeneration on the artificial trachea which has been clinically used, we have made in-vitro and in-vivo studies using the artificial trachea combined with tracheal epitheliocytes. Regeneration of submucosal tissue will also accelerate the epithelial regeneration. The purpose of the present study is to evaluate the effects of fibroblasts for epithelial regeneration of trachea.
METHODS: In-vitro We co-cultured tracheal epitheliocytes of rats with fibroblasts harvested from submucosal tissue of trachea of rats. Epithelial proliferation was assessed by the speed of extension of epithelium, and differentiation of the epitheliocytes were assessed by the forms of epithelium, appearance of the differentiated epitheliocytes, polarization of basement membrane. In-vivo We transplanted the grafts which consisted of artificial trachea and collagenous gel including fibroblasts for the tracheal defects of rats.
RESULTS: In-vitro Fibroblasts activated proliferation of epitheliocytes and made them fast to cover the blank regions of the epithelium. Epitheliocytes reconstructed pseudostratified epithelium, which was composed of ciliated, goblet and basal cells in an appropriate manner. The basement membrane was reconstructed firmly with polarity. In-vivo After transplantation, viable fibroblasts could be observed in collagenous sponge of the artificial trachea.
CONCLUSIONS: The results of this study indicate that fibroblasts had the stimulatory effects to hasten functionally and morphologically normalized epithelial regeneration. Fibroblasts survived in the transplanted artificial trachea may play a role to accelerate the epithelial regeneration.

8:19 AM **Saturday, 20 May 2006**

Relationship Between Time Exposure and Extraesophageal Reflux on Gene Expression in Laryngeal Fibroblasts

Riitta Ylitalo, MD*
Stockholm, Sweden
Susan L. Thibeault, PhD*
Salt Lake City, UT

BACKGROUND: Acid reflux has been recognized as damaging to laryngeal mucosal; however, the significance of the length of reflux episodes on the larynx has not been evaluated. The purpose of this study was to determine if various time exposures of low pH and/or pepsin alter gene expression in laryngeal fibroblasts.
MATERIAL AND METHODS: Human false vocal fold (FVF) and post-cricoidal (PC) primary fibroblast cultures were exposed to pH4 and pH5 media with and without pepsin for 10, 30, 60 and 240 seconds. Using real-time PCR, mRNA expression of TGFβ1, VEGF, FGF2, ERG1, AFT3, CTGF, MMP1, MMP2 and decorin, genes that represent wound repair mediators present in inflammatory conditions, was determined.
RESULTS: Overall, mRNA transcript levels differed significantly between FVF and PC fibroblasts. When exposed to pepsin and/or acid media PC fibroblasts had a greater response in gene expression, as compared to the FVF fibroblasts, across all time points. No differences were measured in gene expression across 10, 30 and 60 seconds in either tissue types, however at 240 second differences were measured across all conditions in PC cultures, for VEGF, FGF2, MMP2, AFT3 and CTGF.
CONCLUSIONS: PC fibroblasts were more sensitive to changes in pH and/or pepsin than FVF with the greatest differences measured for pH5. Length of exposure to reflux appears to play a role when it is 240 seconds but not when 60 seconds or shorter. The findings imply that length of time exposure to extraesophageal reflux is an important factor in understanding the etiology of posterior laryngitis.

8:26 AM **Saturday, 20 May 2006**

Human Lung Mucus Glands Manifest Evidence of H+/K+-ATPase Proton Pump

Kenneth W. Altman MD, PhD
New York, NY
Joshua D. Waltonen, MD*
Gabor Tarjan, MD*
James A. Radosevich, PhD*
G. Kenneth Haines III MD *
Chicago, IL

PURPOSE: The H+/K+-ATPase (proton pump) has been demonstrated in human laryngeal submucosal glands, and is not solely present in the parietal cells of the stomach. While proton secretion is present in the lung, a specific mechanism has not been elucidated. The hypothesis of this study is that the proton pump is expressed in other tissue of the human aerodigestive tract such as the lung.
METHODS: Fourteen surgical lung specimens from 10 subjects were retrospectively obtained after approval from Human Subjects Committee. Banked human stomach tissue was used for comparative positive and negative controls. Sections were immunostained with two monoclonal antibodies selectively reactive with alpha or beta subunits of the H+/K+-ATPase (proton) pump.
RESULTS: In the human lung, consistent staining for both subunits was present in the mucous gland cells and ducts in all specimens where mucus glands were present (6 specimens from 5 subjects). Overall, weak to strong staining was present in focal areas within the multicellular mucus glands. There was only scant focal staining in the respiratory epithelium in 4 specimens. Stomach parietal cells exhibited strongly positive staining for both subunits of the proton pump. There was no staining in stomach cells that were not morphologically consistent with the parietal cell.
CONCLUSION: The H+/K+-ATPase (proton) pump is present in mucinous cells and ducts in the human lung, with some variable expression noted. Proton pump inhibitor pharmacotherapy may have a site of action in the human lung, explaining some of the controversies otherwise attributable to inter-relatedness of aerodigestive tract disease.

8:33 AM **Saturday, 20 May 2006**

Effects of Altered Consciousness on the Protective Glottic Closure Reflex

Clarence Sasaki, MD
Jiajun Xu, MD
New Haven, CT
Ziwei Yu, MD*
Shanghai, China

The sphincteric function of the larynx, essential to lower airway protection, is most efficiently achieved through strong reflex adduction by both vocal cords. We hypothesize that central facilitation is an essential component of a bilateral brainstem-mediated adductor reflex and that its disturbance by altered consciousness or physiologic sleep could result in weakened sphincteric closure. In ten adult pigs the glottic closure response was evaluated under light and deep isoflurane anesthesia. The internal branch of the superior laryngeal nerve was stimulated through bipolar platinum-iridium electrodes, and recording electrodes were positioned in the ipsilateral and contralateral thyroarytenoid muscles. The force of evoked glottic closure was measured with a pressure transducer positioned between the vocal cords. Consistent threshold responses (>90%) were obtained ipsilaterally from 0.5 to 2.0 MAC anesthesia. However, the contralateral reflex responses declined to 6.4.

These results offer a unified explanation for several interesting clinical observations including the vulnerability to tracheal aspiration during sleep, the increased incidence of life-threatening aspiration among sedated patients in an intensive-care setting and among institutionalized patients under heavy psychotropic control in whom death from aspiration represents a highly significant risk.

8:40 AM **Saturday, 20 May 2006**

DISCUSSION

8:48 AM **Saturday, 20 May 2006**

SEYMOUR COHEN AWARD WINNER

Partial Neurolysis of the Hypoglossal Nerve for Selective Lingual Atrophy

Ana Teresa D. Licup, MD*
Homan Arkia MD*
Raanan Cohen-Kerem MD*
Vito Forte MD*
Toronto, Canada

INTRODUCTION: Obstructive sleep apnea (OSA) occurs in children with a prevalence of 3%. The primary mechanism of obstruction has been the excessive prolapse of the tongue base into the oropharynx during the deep phase of sleep. Children with micrognathia/macroglossia are at increased risk. Initial treatment uses CPAP, and any additional surgical treatment has focused on correcting tongue-mandibular proportions. Deliberate denervation of the tongue base to induce atrophy offers a less extensive approach.
PURPOSE OF THE STUDY: This three-stage experiment conducted on the porcine model was undertaken to establish the degree of volume reduction that can be achieved after partial denervation of the tongue base.
METHODS: Mapping of the distribution of the hypoglossal nerve to the muscles of the tongue base was achieved by stimulation of the main trunk at the submandibular space in the (anesthetized animal). The latter two stages documented the amount of volume reduction after complete and partial neurolysis of the hypoglossal after three months.
RESULTS: A lateral branch of the hypoglossal nerve was identified to be dedicated to innervating the posterior tongue and was isolated as the nerve of interest. Comparable decrease of length, height and weight of the posterior tongue was noted three months after complete and partial denervation. Histologically, complete denervation showed significant replacement of muscle tissue with fat and connective tissue and partial neurolysis only showed limited muscular atrophy.
CONCLUSION: Controlled atrophy of tongue musculature through selective denervation is a promising concept for relieving the obstruction of the oropharynx (by reducing tongue muscle volume) without sacrificing deglutition and protection of the larynx. It is potentially simple to undertake and less invasive than glossectomy and mandibular advancement procedures.

8:56 AM **Saturday, 20 May 2006**

Comparative Neuromuscular Histopathology of Cricopharyngeal Achalasia Patients With and Without Previous Botulinum Toxin Treatment

Albert Merati, MD
Jeffrey Tseng, MD*
Joel H. Blumin, MD
Robert J. Toohill, MD
Safwan Jaradeh, MD*
Milwaukee, WI

OBJECTIVES: Botulinum toxin (BT) injection and cricopharyngeal (CP) myotomy are performed in the treatment of cricopharyngeal achalasia (CA). The objective of this study is to examine the effects of botulinum toxin on neuromuscular histopathology and to make direct comparisons between specimens of muscle from CA patients having received botulinum injection to the upper esophageal sphincter and CA patients with no previous exposure to botulinum toxin.

METHODS: Retrospective review (2001-2005) of CP muscle specimens of all patients undergoing myotomy for CA. Cases of Zenker's diverticulum are excluded. Patient demographics, clinical course, and neuromuscular pathology findings are noted from the chart.

RESULTS: Eighteen cricopharyngeal achalasia patients are identified; 9 male and 9 female, with a mean age of 58. Eleven had no prior BT (6 males/5 females, mean age 62); 7 had previous treatment with BT (3 males/4 females, mean age 51). 8/11 BT-naïve patients revealed predominantly myopathic changes on histology. Those with previous BT tended to be younger; 6/7 had a clinical benefit from their BT injection and ultimately went on to myotomy. The CP muscle specimens featured both mixed and neurogenic pathology in 4/7 patients. Though these findings suggest some impact of BT on CP muscle, the difference between the groups was not statistically significant.

CONCLUSIONS: BT treatment has a clinical and histopathological impact on the UES of patients with cricopharyngeal achalasia. Though neuropathic changes are noted in the CP muscle of previously injected patients at the time of their CP myotomy, the neuromuscular pathology overall is not significantly different from botulinum naïve patients.

9:03 AM **Saturday, 20 May 2006**

Heterogeneity of Advanced Squamous Cell Carcinomas of the Larynx – Analysis of Tumor Biologic Factors as Seen in Serial Sections

Claus Wittekindt, MD*
Christian Sittel, MD
Julian Greiss, MD*
Wei-Shih Liu, MD*
Hans Edmund Eckel, MD
Klagenfurt, Austria

PURPOSE OF THE STUDY: To demonstrate heterogeneity of biologic factors in different regions of advanced human squamous cell carcinomas (SCC) of the larynx.
METHOD OF STUDY: Twelve excised human larynges were block-embedded in paraffin. Serial sections were stained by Giemsa and standard immunohistochemistry protocols with commercial antibodies against Cytokeratin 5/6, Ki-67, Topoisomerase IIα and p53. Morphometric surface maps of protein expression were generated for each parameter. Variation coefficients were computed to demonstrate intraindividual variation.
SUMMARY OF RESULTS: The tissues remained intact without major artefacts. Specific characteristics of the tumors were identified after evaluation of the whole-mount sections. Staining of cytokeratin was homogonous, whereas nuclear markers showed a distinct heterogeneity in the respective staining patterns. By analyzation of colour-coded fusion images the spatial expression of the respective antibodies could be visualized. Variation coefficients for three-dimensional distribution of proliferation rates and p53 protein expression were obtained.
CONCLUSIONS: To demonstrate the heterogeneity in SCC of the larynx, biologic parameters were shown in a three-dimensional model. The results confirmed previous observations that SCC of the larynx are heterogenous tumors. Controversial results of studies from biopsy samples on proliferation rates or p53 protein expression and clinical outcome hereby can be explained. Regions with increased proliferation might predict locations of possible tumor recurrence.

9:10 AM **Saturday, 20 May 2006**

The Role of Vascular Endothelial Growth Factor-A in the Pediatric Airway Stenosis

Reza Rahbar, DMD, MD
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OBJECTIVE: Vascular Endothelial Growth Factor-A (VEGF-A) is known to play an important role in the angiogenic response for wound healing. This study was designed to investigate whether VEGF-A may play a role in the pathogenesis of acquired airway stenosis.
DESIGN: Retrospective study with institutional review board approval
SETTING: Two tertiary care medical centers
PATIENTS: Six patients with history of subglottic stenosis after airway reconstruction (N or prolonged intubation (N. There were four males and two females with a mean age of 5 years (range: 1-9 years). Normal pediatric laryngeal samples from 5 autopsy patients were used as controls.
INTERVENTION: Formalin-fixed paraffin embedded sections of subglottic scar tissue from nine lesions in six patients with subglottic stenosis and five control patients were examined by in situ hybridization for the presence of messenger RNA (mRNA) for VEGF-A and vascular endothelial growth factor receptor 1 (VEGFR-1) and vascular endothelial growth factor receptor 2 (VEGFR-2).
RESULTS: Strong expression of VEGF-A mRNA was noted in the squamous epithelium overlying the granulation tissue and fibrous scaring in all patients with sections demonstrating residual epithelium. Strong expression of VEGFR-1 and VEGFR-2 was noted in the epithelial cells of the underlying vessels in all nine lesions.
CONCLUSION: Receptor mRNA for the angiogenic growth factor VEGF (VEGFR-1 and VEGFR-2) is strongly expressed in the epithelial cells of granulation and scar tissue in acquired subglottic stenosis. The overlying epithelium shows strong expression of VEGF. This suggests an important role of VEGF in the pathogenesis of airway scar formation and stenosis.

9:17 AM **Saturday, 20 May 2006**

Gene Therapy for Laryngeal Paralysis

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Surgical options for the management of laryngeal paralysis only achieve static changes of vocal fold position. Laryngeal reinnervation procedures have had little impact on the return of dynamic laryngeal function and are still not widely accepted as a treatment option. The failure of the return of dynamic laryngeal function is the result of multiple factors including a decrease in motor fiber density, laryngeal muscle atrophy, motoneuron loss in the nucleus ambiguus, and misdirected innervation by antagonistic motoneurons.

To overcome these neurological problems and assess the possibility of gene therapy for laryngeal paralysis aiming for the return of dynamic laryngeal function, we investigated the therapeutic effects of gene therapy using rat laryngeal paralysis models. In rat vagal nerve avulsion model, GDNF (glial cell line-derived neurotrophic factor) gene was transferred into the nucleus ambiguus using adenovirus vector. Two and four weeks after GDNF gene transfer, GDNF transfected animals had a significant larger number of survived motor neurons. These neuroprotective effects of GDNF gene transfer were enhanced by simultaneous BDNF (brain derived neurotrophic factor) gene transfer. In rat recurrent laryngeal nerve crush model, GDNF gene was transfected into recurrent laryngeal nerve fiber after crush injury. Two and four weeks after GDNF gene transfer, significantly faster nerve conduction velocity and better vocal fold motion recovery were observed in GDNF transfected animals.

These results indicate that gene therapy could be a future treatment strategy for laryngeal paralysis. Further studies will be necessary to demonstrate the safety of the vector prior to clinical application.

9:24 AM **Saturday, 20 May 2006**

DISCUSSION

9:32 AM **Saturday, 20 May 2006**

Innovative Concepts for Management of Aerodigestive Foreign Bodies

Ellen S. Deutsch, MD
Divya Dixit, MD*
Kelly Malloy, MD*
Thomas Christenson, MD*
Joseph Curry, MD*
David Cognetti, MD*
Wilmington, DE

A 10-month old infant presented with a history of witnessed choking event. She has no allergies, she is not taking any medications, and her past medical history is otherwise unremarkable. She had an SpO2 if 82/5m retractions, asymmetric breath sounds and asymmetric chest wall motion. Chest radiographs including decubitus images suggested left lung atelectasis. In the operating room she was given general anesthesia. During preparation for endoscopy, she demonstrated worsening hypoxia, cyanosis and associated bradycardia, which resolved when the endoscopist coordinated her management with the anesthesiologist to provide effective oxygenation and ventilation. When the endoscopist attempted to enter the larynx, her glottis closed; this transient laryngospasm was managed by positive pressure ventilation. Discussion with the anesthesiologist resulted in a deeper plane of anesthesia, preventing further laryngospasm.

Using a telescope, during episodes of apnea, with intermittent mask ventilation coordinated between the endoscopist and anesthesiologist, direct laryngoscopy and bronchoscopy was accomplished. A foreign body was visualized obstructing the left main bronchus. Bronchoscopy was performed using a ventilating bronchoscope and telescope. The foreign body was visualized and grasped with an optical alligator forceps. As the foreign body and bronchoscope were withdrawn simultaneously, the foreign body was stripped from the forceps in the subglottis; it was retrieved and removed without further adverse events. After the procedure and debriefing were completed, the foreign body was re-inserted into the high fidelity computerized, patient simulation mannequin and the exercise repeated.

High fidelity mannequins are sophisticated, life-sized human models that can respond to, or interfere with, intubation and "ventilation", they have palpable pulses, chest wall motion, breath sounds, cardiac rhythms, verbal responses, and realistic anatomic, physiologic, and hemodynamic responses to interventions. Rather than relying on instructor description, the participant continually evaluates and responds directly to the mannequin's condition. Participants, either singly or in teams, respond to this sense of realism and rehearse to improve provider performance and patient safety.

The mannequins are controlled by a combination of standard and custom programming designed to simulate desired specific clinical objectives, and by interventions controlled in real time by a facilitator. The mannequins electronically sense and respond to certain physiologic and mechanical interventions, such as jaw thrust maneuver, tracheal intubation, right main bronchus intubation; the administration of oxygen or medications, and external defibrillation.

9:38 AM **Saturday 20, May 2006**

BREAK WITH EXHIBITORS

Saturday, 20 May 2006

SESSION #4: IN THE FUTURE

Moderator: J. Scott McMurray, MD

Madison, WI

10:00AM **Saturday, 20 May 2006**

Office Based Pulsed KTP-532nm Laser Treatment of Glottal Papillomatosis and Dysplasia

Steven M. Zeitels, MD
James A. Burns, MD
Robert E. Hillman, PhD*
Lee N. Akst, MD*
Matthew S. Broadhurst, MD*
R. Rox Anderson, MD*
Boston, MA

Several years ago, we introduced office-based photoangiolytic laser treatment of glottal papillomatosis and dysplasia using the 585nm pulsed-dye laser (PDL). Photoangiolytic treatment of these mucosal diseases has been shown to be effective for achieving disease regression with voice preservation. The 532nm wavelength of the Potassium-Titanyl-Phosphate (KTP) laser also corresponds to one of the absorption peaks of hemoglobin and is available in many institutions. Therefore, a prototype solid-state pulsed KTP-laser was designed based on our PDL experience. A pilot investigation was done to assess this laser's performance in treating mucosal papillomatosis and dysplasia of the vocal folds.

A prospective study was done in 13 cases (8 dysplasia, 5 papillomatosis). The prototype solid-state pulsed KTP 532nm laser was used (fluence of 70 J/cm2; 15ms pulse-width; 2 pulse/second repetition-rate) to treat glottal papillomatosis and dysplasia in an office setting with local anesthesia. Four of 13 underwent recent surgery and follow-up is pending. In the remaining 9 patients, the disease involuted substantially (7:>90%, 2:75%). All patients reported that their voice was unchanged or improved. Our clinical observations reveal that there was less microcirculatory vascular rupturing and associated blood extravasation with the pulsed-KTP laser as compared with the PDL.

The pulsed-KTP 532nm laser effectively involuted glottal papillomatosis and dysplasia in an office setting. Preliminary clinical observations suggest that the pulsed-KTP laser may more be more effective than the PDL at sealing the microcirculation suspended within the superficial lamina propria of the vocal-fold mucosa. Greater experience will be necessary to fully characterize these observations.

10:07 AM **Saturday, 20 May 2006**

Office-Based and Microlaryngeal Applications of a Fiber-Based Thulium Laser

James Burns, MD
Steven M. Zeitels, MD
Robert E. Hillman, PhD*
Lee N. Akst, MD*
Matthew S. Broadhurst, MD*
Boston, MA

The carbon dioxide (CO2) laser is the premier dissecting instrument for hemostatic cutting and ablation during endolaryngeal surgery. However, microlaryngeal tangential dissection and office-based photoablation have been limited by the lack of a fiber-based delivery system. To address this, a new laser was designed, which is a diode-pumped solid-state laser with a Thulium doped YAG laser rod. It produces a continuous wave beam with a wavelength of 2013nm and a target chromophore of water. This new laser functions similarly to a CO2 laser with the benefit of being delivered through a small glass fiber (.4-.6mm).

A prospective pilot trial was done in 44 cases to explore applications of the new Thulium laser. Twenty procedures were done using the laser as an ablating instrument with topical anesthesia through a flexible laryngoscope (papillomatosis:11, dysplasia:7, edema:2). Nineteen procedures were done using the laser as a cutting instrument for microlaryngeal dissection with general anesthesia.

This included 15 partial laryngeal resections (supraglottis: 7, glottis: 7, subglottis:1) and 4 posterior glottic laryngoplasties. The laser was also used as an ablative instrument during microlaryngoscopy in 5 cases. Most remarkable was the fact that electrocautery was not needed to control bleeding in any case.

Because of the fiber-based delivery system, the 2-micron continuous-wave Thulium laser shows substantial promise for tangential dissection during microlaryngoscopy and soft-tissue photoablation during office-based flexible laryngoscopy. Hemostasis was judged to be superior to experiences with the CO2 laser. In this pilot study, performing en bloc cancer-resection procedures was facilitated by use of the Thulium laser.

10:14 AM **Saturday, 20 May 2006**

The Management of Laryngotracheostenosis (LTR) with Combined Nd:YAG Laser Incision and Balloon Dilation Tracheoplasty Performed Under Topical Anesthesia with Sedation

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Scott M. Graham, MD*
John S. Ferguson, MD,*
Geoffrey McLennan, MD*,
Iowa City, IA

PURPOSE OF THE STUDY: Laryngotracheostenosis (LTS) is a condition in which the airway between the vocal cords and carina is narrowed. A variety of surgical management strategies have been proposed to treat LTS, each with its own benefits and limitations.
STUDY DESIGN: A retrospective chart review was performed.
Methods: Patients with LTS treated at a tertiary referral hospital between January 1, 2000 and April 2005 who underwent endoscopic Nd:YAG laser incision and balloon dilation tracheoplasty performed with topical anesthesia and IV sedation were included.
RESULTS: Eighteen patients were included in the study (12 females and 6 males). Etiologies of LTS were idiopathic0, iatrogenic, Wegener's granulomatosis, radiation, and inhalation injury. The average age was 51.4 years (range8 to 74). Thirty-six procedures were performed. Eight subjects required only 1 procedure, 5 subjects required 2 procedures, 3 subjects had 3 procedures, 1 subject had 4 procedures, and 1 subject had 5 procedures until an adequate airway was obtained. The average follow-up was 22 months (range 3 to 55 months). The average body mass index (BMI) was 32.2 kg/m2(range0.8 to 42.2 kg/m2). There were no complications and all were successfully performed without general anesthesia.
CONCLUSION: Combined Nd:YAG Laser incision and balloon dilation is a safe and effective management tool in the treatment of LTS. It can be performed under topical anesthesia with sedation. This technique may be particularly beneficial in patients who are at increased risk with general anesthesia

10:21 AM **Saturday, 20 May 2006**

The Glottal Closure Index – Predictor of Glottal Pathology in Children

Ari DeRowe MD
Jacob Cohen, MD
Yael Oestreicher-Kedem MD*
Tel Aviv, Israel

BACKGROUND: Hyperkinetic laryngeal behaviors (muscle tension) may be used to achieve glottal closure in the presence of vocal cords pathology interfering with glottal closure. In adults the Glottal Closure Index (GCI) is a validated 4-item self-administered survey used to evaluate glottal insufficiency.
OBJECTIVE: We sought to evaluate the association Glottal Closure Index (GCI), muscle tension patterns (MTP) and vocal fold lesion causing glottal insufficiency in children.
METHODS: 100 consecutive children under 16 years of age were prospectively evaluated. All underwent a comprehensive head and neck examination that included transnasal fiberoptic laryngoscopy. 4-item glottal closure index questioner was administered to the parents of each study subject on study entry. Abnormal MTPs were compared in subjects with and without vocal fold findings using flexible fiberoptic laryngoscope.
RESULTS: The mean age of the cohort was 7 years. Vocal cords lesion such as nodules, vocal cords bowing and edema were found in 42% of the examinations. 93% of the children with vocal cords lesion had MTP during laryngeal examination. High glottal closure index correlated with hoarseness (mean 4.1-+/-4.3) and was a positive predictor of abnormal MTPs with and without vocal fold findings.
CONCLUSIONS: There is a significant correlation between hoarseness, high GCI and abnormal MTPs in children with underlying glottal insufficiency with or without vocal cord pathology. The Glottal Closure Index is a useful clinical tool in the diagnosis of these children.

10:28 AM **Saturday, 20 May 2006**

Transcutaneous Electrical Stimulation for Dysphagia: Myth or Reality?

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Lee's Summit, MO
Jeff Searl, PhD, CCC-SLP*
Kansas City, KS
Taib A. Rawi, MS III*
Kansas City, MO

Objective: Since it's approval by the F.D.A. in January, 2003 VitalStim therapy®, manufactured by the Chattanooga Group, Chattanooga, TN., has sold over 5000 units relying on a strong marketing to hospitals and speech and language pathologists. This technique is touted as being significantly efficacious in improving swallowing in patients with mild to severe dysphagia. Aside from anecdotal reports included in their marketing and two small studies performed prior to the introduction of their device, there is a paucity of publish studies validating this technique. We propose to retrospectively analyze our data on the first thirty two patients receiving this therapy, attempting to determine in which patients, if any, are best managed with this technique.

Methods: Retrospective chart review of the first thirty two patients. Pre and Post treatment video swallow evaluations by blinded speech pathologist. Telephone interviews to determine dysphagia status of subjects utilizing a standard questionnaire. Statistical analysis of results.

Results: Three subjects (9%)(1 s/p skull base surgery, 2 s/p CVA) noted to have marked improvement in both video swallow and questionnaire. 41% (13/32) subjects had mild improvement. 50% had no measurable improvement.

Conclusion: Like many new therapeutic modalities, initial excitement of VitalStim® therapy must be tempered. Appropriate indications are difficult to identify.

10:35 AM **Saturday, 20 May 2006**

Efficiency with Sheathed Versus Unsheathed Flexible Endoscopes

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Seattle, WA
Corinne E. Horn, MD, MS*
Chicago, IL
Hector P. Rodriguez, MD*
Thomas Murry, PhD
New York, NY

OBJECTIVE: The purpose of this study was to compare the amount of time spent by the ENT surgical house staff on laryngoscope reprocessing when using a sheath-based system as compared to the standard technique of immersion in 0.55% ortho-phthalaldehyde for inpatient Otolaryngology consultations. In an environment of limited work hours, the most efficient reprocessing technique might allow more time for patient care and house-staff education.

METHODS: A prospective study calculating the time required to reprocess TFL scopes was carried out over a 4 week period using 0.55% ortho-phthalaldehyde on Monday, Wednesday, and Friday, and an EndoSheath on Tuesday, Thursday, Saturday, and Sunday. Reprocessing data was recorded for each TFL consultation.

RESULTS: 109 trans-nasal fiber-optic laryngoscopies were performed over a 1 month period. 57 were reprocessed using 0.55% ortho-phthalaldehyde, and 52 using the sheath based technique. On average, the residents devoted 17 minutes and 45 seconds of reprocessing time per scope in the 0.55% ortho-phthalaldehyde group. On average, it took 18 seconds of reprocessing time per scope in the sheath group. A student's t-test showed that the difference between the average reprocessing times in the sheath and 0.55% ortho-phthalaldehyde groups was statistically significant ($p<0.0001$).

CONCLUSION: The use of the EndoSheath-based system as compared to the traditional method of 0.55% ortho-phthalaldehyde reprocessing resulted in almost 17.5 minutes of saved time per scope for the consulting Otolaryngology resident. When translated into time per allowable work week, this represents more than 10% improved efficiency in resident work hours for a given week.

10:42 AM **Saturday, 20 May 2006**

Initial Feasibility Studies of an Intralingual Retractor Device for Obstructive Sleep Apnea (OSA)

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Liancai Mu, MD, PhD,*
Bergenfield, New Jersey
Asif Amirali, MD*
New York, New York
Johann Stein, MD,
West New York, New Jersey

PURPOSE: OSA is largely caused by posterior collapse of the tongue during sleep. This study tested the feasibility of a novel intralingual retracting device that may prevent collapse of the tongue base into the pharyngeal airway.
GOAL: The objectives were to demonstrate that: 1) a retractor could be inserted by injection; 2) the device would remain in position without interfering with swallowing or respiration; 3) the device would not cause fibrosis or infection.
METHODS: Ten 30 kg female swine underwent insertion of prototype devices and were observed for up to 14 days. The device consisted of a flexible shaft (2 mm in diameter and 7 cm in length) with a retractor disc (2 x 8 mm) at its distal end. A 20 gauge spinal needle was passed through the midline of the tongue between the genioglossus muscles from the frenulum to the tongue base. The shaft was reverse threaded through the tongue until the retractor disc indented the tongue base. The anterior end of the shaft was then secured by a soft bolster that rested against the frenulum.
RESULTS: After some initial modifications the device could be inserted within 20 minutes without bleeding. Subjects ate immediately after recovering from anesthesia. Postoperatively, there was no airway compromise or infection. Histological examination showed minimal fibrotic reaction.
CONCLUSION: This study demonstrated that an intralingual retractor device has the potential for becoming a minimally invasive and reversible treatment for OSA. Future studies will test this device in a large animal model of OSA.

10:49 AM **Saturday, 20 May 2006**

DISCUSSION

11:00 AM **Saturday, 20 May 2006**

BREAK WITH EXHIBITORS

11:15 AM **Saturday, 20 May 2006**

PANEL II: DYSPHAGIA GLOBUS/DYSPHAGIA – STATE OF THE ART

Moderator : **Dana Thompson, MD**
Rochester, MN

A. History – LPR, RT, Neurodegenerative, CVA, Infection **Nicole Maronian, MD**
Seattle, WA

B. Diagnostics – TFL, Sensory Testing, EMG, Manometry, Fluoroscopy
Robert Stackler, MD
Huntington, NY

C. Therapeutics **Jamie Koufman, MD**
New York, NY

D. Cases **Mark Courey, MD**
San Francisco, CA

11:56 AM **Saturday, 20 May 2006**

Introduction of New President

GADY HAR-EL, MD
Brooklyn, NY

12:00 PM **Saturday, 20 May 2006**

ADJOURN

12:15 PM **Saturday, 20 May 2006**

Annual Photograph of the Membership

ABEA PRESIDENT'S RECEPTION
&
COMBINED
SCIENTIFIC POSTER SESSION

Hyatt Regency
Chicago, IL

AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION

AMERICAN LARYNGOLOGICAL ASSOCIATION

AMERICAN RHINOLOGIC ASSOCIATION

All ABEA, ALA, ARS, ANS and AOS registrants and guests are invited.

Scientific Posters will be attended by authors.

Abstracts of ABEA submissions to the Combined Scientific Poster Session appear on pages (76-89) of this program booklet.

RULES CONCERNING THE PRESENTATION OF PAPERS AT THE ANNUAL MEETING

1. 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.

2. Five complete copies of the paper and illustrations must be submitted prior to the presentation. If the presenter does not comply with this rule, the paper may not be given. Three copies of the manuscript should be directed to The Annals of Otology, Rhinology & Laryngology, 2 copies to Gady Har-El, MD, Editor of the ABEA Transactions. For those seeking awards, 1 copy must be sent to Ellen M. Friedman, MD of the Awards and Thesis Committee.

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5. 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.

Management of Congenital Laryngeal Cysts Using the Microdebrider

David H. Darrow, MD, DDS

WITHDRAWN

Clinical Analysis of the Laryngotracheal Stenosis

Benjamin Youngho Kim, MD, PhD
Seung Jae Baek, MD*
Seoul, Korea

BACKGROUND AND OBJECTIVES: When performing an endotracheal intubation or tracheotomy to an unconscious patient in emergent situations, one should consider the possibility of later complication of laryngotracheal stenosis (LTS) which can result in difficulties of decannulation. We analyzed the clinical features to search for the possible etiologic factors of LTS and its proper preventive methods.
MATERIALS AND METHODS: Medical records of 2,208 patients who underwent tracheotomy for the last 10 year period were retrospectively reviewed regarding several parameters such as the duration of intubation, site of tracheostoma, site of stenosis and treatment modality.
RESULTS: Tracheotomy performed by non-otolaryngologists had a tendency to have the tracheostoma at higher level of trachea. Technical precautions should be taken into consideration when doing a tracheotomy. Bronchoscopic evaluation and tracheal stent insertion were most commonly used. Successful decannulation was achieved in about 70%, and it required almost a year.
CONCLUSIONS: It was desirable that the endotracheal intubation should be limited within 20 days at most. Using a database of the tracheotomized patients, careful follow-up should be done to diagnose any early development of LTS.

Endoscopic Myotomy of the Cricopharyngeal Muscle with Mucosal Preservation

Katherine J. Shen, MD*
Peak Woo, MD
New York, NY

PURPOSE: Cricopharyngeal dysfunction can lead to severe dysphagia and aspiration. Current treatment techniques include external myotomy, dilation, infiltration with botulinum toxin, and endoscopic transmucosal myotomy. We present an alternate method that is performed endoscopically and maintains mucosal integrity.

DESIGN & METHOD: Case presentation and literature review of treatment options for cricopharyngeal dysfunction.

SUMMARY: Endoscopic cricopharyngeal myotomy using electrocautery, but maintaining mucosal integrity, was performed on a patient with severe dysphagia caused by cricopharyngeal muscle dysfunction. The procedure was well tolerated with no complications. As the mucosal lining was reapproximated, the patient was able to feed orally the next day circumventing the need for nasogastric tube placement or prolonged parenteral feeding.

CONCLUSION: We report a novel approach to endoscopic cricopharyngeal myotomy with mucosal preservation. This technique is a safe and effective treatment for cricopharyngeal dysfunction and allows early oral intake as well.

Long-term Efficacy of Micronized Acellular Dermis in Vocal Fold Augmentation

William P. Innis, MD*
Gregory A. Grillone, MD
Boston, MA

PURPOSE OF THE STUDY: Glottic insufficiency can have devastating effects on voice quality. Augmentation with various materials has been shown to be effective; however, no one material exhibits all desired characteristics. A non-toxic, non-reactive, biocompatible compound with low resorption and ideal viscous properties has yet to be developed. Micronized acellular dermis exhibits many of these properties. While short-term results appear to be good, long-term effectiveness appears to be variable. The purpose of our study is to evaluate the long-term effectiveness of micronized acellular dermis for vocal cord augmentation.

DESIGN AND METHOD OF STUDY AND ANALYSIS: Retrospective review of patients who underwent vocal fold augmentation for glottic incompetence with injection of micronized acellular dermis utilizing a transcutaneous mini-hole approach through the thyroid cartilage. We reviewed preoperative and postoperative videostroboscopic data as well as long-term subjective data. Maximum follow up was greater than 3 years.

SUMMARY OF RESULTS: Videostroboscopic data, particularly presence or absence of mucosal wave and degree of glottic closure, as well as subjective data of voice quality, strength and duration will be presented. Particular aspects of injection technique that may prolong effectiveness will also be discussed.

CONCLUSION: While long-term effectiveness of augmentation with micronized acellular dermis can be variable, modification of injection technique, particularly overcorrection, may improve duration of effect.

Stridor in Infants – The Initial Office Evaluation

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New York, NY

OBJECTIVES: To identify data that facilitate determination of an accurate diagnosis of the cause of stridor in infants and to develop a framework to conceptionalize the problem, particularly at the time of the initial evaluation in the office.

METHODS: We reviewed medical records of patients under one year of age with the presenting symptom of stridor, who were initially evaluated in the outpatient setting of a tertiary children's hospital. All infants underwent history, physical examination, and office flexible laryngoscopy when symptoms were mild. With moderate or severe stridor, a more complete endoscopic evaluation in the operating room was undertaken.

RESULTS: Of 203 patients, 120 (59%) were males, 83 (41%) were females. Ages ranged from three days to 11 months; 175 (80%) were six months of age or younger. Congenital anomalies were diagnosed as the cause of stridor in 170 (86%). Laryngeal anomalies caused stridor in 156 (77%); tracheal abnormalities were the cause in 13 (6%). The most common cause of congenital laryngeal anomalies was laryngomalacia (95%). 51 (25%) of the 203 patients had at least one other anomaly which contributed to airway compromise. Half had laryngopharyngeal reflux, the most common associated condition. 31 (15%) were referred with an erroneous presumptive diagnosis for which they were being treated, the most common of which was tracheomalacia.

CONCLUSIONS: A standard, rational approach to the initial office evaluation of stridor in infants facilitates management. A framework for evaluation is presented.

Laryngopharyngeal Reflux (LPR) Disease Following Thyroid Surgery

Ryo Asato MD*
Shinzo Tanaka MD*
Hoshihiro Tamura MD*
Juichi Ito MD*
Kyoto, Japan
Koichi Omori MD
Fukushima Japan
Tamaki Hisanobu MD*
Okinawa Japan

PURPOSE OF THE STUDY (or report): In this study, we investigated whether laryngopharyngeal symptoms following thyroid surgery are caused by LPR, and whether proton pump inhibitors (PPIs) are effective against these symptoms.

DESIGN AND METHOD OF STUDY AND ANALYSIS This study is prospective study for 35 patients who complained laryngopharyngeal symptom such as hoarseness, discomfort sensation, cough, sore throat and sputa after thyroid surgery.). PPI-test was performed and PPI efficacy was assessed using a 4 point symptom scale from the symptom questionnaire. At the same time laryngeal findings associated with LPR was assessed using a 4 point scale.

SUMMARY OF RESULTS: Resolution or marked improvement of symptoms was seen in 72%, and e
the all effective cases rate rises to 91.6%. No correlation was seen between resolution of symptoms and laryngeal findings.

CONCLUSION: Thyroid Surgery causes LPR in some patients, and laryngopharyngeal symptoms following thyroid surgery, such discomfort in the throat and hoarseness, are caused by LPR. The efficacy of PPIs in the treatment of LPR following thyroid surgery was around 90%, much higher than for GERD or typical LPR. This report brings glad tidings for patients distressed by laryngopharyngeal symptoms following thyroid surgery.

Combined Endoscopic and Open Approach for Removal of Indwelling Tracheal Stents

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Alice Boylan, MD*
Gerard Silvestri, MD*
Charleston, SC

OBJECTIVE: To review the results of indwelling tracheal stent removal using a combined endoscopic and open approach.
STUDY DESIGN: Descriptive case series.
METHODS: Retrospective chart review.
RESULTS: Five patients were identified who had undergone combined endoscopic and open removal of an indwelling tracheal stent. The cause of airway stenosis was intubation-related stenosis with tracheomalacia in 3 patients, and post-thyroidectomy tracheomalacia in 2 patients. The coated (3) and uncoated (2) metal mesh stents had been present for an average time of 21 months (range, 5-60 months) prior to removal. All patients presented with worsening stridor and dyspnea with two requiring intubation. Stent removal was performed in the operating room and consisted of initial exposure of the trachea for emergency airway access, removal of the indwelling stent under bronchoscopic and transtracheal guidance, followed by tracheotomy. Two patients experienced desaturations > 25% during the procedure, and 2 patients had stents that could only be partially removed. Four patients subsequently received a Montgomery T-tube with no complications after a mean follow-up of 19 months (range, 7-33 months).
CONCLUSIONS: Indwelling tracheal stents are becoming increasingly common in the management of benign airway stenosis. The stents frequently occlude with granulation tissue and may require removal. During removal, patients are at high risk of acute airway obstruction. A combined endoscopic and open removal maximizes airway protection while minimizing potential complications.

Multidisciplinary Approach to Post-Intubation and Post Tracheotomic Tracheal Stenoses: A Series of 139 Patients

Cesare Piazza, MD
Michela Bezzi, MD*
Sergio Cavaliere, MD*
Giorgio Peretti, MD*
Brescia, Italy

Iatrogenic airway stenoses are pathologic entities whose management should be evaluated by a multidisciplinary team sharing a common therapeutic algorithm. Aim of this study is to review our results in applying such a cooperative effort for management of laryngotracheal stenoses. We retrospectively analyzed 139 patients treated between 1998 and 2004 in the Center for Respiratory Endoscopy and Department of Otolaryngology of our Hospital. Indications for definitive endoscopic management were web-like stenoses less than 1.5 cm (grade I, II, and mild III according to Cotton). Complex stenoses (severe grade III and IV) received an endoscopic procedure and, if this failed, were scheduled for cricotracheal resection and anastomosis (CTRA).

Primary indications for CTRA were: severe grade III-IV stenoses, tracheomalacia, stenoses longer than 1.5 but less than 6 cm already endoscopically failed, good general conditions.

14 short stenoses (grade I-mild III) were successfully treated by endoscopy alone. Among 125 complex stenoses, 22% were cured by laser alone, while 48% needed a stent. 50% of these had good results after its removal, 27% have a permanent stent for general conditions contraindicating CTRA, and 23% have been surgically treated. No severe complications were detected after endoscopic treatment. Among 38 patients treated by CTRA, 97% has a patent airway and 1 was not decannulated. Minor and major complication rate after surgery was 39%.

This series indicates that our algorithm encompassing endoscopy as a first-line treatment and reserving the relapsing stenoses in good general conditions to CTRA, allows to cure the vast majority of these conditions.

Risk Factors for Laryngotracheal Stenosis: A Review of 74 Cases

Ahmed M.S. Soliman, MD
Ykaterina Koshkar, B.S.*
John Gaughan PhD*
Philadelphia, PA

INTRODUCTION: We present a case control study of 74 patients admitted to our institution with a diagnosis of LTS between years 1997 and 2005.
METHODS: Demographic information, past medical and surgical history, surgical procedures performed, and outcomes were collected. This data was compared with a control group of 106 patients admitted over the same period of time with complains of shortness of breath and stridor, in whom LTS was ruled out. The data collected for both groups was analyzed using Fisher's exact test and Logistic Regression analysis.
RESULTS: Demographically, the control group was not significantly different from the LTS group. Patients who had a previous tracheotomy were 10.99 times more likely to develop LTS than control cases (95% confidence interval 4.68-25.80). Patients treated for carcinomas of oropharynx and larynx were 5.95 times more likely to develop LTS than control patients (95% confidence interval 1.87-18.91). Patients who were previously intubated for more than 48 hours were 3.91 times more likely to develop LTS than control patients (95% confidence interval 1.91-8.02). Previous non-airway surgery was found to be an independent risk factor for development of LTS (common relative risk was 2.07, with 95% confidence interval 1.09-3.93). Finally, patients with LTS were 7.2 times more likely to develop obstructive sleep apnea than the control group (95% confidence interval 1.51- 34.37).
CONCLUSION: There were several risks factors identified for LTS. Multiple surgical procedures are often required for treatment, and decannulation in some cases is very difficult.

Predictors for Good Response of Diagnostic Treatment with Proton Pump Inhibitors in Laryngopharyngeal Reflux Patients

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OBJECTIVE: To determine predictors for good proton pump inhibitor (PPI) treatment response through 4 weeks period in laryngopharyngeal reflux (LPR) patients.
Study design. Open prospective clinical study.

MATERIAL AND METHODS: Data from 100 patients with posterior laryngitis and proven LPR based on upper GI endoscopy and/or positive response on omeprazole treatment during three month were evaluated. During three month omeprazole treatment, patients were classified as responders, if total (laryngological and oesophageal) symptom index improved at least 50% and patients were satisfied with results. Anamnesis data of potential risk factors, reflux symptom scores, self-rated hospital anxiety and depression scale and well-being in general scores as well as laryngoscopic, endoscopic findings, perceptual and quantitative voice assessment data were analyzed with respect to the omeprazole treatment response during 4 weeks period.

RESULTS: After 4 weeks treatment 65 of 100 LPR patients were classified as responders. Only anxiety and heartburn scores showed significant difference between responders and non-responders groups ($p<0.05$). No significant difference was found on other evaluated parameters. Logistic regression analysis revealed these variables and dose of medicine as relevant for response prediction. 1 more point of anxiety score decreased odds ratio for positive test in 1.16 time (95%CI 1.04-1.3), though presence of heartburn on entry and dose of omeprazole more than 20 mg dose daily increased odds ratio for 3.4 time (95%CI 1.3-8.6) and 3.1 time (95%CI 1.1-8.5) respectively. Combination of variables separate groups in 73% accuracy (cutoff P5).

CONCLUSIONS: Findings encourage clinicians to pay more attention to psychological distress and adequate dose for good PPI response in patients with LRR.

Characterization of Dysphagia in Blast Injuries

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OBJECTIVE: In recent years, the increasing threat of terrorism coupled with the waging of the Global War on Terrorism (GWOT) has placed non-lethal blast injuries to the forefront of both battlefield and civilian casualties. Rapid triage coupled with the availability of surgical critical care facilities on the front lines has and will continue to result in a larger population of patients sustaining blasts without succumbing to their injuries. This population may be a risk for long-term disability from both anatomic and physiologic perspectives. The purpose of this study was to examine the effects of blast injuries on swallowing and airway protection.

METHODS: The studies of 50 soldiers who had undergone blast injuries and subsequent evaluation of swallowing with a videofluoroscopic modified barium swallow (MBS) (n7) or flexible endoscopic evaluation of swallowing (FEES) (n_) were reviewed. Swallowing findings of oral and pharyngeal deficits were identified, analyzed and correlated with demographics, anatomic location, mode of injury and subsequent surgical procedures.

RESULTS: Oral transit deficits were observed in 22/37 (59.5%) of patients and some form of pharyngeal deficit was observed in all studies reviewed. Most poignantly, 21/50 (42%) demonstrated clinical or subclinical aspiration, 40/50 (80%) demonstrated vallecular or pyriform sinus residue and 42/50 (84%) experienced pharyngeal delay. In general, no significant associations were noted between dysphagia and nature of injury or subsequent interventions.

CONCLUSIONS: The findings demonstrate the variable presence of swallowing dysfunction in blast injuries, suggesting that the care of all such patients include swallowing surveillance.

Quantitative Assessment of Voice in Patients with Reflux Related Dysphonia

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OBJECTIVES: To assess and compare voice quality in patients with laryngopharyngeal reflux (LPR) and healthy voice subjects, and to select most sensitive quantitative parameters for LPR.
STUDY DESIGN. Prospective observational study
MATERIAL AND METHODS: Voice range profile (VRP), speaking voice parameters (registered in classical way), and aerodynamic maximum phonation time (MPT) were taken from 100 out patients with LRR proven by upper GI endoscopy and/or positive omeprazole test and 109 healthy voice persons. VRP analysis included pitch range (PR), maximum-minimum intensity range (max.-min.IR), total area in squares (A-Total) and area of high frequencies (A-High), speaking voice -fundamental frequency (SF0), habitual intensity (SI-Hab.), maximum speaktone (SF0-max.), maximum intensity (SImax.), speaktone range (SF0-SF0-max.), intensity range (SIHab.-SImax.), location of SF0 within VRP pitch range (SF0/PR) and slope of speaking curve (slope-SC). Overall vocal dysfunction degree (VDD) was calculated according original rules from 4 VRP parameters.
RESULTS: All VRP parameters and 4 of 8 tested speaking voice parameters- SImax., SI-Hab-SImax., SF0/PR and slope-SC showed significant difference between LPR patients and controls ($p<0.05$). MPT mean values were significantly lower only for female patients– 17.0s (95%CI 15.5-18.4) vs. 22.6s (95%CI 21.3-24) ($p<0.0001$). Logistic regression revealed max.-min.IR, AHigh and slope-SC to be the most sensitive parameters for separation of voice quality between groups (model classification sensitivity–83.0%, specificity–87.2%, overall accuracy–85.2%). Significant correlation between selected parameters and VDD as well as laryngoscopic reflux finding index was found.
CONCLUSIONS: Vocal abilities and speaking voice are impaired in patients with LPR. Selected quantitative parameters may be complementary for diagnosis of LPR and assessing of treatment efficacy

Immuno-Scanning Electron Microscopy of Collagen Types I and III in Human Vocal Folds

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BACKGROUND: The extracellular matrix is of extreme interest to tissue engineers and clinicians seeking improved treatment for vocal folds. Our previous work revealed the distribution of collagen types I and III in human vocal fold lamina propria and raised questions about the presence and role of collagen fibrils. The current study was undertaken to elucidate the type of collagen fibrils in the extracellular matrix of human vocal fold lamina propria by immuno-scanning electron microscope using immunogold labeling for collagen types I and III.
METHODS: Human normal vocal folds were obtained from three autopsy cases aged under 65. The vocal fold specimens were labeled by primary antibodies of anti-type I and anti-type III collagen, and then secondary antibody conjugated with 15 nm colloidal gold. The vocal fold specimens were three-dimensionally observed employing the scanning electron microscope. Secondary electron imaging and backscatter electron imaging of high-resolution field emission scanning electron microscopy were used to detect gold particles indicating immunolabeling.
RESULTS: Type III collagen-labeling gold particles were abundant on the fibrils constructing collagen fibers whereas type I collagen-labelling gold particles were occasionally present on fibrils in collagen fibers.
CONCLUSIONS: The results suggest that type III collagen fibrils are predominant in collagen fibers of vocal fold lamina propria, and collagen type I fibrils co-exist with collagen type III fibrils. This implies that collagen type I fibrils might reinforce the fibers primarily constructed by collagen type III in the vocal fold lamina propria.

Glottic Closure Reflex in an Anesthetized and Awake Canine Model

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BACKGROUND AND OBJECTIVE: Sphincteric function of the larynx, essential to lower airway protection, is most efficiently achieved through strong reflex adduction by both vocal cords. We hypothesize that central facilitation is an essential component of a bilateral adductor reflex and that its disturbance could result in weakened sphincteric closure.

MATERIALS AND METHOD: Seven adult 20 kg dogs underwent evoked response laryngeal electromyography under 0.5 to 1.0 MAC isoflurane anesthesia. The internal branch of superior laryngeal nerve was stimulated through bipolar platinum-iridium electrodes and recording electrodes were positioned in the ipsilateral and contralateral thyroarytenoid muscles.

RESULTS: Consistent threshold responses were obtained ipsilaterally under all anesthetic levels. However, contralateral reflex responses disappeared as anesthetic levels approached 1.0 MAC. Additionally, at 0.5 MAC, late responses (R2) were detected in one animal.

CONCLUSION: Alteration of central facilitation by deepening anesthesia abolishes the crossed adductor reflex, predisposing to a weakened glottic closure response. Precise understanding of this effect may improve the prevention of aspiration in patients emerging from prolonged sedation or under heavy psychotropic control.

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