7:30 a. m. **Business Meeting** (Fellows Only)

By-Laws Amendment

Election of Active, Associate, and Emeritus Fellows

Election of Post-Graduate Members

Introduction of Newly Elected Fellows and Members

Election of Nominating Committee

8:00 a. m. **Presidential Address**

*The Voice Literature: Past, Present and Future*

Michael S. Benninger, MD
*Cleveland, OH*

**Presidential Citations**

Jéan Abitbol, MD, PhD, *Paris, FRANCE*

Mark S. Courey, MD, *San Francisco, CA*

Robert T. Sataloff, MD, DMA, *Philadelphia, PA*

Harvey M. Tucker, MD, *Columbus, OH*

Kathleen Yaremchuk, MD, *Detroit, MI*

**Presentation:** Michael S. Benninger MD, *Cleveland, OH*

8:20 a. m. **Guest of Honor Remarks**

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

**Introduction:** Michael S. Benninger, MD, *Cleveland, OH*

8:25 a. m. **Recognition of Program Committee**

C. Blake Simpson, MD, *San Antonio, TX*

Randall C. Paniello, MD, *St. Louis, MO*

Paul W. Flint, MD, *Portland, OR*

C. Gaelyn Garrett, MD, *Nashville, TN*
Medullary neurons involved in breathing also have roles in cough and swallow. Reconfiguration of medullary neural networks into selective behavioral control assemblies (BCAs) that govern different behaviors for airway protection is not well understood. We challenged anesthetized cats with simultaneous cough and swallow-producing stimuli to examine relationships between these behaviors. We recorded from medullary respiratory neurons during cough and swallow. Swallows occurred during repetitive cough and were restricted to the cough E2 phase which was significantly longer when a swallow occurred. Repetitive swallow was associated with increased tonic discharge of some expiratory decrementing (E-Dec) and silence of some inspiratory (I) neurons. Other E-Dec and I neurons increased discharge rate during swallow. The results support: a) a role of E-Dec neurons in coordinating cough and swallow, and b) complex coordination of these behaviors, presumably mediated by elements common to both cough and swallow BCAs. Supported by HL89104, HL89071, HL103415.
8:38 a.m. Invited Presentation

Microinjection of Kynurenic Acid (KA) into the Medial Reticular Formation Elicits Dysphagic Swallow Motor Patterns in the Anesthetized Cat

Teresa E. Pitts, PhD*
Ivan Poliacek, PhD*
Melanie J. Rose, MS*
Ashley N. Mortensen, BS*
Paul W. Davenport, PhD*
Donald C. Bolser, PhD*

Gainesville, FL

Kynurenic acid (KA) is found in higher concentrations in the CNS of Alzheimer’s and Parkinson’s disease patients. A leading cause of death in these disorders is aspiration pneumonia, from dysphagia and/or dystussia (disordered cough). We previously found the medial reticular formation (MRF) is important for cough; we speculated this region was important for swallow. Electromyograms (EMG) for geniohyoid (GH), thyroarytenoid (ThAr), upper esophageal sphincter (UES), and thyrohyoid (TH) were recorded in anesthetized cats (n=7). Swallowing was elicited by water. KA (50nL per injection; 50mM; 12 injections) was microinjected bilaterally within the MRF. The EMG-magnitude suppression for TH, ThAr, and GH, with an increase in UES magnitude during swallow immediately following microinjections. At 2 hours post-injections, EMG magnitudes began returning to control. We conclude neurons within the MRF are important for control of laryngeal and pharyngeal motoneuron activity during swallow.
Objective: To evaluate the role of surface evoked laryngeal sensory action potential (SELSAP) testing in supporting a diagnosis of laryngeal sensory neuropathy in chronic cough.

Techniques: Retrospective chart review.

Results: Thirty-one patients with a chief complaint of chronic cough underwent laryngeal electromyography (EMG) testing since January 2000 with needle EMG and surface nerve conduction studies. 50% of patients demonstrated some evidence of vocal fold motion impairment on videostroboscopy. Sixteen demonstrated EMG findings of suspected unilateral neuropathy, while 10 demonstrated bilateral injury, with mostly mild abnormalities in both groups. SELSAP waveform analysis in unilateral neuropathy demonstrated significantly lowered affected side peak amplitudes that compared to both normal controls and unaffected side amplitude. Patients with bilateral EMG injury patterns generally demonstrated significantly lowered bilateral SELSAP peak amplitude.

Conclusions: Patients with chronic cough often have alterations in SELSAP waveform and EMG testing which may assist in supporting a diagnosis of laryngeal sensory neuropathy.
Laryngopharyngeal reflux disease (LPRD) patients often fail empiric treatment with high dose BID proton pump inhibitors (HDPPPI); subsequently, recalcitrant acid or non-acid reflux (NAR) disease requires exploration. Results of combined multichannel intraluminal pH-impedance (MIPI) and high resolution esophageal manometry (HREM) testing while on HDPPPIs is lacking in this LPRD population. Does combined MIPI and HREM testing further the management of HDPPPI failure LPRD patients? MIPI and HREM were performed while taking HDPPPIs on 23 persistent LPRD subjects. Number and pH of proximal reflux episodes, DeMeester score, reflux symptom correlation percentage (RSC), and motility/physiology findings were recorded. Fifty-two% of subjects had significant NAR and 22% had breakthrough acid reflux (BAR) despite HDPPPIs. Positive RSC was not necessary to diagnose significant NAR. Used in coordination, MIPI and HREM identified significant NAR and BAR in 74% of LPRD subjects who failed empiric HDPPPI therapy. Results further directed management in these subjects.
9:02 a.m. Functional Regeneration of Laryngeal Muscle using Bone Marrow Derived Stromal Cells
Shani-ichi Kanemaru, MD, PhD*
Yoshiharu Kitani, MD, PhD*
Satoshi Ohono, MD, PhD*
Tsuyoshi Kojima, MD, PhD*
Seiji Ishikawa, MD*
Shigeru Hirano, MD, PhD
Tatsuo Nakamura, MD, PhD*
Osaka, JAPAN/Kyoto, JAPAN

Aim: To investigate the ability of Bone marrow derived stromal cells (BSCs)/Induced muscle progenitor cells (IMCs) transplantation to promote functional regeneration of muscle by using vocal fold movement.

Material and Methods: We performed BSC/IMC transplantation into injured canine posterior cricoarytenoid muscles. We investigated the ability of auto- and allo-BSC/IMC with a gelatin sponge scaffold transplantation to promote functional regeneration of posterior cricoarytenoid muscles by fiberscopic analysis of vocal fold movement. And also, we examined the histological changes of the transplanted regions. As a control, a gelatin sponge scaffold without additional cells was transplanted into the injured area.

Results: Auto-BSC/IMC transplantation effectively restored vocal fold movement, whereas scaffold alone or allo-BSC/IMC transplantation did not. Histological examination revealed that, in cases of good recovery, muscle regeneration occurred in the area of cell transplantation, while scar formation without muscle regeneration was observed under control conditions.

9:10 a.m. Discussion
9:20 a.m.  DANIEL C. BAKER JR. LECTURE

“Neurolaryngology: Concepts for Improved Laryngeal Function”
Roger L. Crumley, MD, MBA
Orange, CA

Introduction: Michael S. Benninger, MD
Cleveland, OH

9:45 a.m.  Intermission/Visit Exhibits
10:15 a.m.  The Efficacy of the Percutaneous Vocal Fold Injections for Benign Laryngeal Lesions: The Perspective Multicenter Study
Seung Won Lee, MD*
JooHyun Woo, MD*
* Bucheon, KOREA

Objectives: For benign vocal fold diseases (Reinke’s edema, vocal polyp, nodule, and scarring); there are no other options when patients refuse general anesthesia or voice therapy. We conducted an analysis of the effects of PSI (percutaneous steroid injection) as an alternative treatment for benign vocal fold diseases.

Method: From October 2008 to March 2010, one hundred thirty patients with benign vocal fold disease who refused general anesthesia or showed no response to voice therapy underwent PSI. Of these, this study included 115 patients who completed the evaluation before PSI and at the first and third month after PSI and we included an additional 25 patients who completed evaluation at the sixth month after PSI.

Results: Among 115 patients in the study, 40 cases (34.8%) showed complete remission and 57 cases (49.6%) showed partial remission. As a result, overall improvement rates were 84.4%. Almost all objective and subjective parameters showed statistical improvement at the first and third month after PSI ($P < .05$). Jitter and all subjective parameters maintained statistical improvement until the sixth month. No severe complications, such as fold atrophy, were observed.

Conclusion: PSI may be a useful alternative modality for treatment of benign vocal fold lesions.
Polycaprolactone Microbeads and Thermosensitive Pluronic F127 Hydrogel for Vocal Fold Augmentation: In Vivo Animal Study for the Treatment of Unilateral Vocal Fold Palsy
Seong Keun Kwon, MD*
Se Heang Oh, PhD*
Jin Ho Lee, PhD*
*Gyeonggi-do, SOUTH KOREA

Introduction: Pluronic F127 (F127) is a polymer that can undergo sol–gel transition, depending on ambient temperature. F127 is used for drug delivery and cell carrier. Polycaprolactone (PCL) is a biocompatible material which has a long biodegradation rate. The purpose of this study is to evaluate effects of the PCL microbeads and F127 on the vocal fold augmentation.

 Procedures: PCL microbeads mixed with F127 were injected into the paralyzed vocal fold of rabbits. Endoscopic, histologic and functional evaluation by high speed recording and videokymographic analysis were performed.

 Results: the PCL beads maintained their volume at injection site without migration. At explantation, any adverse tissue reactions were not observed by H&E staining. Videokymography showed reduced open quotient and asymmetric index in PCL group compared with the vocal fold palsy group.

 Conclusions: PCL and F127 can be a promising material for permanent injection laryngoplasty that can improve the glottal insufficiency.
Characteristics of Vocal Fold Injection Materials Appearance in Imaging Modalities
Tack-Kyun Kwon, MD, PhD*
Ji-Eun Lee, MD*
Chang Myeon Song, MD*
Won Jae Cha*
Myung-Whun Sung, MD*
Kwang Hyun Kim, MD
Seoul, KOREA

Introduction: This study aimed to demonstrate the appearance of injection material in various medical imaging modalities, such as CT, MRI and FDG-PET scans.

Methods: A retrospective analysis of 930 patients who had injection laryngoplasty was performed. Injection materials used were either temporary material such as hyaluronic acid (HA) or permanent material as calcium hydroxylapatite (CaHA). A total of 43 patients with post-injection imaging for other medical reason were evaluated.

Results: Hyaluronic acid appeared as neither specific abnormality on medical imaging except for the volume expansion. Meanwhile, CaHA appeared as calcified mass in CT and MRI scans and positive pseudo-lesion on PET-CT scan which lasts up to 17 months after injection.

Conclusions: This study suggests CaHA can produce longstanding abnormal appearance on imaging modalities in the vocal folds during the resorption period, which could lead to misdiagnosis especially in head and neck cancer patients.

Discussion
10:47 a.m.  Quantifying Cepstral Peak Prominence, a Measure of Dysphonia
Yolanda D. Heman-Ackah, MD
Robert T. Sataloff, MD, DMA
Griet Lauryns, MD*
Deidre D. Michael, MD*
Reinhardt Heuer, PhD*
Adam Rubin, MD*
Robert Eller, MD
Philadelphia, PA/Minneapolis, MN/Ann Arbor, MI/Brussels, BELGIUM

OBJECTIVE: The purpose of this study is to establish normative values for cepstral peak prominence (CPP). The robustness of this value is tested statistically and the clinical usefulness of this measure is explored.

METHODS: Voice samples were obtained from 835 patient voice recordings of running speech. Additional voice recordings were recruited from 50 volunteers. Eight laryngologists and four speech-language pathologists performed perceptual ratings on the degree of dysphonia/normality using an analog scale. CPP was measured using the CPPS algorithm of Hillenbrand. Normal, as defined by the raters, was used as the gold standard.

RESULTS. A normal value of 4.0 for CPP has a sensitivity of 0.924 and a specificity of 0.79. Inter-rater reliability was 0.977. The area under the ROC curve was 0.937 (p <0.05).

CONCLUSION. CPP is a good and robust measure of dysphonia, with the normal value of CPPS (Hillenbrand algorithm) of a running speech sample being defined as a value of 4.0 or higher.
Case-Control Study of Risk Factors for Spasmodic Dysphonia: A Comparison with Other Voice Disorders
Kristine Tanner, PhD*
Nelson Roy, PhD*
Ray M. Merrill, PhD, MPH*
Cara Sauder, MA*
Daniel R. Houtz, MA*
Marshall E. Smith, MD
Salt Lake City, UT/Provo, UT/Albuquerque, NM

Objectives: This epidemiology study examined risk factors uniquely associated with spasmodic dysphonia (SD).

Study Design: Case-control. Methods: A questionnaire was administered to 150 patients with SD (with and without coexisting vocal tremor) and 136 patients with other structural, neurological, and functional voice disorders (excluding SD and vocal tremor). Questions included personal and family medical histories, environmental exposures, trauma, illnesses, voice use habits and the Short Form 36.

Results: Several factors were uniquely associated with SD (α=0.05), including: (1) a personal history of cervical dystonia, sinus and throat illnesses, mumps, rubella, dust exposure and frequent volunteer voice use, (2) a family history of voice disorders, (3) an immediate family history of vocal tremor and meningitis, and (4) an extended family history of head and neck tremor, ocular disease, and meningitis. Vocal tremor coexisted with SD in 29% of cases. Measles and mumps vaccines were protective for SD.

Conclusions: SD is likely multi-factorial, associated with several endogenous and exogenous factors. Certain viral exposures, voice use patterns, and familial neurological conditions may contribute to the onset of SD later in life.
A New Paradigm for the Management of Essential Vocal Tremor with Botulinum Toxin
Lowell Gurey, MD*
Catherine F. Sinclair, MD*
Andrew Blitzer, MD, DDS
New York, NY

Objectives: 1- To clarify essential voice tremor (ETV) phenomenology 2- To report a new management paradigm for essential voice tremor using botulinum toxin

Methods: Retrospective analysis of patients diagnosed with ETV between August 2001 and October 2011. Phenomenology was recorded, charted and analyzed. A new paradigm for treatment using botulinum toxin based on individualized clinical findings is discussed.

Results: Less than 50% of ETV patients were responsive to oral medications, compared with 70% for hand tremor and 60% for head tremor. All patients analyzed had a horizontal laryngeal tremor component and received botulinum toxin injections to bilateral thyroarytenoid muscles. Slightly over half (56%) also had vertical laryngeal tremor and these patients underwent additional strap muscle injections. Most patients (70%) reported satisfactory vocal outcomes with reduced tremor amplitude.

Conclusions: Management of essential voice tremor with botulinum toxin is optimized by individualizing treatment based on the tremor phenomenology observed during clinical examination.
11:15 a.m.  PANEL DISCUSSION  
Co-Sponsored with the American Head and Neck Society (AHNS)

“Treatment of Early Laryngeal Cancer”
Moderator:  Michael S. Benninger, MD, Cleveland, OH
Panelists:  Dennis H. Kraus, MD (Secretary, AHNS), New York, NY  
           Carol Bradford, MD (President, AHNS), Ann Arbor, MI  
           Mark S. Courey, MD, San Francisco, CA

12:00 p.m.  Adjournment

12:05 p.m.  Group Photograph (Members only)  
            Location:  TBA
SECOND DAY, THURSDAY, APRIL 19, 2012
Afternoon Session

12:30 p.m.  Business Meeting (Fellows Only)

Report of the Nominating Committee

Report of the Secretary and Announcements
C. Gaelyn Garrett, MD, Nashville, TN

Report of the Treasurer
Kenneth W. Altman, MD, PhD, New York, NY

Report of the Editor
Mark S. Courey, MD, San Francisco, CA

Report of the Historian
Robert H. Ossoff, DMD, MD, Nashville, TN

Special Committee Reports

Other Business

Election of the Council and Organization of New Officers
Sendai Virus-Mediated Transgene Expression in the Novel Laryngo-tracheal Stenosis Model
Daisuke Mizokami, MD*
Koji Araki, MD, PhD*
Nobuaki Tanaka, MD*
Hiroshi Suzuki, MD*
Makoto Inoue, PhD*
Mamoru Hasegawa, PhD*
Akihiro Shiotani, MD, PhD
Tokorozawa, Saitama, JAPAN

Introduction: Sendai virus (SeV) vectors have been shown to efficiently transduce airway epithelial cells and may be ideal for modulating airway wound-healing response. Expression of the agents that inhibit fibroplasia or scar formation may lead to decrease laryngo-tracheal stenosis.

Methods: The rat (n=5) laryngo-tracheal mucosa was scraped with a nylon brush and the cross sectional area was evaluated for developing novel stenosis model. β-Galactosidase expression in the injured larynx and trachea was evaluated 3 days after spray delivery of LacZ-SeV/ΔF through the tracheostoma.

Results: There was significant cross sectional tracheal stenosis in scraped group (mean [+/- SD], 66.3 +/- 21.5% vs. 6.23 +/- 1.68%; p<0.01). Efficient SeV-mediated transgene expression was observed in the stenotic mucosa at the levels of trachea, cricoid and larynx.

Conclusions: The novel and well-established animal model for laryngo-tracheal stenosis was made. SeV has potentials to be a promising strategy for gene therapy for laryngo-tracheal stenosis.
Surgical management of tracheal reconstruction is one of the most difficult issues associated with extensive tracheal resection. We developed the artificial trachea with polypropylene mesh and collagen sponge to reconstruct the tracheal defect. The effectiveness of this scaffold with the application of basic fibroblast growth factor (b-FGF) was investigated in the current study. Three types of collagen scaffold were prepared: the vitrifying collagen sponge, as a vitrigel model and the adding two solutions of b-FGF to vitrigel, as a 10 ng and 100 ng. Tracheal defect was made, and 3 types of scaffold were implanted. At 3, 5, 7, 14 and 28 days after the implantation, tracheae were evaluated. Results demonstrated the effect of b-FGF for epithelial and subepithelial layer of the tracheal luminal surface. The amount of b-FGF releasing from collagen vitrigel sponge was also quantified. Collagen vitrigel sponge with b-FGF will be feasible for regeneration of tracheal epithelium.
Objective: To evaluate the endoscopic surgical management of subglottic stenosis and describe treatment outcomes.

Methods: Ten year retrospective review of adult patients with subglottic stenosis.

Results: 92 adults (23 male, 69 female) with subglottic stenosis underwent 247 endoscopic dilations between 2001 and 2010. Mean age was 48 years at time of first surgery. Etiology was Wegener’s (45%), intubation (25%), or idiopathic (33%). 41 patients (45%) underwent a single procedure; 51 patients (55%) required multiple surgeries. Average interval for patients requiring a subsequent procedure was 13.7 months. Patients with traumatic etiology were less likely to need repeat procedures. Variations in surgical technique did not show differences in time to next procedure, and the use of mitomycin-C did not result in longer intervals between procedures. No significant complications were encountered after dilation.

Conclusions: Subglottic stenosis remains a treatment challenge. Although patients are often symptomatically improved after endoscopic dilation, recurrence rates remain high.
Microvascular Free-Tissue Fascial Flaps as Vascularized Carriers for Cricotracheal Reconstruction
Jason T. Rich, MD*
Ralph W. Gilbert, MD*
Patrick J. Gullane, MD
Toronto, CN

Microvascular free-tissue transfer as a vascularized carrier for reconstruction of the cricotrachea is a novel and successful surgical technique for repair of high and/or severe subglottic stenosis or large cricotracheal defects not amenable to or refractory to conventional treatments. In this technique, costal cartilage and buccal mucosal grafts are enveloped within a vascularized fascial flap (temporoparietal or radial forearm) to enhance viability. Six patients underwent this procedure (mean age 50 years). At mean follow-up of 47 months, three patients maintained widely patent airways, two had some re-stenosis but functioned without tracheotomy, and one remained tracheotomy-dependent (83% decannulation rate). Mean time to decannulation was 18 weeks post-op. All patients tolerated normal diet following recovery. In conclusion, utilizing microvascular fascial free-tissue carrier to vascularize costal cartilage and buccal mucosal grafts is a novel and successful technique to treat severe and/or high subglottic stenosis or large cricotracheal defects not amenable to conventional therapies.
Objective: The aim of this study was to evaluate the effects of a bio-engineered trachea with autologous chondrocytes upon regeneration of tracheal cartilage in a rabbit model.

Methods: Chondrocytes were harvested from the costal cartilage of a Japanese white rabbit and seeded into a tracheal prosthesis composed of polypropylene and collagen sponge. A bio-engineered trachea (tracheal prosthesis with chondrocytes) was implanted into the tracheal defect of the same rabbit. A tracheal prosthesis without chondrocytes was implanted as control.

Results: In the bio-engineered group, the presence of regenerated cartilage was observed in the implanted bio-engineered trachea 2, 8, 14 weeks after implantation. In the control group, effective regeneration of cartilage was not observed in the tracheal prosthesis.

Conclusions: This study demonstrated the feasibility of tracheal regeneration using a bio-engineered trachea with autologous chondrocytes. With the further investigations, this bio-engineered trachea may be useful for the treatment of children with tracheal stenosis.
The Impact of Nimodipine Administration Combined with Nerve-Muscle Pedicle Implantation on Long-Term Denervated Rat Thyroarytenoid Muscle

Kohei Nishimoto, MD*
Yoshihiko Kumai, MD, PhD*
Ryosei Minoda, MD, PhD*
Eiji Yumoto, MD, PhD*

*Kumamoto-city, Kumamoto, JAPAN

Objectives: To evaluate the effect of nimodipine, the L-type voltage-operated calcium channel antagonist, on long-term denervated rat thyroarytenoid (TA) muscle following nerve-muscle pedicle flap implantation (NMPI).

Methods: Wistar rats were subjected to NMPI at varying periods after transection of the left recurrent laryngeal nerve (RLN). Sixty-four animals started receiving nimodipine treatment 2 days before NMP (NIMO (+) group) and 64 animals didn’t (NIMO (-) group). We performed histological and electromyographic assessment at weeks after NMPI.

Results: In 32w-denervation subgroups, myofiber area was significantly greater and myofiber subtype changed from IIA to IIB significantly in the NIMO (+) group compared to the NIMO (-) group (p<0.05, each). At any time point, myofiber area, number of neuromuscular junctions and action potential in the TA muscle tended to be greater in the NIMO(+) than in the NIMO(-).

Conclusions: Nimodipine expedited the effect of NMPI on re-innervation of the long-term denervated TA muscle.
Laryngeal contraction normally entails activation of mutually cooperative intrinsic muscles (ILMs). This study extends prior canine research to the human, using quasitrapezoidal (QT) currents instead of standard square waves that while valuable, inadequately express normal ILM interactions. In two patients undergoing laryngectomy for cancer, the recurrent laryngeal nerve (RLN) on the uninvolved side received QT pulses (20 Hz, 60-500 uA, 100-500 us width, 0-500 us decay) via a bipolar cuff electrode. Bipolar needle electrodes placed into the posterior cricoarytenoideus (PCA), lateral cricoarytenoideus (LCA) and thyroarytenoideus (TA) were used to record EMG amplitudes, and waveforms were analyzed by a specially designed computer program. With activity from square waves serving as control, we observed statistically significant (p=.025) shifts in mutual relationships between PCA, LCA and TA for an array of specific QT configurations. Our preliminary data on selective ILM manipulation offer promise for upgraded dynamic control of faulty laryngeal contraction patterns.
Introduction: This study investigates the role of testosterone propionate (TP) on the muscle reinnervation following recurrent laryngeal nerve (RLN) crush injury.

Procedure: Twenty-seven adult male rats underwent a standardized crush injury of the RLN and received treatment in the form of 2 silastic capsules of either TP or a blank capsule. Larynges were harvested at 1, 2, 3 and 4 weeks post injury. These were cryosectioned and immunocytochemistry was performed to quantify occupied neuromuscular junctions at the posterior cricoarytenoid muscle (PCA) and the thyroarytenoid muscle (TA).

Results: Two-way ANOVA revealed a significant effect of treatment with TP on reinnervation of neuromuscular junction in both the PCA and TA. Also, the Newman-Keuls post-hoc test revealed significance specifically at weeks 3 and 4 in the TP group compared to the untreated.

Conclusion: TP enhancement of muscle reinnervation supports a clinical applicability of TP as a therapeutic agent in recovery of recurrent laryngeal nerve injury.
Introduction: Laryngeal function can be evaluated from multiple perspectives, including aerodynamic input, acoustic output, and mucosal wave vibratory characteristics. To determine the classifying power of each of these, we used artificial neural networks (ANN) to classify data as normal, recurrent laryngeal nerve paralysis (RLNP), or superior laryngeal nerve paralysis (SLNP).

Methods: Aerodynamic, acoustic, and videokymographic data were collected from excised canine larynges simulating normal, RLNP, and SLNP. Classification of samples was performed using a multilayer perceptron ANN.

Results: A classification accuracy over 80% was achieved when including all parameters. Classification accuracy dropped below 75% when using only aerodynamic or acoustic parameters and below 60% when using only videokymographic parameters.

Conclusions: Samples were classified with the greatest accuracy when using a wide range of parameters. Decreased classification accuracies for individual groups of parameters demonstrate the importance of a comprehensive voice assessment when evaluating dysphonia.
2:35 p.m.  AWARD PRESENTATION

American Laryngological Association Award
Minoru Hirano, MD, PhD
Kurume, JAPAN

Presentation:  Elliot Abemayor, MD, PhD
Los Angeles, CA

2:40 p.m.  AWARD PRESENTATION

Gabriel Tucker Award
George H. Zalzal, MD*
Washington, DC

Presentation:  David Eisele, MD
San Francisco, CA

2:45 p.m.  Intermission/Visit Exhibits
Introduction: Although clinical dogma suggests the value of laryngeal imaging in dysphonic patients, the Clinical Practice Guidelines suggest that in many cases, history and/or physical examination are sufficient in the absence of serious underlying conditions or prolonged symptoms. We sought to quantify the diagnostic accuracy of history, laryngoscopy, and stroboscopy.

Study Description: Four laryngologists were presented with vignettes including history, laryngoscopy, and stroboscopy. Questions regarding 1) diagnosis, 2) certainty of diagnosis, and 3) subsequent management were posed. Operative findings via direct laryngoscopy were employed for comparison.

Results: The accuracy of isolated history, flexible laryngoscopy, and stroboscopy was 7.5%, 67.5%, and 70%, respectively. Particular diagnoses were more consistently identified. Cancer was much more accurately identified on laryngoscopy (100%) and stroboscopy (100%) rather than with history (33%), for example.

Conclusions: These findings confirm the value of laryngeal imaging in dysphonic patients and the relative inaccuracy of history in obtaining a diagnosis.
Angiolytic KTP laser treatment of early glottic cancer with ultra-narrow margins was reported initially 3 years ago as a strategy to better preserve glottal function. However, the initial report had a limited number of patients and most did not have 3-year follow-up. Consequently, further analysis is valuable. A retrospective review revealed that 55 patients (T1a-31, T1b-6, T2a-3, T2b-15) underwent this treatment with minimum 3-year follow up (average: 43 months). Initial disease control for T1 and T2 lesions was 97.3% (36/37) and 72.2% (13/18) respectively. Of the 6 recurrences, 4/6 were controlled with radiotherapy, one was salvaged with total laryngectomy and one died of unrelated causes with resectable intercurrent disease. This investigation provides further evidence that angiolytic KTP laser treatment of early glottic cancer with ultra-narrow margins is an effective management strategy. Radiotherapy was preserved as an oncologic option in 89% of patients and effectively salvaged the majority of endoscopic failures.
Introduction: Arytenoid adduction (AA) can dramatically improve voice quality in patients with vocal fold paralysis (VFP); however, it is technically challenging. We present an anterior approach to AA, where Gore-tex suture attached to curled wire is passed through the thyroid cartilage or cricothyroid membrane via a guide needle and used to manipulate the muscular process of the arytenoid.

Methods: We performed thyroplasty followed by traditional and anterior AA on excised larynges with simulated VFP. Aerodynamic, acoustic, and videokymographic measurements were recorded.

Results: Anterior AA significantly improved aerodynamic (phonation threshold power: \( p=0.003 \)) and acoustic parameters (percent jitter: \( p=0.028 \); percent shimmer: \( p=0.001 \); signal-to-noise ratio: \( p=0.034 \)) compared to VFP. Anterior AA and traditional AA produced comparable improvements in all parameters (phonation threshold power: \( p=0.256 \); percent jitter: \( p=0.616 \); percent shimmer: \( p=0.281 \); signal-to-noise ratio: \( p=0.970 \)).

Conclusions: AA is an alternative to traditional AA that is easier to perform and produces comparable improvements in laryngeal function.
The Utility of the Potassium Titanyl Phosphate (KTP) Laser in Augmenting Vocal Fold Healing
Mike Sheu, MD*
Shaum Sridharan, MD*
Benjamin C. Paul, MD*
Sonate Gandonu, BS*
Hang Zhou, MD*
Milan R. Amin, MD
New York, NY

Introduction: Angiolytic lasers have been employed to alter wound healing to treat hypertrophic scars and keloids. Given the recalcitrant nature of vocal fold (VF) scars and the functional consequences, lasers have evolved into the management schema for patients with VF scar.

Study Description: Injury was created in rodent model and allowed to mature for 5 weeks. At that time, low level KTP treatment (20ms@10W) was performed. Relevant control conditions were included. Larynges were harvested at 2 time points and subjected to transcriptional and histological analyses.

Results: KTP induced a mild increase in COX-2 expression (p=0.019), but more relevant to mechanism, MMP-1 expression increased in KTP-treated when compared to injury alone (p=0.05). Multiple gene targets were analyzed; biochemical data appear to correlate with histology.

Conclusions: These data suggest that low level KTP energy alters the dynamics of wound healing and may yield more regenerative outcomes.
Objective: To estimate the annual direct costs associated with the diagnosis and management of dysphonia.

Methods: Retrospective analysis of a nationally representative administrative U.S. claims database of patients with an ICD-9 dysphonia diagnosis.

Results: 309,300 patients with dysphonia, mean age 47.3 ± 21.3 years and 63.5% female, were identified. Acute and chronic laryngitis, non-specific causes of dysphonia, and benign lesions were the most common etiologies. The total annual direct costs were $178,524,552 with mean costs per person of $577.18. Pharmacy claims accounted for 20.1% to 33.3%, procedure claims 50.4% to 69.9%, and medical encounter claims 16.3% to 8.6% of direct costs. Anti-reflux medication accounted for 10% and antibiotics 6% of direct costs. Estimated national direct annual costs were between $0.7 and $3 billion.

Conclusion: This study establishes the economic impact of voice disorder assessment and management and permits cost comparisons with other diseases.
Steroids are used for the treatment of laryngitis in vocal performers despite the absence of evidence demonstrating their impact on VF inflammation. This randomized, double-blinded investigation examined cytokine inflammatory profile changes associated with corticosteroid treatment in a human phonotrauma model. Representative cytokines associated with inflammation and healing (IL-1beta, IL-6, IL-10) were measured in laryngeal secretions from 10 healthy females before and after an experimental induction of acute phonotrauma and at 4 and 22 hours after treatment. Oral hydrocortisone or placebo was given for 22 hrs to the treatment group and the control group respectively. Pro-inflammatory mediators IL-1beta and IL-6 were doubled in the controls versus the steroid treatment group at 22 hours following induction of vocal inflammation. Anti-inflammatory IL-10 showed a 6.3-fold increase in the steroid treatment group versus the controls, indicating anti-inflammatory modulation by steroid treatment. This study provides biologic evidence for the use of steroids for acute phonotrauma.
4:15 p.m.  PANEL DISCUSSION  
“Vocal Fold Scar and Sulcus Vocalis: Current Treatment Options”

Moderator:  Clark A. Rosen, MD, Pittsburgh, PA  
Panelists:  C. Gaelyn Garrett, MD, Nashville, TN  
Lucian Sulica, MD, New York, NY  
Peak Woo, MD, New York, NY  
Shigeru Hirano, MD, PhD, Sakyo-ku, Kyoto, JAPAN

4:55 p.m.  Introduction of 2013 President

Announcements

Adjournment

5:00 p.m.  Neurolaryngology Study Group
A Case of Pilomatricoma at Epiglottis
Hee Youn Son, MD*
Soo-hyeon Ahn, MD*
Gijang-gun, Busan, KOREA

Pilomatricoma is a relatively uncommon benign skin neoplasm arising from the skin adnexa. It can occur at any age, although most affect children and young adults. It can present in most hair-bearing parts of the body including the extremities and trunk, but they have a predilection for the skin of the head and neck. We report a very rare case that a 62-year-old man presented with neck discomfort and foreign body sensation. On the laryngoscopy of a patient showed large cyst as much as half of epiglottis nearly obstructed vallecula. The CT with contrast media showed an ill-defined, less enhancing mass with nodular tiny calcification at epiglottis. The clinical findings in this was suggestive of typical epiglottic cyst. However, during operation, we found contents with yellowish material like butter, subsequent histopathologic examination confirmed this as pilomatricoma. So we report the very rare case with a brief review of literature.
A Novel Means of Electrodiagnostic Assessment of Recurrent Laryngeal Nerve Neuropathy

Lucian Sulica, MD
Bridget T. Carey, MD*

New York, NY

Using a novel, clinically applicable nerve conduction study of the superior laryngeal and recurrent laryngeal branches of CN X, we identify a set of normative electrodiagnostic values and variations of the reflex responses of the laryngeal adductor muscles in response to irritative stimulation of the laryngeal mucosa. In patients with clinically confirmed vocal fold dysfunction on the basis of recurrent laryngeal nerve injury, we confirm significant variations from established normal values on the side of injury. This study is well-tolerated and safe, performed in the outpatient setting with the standard diagnostic equipment routinely used by neurologists and ENTs. Used as an adjunct to laryngeal electromyography, this procedure can provide early accurate information regarding the presence and degree of nerve injury in patients with vocal fold palsy. The information derived from this test may have immediate clinical relevance in determining optimal treatment for vocal fold palsy.
Objectives: To evaluate clinical variability in presenting symptoms of adductor spasmodic dysphonia (AdSD) • To assess effects of disease duration and botulinum toxin treatment on AdSD symptomatology

Methods: Prospective series of 100 consecutive patients diagnosed with AdSD. Assessment methods included a 14 item questionnaire evaluating past / current symptom variability; voice handicap index 10; blinded speech therapy voice assessment using the Unified Spasmodic Dysphonia Rating Scale

Results: A strain-strangle symptom pattern was the most common presentation (75%). Voice breaks were significantly less common as was vocal tremor. For any individual patient, the predominant symptom pattern remained constant over time and symptom severity fluctuated but did not progress. Botulinum toxin treatment remained effective independent of use duration.

Conclusions: The sensitivity of any diagnostic questionnaire for AdSD would be greatly decreased if vocal strain and tightness were excluded. Botulinum toxin treatment remains effective over time despite a fluctuating, non-progressive disease course.
**Alternative Approach for the Treatment of Squamous Cell Carcinoma of the Base of Tongue: Tubes Guided Brachytherapy in Combination with Surgery and Radiochemotherapy**

Karl-Heinz Kueppers, MD*
Nermin Uenal, MD*
G. Kovacs, MD, PhD*
J. E. Meyer, MD, PhD*
Barbara Amberge, CCC-SLP*
Steffen Maune, MD, PhD

Koeln, GERMANY/Cologne, GERMANY/

**Introduction:** Treatment of Base of Tongue (BOT) squamous cell carcinoma (SCC) has always been associated with either poor prognosis or significant morbidity. Common approaches are Radiochemotherapy and Combination with surgery leading to poor functional outcome.

**Method:** We combined surgery with Radiochemotherapy and tube guided brachytherapy with the aim of reducing topical side effects as the base of poor functional outcome. We reviewed four patients with T2 and T3 BOT SCC, mostly with cervical lymph node metastases, and analyzed functional swallow tests, such as Videokinetography and Voice analyzer.

**Results:** Compared with our non-Brachytherapy BOT SCC Patients the standard end points disease control, swallowing function and finally quality of life is advantageous.

**Conclusion:** The brachytherapy in combination with the common modalities improves in our alternative approach the locoregional control, survival and quality of life. The functional setting shows an advantage. The data argue strong for a lower toxical collateral damage on the mucosa.

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Hossein Mahboubi, MD, MPH*

*Irvine, CA

Introduction: Laryngology has grown dramatically over the last fifteen years; despite this growth contemporary demographic data regarding laryngopharyngeal surgery is sparse. This study evaluates the prevalence, demographics, perioperative outcomes and complications of ambulatory laryngopharyngeal surgeries performed in the US and investigates changes over a ten year period.

Methods: The National Survey of Ambulatory Surgery databases from 1996 and 2006 were examined independently for laryngopharyngeal surgeries and comparisons were made.

Results: Approximately 170,000 and 180,000 ambulatory laryngopharyngeal surgeries were performed in 1996 and 2006, respectively. An increasing number of surgeries were performed in ambulatory surgical centers as compared to hospitals during the ten year period. Unexpected admission rate after surgery was steady at less than 7%. While minor complications were present in 9% of all procedures, no serious adverse events occurred in this representative population.

Conclusions: No significant increase in number of cases was noted during a ten year period despite growth in the US population. Complication rates are low, demonstrating safety of these procedures.
Cepstral/Spectral Index of Dysphonia in Adolescent Supraglottic Phonation following Pediatric Airway Reconstruction

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Lisa N. Kelchner, PhD*
Robert E. Hillman, PhD
Dimitar D. Deliyski, PhD*

Cincinnati, OH/Boston, MA

Introduction: Individuals post airway reconstruction often present with severe dysphonia including supraglottic phonation (SGP) due to post-surgical alterations to the larynx. In order to quantify vocal function a thorough evaluation of voice is needed, however, application of traditional acoustic assessment in these instances is limited. A new acoustic measure, the Cepstral/Spectral Index of Dysphonia (CSID), overcomes known measurement obstacles for irregular voice signals.

Purpose: The purpose of this study was to explore how severe dysphonia due to supraglottic phonation post-airway reconstruction is characterized via cepstral/spectral analysis and whether CSID can be applied to SGP.

Methods: Connected speech samples from 15 adolescents with SGP were subjected to analysis using the Analysis of Dysphonia in Speech and Voice (KayPentax) to obtain CSID measures.

Results: Correlations between cepstral/spectral analyses and perceptual measures will be presented.

Conclusions: CSID holds promise as a new acoustic measure of dysphonia for individuals with supraglottic phonation post-airway reconstruction.
Characteristics Associated with Laryngospasm

Thomas Murry, PhD
R. Lucian Sulica, MD
Lowell Gurey, MD*

New York, NY

Laryngospasm chronic cough and paradoxical vocal fold motion are significant problems that share common signs and symptoms. Patients are often refractory to the treatment due to misdiagnosis. The purpose of this study was to identify characteristics in patients diagnosed with laryngospasm but who remained without resolution of symptoms. From a list of 91 patients, data was obtained from 41 and final data from 21 who had previous diagnoses and current assessments to determine their characteristics and to assess effectiveness of previous treatments. The results suggest that confusions exist among chronic cough and laryngospasm that lead to failed treatments.
Clinical Efficacy of the Lumenis Novus Spectra KTP Laser using the Chorioallantoic Membrane Model

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Nazaneen Grant, MD
Kristy Truong*
Washington, DC

Introduction: Microvascular ablation is a valuable method of treating many vocal fold lesions. There are several 532-nm potassium titanyl phosphate (KTP) lasers available but settings are not always transferrable. Previous studies have established settings for the Aura XP KTP laser. Our investigation seeks to establish settings for the Lumenis Novus Spectra KTP laser that result in selective vessel ablation.

Methods: Using the avian chorioallantoic membrane model a pulse width of 50-300msec, pulse energy of 1000-2000mW and working distance of 1-3mm were tested. Vessels 0.01-0.14mm in diameter were utilized.

Results: Pulse widths of 200-300 msec, lower energies (1000-1500mw) and longer working distances (3mm) are most effective at producing vessel coagulation.

Conclusions: The Lumenis Novus Spectra KTP laser is less powerful compared to other KTP lasers but still effective at producing selective vessel ablation without rupture. This study provides a guideline for settings for potential use of the laser on laryngeal mucosa.
Purpose: Tracheoesophageal fistula (TEF) with speech prosthesis is a common voice rehabilitation option after laryngectomy. If speech is not successful or there is tracheal soilage/aspiration, TEF closure may be indicated. Multiple surgical techniques have been described for TEF closure, which speaks to its difficulty. We present a straightforward technique for TEF closure.

Methods: An 86-year-old man status post laryngectomy had successful TEF closure with a two-layer tracheoplasty and esophagoplasty. PubMed review was performed.

Results: Moving up the reconstructive ladder, options for TEF closure include: removing prosthesis to heal by secondary intention, local injection of growth factors or fillers, cautery, primary closure, multi-layer closure, local muscle rotation flaps, pedicled pleural flap, and radial forearm free flap.

Conclusions: Our technique is ideal for small TEFs in non-radiated tissue. Advantages include exposure, technical simplicity, low morbidity, and avoidance of nasogastric tube. This option can be added to the reconstructive ladder.
Computed Tomography Has Low Yield in the Evaluation of Idiopathic Unilateral True Vocal Fold Paresis

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Manish D. Shah, MD*
Michael M. Johns III, MD
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Atlanta, GA/Toronto, CN

Objective: To determine the clinical yield of neck and chest computed tomography (CT) in the initial assessment of patients with idiopathic unilateral true vocal fold paresis (IUVFP).

Methods: A retrospective chart review of consecutive adult patients with IUVFP diagnosed by stroboscopy in a tertiary-care voice center from 2003-2010.

Results: There were 176 patients with unilateral vocal fold paresis of which 81 subjects had IUVFP. Of these, 60 patients (74.1%) had a CT workup. 59 patients (98.3%) had a normal CT scan while one patient had a single mediastinal lymph node that was PET-CT negative. This demonstrates an initial 1.7% yield and ultimate 0% yield of the CT workup.

Conclusions: Our results suggest that CT workup has a low yield for occult neck and mediastinal pathology in patients with IUVFP. Chest and neck CT may not be clinically beneficial provided the patient has good otolaryngologic and medical follow-up.
Spasmodic dysphonia is a neuromuscular disorder of the larynx that manifests during speech. Chemodenervation of the thyroarytenoid muscles using botulinum toxin injection is the standard of care for spasmodic dysphonia treatment. However, controversy remains concerning initial and maintenance dosages. The purpose of this retrospective chart review is to identify a differential response to botulinum toxin between male and female spasmodic dysphonia patients.

Patients with spasmodic dysphonia were injected with botulinum toxin according to standard clinical practice. Results were analyzed using a student’s t-test and a Wilcoxon signed rank test. One-hundred-twenty-seven patients were treated with botulinum toxin over a 15-year period. While there was no significant difference in botulinum toxin dosage used at the time of initial injection, 112 of these patients were treated with more than one injection, and in those patients there was a significant difference in final botulinum toxin dosage between men and women (P=0.04).
Diverse Presentations of Laryngeal Tuberculosis
Jonathan B. Salinas, MD*
Soroush Zaghi, MD*
Gerald S. Berke, MD
Jennifer L. Long, MD, PhD*

Los Angeles, CA

Introduction: Laryngeal tuberculosis is an uncommon disease occurring in less than 1% of tuberculosis cases. Female gender has been found to be an independent risk factor for extrapulmonary tuberculosis, even though tuberculosis is more common in males overall.

Methods: Report of two cases of laryngeal tuberculosis and literature review.

Results: Two cases are presented, both of females in their 30s who presented to the voice clinic with hoarseness. Neither had any known exposure to tuberculosis. Examination in both showed markedly abnormal vocal fold lesions; photos are presented. Diagnosis was made by laryngeal biopsy in one patient and by chest x-ray showing caseating granulomas in the other. Both had acid-fast bacilli recovered in their sputum.

Conclusion: Laryngeal tuberculosis must be in the differential diagnosis of patients with laryngeal lesions, especially in women, as they are at a higher risk of developing extrapulmonary tuberculosis.
Effect and Safety of the 532nm Pulsed Potassium-Titanyl-Phosphate Laser in the Treatment of Reinke’s Edema

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Amy Lebowitz, CCC-SLP*
Chodrin Iacob, MD*
Michael Pitman, MD

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Phosphate (KTP) laser in the office-based treatment of Reinke's edema using objective and subjective measures.

Methods: Seven patients were studied pre and post treatment. Vocal function was evaluated using aerodynamic and acoustic analysis. Subjective changes were evaluated using the GRBAS scale, VHI and videostroboscopy. Histologic effects of the laser were investigated.

Results: At an average follow up of 17.8 weeks maximum phonation time trended toward improvement. The median VHI score decreased from 37 to 26 (p=0.150). There was reduction in each component of the GRBAS scale and the median fundamental frequency increased from 162 to 186 (p=0.625). Stroboscopy demonstrated an intact post-treatment mucosal wave. Histology revealed changes in vocal fold vascularity but no acute or long-term damage to the epithelium.

Conclusion: Objective and subjective measures suggest that in-office treatment of Reinke's edema with a 532nm KTP laser results in improved voice.
Empirical Support for Humidification in the Treatment of Vocal Deterioration Secondary to Vocal Fold Dehydration

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Surface vocal fold dehydration increases the effort required for voice production and may heighten vulnerability to voice problems. Hydration treatments are recommended for the clinical management of voice problems associated with vocal fold drying. However, empirical evidence supporting this recommendation is lacking. The role of a hydration treatment in reversing the negative effects of vocal fold dehydration in 40 speakers was investigated in a prospective study design. Half the subject pool reported a history of vocal fatigue. Voice measures of phonation threshold pressure and perceived phonatory effort were measured at baseline and following a 2-hour dehydration challenge and 2-hour hydration treatment. The hydration treatment was increased environmental humidification. Phonation threshold pressure significantly increased following the dehydration challenge. These detrimental effects were reversed following the hydration treatment. The findings support the clinical use of environmental humidification for the treatment of voice deterioration associated with surface vocal fold dehydration.
Endoscopic Balloon Dilation for the Treatment of Adult Subglottic Stenosis
Noah P. Parker, MD*
Stephanie Misono, MD*
George S. Goding Jr., MD
Minneapolis, MN

Objective: To assess the effectiveness of an endoscopic treatment for adult subglottic stenosis.

Design: Retrospective review.

Methods: Records from patients with subglottic/cervical tracheal stenosis treated by incision, balloon dilation, mitomycin application, and steroid injection from 3/2000-1/2011 were reviewed. At each procedure, vertical stenosis length and distance below the true vocal folds were measured.

Results: Eighty-one patients (205 procedures; 2.5 year mean follow-up) underwent a mean of 2.5 procedures (standard deviation (SD) 2.2) at 396-day intervals (SD 347.7). Mean stenosis length and distance below the vocal folds were 10-mm (SD 6.5) and 20-mm (SD 9.0). Complication, tracheotomy, and open-procedure rates were 2.0%, 1.2%, and 9.9%. Patients with >2 procedures demonstrated a mean 4-mm reduction in stenosis length (range: 17-mm reduction to 4-mm increase) and 2-mm cephalad progression (range: 18 cephalad to 11 caudad) over time.

Conclusions: Balloon dilation effectively opened the airway without increasing stenosis length. Multiple treatments were often necessary.
First Human Cases of a Novel Vascularized Flap for Correction of Glottic Insufficiency

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Karl Ng*
Brian Petty, MS, CCC-SLP*
McLean Gunderson, DVM*

Madison, WI

Surgical implants for treatment of glottic insufficiency are limited. A novel vascularized autologous laryngeal soft tissue flap has been developed to reduce these limitations. This composite thyroid ala perichondrial flap (CTAP) is delivered through a minithyrotomy approach and has been shown experimentally in a canine model not to meaningfully alter viscoelastic performance or change histologic properties of the lamina propria. Yet translation into human use has not been reported to date. We retrospectively reviewed the surgical and voice results of the first two patients to undergo unilateral CTAP delivery for correction of glottic insufficiency. Pre and post-operative outcome measures included surgical complications, voice handicap index, and aerodynamic and acoustic measures. Neither patient had complications and improvements were noted in all parameters measured at follow-up. We conclude that this innovative method for glottic reconstruction holds promise for correction of a wide variety of sources of glottic insufficiency.
Four Adult Cases of Mumps Infection with Laryngopharyngeal Edema

Yui Hirato, MD*
Kenichiro Numura, MD*
Takumi Kumai, MD*
Kan Kishibe, MD*
Isamu Kunibe, MD*
Akihiro Katada, MD*
Yasuaki Harabuchi, MD*

Asakikawa, JAPAN

Mumps virus infections primarily involve parotid glands, and it is common in school-aged children. We present four unusual adult cases of mumps infection with laryngeal edema. All of them had symptoms of dyspnea, sore throat and severe swelling of both the parotid and submandibular glands. No patients had a previous history of mumps infection. Laryngoscopy revealed edematous changes of the epiglottises and arytenoids. In all cases we immediately administered steroid hormone intravenously to prevent further airway obstruction. Because of severe epiglottic edema tracheotomy was needed in one patient with swelling of bilateral both parotid and submandibular glands. Administration of steroid improved their symptoms and laryngeal findings rapidly in 3-5 days. According to published reports, of 23 cases with laryngopharyngeal edema caused by mumps infection, 7 cases were needed tracheotomy. Therefore laryngoscopic examination is recommended when we encounter a mumps case with combined parotid and submandibular gland swelling.
GP46 Silencing by siRNA in Vocal Fold Fibroblasts
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Nathan V. Welham, PhD*
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GP46, the rat homolog of human hsp47, is a collagen-specific chaperone protein residing in the endoplasmic reticulum. It is essential for the maturation of collagen and is thus thought to play an important role in the progression of fibrosis / scarring. The purpose of this study was to evaluate the therapeutic potential of gp46 silencing for the treatment of vocal fold scarring. We performed explant culture using F344 rat vocal fold tissue to establish vocal fold fibroblast cell lines. The cells were then transfected using a siRNA / liposome complex at first passage. siRNA was successfully transfected in more than 90% of cells and gp46 transcription was significantly down regulated. Although no effects were observed on col1a1 transcription, hydroxyproline levels in culture media were significantly decreased. gp46 silencing holds promise as a strategy for manipulating collagen maturation/deposition in the context of vocal fold scar formation.
High-Dose Intra-Arterial Cisplatin with Concurrent Radiation (RADPLAT) Contributed to Laryngeal Preservation for Advanced Hypopharyngeal Cancer

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RADPLAT is a unique method, combining weekly intra-arterial delivery of cisplatin (100mg/mm2 or 75mg/body, x4-6times) with systemic neutralization by sodium thiosulphate, and concurrent radiotherapy (60Gy). This allows high cisplatin dose intensities to be used while minimizing adverse systemic effects. This study aimed to evaluate the efficacy of RADPLAT for patients with advanced hypopharyngeal cancers. Between 2003 and 2010, 47 patients with T2N0 or more than this stage were selected. The median age was 66 years and 79% patients were diagnosed with Stage IV. Complete of the treatment was achieved in 87% patients and 88% patients had complete response at primary site. The 5-year local control and disease-specific survival rate was 71% and 51% for all patients during the median follow-up period of 19 months. Surprisingly laryngeal preservation rate was 96%. Hypopharyngeal cancer has severe prognosis and is the difficult lesion to preserve an organ, however, RADPLAT could resolve both problems.
Hunsaker Mon-Jet Tube Ventilation: A 15-Year Experience

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Philip Weissbrod, MD*
Jennifer Hsia, MD*
Joanna M. Davies, MBBS*
Gouri K. Sivarajan, MBBS*
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Allen D. Hillel, MD

San Diego, CA/Seattle, WA/Cleveland, OH

INTRODUCTION: The Hunsaker Mon-Jet tube (HMJT) (Xomed, Jacksonville, FL) has been used effectively as a subglottic means of ventilation. We previously reported a series of 552 patients over a 10-year period with no major complications. This is the continuation of that series with an additional 5-years of cases and a report of 2 major complications.

METHODS: Retrospective chart review and case presentation.

RESULTS: From the 135 charts reviewed so far, minor complications include tube exchange (5.9% n=8), hypoxia (4.4% n=6), hypercarbia (0.7% n=1), and seeding of blood into trachea (0.7 n=1). There were 2 major complications: pneumothorax requiring chest tube (0.7% n=1) and pneumomediastinum (0.7% n=1). These complications are discussed along with guidelines for safe use.

CONCLUSION: Subglottic ventilation via HMJT with automated jet ventilator is a safe alternative to traditional endotracheal intubation that allows for increased laryngeal and tracheal visualization. Major complications are rare.
Hypothyroidism and Dysphonia
Kristin Kucera Marcum, MD*
Carter S. Wright Jr., MD*
Catherine Rees Lintzenich, MD
Susan G. Butler, PhD
Winston-Salem, NC

Introduction/ Objectives: Little data exists on thyroid function levels in dysphonic patients. Our primary objective is to determine the incidence of hypothyroidism, as assessed by thyroid stimulating hormone, in dysphonic patients.

Study Design: Prospective Methods: 918 healthy adults presented to the Wake Forest Voice Center with a chief complaint of dysphonia or hoarseness. 158 patients met criteria for the study. Data collection included Voice Handicap Index (VHI), age, sex, and thyroid stimulating hormone level.

Results: In patients with dysphonia of no known other cause, hypothyroidism was 2.6%, 16 times higher than the general population with 0.4%. TSH and VHI were compared using a tailed t-test, there was weak to no correlation between VHI and TSH (0.09, p=.276).

Conclusions: Although the VHI did not increase linearly with the TSH level, there was a significant increase in the incidence of new diagnosis of hypothyroidism in dysphonic patients.
Improvement of Tracheal Flap Method for Laryngotracheal Separation

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Kazuaki Chikamatsu, MD*

Gunma, JAPAN

We have previously reported the effectiveness of a new surgical procedure, tracheal flap method (TFM), which is characterized by the absence of tracheal transection, for laryngotracheal separation. However, the patients treated are under various conditions, such as tracheostomy and sucking disorder. For improvement of this procedure, we furthermore developed three different procedures of TFM; A-type, use of tracheal flap, B-type, use of muco-perichondrial flap and sternohyoid muscle, and C-type, tracheoesophageal anastomosis, and evaluated their treatment outcomes. We performed these surgery procedures in 28 patients (23 children and 5 adults). A-type was performed in 17 patients, B-type in 8, and C-type in 3. In all patients treated, aspiration pneumonia was completely prevented without severe complications, revealing that our modified TFM were applicable and effective procedures for laryngotracheal separation. If these modified procedures are able to be used properly according to patients’ conditions, further improvements would be expected.
Intraoperative Electromyography (EMG) during Type I Thyroplasty

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Columbus, OH

Objective: Perform intraoperative EMG during type I thyroplasty to predict voice outcomes while comparing etiologies for vocal fold paralysis.

Methods: Paired electrode EMG was performed intraoperatively of the thyroarytenoid and cricothyroid musculature during type I thyroplasty. Pre and post-operative Voice-Related Quality of Life (VRQOL) measures, along with etiology of paralysis, were recorded and compared to intraoperative EMG findings.

Results: 51 patients with vocal fold paralysis underwent type I thyroplasty. Etiologies for paralysis included iatrogenic (57%), neoplastic (22%), idiopathic (20%), and traumatic (2%). The VRQOL improved from 36.4 to 14.5 for the neoplastic group, 38.7 to 17.0 for idiopathic, and 36.6 to 20.1 for iatrogenic etiology. The idiopathic group had the highest thyroarytenoid EMG activity at 56.1 µv, while the iatrogenic group had 49.2 µv and the neoplastic group had 45.0 µv. The VRQOL was 18.7 for patients that had EMG activity less than 25 µv versus 23.7 for those with increased thyroarytenoid activity.

Conclusions: All patients had significant improvement in their voice based on VRQOL. There was no significant difference between the various etiologies for voice outcomes or EMG activity. There were improved voice outcomes in those individuals with decreased thyroarytenoid EMG activity.
Long Term Effects of Temporary Injection Laryngoplasty on Voice Quality and Vocal Fold Position in Unilateral Vocal Fold Paralysis

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Ilya Likhterov, MD*
Sarah L. Schneider, MS, CCC-SLP*
Soha A. Al-Jurf, MS, CCC-SLP*
Mark S. Courey, MD
Katherine C. Yung, MD
San Francisco, CA

Objective: Patients with unilateral vocal fold paralysis (UVFP) treated with temporary injection laryngoplasty (IL) have a decreased rate of delayed permanent medialization laryngoplasty (ML) compared to UVFP patients initially treated by observation. The aim of this study is to determine whether the lower rate of ML corresponds with improved quantifiable measures.

Methods: Retrospective review. Examinations at presentation and follow-up of 14 IL patients and 24 observation patients were analyzed for stroboscopic parameters and CAPE-V scores.

Results: The groups were similar at presentation. At follow-up, the IL group showed significant improvement in 8/9 stroboscopic parameters and 4/6 CAPE-V parameters compared to the observation group (p<0.05). The observation group underwent ML than frequently than the IL group (75% vs 29%, p=0.007).

Conclusions: The lower rate of permanent ML in patients undergoing temporary IL corresponds with improvements in CAPE-V scores and stroboscopic parameters. Improvements persist beyond the accepted time frame for temporary graft resorption.
Malignant Transformation of Respiratory Papillomatosis in a Solid Organ Transplant Patient: Case Study
Roya Azadarmaki, MD*
Miriam N. Lango, MD*

Philadelphia, PA

The authors report a case of a 77 year old non-smoker and non-drinker solid-organ transplant patient who had malignant transformation of respiratory papillomatosis 3 years after the initial diagnosis of this benign lesion. This is the first case reported in the literature discussing malignant transformation of respiratory papillomatosis in a solid-organ transplant patient. As viral-associated cutaneous cancers occur more frequently and aggressively in solid-organ transplant patients and as respiratory papillomatosis is a viral-associated disease, the question that arises is if immunosuppressed respiratory papillomatosis patients are more prone to malignant transformation? Closer observation and airway evaluation of immunosuppressed patients with respiratory papillomatosis should be recommended as the rate of malignant transformation may be higher in this patient population.
Objectives: To describe the clinical presentation, diagnosis, treatment, and outcomes of MRSA laryngitis.

Methods: Charts of all patients with a culture-proven diagnosis of MRSA laryngitis treated within the Emory Voice Center between 2007-2011 were retrospectively reviewed.

Results: Three patients with culture-proven MRSA laryngitis were identified. Three further cases of Staphylococcus aureus laryngitis sensitive to methicillin were also identified. All three patients with MRSA were diabetics. All presenting symptoms were voice-related--there were no symptoms of airway or swallowing compromise. The duration of symptoms ranged from 3 months to 5 years. Most patients had undergone numerous previous treatments. Laryngeal examination revealed thickened vocal fold epithelium, whitish debris, edema, and crusting. The diagnosis was made in all patients via in-office culture of the larynx and all were treated with a prolonged course of trimethoprim/sulfamethoxazole. Two patients with MRSA had resolution of their symptoms with a single course. The third patient experienced multiple recurrences and required treatment for 1 year after which he had no further recurrence.

Conclusions: This is the largest single case series of patients with MRSA laryngitis. Our study findings suggest that the diagnosis may be more common than previously recognized and that the presenting signs and symptoms may be subtle. Clinicians should have a high index of suspicion for this diagnosis and consider an in-office laryngeal culture when the condition is recalcitrant to initial medical management.
Micronized Alloderm Injection Laryngoplasty for Unilateral Vocal fold Paralysis: Short and Long Term Efficacy
D’Antoni Dennis, MD, MS*
Aneesha Virani, BA, CCC-SLP*
Melda Kunduk, PhD, CCC-SLP*
Andrew J. McWhorter, MD

One hundred years since the first injection laryngoplasty by Brunings, there remains no clear best material for injection augmentation of the paralyzed vocal fold to restore glottic competence. The literature for micronized alloderm is disparate regarding its long-term efficacy. A retrospective review identified 121 patients injected, with 84 patients included for analysis. Videolaryngoscopy, voice samples, and voice handicap index (VHI) were analyzed pre-operatively and post-operatively at intervals to over 12 months. At 1-month, 94% had good/excellent voices and improved glottic closure and 93%, a lower VHI. At 12 months (data from 16 patients), 81% maintained good/excellent voices with complete glottic closure and a lower VHI. A further 49 patients at least 12 months post-injection were contacted and 88% reported good/excellent voice quality, were satisfied with their voice, and did not desire further treatment. Injection laryngoplasty with micronized alloderm is a safe and a long-term effective treatment for unilateral vocal fold paralysis.
Multi-Dimensional Voice Outcomes after Type I Core-Tex Thyroplasty in Patients with Mobile Vocal Folds: A Subgroup Analysis

Rapali N. Shah, MD*
Keimun A. Slaughter, MD*
Robert A. Buckmire, MD
Chapel Hill, NC

Objective: To evaluate the effectiveness of type I Gore-tex thyroplasty in patients with non-paralytic glottic incompetence.

Methods: Forty-nine patients with non-paralytic glottic incompetence treated with medialization thyroplasty were retrospectively reviewed: (paresis, n=13, hypomobility, n=20, scar, n=7, and atrophy, n=9). Pre- and postoperative GRBAS (grade, roughness, breathiness, asthenia, and strain), glottal function index (GFI), and voice-related quality of life (VRQOL) were compared.

Results: Mean follow up was 7.8 months. Statistically significant differences were seen between pre- and postoperative VRQOL for patients with paresis (p=0.0036), hypomobility (p=<0.0001), scar (p=0.0106), and atrophy (p=0.0159). However, patients with atrophy failed to show post-operative improvement on GFI and GRBAS, (p=0.0551 and p=0.2482 respectively).

Conclusions: Gore-tex thyroplasty provides vocal improvement for patients with glottic incompetence and mobile folds. Results vary by underlying diagnosis. Vocal improvements tend to be less robust in patients with atrophy.
Office-based Management of Benign Laryngeal Lesions with 532nm Potassium-Titanyl-Phosphate Laser – An Institutional Experience

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Colin Fuller, BS*
A. Blake Simpson, MD

San Antonio, TX

Purpose of the Study: To provide objective data on office-based pulsed-KTP laser procedures for benign laryngeal pathology, determining effective laser settings and objective measurements of lesion regression after treatment.

Methods: Retrospective chart review of patients over a 5-year period treated with office-based pulsed-KTP treatment for benign laryngeal lesions. Laser settings, pre and post-treatment lesion regression analysis, and stroboscopy evaluation are presented based on individual pathology.

Results: A total of 77 patients underwent 173 procedures, and were divided into 7 groups based on pathology. Granuloma patients required the highest average laser energy per treatment, and the polyp group required the lowest energy. There was significant lesion regression (p < 0.05) in all lesion types following KTP treatment based on lesion size quantification analysis. All patients demonstrated stable or improved mucosal wave on post-treatment stroboscopy. There were no major complications.

Conclusions: Office-based pulsed-KTP laser treatment is a safe and effective option to manage benign laryngeal lesions.
Outcomes following Transoral Robotic Surgery Supraglottic Laryngectomy (TORS-SL)

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OBJECTIVE: To describe our experience with TORS-SL.

STUDY DESIGN: Prospective data collection.

METHODS: Patient records receiving TORS-SL for squamous cell carcinoma (SCC) from a single institution with at least 6-months follow-up were collected. Two patients with previous SCC’s were excluded.

RESULTS: 18 patients (14 male, 4 female) were included in the study having a mean follow-up time of 21.2 months (SD=12.3). All patients had negative margins confirmed on final pathology. Nine (50%) patients received postoperative chemoradiation therapy for advanced neck disease or poor histopathologic features. No (0%) patients received tracheostomy or gastrostomy tubes. Within the follow-up period, treatment outcomes of DFS, DSS, and OS were 61%, 100%, and 89%, respectively. There were no local recurrences. Six (33%) patients experienced postoperative complications (including: three prolonged dysphagias and one pharyngocutaneous fistula).

CONCLUSION: Initial outcomes for TORS-SL are promising and are comparable to previously described treatment modalities. Larger studies are encouraged.
Predictors of Voice and Disease Outcomes in Patients with Early Glottic Cancer

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Objectives: To determine whether the clinical or histological presentation of patients with laryngeal dysplasia/early carcinoma correlates with voice and disease outcomes. Study Design: Retrospective case series

Methods: Between 2004 and 2010 all UCSF Voice Center patients treated with primary surgery for severe dysplasia or early laryngeal cancer were identified. Preoperative stroboscopy, intraoperative appearance and histologic characteristics (invasion pattern, inflammation, and keratinization) were compared with perceptual voice quality, disease free interval, and cordectomy type.

Results: Eighteen patients were evaluated. Pattern of invasion correlated with disease free interval ($r^2 = 0.43$) and postoperative breathiness, strain, and pitch ($r^2 = 0.79, 0.92, and 0.82$). Preoperative voice dysfunction correlated with cordectomy type ($r^2 = 0.40-0.68$) and postoperative perceptual voice parameters ($r^2 = 0.70-0.94$).

Conclusion: Patterns of invasion correlate with disease outcome and voice outcomes correlate with the amount of tissue removed. Clinical lesion appearance did not correlate with outcome.
Recovery of Vocal Cord Motion following Early Type I Thyroplasty

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While Type I thyroplasty remains the gold standard treatment for unilateral vocal cord paralysis (UVCP), it has been suggested that thyroplasty be reserved for cases that fail to spontaneously recover neuromuscular function within 6-12 months. This arbitrary delay is based on the assumption that thyroplasty may permanently alter the vocal mechanism or impair neuromuscular recovery. Our aim is to present 3 patients for whom preoperative and postoperative longitudinal data are available following spontaneous recovery after thyroplasty, performed within one month of UVCP. Subjects underwent acoustic analysis before and after thyroplasty until full kinematic recovery. All patients demonstrated complete recovery of vocal cord motion without the necessity to remove the implant and with evidence of continuing acoustic improvement over time. These observations appear to dispel prevailing concerns and could move us towards a greater use of type I thyroplasty as a first line treatment option for UVCP in selected patients.
Reinnervation of Laryngeal Muscles after RLN Resection in the Rat
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To assess factors that correlate with better functional recovery after RLN injury, laryngeal motion and muscle reinnervation were assessed in rats at various time intervals after right or left RLN resection. Slight vocal fold motion with respiration was noted 60 and 90 days after right but not left RLN lesion. Muscle atrophy was maximal at 30 days: average crosssectional area as a percent of control was 50% for the PCA, and 70% for the TA. 90 days after injury, mean reinnervated muscle area was 90% of control for TA muscles and 90% for the PCA after right RLN injury. However, after left RLN lesion, reinnervated PCA area peaked at only 80% of control. Greater PCA function may account for the recovery of motion after right RLN lesion. Better function after right RLN lesion could be due to the shorter distance between motor neurons and site of nerve injury.
**Relationship of the Recurrent Laryngeal Nerve to the Superior Parathyroid Gland during Thyroidectomy**

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DESIGN: A prospective evaluation of the relationship of the recurrent laryngeal nerve (RLN) to the superior parathyroid gland (SPG) during consecutive thyroidectomies. When one structure was noted, careful dissection was performed to locate the other structure, to preserve the natural anatomic relationship between them.

PATIENTS: 103 consecutive thyroid lobectomies were performed on 73 different patients. Pathology included benign and malignant thyroid nodules, a parathyroid cyst and an exploration for a stab wound to the neck. The distance from the SPG to the ipsilateral RLN was measured.

RESULTS: In 88 (88.89%) of these cases, the gland was identified within 5 mm of the RLN, and in 62 (62.3%) cases the RLN was less than 1 mm from the SPG. Two secondary measures proved statistically significant. Height of the thyroid lobe was positively associated with distance between the structures (p=0.0011). The incidence of cancer was negatively associated with distance (p=0.033). The incidence of RLN paresis was <4%.

CONCLUSIONS: In the majority of cases, the nerve was found in close proximity to the SPG. In a thyroid gland with a large height, or in a cancerous lobe, this relationship is less reliable.
Selected Markers of Apoptosis in Congenital Cholesteatoma

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Introduction: The role of apoptosis in congenital cholesteatoma (CC) is not completely established. The aim of the study was to analyze the expression of apoptosis-related proteins: p21 and p53 in CC cells.

Material, Methods: Immunohistochemical staining of tissues: 13 samples of CC, 12 specimens of acquired cholesteatoma (AC) and 12 auditory meatal skin (MS) was performed.

Results: All CC tissues showed a large increase in number of p21-positive cells compared to MS (p<0.05). There was no significant difference in 21-positive cells in CC compared with AC. Considerably difference was found between CC and AC with respect to p53 expression (p<0.05). The distribution of p21 and p53-positive cells in CC epithelium was different from the epidermis. There was no staining in CC perimatrix.

Conclusions: Up-regulation of p21 protein plays significant role in CC development, may affect p53-dependent apoptosis. Some differences in molecular pathways of apoptosis between congenital and acquired cholesteatoma are suggested.
Superomedial Submucosal Partial Arytenoidectomy for Improved Posterior Glottic Closure

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Endoscopic medial arytenoidectomy has been described previously for improvement in glottal airway in bilateral vocal fold paralysis. A modification of this technique for the specific indication of an anteriorly prolapsed arytenoid can improve the voice. We present our submucosal technique as well as a case example. A 45-year-old male presented with dysphonia secondary to a right true vocal fold paralysis. Laryngoscopy revealed vocal fold atrophy and an anteriorly hooded right arytenoid that prevented posterior glottic closure during phonation. He underwent right superomedial submucosal partial arytenoidectomy and ipsilateral vocal fold Cymetra injection without complication. One month and 11 month postoperative evaluation revealed significant improvement in voice with complete glottic closure. We present this case as evidence that a superomedial submucosal partial arytenoidectomy can improve breathy dysphonia by reducing the posterior glottic gap in patients with malpositioned arytenoids.
Surgical Management of Dysphagia in Head and Neck Cancer Patients

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Case series to develop a protocol for surgical rehabilitation of chemoradiation therapy induced dysphagia in patients with head and neck squamous cell carcinoma. Eighty patients with HNSCC who underwent CRT and developed dysphagia were divided into four groups based on types of surgical rehabilitation. All patients had a tracheotomy and gastric feeding tube, and underwent intense traditional swallowing therapy for at least 3 months. Surgical intervention was offered when no significant improvement occurred. Group 1 underwent retrograde esophagoscopy and Pharyngoesophageal dilatation. Group 2 had pharyngeal reconstruction through a transcervical approach. Group 3 underwent transoral micro-endoscopic laryngopharyngeal reconstruction. Group 4 had total laryngectomy and pharyngeal reconstruction. There were no procedure-related complications. All tolerated a regular diet, and gastric and tracheotomy tubes were removed by 14 weeks after surgery. No patients had postoperative had aspiration pneumonia. We concluded that there are various surgical approaches to rehabilitate swallowing in chemoradiation-induced dysphagia.
The Efficacy of Office Biopsy for Laryngopharyngeal Lesions: Comparison with Surgical Evaluation

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Introduction: Office biopsies have become a common procedure to diagnose laryngopharyngeal lesions with the goal of quicker diagnosis without general anesthetic. We hypothesize that the overall treatment arc for these patients often nullifies these benefits. We also look to evaluate their accuracy.

Methods: A retrospective chart review was performed from 2009-2011. Inclusion criteria were patients who underwent an office biopsy and completed definitive management.

Results: Thirty-four patients underwent office biopsy. Three (9%) patients gained diagnosis and continued to definitive management without a surgical visit. 31 (91%) patients required a visit to the operating room (OR). Of these OR visits, 25 (81%) received definitive management, and 6 (19%) confirmed diagnoses. Sixty percent of office biopsies correlated with exact surgical pathology.

Conclusion: Office biopsy offers early direction regarding diagnosis. However, surgical evaluation is often required for proper staging, full-thickness biopsy, and therapeutic resection of laryngopharyngeal lesions.
Introduction: Papillomas are a common adult laryngeal neoplasm. We hypothesize that the demographics of these patients have changed over recent years. We seek to identify trends in management from the operating room towards office procedures.

Methods: A chart review from 1990-2011 was performed on patients treated by two laryngologists. Patients with laryngeal papilloma were included. Age, sex, treatment modality, treatment intervals, and malignant transformation were obtained.

Results: 184 patients were reviewed with 542 interventions. The average age of diagnosis (46 years) was not found to change. The proportion of males to females diagnosed increased, but was not statistically significant. A trend towards managing these patients with office procedures was identified. Mean interval between procedures was 11 months.

Conclusion: Age distribution for AORP has been constant in our practices. Treatment has shifted from the operating room to office procedures, offering patients an alternative way to control this long-term disease process.
The Impact of Dysphonia on Work-Related Dysfunction

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Objective: To determine the short-term disability (STD) and productivity losses related to dysphonia.

Methods: A retrospective analysis of a national database of work absence and STD claims was performed. Number of patients with dysphonia-related STD claims, number of work days absent, and lost wages were determined.

Results: From 2004 to 2008, 190 unique dysphonic patients (mean age 45.9 ± 9.6 years, 53.2% male) had dysphonia-related STD claims and 12 months follow-up. The mean number of work absences was 39.2 days (95% CI 31.9 to 46.5). Annual total and mean lost wages per person were $843,198.72 and $4437.89, respectively. Laryngeal cancer patients had the most days absent and highest productivity losses. Annual lost wages per person from STD claims ranged from $1685 in depression, $5867 in acute coronary syndrome, and $719 in asthma.

Conclusion: Voice disorders lead to work-related disability with STD and productivity losses similar to those in other diseases.
Transoral Endoscopic CO2 Laser Surgery and Laryngeal Exposure

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Objective: This prospective series was designed to analyze the techniques used to improve the exposure of the glottis.

Method: 200 patients, consecutively treated at a single institution between 2005 and 2010 with early stage glottis cancer were analyzed. The patient position, factors to improve exposure and complications were recorded.

Results: T staging was as follows: Tis (n=47), cT1a (n = 115), cT1b (n=21) and cT2 (n=17). 97% of cases were able to be resected endoscopically. The techniques utilized were: external counterpressure (67%), partial vestibulectomy (58%), resection of petiole (15%) bilateral vestibulectomy (6%) and resection of the suprahyoid epiglottis (5%). No tracheotomies were required. Subcutaneous emphysema occurred in 4%.

Conclusion: The knowledge and use of different techniques of laryngeal exposure allows the transoral CO2 laser resection of 97% of early stage vocal fold cancers.
Utility of Voice Therapy: Laryngologists’ Perspective

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Purpose: Investigate laryngologists’ perceptions of utility of voice therapy and examine perceived impact of insurance coverage on access to voice therapy.

Methods: Nineteen-item electronic survey, active American Laryngological Association members and laryngology working groups.

Results: Response rate was 33% (51/156). Most were academic laryngologists working with voice-trained speech pathologists. Management opinions were consistent for many diagnoses, with >50% of respondents agreeing on how frequently voice therapy was appropriate; these included vocal fold nodules, muscle tension dysphonia, paradoxical vocal fold motion, subglottic stenosis, fungal laryngitis, and singing dysphonia. Responses were inconsistent for vocal fold polyps, cysts, fibrosis, granuloma, motion impairment, and chronic cough. Nearly all respondents reported insurance-related challenges with patient access to voice therapy.

Conclusions: Laryngologist opinions on the utility of voice therapy demonstrate a consensus for some common diagnoses but unexpectedly, not for several others, identifying areas for further investigation. Insurance coverage appears to significantly impact access to therapy.