

**The Program**

**of**

**The Ninety First Annual Meeting**

**of**

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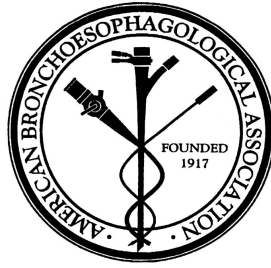
**THE AMERICAN  
BRONCHO-ESOPHAGOLOGICAL  
ASSOCIATION**

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**Wednesday and Thursday**

**April 27-28, 2011**

**Sheraton Chicago Hotel & Towers  
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.

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**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

**EDUCATIONAL OBJECTIVES (cont.)**

**Disclosure**

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

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## THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION

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### **Accreditation Statement**

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the American College of Surgeons and the American Broncho-Esophagological Association. The American College Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

### **AMA PRA Category 1 Credits™**

The American College of Surgeons designates this live activity for a maximum of 7.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



**American College of Surgeons  
Division of Education**

**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

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Clarence T. Sasaki, MD – New Haven, CT

**12:30 PM**

**Wednesday, 27 April 2011**

**BUSINESS MEETING  
ABEA MEMBERS ONLY**

**Announcements**

**Introduction of New Members**

**Comments by Proposer**

**Presentation of ABEA Pins and  
Certificates**

**Election of Members**

**Active Members**

**Senior Members**

**Corresponding Members**

**Honorary Members**

**Associate Members**

**Granting of Senior Membership Status**

**Fifty-Year Certificates**

**In Memoriam**

**Election of Nominating Committee**

**Appointment of Auditing Committee**

**New Business**

**Old Business**

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**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

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1917	Chevalier L. Jackson, MD
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1943	Robert L. Morehead, MD
1944	Carlos E. Pitkin, MD
1945	Carlos E. Pitkin, MD
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1949	Leroy A. Schall, MD
1950	Chevalier L. Jackson, MD
1951	Herman J. Moersch, MD
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1991	Charles W. Cummings, MD
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2003	Charles N. Ford, MD
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2006	Gady Har-El, MD
2007	Clarence T. Sasaki, MD
2008	Jamie A. Koufman, MD
2009	Andrew Blitzer, MD, DDS
2010	Michael Rothschild, MD

**PRESIDENT'S CIRCLE**

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

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

For further information on how you can also make a difference, please contact Clarence T. Sasaki, MD, Development, at [Clarence.Sasaki@yale.edu](mailto:Clarence.Sasaki@yale.edu) or call 203-785-2592.

List of contributors:

**Presidents Circle:**

Jonathan Aviv, Andrew Blitzer, Gady Har-El, Jamie Koufman, Clarence Sasaki, Peter Sasaki, Peak Woo, Eiji Yanagisawa, Steven Zeitels

**Leadership Funds:**

James Burns, Ellen Deutsch, David Eibling, Gregory Grillone, Ian Jacobs, J. Scott McMurray, Gregory Postma, Marc Remacle, Michael Rothschild, Dana Thompson

**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

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**1:00 PM**

**Wednesday, 27 April 2011**

**PRESIDENTIAL WELCOME**

**MICHAEL ROTHSCHILD, MD**

*New York, NY*

**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

**PRESIDENTIAL CITATION HONORING**

**JOHN TUCKER, MD**  
*Philadelphia, PA*

Presented by

**Michael Rothschild, MD**

**INTRODUCTION OF  
GUEST OF HONOR**

by Michael Rothschild, MD

**GUEST OF HONOR**

**ROBIN T. COTTON, MD**

*Cincinnati, OH*

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THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION

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1968	Dean M. Lierle, MD – Iowa City, IA
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1975	Arthur M. Olsen, MD – Rochester, MN
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1977	Alden H. Miller, MD – Los Angeles, CA
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2008 Marshall Strome, MD – Cleveland, OH  
2009 James Pepa – Newark, NJ  
2010 William Lawson, MD, DDS – New York, NY  
2011 Robin Cotton, MD – Philadelphia, PA

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**\* Indicates non-member**

**Wednesday, 27 April 2011**

**SESSION I**

**SWALLOWING**

**Moderator: Michael Pitman, MD**  
*New York, NY*



1:15 PM

Wednesday, 27 April 2011

**Cricopharyngeal Quiescence and Upper Esophageal  
Sphincter Relaxation during Swallow: An  
Electromyographic-Manometric Study**

**Timothy M. McCulloch, MD**

Michael J. Hammer, PhD\*

Corinne A. Jones, MA\*

Jason D. Mielens\*

Matthew R. Hoffman, BS\*

*Madison, Wisconsin*

**Background:** Adequate upper esophageal sphincter (UES) relaxation is important for effective passage of a food bolus from the pharynx into the esophagus. However, the temporal relationship between neuromuscular quiescence of the cricopharyngeus (CP) muscle and relaxation of the UES is not fully understood. Therefore, the purpose of this study was to examine swallow-related UES function using simultaneous high-resolution manometry and intramuscular electromyography (EMG).

**Methods:** We used simultaneous high-resolution (36-channel) manometry and fine-wire intramuscular EMG to examine a group (N=5) of healthy participants. We tested participants ingesting 1cc, 5cc, 10cc, and 20cc water boluses.

**Results:** We found that CP activity and UES pressure were significantly decreased during the swallow compared with the intervals prior to and following the swallow ( $p < .05$ ). In addition, the duration of CP quiescence remained relatively stable across bolus volumes ( $r = 0.18$ ,  $p = 0.51$ ), whereas the duration UES pressure relaxation generally increased in a volume-dependent manner ( $r = 0.64$ ,  $p < 0.05$ ).

**Conclusion:** Our preliminary data suggest that CP activity is less linked to bolus volume than UES pressure. UES pressure changes may be related to intrinsic neuromuscular activity of the CP muscle, and to other extrinsic dynamics including activity of the supralaryngeal musculature to actively elevate the laryngohyoid complex and increase the cross-sectional area of the UES. UES pressure may also respond to changes in cross-sectional area of the upper aerodigestive tract in the presence of different bolus volumes. Our results provide evidence that UES pressure may be a centrally patterned event, influenced by intrinsic and extrinsic dynamics of the aerodigestive tract.

1:22PM

Wednesday, 27 April 2011

**Video Assisted Swallowing Therapy (VAST) for  
Patients with Parkinson's Disease**

**Jacob T. Cohen, MD**  
Manor Y, CCC-SLP PhD\*  
*Tel-Aviv, Israel*

**Background:** Swallowing disturbances (SD) in Parkinson's disease (PD) are usually treated by traditional swallowing therapy (TST). A video assisted swallowing therapy (VAST) might improve swallowing therapy effectiveness.

**Objective:** To assess the effect of VAST compared to TST on swallowing functions of PD patients with dysphagia.

**Method:** 42 PD patients were divided randomly into TST and VAST groups. All patients filled SD questionnaire (SDQ) and underwent swallowing assessments: Bed side evaluation (BSE) and fiberoptic endoscopic evaluation of swallowing (FEES). During the first FEES, two episodes were recorded; the patient's pathological swallowing process and the appropriate compensatory strategy. The visual information from the video used during all VAST sessions. SDQ and BSE were performed at pre post and 4 weeks followup and FEES was performed pre and post therapy. Evaluators were blinded to the patient's therapy approach as well as the patients who were not aware of the two therapy approaches.

**Results:** The mean age was 67.68.26 y and disease duration 7.434.66 y. A significant improvement was observed in swallowing functions in both groups from pre to post therapy in three variables: FEES, BSE and SDQ. FEES demonstrated a significant grater reduction in pharynx food residues in the VAST group compare to the TST group. A significant difference was observed in SDQ in the VAST group between the pre-treatment to follow up measurements and between post treatment and follow up measurements.

**Conclusion:** VAST was found to be a more effective therapy program than TST for treating PDP with SD.

**Management of Zenker's Diverticulum in the  
Endoscopic Age: Current Practice Patterns**

**Jonathan M. Bock, MD**

Nidhi Gupta, MD\*

Joel H. Blumin, MD

*Milwaukee, WI*

Douglas J. Van Daele, MD\*

*Iowa City, IA*

**Purpose:** Zenker's diverticulum is a common source of dysphagia with a well-established surgical treatment history. Operative management of patients with Zenker's diverticulum has traditionally favored open techniques due to initial early failures of endoscopic approaches. However, due to significant refinements in endoscopic technique, transoral surgical approaches have gained favor over the last two decades. This transition in technique leads to questions regarding the optimal perioperative care of these patients. Many possible variations may exist between practitioners in the pre-operative, intra-operative, and post-operative management of patients with Zenker's diverticulum.

**Methods:** An online survey instrument was prepared and forwarded to the membership of the American Broncho-Esophagological Association (ABEA) to ascertain the current practice patterns of its members regarding numerous care parameters for patients with Zenker's diverticulum.

**Results:** Data representing responses to survey questions regarding indications for surgery, pre-operative work-up and testing, selection of operative techniques, use of nasogastric tubes, post-operative diet restrictions, use of perioperative antibiotics and steroids, post-operative follow-up and testing, and incidence of complications were collected and analyzed.

**Conclusions:** These data present a contemporary snapshot of clinical care patterns of the ABEA membership for patients with Zenker's Diverticulum.

1:36 PM

Wednesday, 28 April, 2010

**Endoscopic Treatment of Cervical  
Esophageal and Hypopharyngeal Strictures:  
Dilation vs Self-Expandable Stent Insertion**

**Andrea Gallo MD, PhD\***

Marco de Vincentiis, MD\*

Giulio Pagliuca, MD PhD\*

Elsa Iallonardi, MD\*

Salvatore Martellucci, MD\*

Gianfranco Fanello, MD\*

Fabrizio Cereatti, MD\*

Fausto Fiocca, MD\*

*Rome, Italy*

**Objective:** Cervical esophageal and hypopharyngeal strictures are challenging conditions. Dysphagia is the debilitating symptom experienced by all patients. The objective of this study is to evaluate the efficacy of endoscopic techniques in the management of these conditions. Another purpose is to compare the functional results of dilation treatment with those of self-expandable stents.

**Methods:** A series of 45 patients with cervical esophageal (35 cases) and/or hypopharyngeal strictures (10 cases) are included. The causes of stenosis were: inoperable tumors (25 patients), radiotherapy complications (11) and post-surgical complications (9). The patients were divided into two groups: Group 1 included 23 patients treated with dilation techniques whereas Group 2 included 22 patients treated with insertion of self-expandable metallic or plastic stents. Swallowing test data, clinical notes and operative reports were reviewed.

**Results:** All the patients showed improvement of dysphagia. Eleven out of 23 patients in Group 1 and 7 out of 22 patients in Group 2 recovered regular oral feeding after only one treatment and did not show complications of any kind. There is no statistically significant difference between the Groups ( $p=0.27$ ). In Group 1, 12 patients required multiple dilation treatment to maintain normal deglutition but did not report any significant complications. In Group 2, 10 patients reported pain and foreign body sensation and 3 patients experienced stent migration.

**Conclusions:** Both groups showed significant improvement of dysphagia with comparable functional results. Dilation treatment often requires multiple surgeries but is usually well-accepted while placement of self-expandable stents are effective but generally less tolerated procedures.

1:43 PM

Wednesday, 27 April 2011

**Sensitivity and Specificity of Scintigraphy  
Compared to Flexible Endoscopic Evaluation of  
Swallowing**

**Jordan L. Wallin, MD\***

Catherine J. Rees, MD

Paige Clark, MD\*

Akiva Mintz, MD\*

Haiying Chen, PhD\*

Susan G. Butler, PhD, MS, CCC-SLP\*

*Winston-Salem, NC*

**Purpose of Study:** Many professionals have suggested that scintigraphy may be the most accurate means to quantify prandial aspiration; however this premise has never undergone systematic investigation. Flexible endoscopic evaluation of swallowing (FEES) has been repeatedly subjected to investigation and consistently shown to be superior to fluoroscopy in identifying aspiration. Accordingly, the goal of this study was to compare the sensitivity and specificity of scintigraphy to FEES during concurrent testing in adults who prandially aspirate.

**Design and Method of Study and Analysis:** Prospective pilot study of ten previously identified aspirators who underwent simultaneous scintigraphy and FEES. Technetium-99 labeled thin liquid milk and water boluses were administered. Assessment of presence or absence of aspiration was determined via FEES and scintigraphy (level of oropharynx, larynx, and upper trachea) immediately following the swallow. Additionally, 30-minute delayed chest images were acquired to scintigraphically evaluate presence of aspiration in the lungs.

**Summary of Results:** Considering FEES the gold standard, sensitivity and specificity for scintigraphy detecting presence or absence of aspiration were 0.41 and 0.65, respectively. None of the delayed scintigraphic chest films revealed aspiration into the lungs despite numerous episodes of aspiration visualized in the trachea as determined via FEES.

**Conclusion:** Scintigraphy has low sensitivity and specificity in identifying prandial aspiration compared to FEES. This first study evaluating sensitivity and specificity of scintigraphy vs. FEES should be repeated in a larger cohort, but this preliminary data calls into question the utility of scintigraphy as a means to detect, much less quantify, prandial aspiration.

**DISCUSSION**

THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION

2:00 PM

Wednesday, 27 April 2011

**SPECIAL PRESIDENTIAL LECTURE**

**Mary Cappello, PhD\***

*Providence, RI*

**Chevalier Jackson's Endoscopic Art:  
an Illustrated Reading**

2:30 PM

Wednesday, 27 April 2011

**PRESIDENTIAL CITATION FOR  
FOREIGN BODY MANAGEMENT**

Presented by Gresham Richter, MD  
to

**Michael J. Wilhelm, MD\***

**Novel Use of a Suction/Irrigation Device to  
Remove Impacted Blood Clot from the  
Airway**

**Michael Joshua Wilhelm MD\***

*Yokosuka, Japan*

Benjamin Westbrook, MD\*

Joseph Shvidler, MD\*

*Washington, DC*

Also Poster #7

**Purpose:** To describe the novel use of a suction/irrigation device to remove a large volume clot that was causing critical obstruction of the trachea and mainstem bronchi.

**Design:** Case Report

**Summary:** A 93 y/o male on Coumadin presented to the Emergency Room after falling and hitting his chest on the ground. Significant bruising of his chest wall was noted, as well as an INR of 7.55 and PT of 65.5. He was given Vitamin K and FFP, but soon after developed increasing respiratory difficulty and was intubated. The pressure required to maintain ventilation steadily increased. Flexible bronchoscopy revealed clot in the trachea and the Otolaryngology service was consulted for rigid bronchoscopy and removal of the airway clot. The patient was taken to the operating



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room where rigid bronchoscopy noted copious amounts of fibrinous clot filling his trachea. Due to the nature of the clot, traditional methods failed to relieve the airway obstruction and his ventilatory requirements increased. A Stryker StrykeFlow II Disposable Suction/Irrigator, traditionally used for gynecologic procedures, was brought to the operating room and used through the rigid bronchoscope. The tracheal obstruction, as well as the significant bronchial obstructions, were able to be removed using the device. The patient's ventilatory status stabilized and he was extubated the following day and discharged home.

**Conclusion:** The StrykeFlow II suction/irrigator proved highly successful in removing a large volume clot from the airway. A similarly designed device made specifically for the airway could prove useful in similar cases in the future.

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**2:37 PM**

**Wednesday, 27 April 2011**

**BREAK WITH EXHIBITORS**

**PANEL I**

**AIRWAY ALBATROSS**

**Moderator: Karen B. Zur, MD**  
*Philadelphia, PA*

**Panelists:**

**Dana Thompson, MD**  
*Rochester, MN*

**Mike Rutter, MD**  
*Cincinnati, OH*

**Gresham Richter, MD**  
*Little Rock, AK*

**Ian Jacobs, MD**  
*Philadelphia, PA*

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**Wednesday, 27 April 2011**

**SESSION II**

**CASE REPORTS**

**Moderator: Adam Klein, MD**  
*Atlanta, GA*

3:20 PM

Wednesday, 27 April 2011

**Function Preservation Surgery in Patients with  
Chondrosarcoma of the Cricoid Cartilage**

**Steven M. Zeitels, MD**

John C. Wain, MD\*

Cameron D. Wright, MD\*

Andrew E. Rosenberg, MD\*

*Boston, MA*

Chondrosarcoma is a rare larynx neoplasm most commonly encountered in the cricoid and optimally treated by surgical excision. It is typically a slow-growing malignancy with well-defined margins and minimal risk of metastasis. However, radiographic imaging often appears ominous if the clinician correlates these findings to the biological behavior of epithelial cancer. Furthermore, the neoplasm's epicenter is usually under the cricoarytenoid joint, which can lead to airway and voice deficits preoperatively and postoperatively. Many surgeons opt for function-sparing resection approaches; however, due to the rarity, large size, location, and ominous appearance of these tumors on imaging studies, it is commonplace for some surgeons to injudiciously perform a total laryngectomy as initial treatment. We reviewed our cases to gain insights into treatment strategies designed to preserve laryngeal function while minimizing risk of local recurrence.

A retrospective review was done on 10 cases of cricoid chondrosarcoma with ~4-year mean follow-up.

No patient had metastasis. 8/10 were treated by our group; all have an excellent voice and are eating normally. 1/8 developed a limited recurrence requiring a second transcervical resection. 1/8 presented with complete cricoid replacement subsequent to prior treatment elsewhere and underwent a total cricoid resection with complete glottal preservation. Her presentation to us with a tracheotomy is unchanged but she vocalizes well and is without disease for 5 years.

Function-sparing surgical treatment of chondrosarcomas of the cricoid can usually be achieved so that surgeons should carefully modify core principles of epithelial cancer-surgery based on the different biologic behavior of this disease.

3:27 PM

Wednesday, 27 April 2011

**Recurrent Post-Transplant  
Lymphoproliferative Disorder of the Larynx  
and Trachea: A Case Report and Review of  
the Literature**

**Caroline A. Banks, MD\***

Jeremy D. Meier, MD\*

David R. White, MD\*

*Charleston, SC*

**Objectives:** Post-transplant lymphoproliferative disorder (PTLD) is a well-recognized complication of solid organ transplantation and commonly affects upper airway lymphoid tissue. Tracheal and laryngeal involvement, however, is rare.

**Study Design and Methods:** Case report on one patient with recurrent PTLD involving the larynx and trachea. This study describes the presentation, evaluation, management, and outcome as well as review of the literature.

**Results:** An 11-year-old boy who underwent bilateral nephrectomy and renal transplantation as an infant was admitted to the hospital with chronic cough, fever, stridor, and dyspnea. His post-transplant course was complicated by PTLD in cervical lymph nodes at the age of 9 that was successfully treated with chemotherapy. Computed tomography (CT) during present admission revealed supraglottic swelling, distal tracheal mass, and paratracheal lymph node enlargement. The patient underwent laryngoscopy and bronchoscopy with biopsies taken of the right laryngeal ventricle and distal trachea. Pathologic diagnosis was Epstein-Barr virus-positive PTLD. He was treated with chemotherapy, resulting in the resolution of airway lesions on repeat bronchoscopy.

**Conclusions:** This case is the first report, to our knowledge, of recurrent PTLD involving simultaneous lesions in the larynx and trachea. PTLD can present as lymphoid hypertrophy, airway obstruction, stridor, or cough. High clinical suspicion is essential for prompt diagnosis of this life-threatening complication.

**Methicillin-Resistant Staphylococcus Aureus  
Laryngitis: A Report of Two Cases with  
Different Clinical Presentations**

**Marcelo B Antunes, MD\***

Evan R Ransom, MD\*

Kevin Leahy, MD, PhD \*

*Philadelphia, PA*

Methicillin-resistant Staphylococcus aureus (MRSA) was initially described in the 1980's. Since then, it has been increasingly recovered from various infected sites as well as nasal mucosa of asymptomatic individuals. In the head and neck, MRSA has been described in epiglottitis, tonsillitis, and deep-space neck infection. Recently, otolaryngologists have recognized MRSA infection in the glottis. We describe two cases of severe laryngitis caused by MRSA: one presenting with acute airway obstruction and another with recalcitrant hoarseness. In the first case, a 54 year-old woman presented to the ENT office with a history of hoarseness with rapid progression to respiratory distress and stridor. On exam she had exuberant granulation tissue on the glottis with a narrowed airway. In the second case, a 44 year-old HIV positive woman presented with near aphonia despite maximal medical therapy. Examination showed diffuse erythema and edema of the endolarynx with yellowish plaques lining the glottis and supraglottis, no respiratory distress or stridor. She had failed multiple courses of antibiotics, proton-pump inhibitors and steroids. The diagnosis in both patients was made through biopsies taken during direct laryngoscopy. The first patient received a combination of sulfamethoxazole-trimethoprim and rifampin for 8 weeks, and with close monitoring, avoided a surgical airway. The second patient received sulfamethoxazole-trimethoprim alone for 6 weeks. Follow-up fiberoptic examination and stroboscopy in both cases showed complete resolution of disease. MRSA treatment is a growing part of otolaryngologic practice and a significant addition to the differential diagnosis of hoarseness and stridor.

**Novel Treatment of Idiopathic Subglottic Stenosis with Use of Immunosuppressive Medication (Mycophenolate Mofetil)**

**Scott Rickert, MD\***

Lesley Childs, MD\*

Oscar Calderon Wengerman, MD\*

Marshall Strome, MD

*New York, NY*

**Purpose:** Idiopathic subglottic stenosis (ISS) is a rare disease of characterized by inflammatory stenosis involving the subglottic larynx and upper trachea. It predominantly affects women with no identifiable cause for airway stenosis. ISS is a diagnosis of exclusion and extremely difficult to treat, requiring multiple surgical interventions. Here an intractable case of ISS is presented with a successful and novel treatment of initial surgical intervention followed by immunosuppressive therapy (mycophenolate mofetil) for maintenance. Mycophenolate mofetil (CellCept) is a frequently used immunosuppressive medication in transplant surgery and has also been used to treat immune-mediated inflammatory vasculitis conditions.

**Study Design:** Single case study

**Results:** One patient with well documented idiopathic subglottic stenosis presents after more 50 surgical interventions failed to relieve the stenosis long-term. Stenosis was noted to extend from the vocal folds to the 3rd tracheal ring. An initial surgical intervention was performed to relieve the stenosis. Afterwards, the patient was placed on steroids and immunosuppressive medication (mycophenolate mofetil). Blood work was performed weekly and the patient was examined monthly after the intervention. Follow-up of four months has shown an excellent airway with no progression of disease and no inflammation of the healed surface of the airway. There have been no complications noted during the follow-up period.

**Conclusions:** We present a case of idiopathic subglottic stenosis treated in a novel way with initial surgical intervention followed by immunosuppressive maintenance. Close follow-up is paramount. Mycophenolate mofetil anti-inflammatory and immunosuppressive properties may provide a new treatment option in this difficult disease.



**Management of Plastic Bronchitis in a  
Child with Intermittent Asthma**

**Sachin S. Pawar, MD\***

Robert Chun, MD\*

Joseph E. Kerschner, MD

*Milwaukee, WI*

Plastic bronchitis in children is a rare condition that can mimic foreign body aspiration and can be associated with underlying pulmonary inflammatory disorders or cardiovascular disease. We present a case of a 7 1/2 year old male with a history of intermittent asthma who presented with a three week history of sharp chest pain, cough, and shortness of breath. Initial workup demonstrated left lung collapse which was felt to be chronic in nature due to his preserved respiratory status. Flexible bronchoscopy demonstrated a large white, friable, cast-like material obstructing the entire left mainstem bronchus which could not be easily suctioned. Using rigid bronchoscopy and optical forceps with endoscopy, the cast was removed in a piece-meal fashion from the left main bronchus and the left upper, middle, and lower bronchioles. The airway was managed with intermittent ventilation, suctioning, and a ventilating bronchoscope. Microscopic examination of the cast-like material showed a predominance of eosinophils along with neutrophils encased in proteinaceous material. The patient subsequently required four additional rigid bronchoscopies over the next three months with removal of additional cast from the left subsegmental lower bronchi using both optical forceps and flexible suction catheters. Intraoperative video and photo images will be presented to demonstrate the techniques used. Aggressive bronchoscopic management of the airway obstruction and medical management of the underlying disease process is important for the successful treatment of plastic bronchitis.

3:55 PM

Wednesday, 27 April 2011

**Management of an Aspirated Posterior Graft  
after Laryngotracheoplasty**

**David R. White, MD\***  
*Charleston, SC*

A twenty month old child underwent a single-staged laryngotracheoplasty with anterior and posterior costochondral cartilage grafts for grade 3 subglottic stenosis. After an uncomplicated procedure, the patient was nasotracheally intubated with a 4.0 uncuffed endotracheal tube and transported to the pediatric intensive care unit. Several hours later, the patient self-extubated and was emergently reintubated by the pediatric intensivist. After reintubation, decreased ventilatory compliance and volumes were noted. Flexible bronchoscopy revealed an extruded posterior cartilage graft positioned in the right mainstem bronchus. The patient was returned to the operating room where the extruded graft was removed with optical foreign body forceps and placed into saline solution. The decision was made to replace the posterior graft endoscopically. Because a paralytic had been administered during the earlier emergent reintubation, the endoscopic placement needed to be performed while maintaining mechanized ventilatory support. A 3.0 cuffed endotracheal tube was placed with the cuff in the distal tracheal. A laryngoscope was suspended posterior to the endotracheal tube. Vocal cord spreaders were used to expose the posterior commissure and posterior subglottis. Alligator forceps were used to place the graft upon the previously performed posterior cricoid split. Using a rigid suction and a zero-degree Hopkins rod, the graft was manipulated into proper position in the posterior cricoid split. The patient was then nasotracheally intubated with a 4.0 uncuffed endotracheal tube, taking care not to displace the graft. Postoperative bronchoscopies revealed a widely patent subglottis with a healthy appearing anterior and posterior graft

4:02 PM

Wednesday, 27 April 2011

**Lingual Thyroid and Hypothyroidism  
Causing Dysphonia Improved after  
Lingual Thyroidectomy**

**Diana Orbelo, PhD**

Dale Ekbohm, MD\*

Dana Thompson, MD

*Rochester, MN*

**Purpose:** To present a unique and medically complex case of improved voice following lingual thyroidectomy.

**Design:** Single subject case report.

**Summary:** This report reviews a case of a 10-year-old boy with a multifactorial dysphonia who presented with bilateral vocal fold cystic lesions and sulci in the context of alternating hyper and hypothyroidism secondary to congenital lingual thyroid. Despite hormone replacement, medical treatment for asthma, allergy, cough, and possible reflux as well as voice therapy, dysphonia persisted. Significant improvement in both subjective and objective voice measures was achieved after surgical removal of the lingual thyroid that allowed for maintenance of a consistent euthyroid state.

**Conclusions:** Lingual thyroidectomy is typically reserved for cases of bleeding and dysphagia. This case supports dysphonia as a possible additional indication for lingual thyroidectomy.

**DISCUSSION**

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**Wednesday, 27 April 2011**

**SESSION III**

**NEW TECHNOLOGY**

**Moderator: James Burns, MD**  
*Boston, MA*

4:19 PM

Wednesday, 27 April 2011

**Application of Natural Orifice Transluminal  
Endoscopic Surgical Instrumentation to the  
Endolarynx: A Feasibility Study**

**Melin Tan, MD\***

*Bronx, NY*

Neil Prufer, MD\*

Nina Chinosornvatana, MD\*

Chan Woo Park, MD\*

Peak Woo, MD

*New York, NY*

**Objective:** RealHand instruments (Novare Surgical, Cupertino, CA) are high dexterity instruments that have been designed for natural orifice transluminal endoscopic surgery (NOTES) applications. They overcome limitations found in traditional laryngoscopy instrumentation by providing precise dexterity in a 360-degree range of motion. We hypothesize that RealHand instruments will resolve some of the mechanistic limitations encountered in traditional endolaryngeal surgery by: 1) increasing mobility 2) improving visualization through telescope, precluding the need for an operating microscope, 3) improving dexterity in comparison to traditional laryngoscopy instrumentation, and 4) increasing flexibility in difficult foreign body retrieval from distal airways.

**Study Design:** To test this hypothesis, we developed and optimized a lamb larynx model for endolaryngeal microsurgery. To evaluate the feasibility of the RealHand instruments in their application to laryngeal surgery, we had 2 otolaryngology senior residents and 2 laryngology fellows-in-training perform five different endoscopic tasks including: 1) foreign body removal, 2) arytenoidectomy, 3) micro flap, 4) cricopharyngeal myotomy and 5) Endoknot suture tying.

**Results:** Experience with RealHand instruments demonstrated that while they are limited in application to fine tissue manipulation such as that required in phonosurgery, they have significant potential for increasing facility in surgery of the supraglottic structures and the increased dexterity enables tasks not otherwise possible with traditional instrumentation such as endoscopic suturing ability.

**Conclusion:** RealHand high dexterity instrumentation allows for full range-of-motion instrumentation and with modification, has potential for wider application in endoscopic laryngeal surgery.

4:26 PM

Wednesday, 27 April 2011

**Combining a New CO<sub>2</sub> Laser Wave Guide with  
Transoral Robotic Surgery: A Feasibility Study  
on 4 Patients with Malignant Tumors**

**Marc Remacle, MD, PhD**

Nayla Matar, MD\*

Georges Lawson, MD\*

Vincent Bachy, MD\*

Monique Delos, MD\*

Marie-Cecile Nolleveaux, MD\*

*Yvoir, Belgium*

**Purpose of the Study:** We present the first series of patients treated by transoral robotic surgery (TORS) using a new CO<sub>2</sub> laser wave guide (CO<sub>2</sub> LWG) (Lumenis, Santa Clara, CA).

**Method of Study and Analysis:** Patients older than 18 years, with malignant pharyngolaryngeal tumors were enrolled in this prospective study after signing an informed consent. Patients with tumors not accessible to TORS were excluded. The ethical committee's approval was obtained to perform this study.

**Summary of Results:** Between August 2010 and September 2010, 4 patients were enrolled in the study. The mean age was 56 years (Range: 51-62 years). One patient had a T1 base of tongue tumor, 2 patients had supraglottic tumors (T1, T2), and one a T1 palatine tonsil tumor. All the procedures could be performed using a Maryland forceps, a 0 ĩŠ endoscope and a CO<sub>2</sub> laser fiber introduced via the robotic arm introducer. The laser parameters were: super pulse or continuous mode, 7-15 W, continuous delivery. The average set-up time was 30 minutes (range: 10-60 minutes). The average surgical time was 94 minutes (range: 60-125 minutes). All the patients had frozen-section analysis of the surgical margins to ensure complete tumor removal. No complications were noted due to the intraoperative use of the robot or the CO<sub>2</sub> LWG. One laser fiber was used for each of the surgeries. The mean coagulation depth was 200 μm (Range 100-300).

**Conclusion:** The CO<sub>2</sub> LWG is a reliable tool for TORS. It allowed more than 1 hour of work without any trouble.

4:33 PM

Wednesday, 27 April 2011

**A Pilot Study Assessing Transoral Robotic  
Surgery for Sleep Apnea Using the Da Vinci®  
Robotic Surgical System**

**Jonathan M. Lee, MD\***  
Gregory S. Weinstein, MD  
Bert W. O'Malley, MD  
Erica R. Thaler, MD\*  
*Philadelphia, PA*

**Background:** Traditional uvulopalatopharyngoplasty alone does not adequately manage many patients with obstructive sleep apnea (OSA). It is increasingly understood that tongue base anatomy plays an important role in the pathophysiology of OSA. Over the past two decades, multiple surgical approaches have been developed to address this issue. Many existing techniques, however, do not involve direct removal of tongue base tissue, conventional transoral approaches are often limited by inadequate exposure, and external approaches may require cervical incisions, pharyngotomy, and tracheostomy.

**Purpose:** To use the excellent exposure afforded by transoral robotic surgery (TORS) for the surgical management of lingual tonsillar hypertrophy in patients with obstructive sleep apnea. The primary endpoints are reduction in apnea hypopnea index (AHI) and improvement of oxygen desaturations on polysomnography.

**Methods:** This study is a prospective, non-randomized trial utilizing historical controls. Patients meeting indications for surgery of tongue base hypertrophy to treat OSA underwent diagnostic sleep endoscopy; TORS tongue base reduction, and pre- and post-operative polysomnography.

**Results:** Four patients have completed the study to date. There was a significant decrease from the mean pre-op AHI of 78.8 (SD 23.8) to the mean post-op AHI of 18.2 (SD 16.6) (0.0432). The oxygen saturation nadir also increased from the mean pre-op of 76.8% (SD = 0.04) to the mean post-op of 87.0 % (SD = 0.05) (p = 0.0181). There were no significant adverse events. This pilot study shows preliminary evidence that TORS is a safe, feasible, and potentially effective surgical approach to tongue base reduction for OSA.



4:40 PM

Wednesday, 27 April 2011

**Diagnostic Sleep Endoscopy Improves Outcomes  
in Children with Obstructive Sleep Apnea**

**Victoria G. Woo, BA\***

Mai Thy Truong, MD\*

Peter J. Koltai, MD, FACS, FAAP

*Stanford, CA*

**Purpose:** Adenotonsillectomy (T&A) is the standard treatment for obstructive sleep apnea (OSA) in children. However, 10-15% of children have persistent OSA after T&A. Sleep endoscopy, a flexible fiberoptic examination of the pharynx, can be used to direct further treatment. We hypothesize that sleep endoscopy is the best tool for identifying the site of persistent obstruction.

**Methods:** In this retrospective cohort study, we reviewed records of children who had symptoms consistent with OSA and a positive polysomnogram (PSG) who underwent sleep endoscopy followed by sleep endoscopy directed surgery. Analysis included age, BMI and co-morbidities. Apnea hypopnea index (AHI) was compared pre and post surgery for each child using a paired t-test.

**Results:** Of the 82 children who underwent sleep endoscopy followed by directed surgery, 34% were female and 66% were male, mean age was 6 years (SD 45 months), average BMI was 19 (SD 5.1) and 27% had co-morbidities. For the 51% patients who had failed T&A, the mean AHI after sleep endoscopy directed surgery was significantly lower than before surgery (8.1 vs. 15.5,  $p < .01$ ). The mean AHI after sleep endoscopy directed surgery for the 49% patients who were surgically naive was significantly lower than before surgery (8.0 vs. 13.8,  $p < .01$ ).

**Conclusions:** Sleep endoscopy is a consistently reliable tool for identifying the remaining site of obstruction in children with persistent OSA after T&A and in surgically naive children with OSA but small tonsils and adenoids. This technique demonstrably guides successful therapy and offers a good solution for treatment of complex OSA.

**DISCUSSION**

**PANEL II**

**INSTITUTE OF LARYNGOLOGY AND  
VOICE RESTORATION PANEL**

**CHRONIC COUGH**

**Moderator:**        **Milan Amin, MD**  
*New York, NY*

**Panelists:**

**Thomas Murry, PhD**  
*New York, NY*

**Mark Gerber, MD**  
*Evanston, IL*

**Susanna A. McColley, MD\***  
*Chicago, IL*

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**5:30 PM**

**Wednesday, 27 April 2011**

**ADJOURN**

**7:30 AM**

**Thursday, 29 April 2010**

**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**

**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

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**Thursday, 28 April 2011**

**SESSION IV**

**AIRWAY: BASIC SCIENCE**

**Moderator: Julie Wei, MD**  
*Kansas City, KS*

8:00 AM

Thursday, 28 April 2011

**Tracheal Regeneration Using Bio-Engineered  
Trachea with Autologous Chondrocytes**

**Mika Nomoto, MD \***

Yukio Nomoto, MD\*

Koichi Omori, MD

*Fukushima, Japan*

**Purpose of the Study:** Our group applied a tracheal prosthesis in human adult cases with successful result. However, infantile cases are the off label indication of this treatment because the polypropylene frame is un-absorbable without expansion, when infants are growing up. In this study, bio-engineered trachea with autologous chondrocytes was developed, and its effects on tracheal regeneration were evaluated by implantation into the tracheal defects of rabbits.

**Design and Method of Study and Analysis:**

A tracheal prosthesis used in this study was composed of polypropylene as the frame and collagen sponge as the scaffold with suitable size for rabbit's trachea. Chondrocytes were harvested from the costal cartilages of rabbits under general anesthesia. Chondrocytes isolated from the cartilage were seeded onto a tracheal prosthesis. Bio-engineered tracheas were implanted into tracheal defects of rabbits. As a control, a tracheal prosthesis without chondrocytes was implanted into tracheal defects of rabbits.

**Summary of Results:** In the control group, proliferation of chondrocytes at the end of tracheal cartilage was observed at 8 weeks after the implantation. However, effective regeneration of cartilage was not observed in a tracheal prosthesis.

In the bio-engineered group, the presence of cartilage-like tissue was revealed in the implanted bio-engineered trachea by hematoxylin-and-eosin staining and Alcian blue staining at 2 weeks after implantation.

**Conclusions:** This study demonstrated the feasibility of tracheal regeneration using bio-engineered trachea with autologous chondrocytes. With further study, the bio-engineered trachea without un-absorbable polypropylene structure may useful for cases of infants with tracheal stenosis.

8:07 AM

Thursday, 28 April 2011

**Inflammatory Cytokine and Protein Expression  
in a Murine Model of Airway Granulation and  
Subglottic Stenosis**

**Nora Malaisrie, MD\***  
Ankona Ghosh, BS\*  
Noam Cohen, MD, PhD\*  
Kevin Leahy, MD, PhD\*  
Natasha Mirza, MD  
*Philadelphia, PA*

**Purpose:** Using a functional model of airway granulation tissue and subglottic stenosis, mouse laryngotracheal complexes will undergo airway injury and transplantation into syngeneic recipient mice and the expression of inflammatory cytokines and proteins will be measured using real time polymerase chain reaction (RT-PCR) at specific time points post-transplantation.

**Study Design:** IACUC (Institutional Animal Care and Use Committee) approved animal study

**Methods:** The laryngotracheal complexes (LTCs) of donor mice underwent direct airway injury through mucosal scraping using a wire brush or through application of hydrochloric acid (HCl) solution to the mucosa. A control group did not undergo any airway injury. LTCs were harvested and transplanted heterotopically into the subcutaneous tissue of syngeneic recipient mice and harvested at 1, 2 and 3 weeks post-transplantation. The mRNA expression levels of TGF-beta 1, IL-1 beta, Smad 2 Smad 3, matrix metalloproteinase-2 (MMP-2), matrix metalloproteinase-9 (MMP-9) and a smooth muscle actin (SMA) were quantified using RT-PCR at each time point in both experimental groups and compared to control.

**Results:** At 1, 2 and 3 weeks post-transplantation, there were measurable differences in mRNA expression of TGF-beta 1, IL-1 beta, Smad 2 Smad 3, MMP-2, MMP-9 and SMA in both the mechanically and chemically injured groups compared to control.

**Conclusions:** Changing expression of inflammatory cytokines and proteins at different time points implicates their role in the process of airway injury in this murine model of airway granulation and subglottic stenosis and provides insight into possible targets in the prevention and treatment of this disease process.



**Overexpression of Epidermal Growth Factor  
Receptor Associated with Clinically Aggressive  
Recurrent Respiratory Papillomatosis**

**Paul M. Weinberger, MD\***

Tarik Farrag, MD\*

Phillip K. Robb Jr., BA\*

Jeffrey R. Lee, MD\*

Teresa Coleman, MD\*

Gregory N. Postma, MD

*Augusta, Georgia*

**Purpose:** Some patients with recurrent respiratory papillomatosis (RRP) require frequent surgical intervention while others experience benign disease course. There is currently no method to predict disease aggressiveness. Previous studies have demonstrated epidermal growth factor receptor (EGFR) in RRP tissues but have not compared clinical outcome to EGFR expression. We hypothesized EGFR overexpression is associated with aggressive clinical disease.

**Methods:** Clinically aggressive RRP was defined as: undergoing more than four procedures in twelve months, distal spread of disease, or transformation to squamous cell carcinoma. Standard immunohistochemistry was performed for EGFR expression from paraffin-embedded surgical specimens. EGFR expression was determined as intensity and percentage for basal, mid-portion, and full thickness epithelium. Comparisons were made by Mantel-Hanszel Chi Square test, and Wilcoxon Rank Sums test.

**Results:** Thirty patients with RRP were included (26 adult-onset and 4 pediatric-onset). Age ranged from 1-4 years for pediatric patients and 20-76 for adults. Ten patients had aggressive and 20 had non-aggressive disease. Increased expression of EGFR in the mid/basal portion of the epithelium was associated with aggressive clinical course ( $p=0.02$ ). There was a positive correlation between EGFR mid/basal expression and the maximum number of procedures performed (Spearman  $\rho=0.41$ ,  $p=0.03$ ). In a logistic regression model, EGFR mid/basal expression was able to predict RRP disease aggressiveness with overall accuracy of 82% ( $p=0.02$ ).

**Conclusion:** Mid/basal EGFR overexpression was associated with clinically aggressive RRP. These data support that the EGFR axis is disturbed in RRP. Future research into targeted disruption of EGFR in patients with aggressive RRP disease is warranted.

**Thursday, 28 April 2011**

**BROYLES-MALONEY AWARD**

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

**RECIPIENTS OF THE  
BROYLES-MALONEY THESIS AWARD:**

1988	Richard A. Kosarek, MD
1989	(no award)
1990	Thomas F. Dowling, MD Jamie Koufman, MD
1991	(no award)
1992	(no award)
1993	Jos. J.M. van Overbeek, MD, PhD
1994	Steven D. Gray, MD
1995	Jonathan E. Aviv, MD John H. Martin, PhD Ralph Sacco, MD Beverly Diamond, PhD Andrew Blitzer, MD, DDS
1996	(no award)
1997	Ira Sanders, MD Liancai Mu, PhD
1998	Nancy M. Bauman, MD Degiang Wang, MD Eric S. Luschei, PhD Debra M. Jaffe, MD
1999	Robert Berkowitz, FRACS Qi-Jian Sun, PhD John Chalmers, PhD Paul Pilowsky, PhD
2000	Asif Amirali, MD Greg Tsai, MD Nicole Schrader, MD Donald Weisz, PhD Ira Sanders, MD
2001	(no award)
2002	Shin-ichi Kanemaru, MD Hisayoshi Kojima, MD Akhmar Magrufov, MD Koichi Omori, MD Yasuyuki Hiratsuka, MD Shigeru Hirano, MD

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	Juichi Ito, MD
	Yasuhiko Shimizu, MD
2003	Ira Sanders, M.
2004	Clarence T. Sasaki, MD
2005	Tomoko Tateya, MD
	Ichiro Tateya, MD, PhD*
	Diane M. Bless, PhD*
2006	(No award)
2007	J. Scott McMurray, MD
	Charles N. Ford, MD
	Nadine P. Conner, MD*
2008	Tina L. Samuels, MS*
	Ethan Handler*, BS*
	Michael L. Syring, BS*
	Joel H. Blumin, MD
	Joseph E. Kershner, MD
	Nikki Johnston, PhD*
2009	Nikki Johnston, PhD*
	Clive W. Wells*
	Tina Samuels, MS*
	Joel Blumin, MD
2010	Sandeep Karajanagi, PhD*
	Gerardo Lopez-Guerra, MD*
	Hyoungshin Park, PhD*
	James B. Kobler, PhD*
	Daryush D. Mehta, SM*
	Yoshihiko Kumai, MD, PhD*
	James T. Heaton, PhD*
	Victoria L. M. Herrera, MD*
	Robert E. Hillman, PhD*
	Steven M. Zeitels, MD
2011	Mikhail Wadie, MD*

8:21 AM

Thursday, April 28, 2011

**BROYLES-MALONEY AWARD**

**Presenter: Michael Rothschild, MD**

**Recipient:**

**Mikhail Wadie, MD\***

**The Effect of Altered Core Body  
Temperature on Glottic Closing Force**

**Mikhail Wadie, MD\***

Juan Li, MD\*

Clarence T. Sasaki, MD

*New Haven, CT*

A basic function of the larynx is to promote sphincteric protection of the lower airway provided by reflex glottic closure. Glottic closing force (GCF) is defined as the measured pressure generated between the vocal cords during glottic closure. One of the factors affecting the glottic closure reflex is a variation in core body temperature. Four adult male Yorkshire pigs were used in this study, Subjects were studied under control condition (37oC) , hyperthermic conditions (38-41 oC) and hypothermic conditions (36-34 oC).We demonstrated that GCF increased significantly with an increase in core body temperature and, on the other hand, decreased significantly with decreased core body temperature. These results are suggested by neurophysiological changes demonstrated in pups and adult dogs in 1983.The mechanism for these responses is thought to reside centrally rather than in the peripheral nervous system. We hope that a better understanding of these aspects of glottic closure will alter the care of many hypothermic post anesthetic patients and sedated in-mates and will further enhance preventive measures needed to decrease rates of SIDS in overheated or febrile children.

**DISCUSSION**

Thursday, 28 April 2011

**SESSION V**

**AIRWAY: CLINICAL PERSPECTIVES**

**Moderator: Marc Remacle, MD, PhD**  
*Yvoir, Belgium*

8:38 AM

Thursday, 28 April 2011

## Patterns Following Surgery for the Pediatric Laryngeal Trauma Patient

**Douglas Sidell, MD\***

Abie Mendelsohn, MD\*

Nina L. Shapiro, MD

Maie St. John, MD, PhD\*

*Los Angeles, CA*

**Objective:** Laryngeal trauma is an infrequent occurrence in the pediatric population. Under many circumstances, the requirement for surgical repair of these lesions is controversial. The purpose of this study is to identify outcomes following the three most common surgical procedures for pediatric laryngeal trauma.

**Study Design:** Population based study

**Methods:** Utilizing the National Trauma Database (NTDB), pediatric laryngeal trauma incidents between the years of 2002-2006 were identified. Data including patient demographics, injury type, associated injuries, surgical procedure received, hospital duration, ventilator dependence and discharge disposition were abstracted.

**Results:** There were 69 laryngeal trauma incidents identified, with a median age of 12.8 years (range: 2-17years) and an overall mortality rate of 8.7%. Laryngeal injury was frequently blunt-force in nature (82.8%), and occurred in conjunction with multi-organ-system trauma (76.8%). Tracheotomy (n=16), laryngeal suturing (n=13), and laryngeal fracture repair (n=10) were the most frequent procedures identified. When controlling for both trauma severity and laryngeal injury diagnosis, laryngeal fracture repair significantly increased the duration of hospital stay on multivariate analysis (OR=0.09, CI=0.94,0.01, p=0.04). Communication scores at discharge were affected only by tracheostomy (P=0.02). Surgical intervention did not influence the requirement for rehabilitation facility placement.

**Conclusion:** Laryngeal trauma in the pediatric patient is an uncommon event that can be adequately evaluated utilizing the NTDB. Consideration should be given to the pediatric laryngeal fracture patient, as the repair can be associated with increased length of hospital stay. While tracheostomy can affect communication function, surgical intervention does not appear to influence home-discharges.

8:45 AM

Thursday, 28 April 2011

**The Ram Sign: Detecting Previously  
Undiagnosed Congenital Laryngeal Clefts in  
Adults**

**Philip Weissbrod, MD\***

Andrew Inglis, MD

Albert Merati, MD

*Seattle, WA*

**Purpose:** (1) To present clinical characteristics in a case series of adult patients with Benjamin and Inglis type III laryngeal clefts. (2) To make practitioners aware of the Ram Sign, a clinical finding associated with laryngeal clefts in adults.

**Design:** Case Series

**Summary:** Laryngeal clefts are an uncommon entity nearly universally identified during infancy due to persistent aspiration and pneumonia. Undiagnosed laryngeal clefts in adults are extremely rare. Three type III laryngeal clefts were identified in adults (ages 24-60) from one clinic over an 18 month period; the existing literature features only a few individual cases, and only one type III cleft to our knowledge. The 60 year old male patient represents the oldest person in the English literature with a newly diagnosed laryngeal cleft. All three cases presented with varying degrees of aspiration over an extended period. We will present CT imaging and dynamic videolaryngoscopy demonstrating the Ram Sign, an endoscopic finding associated with redundant soft tissue overlying the arytenoids that prolapses into the cleft creating the appearance of ram's horns, a striking feature in all 3 patients.

**Conclusion:** While rare, laryngeal clefts may represent an underdiagnosed entity in the adult population; with increased awareness, they may be identified more frequently as a treatable etiology of aspiration and recurrent pneumonia.



8:52 AM

Thursday, 28 April 2011

**Reducing Fistula Rates in  
Laryngotracheal Separation**

**David O. Francis, MD, MS\***

*Nashville, TN*

Joel Blumin, MD

*Milwaukee, WI*

Albert L. Merati, MD

*Seattle, WA*

**Objective:** Laryngotracheal separation (LTS) is an uncommonly employed but highly beneficial procedure for patients suffering from amyotrophic lateral sclerosis (ALS) and other neurodegenerative conditions. Previously published large series have noted a post-operative tracheocutaneous fistula rate of nearly one in three patients. This report details the use of a muscle-flap reinforced imbrication technique to reduce the incidence of fistula formation.

**Methods:** All patients undergoing LTS surgery over a 5-year period were identified from a patient care database. Principal diagnosis and patient characteristics were noted. The presence or absence of a preexisting tracheotomy as well as any post-operative complications including fistula formation were recorded. Technique for imbrication closure of the proximal stump with strap muscle reinforcement is described.

**Results:** Thirteen patients undergoing LTS surgery were identified over a 5 year period; 10 male and 3 female with a mean age of 54 years. ALS was the principal diagnosis in 8/13 patients. Six of 13 had a preexisting tracheotomy. No patient developed tracheocutaneous fistula, hemorrhage or wound infection. Two of the 13 patients required stomaplasty dilation for stenosis.

**Conclusion:** Strap muscle flap reinforced imbrication closure of the proximal tracheal stump in LTS surgery allows for low rates of post-operative fistula formation.

8:59 AM

Thursday, 28 April 2011

**Airway Complications in Pediatric Extra-Corporeal Membrane Oxygenation (ECMO)**

**Robert G Berkowitz, MD**

Nicholas JM Agar, MD\*

*Melbourne, Australia*

**Objectives:** Children undergoing ECMO usually remain intubated for an extended period, and in addition, have a severe burden of cardio-respiratory disease. The incidence of acquired laryngotracheal stenosis in this group of complex children is unknown. We therefore undertook a retrospective study of all patients under 18 years of age who underwent ECMO at our institution over a 10-year period to determine both the incidence of laryngotracheal stenosis and the need for tracheostomy.

**Methods:** Case series with chart review.

**Results:** There were 218 patients who had a mean duration of ECMO of 6.7 days and mean duration of intubation of 16.8 days. There were 112 survivors (51.4%). A total of 14 patients (6.4%) required a surgical procedure on the airway. Four of these patients died following cardiac surgery and all had undergone tracheostomy for prolonged respiratory support. Of the 10 survivors, 2 had pre-existing laryngotracheal stenosis, 3 developed acquired laryngotracheal stenosis, and 5 required tracheostomy for long term ventilation but were all eventually decannulated. Of the 3 patients with acquired laryngotracheal stenosis, one required balloon dilatation while the other two were treated conservatively. The rate of acquired airway stenosis was 2.7% in survivors.

**Conclusions:** The rate of laryngotracheal stenosis in children requiring ECMO is acceptably low. Nonetheless there is a clear need for otolaryngologists to maintain involvement in the complex multidisciplinary management of children requiring ECMO.

9:06 AM

Thursday, 28 April 2011

**Laryngotracheal Stenosis in Burn Patients  
Requiring Ventilatory Support**

**Yekaterina Koshkareva, MD\***

William Hughes, MD\*

Ahmed Soliman, MD

*Philadelphia, PA*

**Objective:** To identify incidence of laryngotracheal stenosis (LTS) in burn patients requiring ventilatory support at an urban burn center.

**Methods:** A retrospective review of burn patients requiring endotracheal intubation or tracheostomy between 2003-2009 was performed. A group of 72 trauma patients requiring mechanical ventilation during same time was used as control. Demographics, past medical/surgical history, mechanism/extent of injury, method/duration of airway management, and clinical outcomes were recorded.

**Results:** Of 114 burn patients requiring mechanical ventilation, 47 expired and were excluded. Mean age of surviving 70 burn patients was 49 years, compared to 38 years for trauma patients. 20% of burn victims suffered inhalation injury only. Average BSA was 15%; 43% of burns involved face. Mean duration of intubation was 9 days (1-19) for burn, and 6 days (1-23) for trauma groups. 70% of burn patients required tracheostomy, of which 57% were decannulated, with an average decannulation period of 31 days (range 10-64). 30% of trauma patients required tracheostomy, of which 77% were decannulated, with an average decannulation period of 31 days (16-56). None of trauma patients and 2 burn patients developed LTS. Both presented with stridor within 3-6 weeks of injury. Both had stenosis of distal trachea. One patient underwent successful CO<sub>2</sub> laser incision/dilation and continues to do well. The other failed same procedure and required Montgomery T-tube. She later underwent 2 additional procedures, however remains T-tube dependent.

**Conclusions:** The incidence of LTS in burn patients requiring ventilatory support is 2-3%. Patients become symptomatic within weeks. Treatment is challenging, multiple procedures are often required.

**DISCUSSION**

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**Thursday, 28 April 2011**

**SESSION VI**

**VOICE: BASIC SCIENCE**

**Moderator: Seth Dailey, MD**  
*Madison, WI*

9:23 AM

Thursday, 28 April 2011

**Implantation of an Atelocollagen Sponge with  
Bone Marrow-Derived Stromal Cells for the  
Treatment of Vocal Fold Scarring**

**Satoshi Ohno, MD\***

Shigeru Hirano, MD, PhD

Shin-ichi Kanemaru, MD, PhD\*

Yoshiharu Kitani, MD\*

Tsuyoshi Kojima, MD\*

Ichiro Tateya, MD, PhD

Tatsuo Nakamura MD, PhD\*

Juichi Ito MD, PhD\*

*Kyoto, Japan*

**Purpose of the Study:** Vocal fold scarring remains a therapeutic challenge. A new regenerative approach is needed to restore a disorganized extracellular matrix (ECM). Tissue regeneration requires appropriate cells and scaffold. Bone marrow-derived stromal cells (BSCs) are multipotent and secrete many kinds of growth factors to regenerate tissues. Implantation of BSCs has shown a therapeutic effect in various organs. Atelocollagen sponges have many large pores that permit cell entry. A previous study revealed that BSCs can adhere to an atelocollagen sponge and proliferate. The present study evaluates whether implantation of an atelocollagen sponge plus BSCs is effective for the treatment of vocal fold scarring.

**Design and Method of Study and Analysis:** Twelve beagles were included in this study. The beagles underwent implantation of an atelocollagen sponge or of an atelocollagen sponge with autologous BSCs in the subepithelial pockets of scarred vocal folds. Six months after the operation, vibratory examinations and histological examinations were performed.

**Summary of Results:** Mucosal vibrations improved significantly for the atelocollagen sponge-implanted vocal folds. Histological analyses revealed favorable restoration of the ECM in the lamina propria. Increased hyaluronic acid (HA) and decreased dense collagen deposition were also noted. These improvements were enhanced by implantation of BSCs.

**Conclusions:** Implantation of atelocollagen sponges with autologous BSCs into vocal fold scarring significantly increased HA distribution and decreased dense collagen deposition of lamina propria, leading to better mucosal vibration.

**The Pathologic Effects of External Beam  
Radiation on the Human Vocal Fold**

**Eric E. Berg, MD\***  
Vasanth Kolachala, PhD\*  
Susan Muller, DMD\*  
Michael M. Johns, MD  
*Atlanta, GA*

**Purpose:** To characterize pathologic changes in the human vocal fold responsible for the clinical loss of vocal fold pliability and subsequent functional limitations observed in patients radiated with curative intent for laryngeal cancer.

**Study Design:** Blinded case-control study of archived tissue

**Methods:** Post-radiation salvage laryngectomy vocal fold tissue without evidence of recurrent or persistent disease was evaluated. Clinical histories and demographic data were collected. In a blinded fashion, radiated tissue was compared to non-radiated, benign control tissue. Histomorphometry was employed to assess for gross differences in muscle and collagen organization, superficial lamina propria (SLP) and vocal ligament thickness, mean thyroarytenoid muscle fiber area, collagen content, and hyaluronic acid content. Immunohistochemical analysis assessed for differences in collagen I, collagen IV, vimentin, fibronectin, alpha-smooth muscle actin, matrix metalloproteinase 9, and laminin content.

**Results:** 20 radiated vocal folds with a mean of 30 months between radiation and excision were evaluated and compared to controls. Marked collagen and muscle disorganization was noted in radiated specimens. SLP and vocal ligament thickness and mean muscle fiber diameter did not differ significantly. Radiated SLP fibronectin ( $p=0.021$ ) and thyroarytenoid muscle ( $p=0.011$ ) and SLP ( $p=0.0007$ ) collagen content were significantly increased, and SLP collagen content increased significantly with time between radiation and resection ( $p=0.03$ ). Radiated thyroarytenoid muscle laminin content was significantly decreased ( $p<0.0001$ ).

**Conclusions:** Radiation therapy results in significant vocal fold tissue changes and functional consequences. Having more precisely defined these changes, continued investigation will aim for targeted preventative and therapeutic interventions for improved vocal quality following radiation therapy.

**The Neuromuscular Basis for Ventricular  
Fold Function**

**Nwanmegha Young, MD**

Clarence Sasaki MD

*New Haven, CT*

**Purpose:** To examine the neuromuscular basis for ventricular fold function. The primary function of the ventricular folds is to assist in the regulation of intra and inter-abdominal pressure. Secondly, it can influence phonation in the settings of vocal cord paralysis, ventricular dysphonia and post laser partial laryngectomy. The neuromuscular basis of true vocal cord function has been well studied. However, its neuromuscular correlates in the ventricular folds are ambiguous. The literature is unclear whether ventricular fold contraction is passive or active. The musculature and innervation responsible for this action has also not been well defined. The aim of this study is to provide clarity to these mechanisms.

**Materials and Methods:** A whole organ section of a human larynx of a patient with a long standing unilateral vocal cord paralysis was examined. The region of the ventricular folds was compared on both the paralyzed and normal side. Electrophysiology was performed using a porcine model. The superior laryngeal nerve was stimulated while recording electrodes in both ventricular folds recorded electrical activity. The recurrent nerve was then cut and the experiment repeated.

**Results:** The histological slide demonstrated atrophied ventricularis and thyroarytenoid muscles on the paralyzed side. On the unaffected side both these muscles were normal. Electrophysiology demonstrated findings consistent with innervation of the ventricularis muscle by the recurrent laryngeal nerve. Also an association of ventricularis muscle activity with ventricular fold contraction was demonstrated.

**Conclusions:** Ventricular fold adduction appears to be a result of ventricularis muscle contraction and is mediated by the recurrent laryngeal nerve.



9:44 AM

Thursday, 28 April 2011

**Rabbit Cricothyroid Dorsalis (CAD) Model  
for Cranial Regeneration**

**Jonathan Fishman, MD, MA. MRCS, DOHNS\***

Dr Paul Sibbons, FIBMS, PhD., FRCPATH\*

Dr Paolo De Coppi, MD., PhD\*

Professor Martin Birchall, MA, MD, FRCS

*London, UK*

**Purpose of the Study (or report):** Although considerable progress has been made in regenerative medicine, a major step is the replacement/regeneration of functional muscle tissue. For example, although we have now successfully replaced the airways of two adults and one child using stem-cell based techniques, a much larger patient need would be answered by providing the muscles required for engineering fully-functional larynx and oesophagus, where active movement is critical. The rabbit CAD muscle is equivalent to the posterior cricothyroid muscle in humans and is a singularly critical muscle for normal respiration.

**Design and Method of Study and Analysis:** A sequential design is used where the right cricothyroid dorsalis muscle from each animal is used to form the scaffold of the next, and the region vacated will be used to receive a muscular construct prepared using tissues and cells obtained from earlier animals in the series. This reduces the numbers of animals required. The left side acts as internal control in each case.

**Summary of Results:** The rabbit larynx is easily accessed and endoscopy for monitoring of grafts is simple. The rabbit larynx is amenable to video laryngoscopy using a fine zero-degree Hopkins rod telescope and thus the tissue-engineered constructs can be easily monitored post-operatively. Demonstration videos will be shown of vocal fold mobility pre- and post-operatively.

**Conclusions:** The rabbit cricothyroid dorsalis model is a useful model for studying muscular tissue-engineered constructs, for the purpose of replacing diseased head and neck organs and tissues that rely on active movement.

9:51 AM

Thursday, 28 April 2011

**Neuronal Mechanisms Underlying The  
Laryngeal Adductor Reflex (LAR)**

**Robert G Berkowitz, MD**

Qi-Jian Sun, PhD\*

Jamie Chum, MBBS\*

Paul M Pilowsky, MBChB, PhD\*

*Melbourne, Australia*

**Purpose:** The LAR is responsible for glottic closure that occurs following laryngeal stimulation, and is essential for life. Electromyographic studies have demonstrated that the LAR comprises an early ipsilateral response (R1) and a late bilateral response (R2). In an attempt to define the neurophysiologic properties of these early and late responses, we carried out experiments in anesthetized adult Sprague-Dawley rats by recording from laryngeal constrictor motoneurons (LCM) during superior laryngeal nerve (SLN) stimulation.

**Method:** Single unit extracellular recordings were obtained from 8 LCMs, identified by their antidromic responses and post-inspiratory firing pattern.

**Results:** During ipsilateral 20 Hz SLN stimulation phrenic nerve discharge was reduced to only 97% of baseline. LCMs responded to SLN stimulation with a robust tonic firing that consisted of an ipsilateral orthodromic response with latency 6.30.7 ms (range 5-10 ms) and a bilateral bursting activity that was likely to be related to swallowing and other airway protective reflexes. More interestingly, we found that there was a high likelihood of single action potentials occurring between 20-40 ms after the SLN stimulation artefact, and this longer latency response could be recorded bilaterally.

**Conclusions:** The R1 response appears to represent orthodromic activation of neurons within the ipsilateral nucleus tractus solitarius and direct excitation of LCMs. The R2 response is likely to be represented by the long-latency, bilateral action potentials identified. This is the first time the LAR has been recorded from individual laryngeal motoneurons, and provides a basis for more detailed study of the neuronal control of the LAR.

**DISCUSSION**

**BREAK WITH EXHIBITORS**

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Thursday, 28 April 2011

RECOGNITION OF  
CHEVALIER JACKSON AWARD RECIPIENTS  
1959-2010

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	Eiji Yanagisawa, MD
2000	William W. Montgomery, MD
2002	Jack L. Gluckman, MD
2003	Ellen M. Friedman, M.D.

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2004 Robin T. Cotton, M.D.  
2005 Charles W. Vaughn, MD  
2006 Andrew Blitzer, MD, DDS  
2007 Gayle E. Woodson, MD  
2008 Robert J. Toohill, MD  
2009 Peter Koltai, MD  
2010 Clarence T. Sasaki, MD  
2011 Peak Woo, MD

**10:18 AM**

**Thursday, 28 April 2011**

**CHEVALIER JACKSON AWARD**

**Presenter: Michael Rothschild, MD**

**Recipient:**

**PEAK WOO, MD**

*New York, NY*

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**10:21 AM**

**Thursday, 28 April 2011**

**. INTRODUCTION OF THE CHEVALIER  
JACKSON LECTURER**

**Presenter: MICHAEL ROTHSCHILD, MD**

**CHEVALIER JACKSON LECTURE**

**JEFFREY LAITMAN, MD**

*New York, NY*

**NATURE'S GREAT EXPERIMENT: THE  
DEVELOPMENT AND EVOLUTION OF  
THE HUMAN AERODIGESTIVE TRACT**



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Previous Chevalier Jackson Lecturers

1964	D.F.N. Harrison, MD	London, England
1965	Eric Carlens, MD	Stockholm, Sweden
1966	John L. Pool, MD	New York, NY
	Presentations by:	
	Ernest L. Wynder, MD	
	Paul H. Holinger, MD	
	Leslie Bernstein, MD	
	Robert H. Sageman, MD	
1967	Professor Eelco Hizinga, MD	Groningen, Holland
1968	Paul H. Holinger	Chicago, Il
1969	Plinio de Mattos Baretto, MD	Sao Paulo, Brazil
1970	James R. Jude, MD	Miami, Florida
1971	Jo Ono, MD	Tokyo, Japan
1972	G. Gordon McHardy, MD	New Orleans, LA
1973	Hermes C. Grillo, MD	Boston, MA
1974	John R. Gutelius	Kingston, Canada
1975	Donald O. Castell, MD	Philadelphia, PA
1976	Paul Moore, PhD	Gainesville, Fl
1977	Mary Ellen Avery, MD	Boston, MA
1978	George Berci, MD	Los Angeles, CA
1979	Gabriel F. Tucker, Jr., MD	Chicago, IL
1980	Flavio Aprigliano, MD	Sao Paulo, Brazil
1981	Peter Stradling, MD	Somerset, England
1982	Arthur M. Olsen, MD	Rochester, MN
1983	Bruce N. Benjamin, MD	Sydney, Australia
1984	Ronan O'Rahilly, MD	Davis, CA
1985	John A. Tucker, MD	Philadelphia, PA
1986	William G. Anlyan, MD	Durham, NC
1987	Tu Guy-Yi, MD	Bejing, PR of China
1988	Lucius Hill, MD	Seattle, WA
1989	Bernard R. Marsh, MD	Baltimore, MD
1990	David R. Sanderson, MD	Scottsdale, AZ
1991	Michael E. Johns, MD	Baltimore, MD
1992	Whitney Addington, MD	Chicago, IL
1993	Henry J. Heimlich, MD	Cincinnati, OH
1994	John A. Kirchner, MD	Woodbridge, CT
1995	Minoru Hirano, MD	Krume, Japan
1996	Harold C. Pillsbury, III, MD	Chapel Hill, NC
1997	Gerald Healy, MD	Boston, MA
1998	Robin T. Cotton, MD	Cincinnati, OH
1999	Jamie Koufman, MD	Winston-Salem, NC
2000	Stanley Shapshay, MD	Boston, MA
2001	Paul A. Levine, MD	Charlottesville, VA
2002	Steven D. Gray, MD	Salt Lake City, UT
2003	Wolfgang Steiner, MD	Gottingen, Germany

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Previous Chevalier Jackson Lecturers Continued

2004	Jonathan Aviv, MD	New York, NY
2005	John Ward, MD	Chicago, IL
2006	Steven M. Zeitels, MD	Boston, MA
2007	Peak Woo, MD	New York, NY
2008	Reza Shaker, MD	Milwaukee, WI
2009	Jamie Koufman, MD	New York, NY
2010	Clarence T. Sasaki, MD	New Haven, CT
2011	Jeffrey Laitman, MD, PhD	New York, NY

**DISCUSSION**

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**Thursday, 28 April 2011**

**SESSION VII**

**VOICE: CLINICAL PERSPECTIVES**

**Moderator: Albert Merati, MD**  
*Seattle, WA*

**Thursday, 28 April 2011**

**STEVEN D. GRAY RESIDENT AWARD**

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

**RECIPIENTS OF THE  
STEVEN D. GRAY RESIDENT AWARD**

2003	Sarah Hodges, MD Randal Leung, MBBS
2004	Seth Cohen, MD Jonathan P. Lindman, MD
2005	Grace SY Yang, MD
2006	None
2007	Tsunehisa Ohno, MD
2008	J. Matthew Dickson, MD
2009	Wataru Okano, MD
2010	None
2011	Richard Turley, MD

**STEVEN D. GRAY RESIDENT AWARD**

**Role of Rhinitis in Laryngitis: Another  
Dimension of the Unified Airway**

**Richard Turley, MD\***

Seth Cohen, MD

Adam Becker, MD\*

*Durham, NC*

Charles Ebert, Jr., MD\*

*Pembroke, NC*

**Purpose:** To evaluate the prevalence and severity of dysphonia among patients with allergic rhinitis (AR), non-allergic rhinitis (NAR), and patients without rhinitis (controls).

**Methods:** Patients with rhinitis symptoms with positive and negative allergy tests were recruited from allergy clinics. Patients without rhinitis symptoms were recruited from an orthopedic clinic. All three groups completed demographic and health information, the Voice-Related Quality of Life survey (VRQOL), mini-Rhino-conjunctivitis Quality of Life Questionnaire (mini-RQLQ), and the Reflux Symptom Index (RSI), as a measure of secondary laryngeal symptoms (throat clearing, cough, etc.). Confounding variables such as the presence of asthma, inhaled steroid use, and gastroesophageal reflux symptoms were collected.

**Results:** 134 AR, 54 NAR, and 62 controls completed the study. Both AR and NAR patients had an increased prevalence of dysphonia compared to control (32.8% and 266.9%, respectively, versus 8.1%,  $p = 0.001$ ). No differences were seen between AR and NAR patients ( $p = 0.5$ ). Controlling for confounding variables, such as asthma, inhaled steroid use, and gastroesophageal reflux (heartburn and/or regurgitation), patients with either AR or NAR had a higher odds of dysphonia

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(odds ratio = 4.6, 95% confidence interval 1.5 to 14.3, multiple logistic regression). Patients with worse mini-RQLQ scores had lower VRQOL scores and higher RSI scores (Spearman correlation = -0.47,  $p < 0.001$ ; 0.6,  $p < 0.001$ , respectively).

**Conclusions:** Patients with rhinitis (AR or NAR) had a higher prevalence of dysphonia compared to controls. Patients with worse rhinitis symptoms had poorer voice-related quality of life and more severe secondary laryngeal symptoms.

**False Vocal Fold and Interarytenoid Muscle  
Botulium Toxin A Injection for Laryngeal  
Dystonias**

**Jason Stubbs, DO\***

Libby Smith, DO

Clark Rosen, MD

*Pittsburgh, PA*

**Purpose of the Study:** Evaluate the efficacy of false vocal fold and interarytenoid muscle Botulinum toxin A (BtxA) injection for recalcitrant laryngeal dystonia.

**Design and Method of Study and Analysis:** Retrospective analysis of false vocal fold (FVF) and interarytenoid (IA) BtxA muscle injection from a tertiary care center. The vocal tremor severity scale was utilized to characterize the laryngeal movement disorders. The parameters evaluated were for repeated FVF and IA injection, unfavorable results, amount of BtxA injected, and time between injections.

**Summary of Results:** Fourteen of 157 patients being treated for laryngeal movement disorders were not satisfied with traditional BtxA injections of the thyroarytenoid or posterior cricoarytenoid (8.9%). Eleven patients were treated with injections of FVF and three patients were treated with IA injection. Nine of 11 (82%) FVF patients felt that these injections were superior to the traditional injections and 100% (3/3) of the IA patients perceived increased benefit. Two of the eleven 18% requested to return to previous sites of BtxA injections. One patient had temporary breathiness. The amount of BtxA injected in the FVF and IA ranged from 1.25mu to 10mu. The time between injections of the FVF and IA was equal to that of the TA and PCA.

**Conclusion:** Botulinum toxin A injection of the FVF and/or IA muscles is a treatment option for appropriately chosen patients.



11:14 AM

Thursday, 28 April 2011

**Subepithelial Vocal Fold Infusion: A Useful  
Diagnostic and Therapeutic Technique**

**James A. Burns, MD**

Aaron D. Friedman, MD

Steven M. Zeitels, MD

*Boston, MA*

Matthew J. Lutch, MD\*

*Pasadena, CA*

**Purpose:** Microlaryngoscopic surgery of phonatory mucosa requires maximal preservation of subepithelial superficial lamina propria (SLP). Volume expansion of the SLP (Reinke's space) with a subepithelial infusion has been widely adopted since its introduction in 1990. This technique has evolved so that it currently is used to assist with determining depth of vocal fold pathology, defining residual pliable SLP, enhancing microsurgical precision, and identifying unrecognized pathology. The purpose of this investigation was to examine indications, method, and benefit of subepithelial saline infusion as an adjunct technique during phonomicrosurgery.

**Study Design:** Case series with prospective data collection over 12 months.

**Methods:** Data was recorded on 280 consecutive microlaryngoscopies and 178 underwent subepithelial saline infusion.

**Results:** New pathology was identified in 20/178 patients (scar 15, sulcus 4, mucosal bridge-1). Depth of needle placement varied depending on specific pathology with 118/178 infusions done just below the epithelial basement membrane and 60/178 infusions performed deeper within the SLP just superficial to the vocal ligament. The infusion technique provided surgical assistance in multiple ways including identifying residual SLP (130/178), defining SLP/lesion interface (65/178), lifting scar (60/178), providing tension for cordotomy (47/178), expanding SLP volume to protect against laser (45/178), and hydrostatic compression of vascular ectasias/varices for phot angiolysis (7/178). Microlaryngoscopies during which no infusion was done (102/380) were primarily for non-glottic cancer (39 patients), stenosis (30 patients), and arytenoid granuloma (13 patients).

**Conclusion:** Subepithelial infusion of the superficial lamina propria is a useful microsurgical adjunct during diagnosis and treatment of phonatory mucosal lesions.

11:21 AM

Thursday, 28 April 2011

**Laryngeal Manifestations of Relapsing  
Polychondritis and a Novel Treatment Option**

**Lesley Childs, MD\***

Scott Rickert, MD\*

Oscar Calderon Wengerman, MD\*

Robert Lebovics, MD\*

Andrew Blitzer, MD, DDS

*New York, NY*

**Purpose:** Relapsing Polychondritis (RP) is a rare inflammatory disease characterized by recurrent inflammation and destruction of cartilage and other connective tissues. Typically, head and neck manifestations of RP include chondritis of the ears and nasal septum. Although laryngeal involvement is rare, hoarseness or difficulty breathing may be the first sign of this debilitating disease. Indeed, the most common cause of death in patients with RP is airway involvement. We present three patients who primarily presented with laryngeal manifestations of RP and a novel treatment option.

**Study Design:** Retrospective chart review.

**Results:** Two patients first presented to an otolaryngologist because of hoarseness and chronic cough that eventually progressed to dyspnea upon exertion. Laryngeal examination revealed subglottic stenoses with unique features. Upon rheumatologic workup both were diagnosed with RP. After treatment with steroids and immunosuppressive drugs, one of the patient's laryngeal symptoms improved, while the other required dilation procedures. Neither patient had auricular or nasal symptoms upon initial presentation. The third patient was being treated for spasmodic dysphonia and was noted to have bamboo nodules with accompanying dysphonia. Rheumatologic workup revealed RP and systemic treatment ensued. Unfortunately, her symptoms of hoarseness persisted despite systemic treatment. A pulsed-KTP laser was applied to the bilateral bamboo nodules, which eventually caused resolution of her dysphonia.

**Conclusions:** We present three patients with RP, all who sought healthcare by an otolaryngologist primarily. Awareness of this disease entity and the possibility for early laryngeal involvement is crucial for proper care of those with this life-threatening disease.

**Voice Outcomes Following Gray's Mini-Thyrotomy**

**Pavan S. Mallur, MD\***

Clark A. Rosen, MD

*Pittsburgh, PA*

**Purpose:** Most clinical practitioners have limited treatment options for vocal fold scar and sulcus. While Gray's Mini-Thyrotomy (GMT) has been described as a surgical procedure for these, limited objective data exists regarding voice outcomes. The purpose of this study is to compare the subjective, objective, and visual perceptual outcomes following GMT for the treatment of vocal fold scar.

**Study Design:** Retrospective review of all patients undergoing GMT in a single institution. Pre- and post-operative patient reported satisfaction, Voice Handicap Index-10 (VHI-10), and complications were recorded. Visual perceptual analysis of pre- and post-operative stroboscopy was performed.

**Results:** Sixteen patients with severe scar or sulcus underwent GMT. Indications were phonotraumatic or post-operative scar (11), radiation induced scar (3), and sulcus vocalis (2). Seven patients underwent bilateral operations, while 9 underwent unilateral GMT. Nine of 16 patients had more than 2 failed surgical interventions prior to GMT. Post-operative follow up was available in 12 patients. Seven of 12 patients showed self reported improvement after GMT. Mean pre-operative VHI-10 was 29.8 across all patients, and did not decrease post-operatively. Six of twelve patients showed an improvement in VHI-10, with a mean decrease of 9. Complications were encountered in 4 patients, and included ecchymosis, neck abscess, self-limited tongue numbness, and aspiration pneumonia.

**Conclusion:** Gray's Mini-Thyrotomy is a viable treatment option for severe vocal fold scar and sulcus. Our results point to the recalcitrant nature of voice difficulties when treating vocal fold scar and may properly guide clinicians and patients in their expectations following this procedure.

**Surgery or Botox for Adductor Spasmodic  
Dysphonia: A Comparative Study**

**Abie H. Mendelsohn, MD\***

Gerald S. Berke, MD

*Los Angeles, CA*

**Objective:** Currently Botox injection is the standard for treatment of adductor spasmodic dysphonia (ADSD). Results of the selective laryngeal adductor denervation-reinnervation (SLAD-R) surgery for ADSD in comparison to Botox injection are unknown.

**Study Design:** Botox cohort – prospective recruitment. Surgical cohort – retrospective patient selection. Patient-oriented measures (VHI-10) and objective single-blinded digital voice recordings grading were utilized.

**Methods:** The surgical cohort consisted of 77 patients with mean follow-up time of  $7.54 \pm 2.55$  years (range: 2.2–14.2). The Botox cohort included 28 patients with mean follow-up time of  $46.37 \pm 5.51$  days (range: 36-54).

**Results:** Surgical patients scored significantly improved VHI-10 score (mean:  $14.4 \pm 13.6$ ) over Botox patients (mean:  $26.5 \pm 12.1$ ) ( $p=0.001$ ). Aside from VHI-10 #2, the surgical group demonstrated significantly improved voice-related function on each VHI-10 component ( $p=0.01$ ). Within the injection subgroup, 88% agreed that Botox successfully treated their ADSD, yet only 63% agreed that Botox improves their speech consistently. Within the surgical subgroup 82% would recommend this surgery to others; 78% agreed that their voice is actually better following surgery than following Botox. Voice ratings demonstrate similar levels of breathiness and overall voice quality between the treatment subgroups.

**Conclusions:** When indicated, the SLAD-R surgery for ADSD demonstrates outcomes equal to or superior to the current standard of Botox injections.

## **DISCUSSION**

**Introduction of New President**

**GREGORY POSTMA, MD**

*Augusta, GA*

**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

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**12:00 PM**

**Thursday, 28 April 2011**

**ADJOURN**

**LUNCH WITH EXHIBITORS**

**12:15 PM**

**Thursday, 28 April 2011**

**Annual Photograph of the Membership**

**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

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**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. Copies of the manuscript must be submitted prior to podium presentations. If the presenter does not comply with this rule, the paper may not be presented. Manuscripts for poster presentations are optional. One copy of the manuscript should be submitted to The Annals of Otolaryngology, Rhinology & Laryngology, and one copy should be sent to J. Scott McMurray, Editor of the ABEA Transactions. The session moderator and program director should also receive copies of the manuscript. Additional instructions for those seeking awards are posted on the ABEA website.
3. All papers become the property of the Association.
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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.



**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

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***COMBINED  
SCIENTIFIC POSTER SESSION***

**Sheraton Chicago Hotel & Towers**  
River Exhibit Hall A & B  
Chicago, Illinois

**AMERICAN BRONCHO-ESOPHAGOLOGICAL  
ASSOCIATION**

**AMERICAN HEAD & NECK SOCIETY**

**AMERICAN LARYNGOLOGICAL ASSOCIATION**

**AMERICAN RHINOLOGIC ASSOCIATION**

All ABEA, AHNS, ALA, ARS, ANS, AOS and TRIO  
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 (89-105) of this program booklet.*

#1

**Foreign Body Aspiration in an Eight  
Month Old Female: A Case Report**

Matthew K. Steehler, MD\*

Kaelan D. Young, M.Sc.\*

Earl H. Harley, MD, FACS, FAAP

*Washington, DC*

Foreign body (FB) aspirations affect more than 2.5 million children in the United States of America every year. The average age of pediatric aerodigestive FB aspiration is 3.5 years old. Airway FBs are the fifth greatest cause of death in children under the age of one. It is important to identify and treat children with suspected FB aspiration as soon as possible.

This paper presents a rare case of a large, inorganic foreign body completely obstructing the left mainstem bronchus of an eight-month-old female. Appropriate pre-operative multi-disciplinary discussions were completed prior to and immediately upon patient arrival. The operating room was expeditiously stocked by the surgeons with an array of age-appropriate instruments utilized for FB retrieval. The patient was critically ill and there was much difficulty in removing the inorganic foreign body. The object was eventually removed with a novel technique, and the patient recovered without incident.

A review of the literature is compared and contrasted with our case.

#2

**Parent Satisfaction from a Multidisciplinary  
Pediatric Aerodigestive Center**

Thomas Q. Gallagher, MD\*  
Christopher J. Hartnick, MD  
*Cambridge, MA*

**Objective:** To measure the satisfaction regarding the outpatient experience of parents whose children were seen at a multidisciplinary aerodigestive clinic with specific focus upon issues relating to length of time per visit, satisfaction on seeing multiple providers simultaneously, and their general feeling of whether they left understanding the overall diagnostic and treatment plan established by the multiple specialists.

**Study Design:** Nationally recognized, psychometrically valid, mail-out medical practice survey

**Setting:** Tertiary care multidisciplinary aerodigestive center

**Subjects and Methods:** 180 surveys were randomly mailed out over a six-month period to the parents of children seen in our clinic. The survey consisted of a validated, standardized questionnaire as well as five additional, non-standard questions specific to a multidisciplinary clinic. Responses were interpreted using linear transformation to a 0-100% score.

**Results:** 26 surveys were returned (14.4%). Results were compared to national and regional benchmarks. Non-standard questions used to gauge the parent satisfaction demonstrated favorable results. These questions addressed satisfaction seeing multiple specialists at the same visit (96.2%), understanding their child's illness (93%) and treatment plan (92%) as well as their likelihood of returning for follow-up (95.8%). Waiting time in exam room had a fair □ to good □ score (68.3%).

**Conclusion:** This is the first report looking at parent satisfaction with a multidisciplinary pediatric aerodigestive clinic. Our results suggest that parents find the extra wait time worthwhile in order to see all the doctors they need to obtain and understand their child's diagnosis.

#3

**Closure of Persistent Tracheocutaneous  
Fistulas in the Adult Population**

Aaron Fletcher, MD\*

Sobia Khaja, MD\*

Henry T. Hoffman MS, MD, FACS

*Iowa City, IA*

Tracheocutaneous fistulae may persist after tracheotomy. Suture closure of the fistula may result in complications including infection, wound dehiscence, and pneumomediastinum. We present a simplified and safe technique which may be performed under local anesthesia to close persistent fistulas. A retrospective chart review was performed on fourteen patients treated by this technique. A single case with incomplete closure was successfully addressed by additional procedures. Our review included analysis of reported risk factors for persistence of tracheocutaneous fistulae: previous irradiation to the neck, extended duration of cannulation, previous tracheostomies, obesity, and use of the Bjork flap or four-flap epithelial lined tracheostomy. All fourteen patients in the study were found to have at least one of these risk factors.

#4

**Vocal Fold Stellate Cells in the Human Macula  
Flava as a Diffuse Stellate Cell System**

Kiminori Sato, MD, PhD  
Hirohito Umeno, MD  
Tadashi Nakashima, MD  
*Kurume, Japan*

**Purpose:** Hepatic stellate cells (HSCs) play an important role in liver fibrogenesis. Stellate cells are desmin-positive cells with perinuclear vitamin A droplets. Morphologically similar cells have been found at many extrahepatic sites such as pancreas, kidney and colon. Consequently, the concept of a Diffuse Stellate Cell System (DSCS) has been proposed. However, the true phenotypic relationship between these cells has not been fully established. Vocal fold stellate cells (VFSCs) in the human maculae flavae (MFe) are stellate in shape and possess lipid droplets and store vitamin A in their cytoplasm. The VFSCs are inferred to be involved in the metabolism of extracellular matrices that are essential for the viscoelasticity of the human vocal fold mucosa. The VFSCs are considered a new category of cells in the human vocal fold. The relationship between the VFSCs and the DSCS was investigated.

**Methods:** Immunoreactivity to antibodies directed to glial fibrillary acidic protein (GFAP), vimentin and desmin was investigated in five human adult vocal fold mucosae.

**Results:** GFAP, vimentin and desmin were identified in the VFSCs in the human adult MFe.

**Conclusions:** Obtained data indicates that VFSCs in the human MFe express the neural and muscle-associated proteins seen in HSCs. Our present and previous results suggest that the VFSCs in the human MFe are a member of a DSCS. The VFSCs are considered a new category of cells in the human vocal fold. The MFe are supposed to be special microenvironments known as niches nurturing a pool of VFSCs.

#5

**Mucosa-Associated Lymphatic Tissue  
(Malt) Lymphoma of the Larynx in a  
Patient with Sjögren's Syndrome**

Vartan Mardirossian, MD\*

*Boston, MA*

Timothy Anderson, MD

*Burlington, MA*

A 71 year old woman with a long-standing history of Sjögren's syndrome presented to the Otolaryngology Clinic after several months of worsening dysphonia. She had no odynophagia, dyspnea or fevers. Fiberoptic laryngoscopy showed a cystic lesion involving the left false vocal fold which was initially thought to represent a saccular cyst. The patient was brought to the Operating room for an excisional biopsy of the cyst in suspension microlaryngoscopy. Pathology showed a MALT lymphoma of the larynx. Subsequently a PET-CT showed avid uptake in nodules of the right lung which were also biopsied and resulted positive for MALToma. She then underwent several weeks of chemotherapy with resolution of the lesions.

To our knowledge this is the first case reported in the literature of MALT lymphoma in a Sjögren's patient with initial manifestation in the larynx.

#6

**The Assessment of Voice Outcome after  
Thyroplasty for the Aged Patients**

Takehiro Iki, MD\*  
Shigeru Hirano, MD  
Satoshi Ohno, MD  
Ichiro Tateya, MD  
Shin-ichi Kanemaru, MD\*  
Juichi Ito, MD\*  
*Kyoto, Japan*

**Purpose:** Thyroplasty type I has become the main treatment of improving glottic incompetence caused by unilateral vocal fold paralysis. In the aged patients, atrophy of vocal fold or deterioration of respiratory functions can influence their postoperative voice function. The purpose of this study is to investigate the possibilities of the influence by assessing the results of pre and postoperative voice function in the aged patients, comparing to those of the younger.

**Design And Method of Study:** A retrospective study of 12 patients more than 75 years old and 34 patients under 75 years old who had undergone thyroplasty type I for treatment of unilateral vocal fold paralysis was undertaken. Data on the aged group were compared to those on the younger group in five voice measurements: maximum phonation time (MPT), mean flow rate (MFR), pitch perturbation quotient (PPQ), amplitude perturbation quotient (APQ), and noise-to-harmonics ratio (NHR).

**Results:** It was indicated that improvement of averaged MPT through operation was lower in the aged group than the younger, and improvement of averaged PPQ, APQ and NHR were also lower in the aged group, postoperative value of these three parameters remaining further from normal limit. However, improvement of averaged MFR was almost same between two groups.

**Conclusions:** The results indicated that although MFR is improved by medialization in elderly, age-related changes on the mucosa may give negative effects to postoperative voice function.

#7

**FOREIGN BODY AWARD WINNER**

**Novel Use of a Suction/Irrigation Device to  
Remove Impacted Blood Clot from the Airway**

**Michael Joshua Wilhelm, MD\***

*Yokosuka, Japan*

**Benjamin Westbrook, MD\***

**Joseph Shvidler, MD\***

*Washington, DC*

**Purpose:** To describe the novel use of a suction/irrigation device to remove a large volume clot that was causing critical obstruction of the trachea and mainstem bronchi.

**Design:** Case Report

**Summary:** A 93 y/o male on Coumadin presented to the Emergency Room after falling and hitting his chest on the ground. Significant bruising of his chest wall was noted, as well as an INR of 7.55 and PT of 65.5. He was given Vitamin K and FFP, but soon after developed increasing respiratory difficulty and was intubated. The pressure required to maintain ventilation steadily increased. Flexible bronchoscopy revealed clot in the trachea and the Otolaryngology service was consulted for rigid bronchoscopy and removal of the airway clot. The patient was taken to the operating room where rigid bronchoscopy noted copious amounts of fibrinous clot filling his trachea. Due to the nature of the clot, traditional methods failed to relieve the airway obstruction and his ventilatory requirements increased. A Stryker StrykeFlow II Disposable Suction/Irrigator, traditionally used for gynecologic procedures, was brought to the operating room and used through the rigid bronchoscope. The tracheal obstruction, as well as the significant bronchial obstructions, were able to be removed using the device. The patient's ventilatory status stabilized and he was extubated the following day and discharged home.

**Conclusion:** The StrykeFlow II suction/irrigator proved highly successful in removing a large volume clot from the airway. A similarly designed device made specifically for the airway could prove useful in similar cases in the future.



#8

**Laryngeal Reconstruction with Tissue  
Engineering Technique Using Acellular  
Extracellular Matrix Scaffold**

Morimasa Kitamura, MD\*  
Shigeru Hirano, MD, PhD  
Yoshiharu Kitani, MD\*  
Satoshi Ohno, MD\*  
Tsuyoshi Kojima, MD\*  
Shin-ichi Kanemaru, MD, PhD\*  
Juichi Ito, MD, PhD\*  
*Kyoto, Japan*  
Clark Rosen, MD  
Thomas Gilbert, PhD\*  
*Pittsburgh, PA*

**Objectives:** The aim of this study in a canine model was to investigate regenerative effects of acellular extracellular matrix scaffold derived from porcine urinary bladder (UBM) to repair hemilaryngectomy.

**Methods:** Five beagles were used in this study. Vertical hemilaryngectomy was performed, and the surgical defects were reconstructed by insertion of UBM scaffold. The effect of regeneration of the larynx was evaluated 6 months after the operation. The excised larynges experiments were performed to measure phonation threshold pressure (PTP), normalized mucosal wave amplitude (NMWA), and normalized glottal gap(NGG). Histologic examination was performed to evaluate structural changes of the scaffold.

**Results:** Although local infection was observed in one dog in a week after implantation of the scaffold, all dogs showed good epithelialization with minimum complication in one month. The UBM scaffold appeared to be absorbed in a month after operation. The results of excised larynx measurements varied, but some of the cases showed good vibratory properties with low PTP.

**Conclusions:** The UBM scaffold has shown to be biocompatible, biodegradable, and useful for tissue regeneration of the hemilarynx with possible restoration of the vocal fold function.

#9

**Posterior Glottic Stenosis Due to Fusion of  
Bilateral Vocal Process Granulomas**

VyVy Young, MD\*  
Libby Smith, DO  
*Pittsburgh, PA*

Vocal process (VP) granulomas result from an irritating stimulus such as intubation, laryngopharyngeal reflux, chronic vocal abuse, or glottal insufficiency. Management includes observation, medical intervention, or surgical options. Recurrence is not uncommonly observed, but other complications are not as well described.

**Purpose:** We present an unusual case of rapid and substantial enlargement with associated fusion of bilateral VP granulomas, resulting in posterior glottic stenosis. To our knowledge, this has not been previously reported in the literature.

**Methods/Results:** We present multiple photographs and video of a patient who complained of acute hoarseness following intubation for heart failure. Initial evaluation revealed small bilateral vocal process granulomas. Aggressive reflux management was begun. At one-month follow-up, the patient complained of new onset progressive dyspnea. Repeat examination demonstrated massive enlargement and fusion of the bilateral VP granulomas, resulting in severely limited vocal fold abduction due to posterior glottic stenosis. The patient underwent microsuspension laryngoscopy with excision of the bilateral VP granulomas and lysis of posterior glottic stenosis. No recurrence has been noted to date, although the patient continues to undergo routine surveillance.

**Conclusion:** Multiple reports in the literature describe VP granulomas as benign laryngeal lesions which often spontaneously resolve. In contrast, this report details what we believe to be the first description of bilateral VP granulomas which rapidly and significantly enlarged and fused, resulting in posterior glottic stenosis. Though a rare occurrence, the otolaryngologist should remain aware of this possibility. Particularly close follow-up and monitoring may be warranted in patients with bilateral VP granulomas.

#10

**Regeneration of Tracheal Epithelium Using a  
Collagen Vitrigel Membrane**

Akiko Tani, MD\*  
Yasuhiro Tada, MD\*  
Toshiaki Takezawa, PhD\*  
Mitsuyoshi Imaizumi, MD\*  
Yukio Nomoto, MD\*  
Koichi Omori, MD  
*Fukushima, Japan*

In the case of laryngeal trauma or tracheal invasion of malignant tumor, we developed the artificial trachea with polypropylene mesh and collagen sponge to reconstruct the tracheal defect in our department. However, it takes 2months to form epithelial layers. In order to solve this problem, three types of collagen scaffold were prepared: the vitrifying collagen sponge, as a vitrigel model (A) and the adding two solutions of b-FGF to vitrigel, as a 10ng (B) and 100ng(C). Tracheal defect with the size of 2—4mm was made in 9 week-old, male Sprague-Dawley rats, and 3 types of scaffold were implanted. At 3, 5, 7 days after implantation, rats were sacrificed.

On day 3 after implantation, inflammatory cells were observed in collagen scaffold of A and B. Epithelial layer was observe on day 3 in C, on day 5 in B, and on day 7 in A, Sub-epithelial layer composed with connective tissue in C was thicker than that in A and B. These results demonstrated the effect of b-FGF for epithelial formation of the tracheal luminal surface. Our technique for tracheal reconstruction using a collagen vitrigel membrane with b-FGF is a feasible approach for accelerating epithelial regeneration.

#11

**Atrioesophageal Fistulae- Case Report and  
Review of the Literature**

Courtney Shires, MD\*  
Glenn B Williams, MD\*  
*Knoxville, TN*

**Purpose:** Discuss the incidence, presentation, diagnosis, and treatment of atrioesophageal fistulae (AF).

**Design:** We report a case of a 44 year old female with retroesophageal right subclavian artery-esophageal fistula (RSAEF) and a review of the literature for three types of AF.

**Results:** Eight cases of carotid artery-esophageal fistula (CAEF), 20 cases of RSAEF, and over 500 cases of aorto-esophageal fistula (AEF) were found. Three patients with CAEF have survived; two underwent ligation of the common carotid artery, while one underwent endoluminal grafting of the artery. Six patients with RSAEF have survived; five patients required open surgical repair of the fistula and redirection of the right subclavian artery, and one underwent endovascular stenting. Sixty-five percent of patients with RSAEF had prolonged placement of a nasogastric tube. Forty-eight survivors of AEF have been reported, with a mortality rate of over 90%. Patients with AF present most commonly with abrupt, severe hematemesis. Sentinel bleed is reported in 80% of patients with AEF but only 20% of patients with RSAEF. In stable patients, endoscopy localized the bleeding source in 23% of patients with RSAEF and 38% of patients with AEF. For severe bleeding in AF, placement of a Sengstaken-Blakemore tube was temporizing until definitive treatment.

**Conclusions:** Patients with prolonged nasogastric tube use presenting with severe hematemesis should be screened for AF. Immediate surgical repair or endovascular stenting should not be delayed given the high mortality.

#12

**Persistent Submucosal Foreign Body: An Indication for Extramucosal Approach**

Maggie A. Kuhn, MD\*  
Milan R. Amin, MD  
*New York, NY*

**Purpose:** To discuss the limitations of endoscopic management of chronic foreign bodies and the indications for external approach

**Design:** Report of a case and review of literature

**Results:** A 38 year-old man in custody of the Department of Corrections was referred for evaluation of a pen retained in his throat. The patient, who had a person history of foreign body ingestion, reported swallowing the object over four year prior to presentation. Multiple chest x-rays documented its presence in the right side of his neck. Worsening dysphagia and odynophagia led to his referral to the Otolaryngology service. Neck CT demonstrated a 12cm linear opacity and metallic spring extending inferiorly from his right pyriform sinus in the tracheoesophageal groove to the level of T4. Direct laryngoscopy revealed no intraluminal foreign body or hypopharyngeal mucosal irregularity. He subsequently underwent an external approach to retrieve the submucosal foreign body. Dissection and medial retraction of the lateral thyroid cartilage allowed identification and removal of a plastic ink refill and metallic spring without mucosal violation. His recovery was uncomplicated, and his odynophagia resolved.

**Conclusion:** This unique case highlights the utility of endoscopic evaluation to confirm the presence of a submucosal foreign body. When faced with a chronic aerodigestive foreign body that has assumed a submucosal position, an extramucosal approach may be an effective and safe technique for its retrieval.

#13

**Outcomes of Airway Management by a  
Multidisciplinary Difficult Airway Response Team**

Alexander Hillel, MD\*

Marietta Tan, MD\*

Nasir Bhatti, MD\*

John Carey, MD\*

John Ok, MD\*

Lauren Berkow, MD\*

Lynette Mark, MD

Eugenie Heitmiller, MD\*

*Baltimore, MD*

Paul Flint, MD\*

*Eugene, OR*

Our hospital implemented a difficult airway response team (DART) to address the needs of patients with difficult airway anatomy and in response to 6 airway sentinel events. DARTs are initiated as an escalation from code events for patients with known or presumed difficult airways who benefit from multidisciplinary providers and specialized equipment. Our purpose is to analyze outcomes of our DART responses, risk factors for patients with difficult airways, and risk factors within the difficult airway cohort to optimize management algorithms to improve patient safety.

Prospective analysis of data from difficult airway responses at a tertiary-care hospital from 2008-2010. Data included patient demographics, intubation and tracheostomy history, medical comorbidities, and operating room mobilization.

There were a total of 118 calls and no airway sentinel events. Airways were managed by Anesthesia (n=63), Otolaryngology (n=42), Trauma surgery (n=3). 10 calls were canceled. Conditions initiating DART calls included known difficult airway (n=25), pharyngeal/mediastinal mass or trauma (n=25), morbid obesity (n=24), angioedema (n=15), and current tracheostomy (n=15). Angioedema (n=10), known difficult airway (n=8), and morbid obesity (n=7) most commonly resulted in operating room (OR) airway management (n=28). 66% of angioedema cases were managed in the OR.

Airway sentinel events were reduced from 6 to 0 following implementation of DART. Analysis suggests that patients with evidence of supraglottic angioedema benefit from transport to the OR for safe airway management with optimal support personnel and equipment. Trends identified from this study may allow hospitals without a DART to offer their patients a similar level of care.

#14

**Surgical Management for Cricotracheal  
Invasion of Papillary Thyroid Carcinoma in  
Our 29 Years' Experience**

Sueyoshi Moritani, MD\*  
Kunihiko Nagahara, MD, PhD\*  
Masaru Yamashita, MD, PhD\*  
Shinji Yajin, MD, PhD\*  
Hideaki Okuyama, MD\*  
*Kusatsu, Shiga, Japan*

**Background:** Patients with papillary thyroid carcinoma (PTC) have excellent post-operative prognosis in general. Patients with cricoid and/or tracheal PTC invasion, however, often result in higher morbidity and airway insufficiency postoperatively.

**Objectives:** 1) To investigate locoregional recurrence and survival ratios in PTC patients with cricotracheal resections in our institute. 2) To analyze their postoperative airway outcomes.

**Material and Methods:** One hundred and ten patients out of 746 PTC cases had cricoid, tracheal, or cricotracheal invasion between 1981 and 2009. We reviewed and collected information from each case record retrospectively. The IRB approved this study and privacy policy was carefully considered with informed consent. Ten-year disease specific survival ratios were statistically examined using Kaplan-Meier method.

**Results:** Shave excision was performed in 57 patients, while 53 took sleeve resection. The 10-year disease-specific survival ratios in shave resection □ and sleeve resection were 89.5 and 43.6%, respectively ( $P < 0.0001$ ). The locoregional recurrence ratios in shave resection and sleeve resection were 5.3% and 5.8%, respectively. Six locoregional recurrences were managed with a total laryngectomy, an additional shave resection and sleeve resection's (n=4). Stomal closure was achieved in 22 patients out of 53 with affected laryngotracheal stoma using local cutaneous flaps, muscle flaps, artificial tracheas, D-P flaps, and composite D-P flaps with nasal septal cartilage for larger defects.

**Conclusion:** Surgical decision for cricotracheal invasion of PTC is very important for quality of life in patients. Shave excision and sleeve resection decreased locoregional recurrence, and composite D-P flaps allowed us to restore widely affected cricotracheal area.

#15

**Pedunculated Submucosal Lipoma of the  
Cervical Esophagus: A Case Report**

Allison M. Dobbie, MD\*  
Rony K. Aouad, MD\*  
Scott C. Fuller, MD, MD\*  
Paul J. Donald, MD, FRCS\*  
*Davis, CA*

Although lipomas are commonly found throughout the body, esophageal lipomas are exceedingly rare and are thought to present less than 0.5% of gastrointestinal lipomas. Many of these are asymptomatic, however, patients may present with dysphagia, weight loss, or even asphyxia from regurgitation of the tumor. We present the case of a 64-year-old man who presented with a six-week history of solid food dysphagia. Flexible laryngoscopy revealed a smooth mass in the hypopharynx which descended into the cervical esophagus. Additional investigational workup included barium esophagram and computed tomography (CT) of the neck, which confirmed a large, pedunculated lesion of the pedicled to the posterior cervical esophageal wall. The patient subsequently underwent a transcervical posterior esophagotomy for tumor resection. The tumor was measured to be 5 x 5 x 5 centimeters in size, and pathology confirmed a submucosal lipoma. After resection of the tumor, the patient's dysphagia resolved entirely.



#16

**ROGUE SUPERHERO MAKES  
UNSUSPECTED APPEARANCE**

Ellen M Friedman, MD

MaryFrances Musso\*

Robert Schulman\*

*Houston, TX*

A 15 month old healthy male, product of a normal pregnancy and normal delivery, came from St Bart's in the Caribbean Islands to Texas Children's Hospital in search of a second opinion concerning persistent coughing, choking with feeding, and gagging which had begun approximately 6 months earlier following an undocumented case of Swine Flu. The child had no respiratory symptoms or cyanosis, but did have difficulty swallowing foods, especially semi solids. He was well nourished with no weight loss. The family had been told that these symptoms were residual of Swine Flu. There was no history of previous intubation or surgery.

On awake flexible laryngoscopy in the office, the child had a left sided vocal fold weakness, without erythema or other abnormality. A chest x-ray was obtained in order to look for an explanation for the vocal fold weakness, other than a post viral etiology. The chest x-ray (Figure 1) demonstrated tracheal narrowing to less than 50% of the normal diameter, suggestive of tracheal stenosis. At this point a direct laryngoscopy under anesthesia was performed and the trachea mid cervical appeared narrowed with apparent external compression rather than actual stenosis (Figure 2). A cardiothoracic consultation was sought and surgery to decompress the trachea by relocation and reimplantation of the brachiocephalic artery was contemplated and discussed with the family. In preparation for this surgery, a CT scan with contrast was obtained (Figure 3). The scan was read as focal tracheal stenosis with narrowing of the superior trachea secondary to tracheomalacia associated with the mass effect from the overlying right brachiocephalic artery without evidence of a complete vascular ring.

The following day, the radiologic interpretation of the CT scan of the chest was amended to include a marked soft tissue density surrounding the superior esophagus causing the deviation of the trachea as well as the right brachiocephalic artery anteriorly. The report stated that the soft tissue mass was unclear but could represent a mediastinal tumor with infiltration of the esophagus such as a lymphoma or inflammation and reactive change due to a radiolucent foreign body in the esophagus.

Radiographic findings were discussed with the parents and esophagoscopy was performed. On esophagoscopy, the esophageal inlet was obstructed with friable material. The wall of the esophagus was noted to be edematous with filled thickened secretions. In the midcervical esophagus, a foreign body was seen in a narrowed and edematous lumen (Figure 4, 5). The foreign body, a Spiderman sticker (Figure 6) was removed without difficulty or injury to the inflamed esophageal mucosa. All symptoms resolved without further sequelae.

#17

**Treatment of Tracheal Amyloidosis With  
External Beam Radiation**

Ryan Murray, MD\*

Joseph DePietro\*

Maurits Boon\*

*Philadelphia, PA*

Tracheobronchial amyloidosis is a relatively rare entity consisting of amyloid deposition in the submucosa of the tracheal wall. Patients may present in acute airway distress secondary to significant airway obstruction, occasionally requiring tracheostomy placement. Traditional management techniques have involved serial dilation, surgical debridement, laser ablation or stent placement, however none of these techniques has demonstrated reliably effective outcomes. Recent reports involving external beam radiation have yielded limited but encouraging results. We report a case of a 71 year-old male who presented with a two week history of new onset inspiratory stridor, shortness of breath and hemoptysis. CT imaging revealed circumferential tracheal wall thickening extending from the larynx to the carina with marked narrowing in the subglottic larynx. Operative biopsy confirmed the diagnosis of amyloidosis. Following stabilization with high dose steroids the patient was treated definitively with low dose external beam radiation (24Gy). Following radiation therapy the patient experienced significant improvement in airway symptoms and has remained stable for nine months post treatment. Although a rare clinical entity, tracheal amyloidosis must be considered in the differential for tracheal stenosis and airway distress. Radiation therapy demonstrates promise for the treatment of this otherwise recalcitrant disease

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**THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION**

**ACTIVE MEMBERSHIP REQUIREMENTS**

**BYLAWS** (Article III, Section 2a) – Admission to the Association shall be by invitation only. All nominations for Active membership shall be made by the Council. Elections to membership shall be made by the Active Member.

**BYLAWS** (Article III, Section 2e) – Each candidate for Active Membership must be a graduate of medicine, a diplomate of the recognized American or Canadian Board of Medical Specialties or the Osteopathic equivalent, engaged for three years or more, after Residency, in the active practice of his specialty; who has by endoscopic skill and scientific ability, proven qualified as a Broncho-Esophagologist.

**BYLAWS** (Article III, Section 2b) – The proposal of an individual (an “Applicant”) for Active Membership shall be by written recommendation to the Council of Two Active Members, preferably practicing and residing in the community where the Applicant practices and resides. In addition, letters of recommendation are required from two local physicians attesting to the Candidates ethics and consistency.

**CANDIDATE MEMBERSHIP** – 1) If they are a resident, they must have one letter of recommendation from the Chair of the Department or the Program Director. 2) If they are applying post-residency, they must have one letter from their Chair and/or Program Director and one Active Member of the ABEA. 3) The applicant for Candidate Membership is required to attend at least one ABEA meeting every three years to maintain good standing in this category.

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THE AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION

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