

# WESTERN SECTION PROGRAM

FRIDAY, JANUARY 30, 2004

4:00 - Registration - Sonora B/C Lobby  
7:00

3:00 - Speaker Ready Room - Sunset Room  
9:00

6:00 - Welcome/President's Reception and Poster Reception - Sonora A & B  
7:30

SATURDAY, JANUARY 31, 2004

6:00 - Speaker Ready Room - Sunset Room  
9:00

7:00 - Registration - Sonora B/C Lobby  
noon

7:00 - Poster Viewing - Salons 1 and 2  
1:00

7:00 - Business Meeting (Members Only) - Sonora A  
7:50

7:00 - Exhibit Hall Open - Salons 1 & 2  
1:00

7:00 - Continental Breakfast with Exhibitors - Salons 1 & 2  
7:50

8:00 - Scientific Sessions - Sonora B & C  
1:00

8:00 Welcome and Introduction of Robert A. Jahrsdoerfer, MD\*, President  
C. Phillip Daspit, MD\*, Phoenix, AZ

8:05 Presidential Address  
Robert A. Jahrsdoerfer, MD\*, Charlottesville, VA

8:15 Introduction of Guest of Honor, Robert F. Spetzler, MD, Phoenix, AZ  
C. Phillip Daspit, MD\*, Phoenix, AZ

## GUEST OF HONOR LECTURE

**Skull Base Approaches; An Example of Interdisciplinary Team Work**

Robert F. Spetzler, MD, Phoenix, AZ

**MODERATOR: SIGSBEE W. DUCK, MD\*, GILLETTE, WY**

8:30 **Benign Hypopharyngeal and Proximal Esophageal Strictures in Patients Following Non-Surgical Treatment of Head and Neck Squamous Cell Carcinoma Cancer (HNSCC)**

Douglas D. Reh, MD, Portland, OR

Donna J. Graville, PhD, Portland, OR

Andrew D. Palmer, MS, Portland, OR

Cohen I. James, MD PhD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the common clinical features associated with the development of benign proximal and esophageal strictures in patients who have undergone radiation therapy for head and neck squamous cell carcinoma.

**OBJECTIVES:** Treatment of HNSCC with chemotherapy and radiation (XRT) has been associated with the development of benign proximal esophageal/hypopharyngeal strictures, perhaps due to scarring after healing from a confluent mucositis in this location. Given the increased use of these nonsurgical approaches, we sought to determine whether there were any common features associated with the development of this complication so that the patient group at highest risk could be identified. **STUDY DESIGN:** Retrospective case review. **METHODS:** The charts of all HNSCC patients treated since 1994 for benign hypopharyngeal/esophageal stricture following XRT were reviewed. Radiographic and operative reports were used to develop a stricture severity score (2-6) based on the diameter and ease of dilation of the stricture. **RESULTS:** 10 patients with an average stricture score (SS) of 3.40 were identified. 7/10 patients had adjuvant chemotherapy (SS=3.57), in 5 this had been delivered concurrently with radiation (SS=4.20). Only 3 had not had chemotherapy (SS=3.00). 7/10 patients had required the placement of an enteral feeding tube during their XRT (SS=3.86), in 5 this was a PEG (SS=3.60). Stricture score also varied based on location of tumor and was highest for nasopharynx (2) (SS=5.00). **CONCLUSIONS:** A high proportion of the stricture patients in this study had adjuvant chemotherapy and feeding tubes placed during their XRT. Patients with nasopharynx cancer had higher stricture severity scores compared to patients with tumors in other locations. Significant and prolonged dysphagia following radiation for HNSCC should alert the physician to the possibility of hypopharyngeal/esophageal stricture, particularly in patients with these associated features.

#### 8:40 A Genomic Predictor of Oral Squamous Cell Carcinoma Using Principal Component Analysis

Mark E. Whipple, MD MS, Seattle, WA  
Eduardo Mendez, MD, Seattle, WA  
D. Gregory Farwell, MD, Seattle, WA  
S. Nicholas Agoff, MD, Seattle, WA  
Chu Chen, PhD, Seattle, WA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand how genomic expression data can be used to predict the presence of oral squamous cell carcinoma in unknown tissue samples.

**OBJECTIVES:** To identify a genomic profile that predicts the likelihood of oral squamous cell carcinoma compared to normal oral mucosa in unknown tissue samples. **STUDY DESIGN:** Using a training set of tissue samples that were histologically classified as oral squamous cell carcinoma (OSCC) or normal mucosa, we used principle component analysis (PCA) to develop a genomic predictor for OSCC. On a separate test set of unclassified samples, we used the predictor to classify the samples, then evaluated the performance of the predictor using histologic diagnosis. **METHODS:** We extracted mRNA from 29 OSCC and 19 normal oral mucosa tissue samples and hybridized the mRNA to Affymetrix oligonucleotide microarrays containing probe sets for 7070 genes and expressed sequence tags. We divided the samples into a training set of 15 OSCC and 10 normal samples and a test set consisting of the remaining samples. Using PCA on the training set we found a composite gene expression vector (principal component vector) which we used to compute likelihood ratios for OSCC on the test set. By calculating the contribution of each gene to the principal component vector, we identified those genes with the greatest predictive value. **RESULTS:** Using the likelihood ratio, we correctly classified all 23 samples in the test set as either OSCC or normal. We found that many of the most predictive genes code for known markers of squamous cell carcinoma and other cancers. **CONCLUSIONS:** Principle component analysis can be used with genomic microarray data to correctly predict the presence of OSCC in unknown tissue samples.

#### 8:50 Cervical Sympathetic Chain Schwannomas

Jamie L. Robinson, MD MS, Portland, OR  
Samuel G. Shiley, MD, Portland, OR  
Jane L. Weissman, MD, Portland, OR  
Mark K. Wax, MD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the clinical presentation, surgical management, and outcomes of patients with cervical sympathetic chain schwannomas.

**OBJECTIVES:** Schwannomas are benign, slow-growing tumors that arise from nerves. Those originating from the sympathetic cervical chain are rare. We describe our experience with the clinical presentation, surgical management, and outcomes of patients with this pathology. **STUDY DESIGN:** Retrospective chart review of a case series in a tertiary referral center. **METHODS:** Four cases of cervical sympathetic chain schwannomas were reviewed. Patients presented with either an asymptomatic neck mass discovered on routine physical examination (1), an enlarging neck mass (2), or an acute onset of Horner's syndrome (1). All patients underwent preoperative imaging (MRI, CT, or both). **RESULTS:** The location and soft-tissue characteristics of the mass, along with displacement of the carotid sheath vessels, were typical of a cervical sympathetic chain schwannoma. All patients underwent surgical excision of the mass. Postoperative Horner's syndrome was common. First bite syndrome was encountered in two patients. **CONCLUSIONS:** Cervical sympathetic chain schwannomas are rare tumors. Preoperative imaging characteristics facilitate the diagnosis. First bite syndrome occurs and can be debilitating postoperatively. Long-term prognosis is excellent.

#### 9:00 Depletion of HIF-1 Alpha Inhibits Proliferation of Human Tongue SCCA Cell Lines Through an Apoptotic Mechanism

Jimmy J. Brown, MD DDS\*, Los Angeles, CA  
Christopher A. Regala, MD, Los Angeles, CA (Presenter)  
Qunzhou Zhang, PhD, Los Angeles, CA  
Diana Messadi, DDS DMSc, Los Angeles, CA  
Anh Le, DDS PhD, Los Angeles, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation the participants should be able to understand: 1) the role of hypoxia on tumor cell viability; and 2) the link between HIF-1 alpha and the apoptotic pathway among two selected SCCA tumor cell lines.

**OBJECTIVES:** The main objectives of this study were to clarify the role of HIF-1 alpha in the apoptotic pathways of two human tongue SCCA tumor cell lines and to introduce the potential of HIF-1 alpha modulation in cancer therapy. **STUDY DESIGN:** A series of in vitro laboratory experiments were designed and executed to determine the role of HIF-1 alpha on the apoptotic pathways among two tumor cell lines. **METHODS:** Human SCCA cell lines (SCC-4, SCC-9) were subjected to hypoxia followed by transfection with antisense HIF-1 alpha phosphorothioate oligonucleotide (AS-HIF-1alpha-ODN). Transfection with sense sequenced HIF-1 alpha phosphorothioate oligonucleotide (S-HIF-1alpha-ODN) in a second group of cells served as control. The transfected cell groups were then analyzed for cell proliferation rate and apoptosis using standard methods. Analysis of HIF-1 alpha mRNA levels and its HIF-1 alpha protein expression were also performed using the methods of RT-PCR and Western blot respectively. Data analyses were undertaken with use of the paired student t-test with significant differences determined as  $P < 0.05$ . **RESULTS:** Exposure of human tongue SCCA cell lines to hypoxia triggered a transient increase in HIF-1 alpha mRNA levels followed by a more prolonged HIF-1 alpha protein expression. Elimination of HIF-1 alpha suppressed both HIF-1 alpha mRNA and HIF-1 alpha protein expression. Knockout of HIF-1 alpha expression suppressed cell proliferation and facilitated apoptosis in both SCC-4 and SCC-9 cell lines. **CONCLUSIONS:** Elimination of HIF-1 alpha expression induces apoptosis in human tongue SCC-4 and SCC-9 cell lines. The implication of this finding suggests HIF-1 alpha may be recruited as a potential target for the suppression of SCCA cell proliferation.

#### 9:10 Salivary Duct Carcinoma: A Clinical and Histologic Review and Use of Trastuzumab (Herceptin) as Adjuvant Therapy

Vishad Nabili, MD+, Los Angeles, CA  
Jesse W. Tan, MD, Los Angeles, CA  
Ali Sepehr, MD, Los Angeles, CA  
Sunita Bhuta, MD, Los Angeles, CA  
Joel A. Sercarz, MD, Los Angeles, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the clinical behavior of salivary duct carcinoma (SDC) of the head and neck and assess the use of trastuzumab (Herceptin) as adjuvant therapy based on the immunohistochemical similarities between SDC and ductal carcinoma of the breast.

**OBJECTIVES:** This study analyzes the clinical behavior and immunohistochemical (IHC) characteristics of salivary duct carcinoma (SDC) of the head and neck. Based on IHC similarities between SDC and ductal carcinoma of the breast and the presence of HER2 protein overexpression in both entities, the use of the breast cancer drug trastuzumab (Herceptin) as adjuvant therapy for SDC is assessed. **STUDY DESIGN:** Retrospective chart review with median follow-up of 26 months. Seven patients with SDC of the head and neck were seen at a university medical center between 1993-2003. **METHODS:** Patients were contacted and charts were reviewed to analyze presentation, treatment methods, and course of disease in each patient. Tumor specimens were examined for the presence of HER2 protein overexpression via IHC methods. **RESULTS:** 57% of

patients had SDC originating in the parotid gland. The majority had facial nerve paresis or paralysis at the time of diagnosis. 71% had evidence of lymph node metastasis on final pathologic evaluation. 43% of patients experienced recurrence of disease despite surgery and radiation, with or without chemotherapy. One patient (14%) was dead of disease from SDC, 20 months after diagnosis. All patients with SDC of the head and neck strongly overexpressed HER2 protein on IHC analysis. **CONCLUSIONS:** Salivary duct carcinoma is an aggressive tumor of the head and neck with a poor prognosis. There are striking immunohistochemical similarities between SDC and ductal carcinoma of the breast, including HER2 protein overexpression. Because trastuzumab has been shown to be highly effective in treating HER2-overexpressing breast cancer, trastuzumab should also be included when planning adjuvant therapy for SDC.

#### **9:20 The Lateral Approach to Parapharyngeal Space Lesions**

Pramod K. Sharma, MD, Salt Lake City, UT  
Clough Shelton, MD\*, Salt Lake City, UT  
Roy K. Davis, MD\*, Salt Lake City, UT

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe the lateral approach to parapharyngeal space lesions as a method to avoid mandibulotomy.

**OBJECTIVES:** Neoplasms of the parapharyngeal space are a therapeutic challenge due to the anatomic constraints of the region. The mainstay of treatment is surgical resection. The most commonly used approaches include a transcervical approach for small to medium sized lesions and a transmandibulotomy approach for larger lesions. The objective of this study is to evaluate the lateral approach to parapharyngeal space lesions. **STUDY DESIGN:** A prospective study of consecutive patients with parapharyngeal space lesions at a tertiary care facility. **METHODS:** Patients with parapharyngeal space lesions to be treated by surgical resection were identified. Patients underwent a lateral approach to the parapharyngeal space lesion. This technique involves a transcervical approach in addition to extension superiorly with identification of the facial nerve and the stylomastoid foramen and separation of the sternocleidomastoid muscle from the mastoid tip. **RESULTS:** Successful resection was performed in all patients. Mandibulotomy was avoided in all patients. **CONCLUSIONS:** The lateral approach provides an alternative to the transmandibulotomy approach for the resection of parapharyngeal space lesions.

#### **9:30 The Lateral Approach to Parathyroidectomy: Indications and Techniques**

R. Kim Davis, MD\*, Salt Lake City, UT  
Timothy R. Miller, MD, Salt Lake City, UT  
Pramod K. Sharma, MD, Salt Lake City, UT

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe the indications and technique of the lateral approach to parathyroidectomy and to understand the role of pre-op Sestamibi scanning and intraoperative iPTH testing with this approach.

**OBJECTIVES:** The objective of this study was to determine the number of patients with primary hyperparathyroidism who could be treated by a minimally invasive lateral approach to parathyroidectomy and to describe indications and techniques and to analyze results. **STUDY DESIGN:** Prospective, non-randomized study. **METHODS:** Twenty consecutive patients seen from January 1, 2003 to July 8, 2003 are included. Nineteen patients underwent post-operative Sestamibi parathyroid scanning. Patients who localized to one site and could be operated on with rapid iPTH testing availability underwent the lateral approach. Time required from skin excision to removal of the adenoma was recorded as well as rapid iPTH results and ultimate outcomes. The value of pre-operative Sestamibi scanning was critically analyzed. **RESULTS:** Nine of eleven patients with localizing Sestamibi scanning underwent the lateral approach. Time from skin excision until adenoma resection was 13-27 minutes (average 21 minutes). There were no operative complications to include recurrent nerve injury. Sestamibi scans were positive in 13 of 19 cases (68%), the eleven listed above, one in the chest, and one bilaterally. Five of the six patients with non-localizing scans had hyperplasia. One patient with total radioisotope washout at 3 hours had initial localized brightness where an adenoma was found at surgery. One pregnant patient with hypercalcemic crisis did not undergo Sestamibi scanning. Two patients had co-existent papillary thyroid cancer, one discovered at surgery. The only complication seen in the total group was one post-operative hematoma. **CONCLUSIONS:** Selective use of a minimally invasive lateral approach to parathyroidectomy based on pre-operative Sestamibi scanning and intraoperative iPTH testing was safe, effective and very time efficient. Pre-operative Sestamibi scanning was helpful even when non-localizing as it helped direct the nature of surgery.

#### **9:40 The Relative Accuracy of High-Resolution Ultrasound for Preoperative Localization of Parathyroid Adenomas in Primary vs. Reoperative Parathyroid Surgery**

Bobak A. Ghaheri, MD, Portland, OR  
D. Bradley Koslin, MD, Portland, OR  
Aaron H. Wood, MD, Baltimore, MD  
James I. Cohen, MD PhD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to determine if high resolution ultrasound can be effectively used in patients with and without surgery and to understand factors which may lead to a false positive or false negative test.

**OBJECTIVES:** High-resolution ultrasound (US) and sestamibi scanning are generally regarded as the first line methods for preoperative localization of parathyroid adenomas. However the utility of US in reoperative cases has been questioned due to concern that scarring will obscure the normal tissue planes and vascularity that are critical to identification of an adenoma. The purpose of this study was to determine the relative accuracy of US for preoperative localization of parathyroid adenomas in primary vs. reoperative parathyroid surgery. **STUDY DESIGN:** Retrospective chart review at a tertiary care academic medical center. **METHODS:** All patients seen in referral for parathyroid surgery between May 1994 and September 2002 underwent high-resolution US as their initial diagnostic test. Patients who subsequently underwent exploration were included in this study. Patients with parathyroid hyperplasia were excluded. Intraoperative and US findings were compared. **RESULTS:** 142 patients were included, 116 without prior exploration and 26 with. The sensitivity and positive predictive value of US were 86.9% and 89.1% respectively. These data were not significantly different in those patients without prior neck surgery (88.2% and 90%) and those with (80% and 84.2%). The overall accuracy was 81% with a false-negative rate of 11.3%. Thyroid nodularity was significantly more common (81.8%) in those patients who had a false positive or false negative US than in the total population (61.3%). **CONCLUSIONS:** High-resolution US is an accurate and sensitive method for localizing parathyroid adenomas even in patients who have previously undergone parathyroid exploration. However the presence of thyroid nodules can interfere with its accuracy.

#### **9:50 VICE PRESIDENT'S RESIDENT RESEARCH AWARD**

##### **Use of Elastin and Small Intestine Submucosa for Reconstruction of Floor of Mouth Defects**

Julie T. Kerr, MD+, Tacoma, WA  
Douglas M. Sorensen, MD, Tacoma, WA  
Jeffrey S. Teach, BSN, Portland, OR  
Scott J. Gustafson, DVM MS, Corvallis, OR  
Kenton W. Gregory, MD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss and compare methods of repairing floor of mouth defects that require grafting.

**OBJECTIVES:** To examine the use of two biomaterials, elastin and small intestine submucosa, in repair of floor of mouth defects. **STUDY DESIGN:** Randomized, blinded animal study. **METHODS:** 2X2 cm floor of mouth defects were created in 14 pigs. Seven were repaired with elastin and laser tissue welding. Seven were repaired with sutured in place small intestine submucosa. No bolsters were utilized. Specimens were harvested at seven days for examination of healing and tissue reaction. **RESULTS:** All 14 pigs demonstrated reepithelialization and mucosal coverage of the defect within 7 days. There was no evidence of foreign body tissue reaction. **CONCLUSIONS:** Biomaterials offer an exciting alternative to split thickness skin grafts for application in the repair of mucosal defects in the oral cavity. They eliminate donor site morbidity, replace "like with like" epithelial lining, and may potentially eliminate the need for bolsters. Future studies should continue to improve upon methods and techniques for the use of biomaterials in mucosal defects of the head and neck.

#### 10:00 DISCUSSION

#### 10:10 Break/Poster Presentations/Visit with Exhibitors - Salons 1 & 2

**MODERATOR: ERNEST A. WEYMULLER, JR., MD\*, SEATTLE, WA**

#### 10:30 Alterations of Nasal Mucociliary Clearance in Association with HIV Infection and Treatment with Guaifenesin

Elizabeth J. Rosen, MD, Galveston, TX

Karen H. Calhoun, MD\*, Galveston, TX

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe the effect of HIV infection on nasal mucociliary clearance and understand the utility of guaifenesin therapy in these patients.

**OBJECTIVES:** To determine if HIV infection is associated with a prolonged mucociliary clearance time (MCT) and to evaluate the effect of guaifenesin on MCT in HIV+ patients. **STUDY DESIGN:** An independent sample, cross-sectional study comparing MCT in HIV+ and HIV- volunteers followed by a prospective, randomized, double-blind, placebo controlled study of HIV+ patients before and after guaifenesin treatment. **METHODS:** Twenty-five HIV+ patients and 29 HIV- controls were enrolled and MCT measured using the saccharin method. A second group of 20 HIV+ patients participated in the second arm of the study and underwent saccharin testing before and after a three week course of guaifenesin or placebo. All study participants completed a medical history questionnaire, a SNOT-16 survey and were examined with both anterior rhinoscopy and rigid nasal endoscopy. **RESULTS:** A statistically significant difference ( $P=.002$ ) was found in the MCT of the HIV+ group (13.3 +/- 7.5 minutes) compared to the HIV- controls (9.2 +/- 3.9 minutes). However, the difference in MCT before (22.3 +/- 10.1 minutes) and after (17.8 +/- 9.5 minutes) guaifenesin therapy did not reach statistical significance ( $P=.20$ ). The HIV+ group was found to have a higher SNOT-16 score compared to HIV- controls (21.1 vs. 7.4,  $P<.001$ ). Guaifenesin therapy in HIV+ patients did not lead to a significant improvement in the SNOT-16 score (24.6 before vs. 19.3 after treatment,  $P>.05$ ). **CONCLUSIONS:** Compared to HIV- controls, HIV+ patients have a prolonged MCT and appear to have more sinonasal symptoms as indicated by a higher SNOT-16 score. Although the MCT and the SNOT-16 score improved after guaifenesin therapy, the difference did not reach statistical significance.

#### 10:40 Arterial Embolization in the Management of Posterior Epistaxis

Nathan P. Christensen, BA, Portland, OR

Dana S. Smith, MD, Portland, OR

Stanley L. Barnwell, MD, Portland, OR

Mark K. Wax, MD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to 1) explain the various treatment options available for posterior epistaxis; 2) discuss the morbidity of embolization in the management of posterior epistaxis; and 3) discuss the benefits of embolization in the management of posterior epistaxis.

**OBJECTIVES:** Treatment of severe epistaxis can encompass many modalities, ranging from medical (posterior packs) and surgical (arterial ligation) to interventional radiology. Angiographic embolization is a method that is preferentially employed at our institution. We discuss its effectiveness and morbidity. **STUDY DESIGN:** Two tertiary medical referral centers. **METHODS:** Retrospective review of 70 patients with epistaxis treated with elective angiographic embolization from 1993 to 2002. **RESULTS:** Upon admission, patients had bled for a median of 4.5 days. 79% of bleeds were unilateral. The etiology of bleeding was idiopathic (61%), previous surgery (11%), anticoagulants (9%), trauma (7%), and other causes (12%). 30% of patients required blood transfusions prior to admission (mean 4.4 units). The internal maxillary artery (IMAX) was embolized in 94% of patients (47% unilateral or bilateral IMAX only, 47% unilateral or bilateral IMAX in combination with other vessels, 6% other vessels besides the IMAX). The mean length of stay was 2.5 days. 86% of patients had no or minor complications after the embolization. 13% of patients had a major re-bleed that required surgical intervention within 6 weeks of the embolization. One patient had a serious neurological complication. Using the data available on 68 patients, the cost of the hospitalization averaged \$18,150 with the more direct costs of the embolization averaging \$10,930. **CONCLUSIONS:** Angiographic embolization is a clinically effective treatment for severe epistaxis.

#### 10:50 Is Nasal Packing Necessary Following Endoscopic Sinus Surgery?

Richard R. Orlandi, MD, Salt Lake City, UT

Donald C. Lanza, MD, Cleveland, OH

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss techniques to avoid nasal packing following sinus surgery and explain the relative indications for packing.

**OBJECTIVES:** To determine the necessity of nasal packing and hemostatic agents following endoscopic sinus surgery. **STUDY DESIGN:** Retrospective review of cases in a tertiary care sinus practice at an academic medical center. **METHODS:** Records of 165 patients undergoing 169 endoscopic sinus surgeries were reviewed to determine the presence of adjunctive nasal procedures, the use of nasal packing and hemostatic agents, blood loss during surgery, and the incidence of bleeding complications following surgery. **RESULTS:** The median estimated blood loss during surgery was 50.0 ml. (range 5-1000). In 4 surgeries (2.4%) hemostatic agents were placed in the nose at the conclusion of surgery, 19 (11.2%) had packing, and 147 (87.0%) had no material left in the nose. No patients suffered bleeding complications postoperatively. There was a significant decrease in the use of packing/hemostatic agents over time. **CONCLUSIONS:** Placement of nasal packing or other hemostatic agents within the nasal cavity is not necessary in the majority of endoscopic sinus surgeries. Risks, costs, and discomforts associated with these interventions can often be avoided.

#### 11:00 Management of Frontal Sinus Trauma in the Era of Endoscopic Conservation

Edward J. Hepworth, MD+, Albuquerque, NM

Ian J. Alexander, BS, Albuquerque, NM

Jon D. Wagner, MD, Albuquerque, NM

Garth T. Olson, MD, Albuquerque, NM

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand and implement a treatment algorithm for frontal sinus fractures that allows maximal restoration of function and minimal destruction of physiologic frontal sinus anatomy. Confidence in performing the appropriate repair procedures will be bolstered by experiential data at an active trauma center.

**OBJECTIVES:** To demonstrate that conservative operative management of frontal sinus trauma leads to decreased perioperative, postoperative, and delayed complications and morbidity. To raise the threshold of tendency to obliterate, cranialize, or otherwise defunctionalize the frontal sinus in a post-traumatic setting by use of endoscopic and restorative strategies. **STUDY DESIGN:** A relevant review of the literature followed by a retrospective chart and radiograph review of all operatively managed frontal sinus trauma during a fifteen year interval at a busy trauma center and a discussion of several cases managed recently by maximally restorative techniques. **METHODS:** All frontal sinus fracture patients treated at a large tertiary referral hospital from 1988 to the present were identified. Retrospective chart and radiograph review was performed, including analysis of injury type, repair technique, and outcomes. Ablative and reconstructive techniques were compared for injuries of similar severity and anatomic distribution and with historic norms. **RESULTS:** Sixty-three patients with operatively managed fractures were included. Follow-up intervals varied from zero to fifteen years. The types and frequencies of complications with operative repair correspond with those previously reported. Given the same severity of injury, more complications were associated with ablative techniques than with function-restoration techniques. **CONCLUSIONS:** Ablative techniques evolved and persist as a result of healthy concern for delayed complications related to disrupted frontal sinus mucociliary clearance. Given recent advances in endoscopic and conservation techniques, the otolaryngologist should attempt to salvage frontal sinus anatomy and physiology. Use of endoscopic techniques to verify or establish nasofrontal recess patency should lead to fewer long-term complications.

#### 11:10 Xylitol Reduces Pseudomonas Aeruginosa Sinusitis in the Rabbit Maxillary Sinus Model

Christopher L. Brown, FRACS, Iowa City, IA

Benjamin B. Cable, MD, Honolulu, HI

Egon A. Ozer, BS, Iowa City, IA

Peter J. Taft, BA, Iowa City, IA

Joseph Zabner, MD, Iowa City, IA

Scott M. Graham, MD, Iowa City, IA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the role of xylitol in reducing pseudomonas aeruginosa experimental sinusitis in the rabbit maxillary sinus model.

**OBJECTIVES:** Factors that alter airway surface liquid (ASL) ionic concentrations may influence the course of sinusitis. Xylitol has been shown to effect ASL ionic composition in vitro and to reduce nasal bacterial carriage, otitis media and dental caries, in vivo. We examined the effect of xylitol on experimental sinusitis in the rabbit model. **STUDY DESIGN:** Prospective randomized controlled study of xylitol, saline and pseudomonas aeruginosa administration to the rabbit maxillary sinus. **METHODS:** P. aeruginosa was administered to the sinuses of 31 New Zealand White rabbits. Saline was placed in the left maxillary sinus and xylitol in the right. The rabbits were randomly assigned to one of four groups: One: simultaneous administration of bacteria and solutions with bacterial analysis at twenty minutes: 11 rabbits. Two: pre-administration of solutions one hour prior to bacterial infection with analysis at 20 minutes: 11 rabbits. Three: development of sinusitis: 5 rabbits were kept for 9 days and sacrificed and their sinuses analyzed. 4 received bacteria, one did not. Four: established sinusitis: 4 rabbits had daily injections of solutions for 5 days starting 7 days after P. Aeruginosa administration. **RESULTS:** In Group One 6.96% of injected bacteria were retrieved on the left (saline), while 0.095% were retrieved on the right (xylitol) (p=0.034). Group Two: 5.64% of inoculum was recovered from the left and 2.89% from the right (p=0.188). Groups three and four demonstrated CT, macroscopic and histologic evidence of sinusitis with recovery of non-inoculate bacteria with no difference between right and left. **CONCLUSIONS:** Xylitol reduces experimental sinusitis when administered simultaneously with bacteria. Its effect in established sinusitis is less clear. A role may exist for xylitol in nasal irrigation fluid in human disease.

#### 11:20 The Effects of Immune Complexes in Intracellular Signaling in B-Cells—Down Regulation of the Immune Response

Michelle A. Putnam, MD, Albany, NY

Neil S. Tanna, Albany, NY

James R. Drake, PhD, Albany, NY

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should have better insight into the mechanism by which immune complexes interact with the B-cell receptor and the inhibitory receptor FcγRII to inhibit specific immune responses.

**OBJECTIVES:** The ability of the immune system to respond to its environment is dependent on a delicate balance of activating and inhibitory signals. Recently the roles of cell surface receptors have been studied in attenuating immune response to prevent pathological conditions such as autoimmunity and allergy. We studied the effects of immune complexes and antigen on the intracellular second messengers calcium and hydrogen peroxide on A20μWT cells. **STUDY DESIGN:** Basic science. In-vitro study. **METHODS:** The murine A20μWT B-cell line expressing a transfected, phosphocholine-specific human IgM B-cell receptor were studied by flow cytometry and Western blot analysis. Immune complexes at various concentrations were used to study the signaling process. **RESULTS:** Exact concentrations of immune complexes used to stimulate B-cells lead to increased production of hydrogen peroxide within the cell resulting in cell death. Increasing or decreasing the immune complex concentration lead to decreased levels of intracellular hydrogen peroxide and calcium signaling and decreased levels of cell death. **CONCLUSIONS:** The correct concentration of antigen within a specific antibody environment may be required to produce immune complex formation to co-ligate the B-cell receptor with the inhibitory receptor FcγRII. The precise concentration may result in specific apoptosis of these cells and a diminished immune response. The mechanisms by which immunotherapy inhibits the allergic response may be explained by this process.

#### 11:30 True and False Vocal Cord Amyloidosis

Herbert H. Dedo, MD\*, San Francisco, CA

Krzysztof Izdebski, PhD, San Francisco, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to demonstrate an understanding of true (TVC) and false (FVF) vocal fold (laryngeal) amyloidosis (LA), including clinical symptoms, treatment and results.

**OBJECTIVES:** To review our experience with diagnosis and treatment of LA in nine patients; to present symptoms, diagnosis, and treatment outcomes. **STUDY DESIGN:** Retrospective review of patients referred to our institute for diagnosis of dysphonia who were found to have LA. **METHODS:** Objective analysis of symptoms using acoustics and videostroboscopy including pathologic exam of tissue removed at surgery. **RESULTS:** Bilateral amyloidosis of the TVC(s) were found in two cases while in remaining seven cases amyloids were present uni- or bilaterally in the FVF(s). Voice showed, increased aperiodicity, breathiness, noise, reduced phonatory range, loudness, phonation time and overall voice quality. Videostroboscopy showed restriction-to-absence of mucosal wave on the affected TVC(s) with supraglottic compression during phonation. Glottic airway was narrowed more in TVC(s) than FVF(s) cases, but none required a tracheotomy. In all cases amyloids were resected with a CO2 laser by MDL on one side at the time to prevent anterior commissure scarring and to preserve at least the preoperative voice quality during post-op healing. This required removal of the whole FVF for supraglottic deposits and removal of 2-3mm of mucosa and submucosal deposits when amyloid was present on the undersurface of the TVC(s). The voice improved post-operatively in all patients. At the time of this presentation, the longest follow-up was 15 years and this patient required now a re-excision at the FVF level. **CONCLUSIONS:** The disease is controlled by CO2 laser surgery.

#### 11:40 Pain Reduction by Fibrin Sealant in Adult Tonsillectomy

Michael H. Stevens, MD\*, Salt Lake City, UT

Daniel C. Stevens, BS, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to know that the addition of fibrin sealant to the tonsillar fossae at the com-

pletion of tonsillectomy will reduce pain in adults and allow them to return to work sooner.

**OBJECTIVES:** To help participants to know that the addition of fibrin sealant (Tisseal) at the completion of tonsillectomy will reduce the time patients need to take narcotic analgesics and allow them to return to work sooner. **STUDY DESIGN:** Forty (40) adult patients over the age of 12 were entered into a prospective, randomized study to see if the addition of fibrin sealant (Tisseal) to the tonsillar fossae at the completion of tonsillectomy for recurrent tonsillitis would reduce the time they needed to take narcotic analgesics after surgery. **METHODS:** Fifteen (15) adults had a traditional complete tonsillectomy by means of a needle point bovie and served as a control group. Twenty five (25) had the same procedure with the addition of Tisseal to see how long they required narcotic analgesics postoperatively, and when they were able to resume normal activities. **RESULTS:** The control group took narcotics an average of 10.02 days, whereas the addition of Tisseal reduced the time to 8.16 days (p=0.0058). This significant reduction of time allowed adults to return to work and other activities sooner. **CONCLUSIONS:** Since the time required to return to work is often of paramount interest to patients having surgery, Tisseal should be considered as a safe addition to adult tonsillectomy in patients who are not allergic to bovine products as it will allow an earlier return to normal activities.

**11:50 DISCUSSION**

**12:00 PANEL: ISSUES AND SOLUTIONS FOR COMMON HEAD AND NECK MEDICAL AND SURGICAL CASES**

**MODERATOR: Richard E. Hayden, MD\*, Scottsdale, AZ**

**PANELISTS:** Mark I. Singer, MD\*, San Francisco, CA

Peter J. Martin, MD, San Diego, CA

Stephen W. Bayles, MD, Seattle, WA

**12:45 Remarks by Executive Vice President AAO-HNS, David R. Nielsen, MD**

**1:00 Adjourn**

**6:00 - Cocktail Party - Sonora A**

**8:00 pm**

**SUNDAY, FEBRUARY 1, 2004**

**6:00 - Speaker Ready Room - Sunset Room  
12:00**

**7:00 - Registration - Sonora B/C Lobby  
noon**

**7:00 - Poster Viewing - Salons 1 and 2  
10:45**

**7:00 - Business Meeting (Members Only) - Sonora A  
7:50**

**7:00- Exhibit Hall Open - Salons 1 & 2  
11:00**

**7:00 - Continental Breakfast with Exhibitors - Salons 1 & 2  
7:50**

**8:00 - Scientific Sessions - Sonora B & C  
1:00**

**8:00 Poster Discussion and Awards  
POSTER AWARD - BASIC SCIENCE  
POSTER AWARD - CLINICAL SCIENCE**

**8:10 Introduction of Honored Guest, John A. T. Ross, MD\*, Ketchum, ID  
C. Phillip Daspit, MD\*, Phoenix, AZ**

**MODERATOR: RICK A. FRIEDMAN, MD\*, LOS ANGELES, CA**

**8:15 Clinical Approach to Vertigo in the Elderly  
Chung-Ku Rhee, MD PhD\*, Cheonan, Chungnamdo Korea  
Seung-Houn Woo, MD, Cheonan, Chungnamdo Korea  
Sang-Jun Jeon, MD PhD, Cheonan, Chungnamdo Korea  
Phil-Sang Chung, MD PhD, Cheonan, Chungnamdo Korea**

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand how to approach and treat vertigo or dizziness in elderly.

**OBJECTIVES:** To analyze the clinical characteristics, the findings of audiological and vestibular testings, and treatment outcome of dizziness in elderly patients. **STUDY DESIGN:** Retrospective chart review. **METHODS:** A total of 240 patients with vertigo or dizziness from a tertiary care hospital from January 1999 to January 2003 were studied. Charts were reviewed retrospectively. A thorough neurotologic evaluation was performed in every case to determine the specific cause of dizziness. Electronystagmogram, rotating chair testing, and posturography were performed. Magnetic resonance imaging of brain was performed in selective cases. The intensities of vertigo or dizziness was evaluated by questionnaires before and after the treatment. **RESULTS:** The average age of the patients was 76.5 years. In 153 cases (63%), no specific causes for the vertigo or dizziness were found. General vestibular rehabilitation therapy (VRT) were performed in 103 cases while it was not done on the other 46 cases. All the patients were treated with ginkgo biloba. The VRT group showed significant improvement in vertigo or dizziness compared to the non-VRT group in three weeks. **CONCLUSIONS:** Majority of elderly patients with dizziness did not show any specific causes of dizziness other than old age (presbyastasis). General VRT seems to be effective treatment for this elderly group.

**8:25 Hypoglossal-Facial Nerve Anastomosis: The Effects of Delay, Age and Gender  
Raquel A. Redtfeldt, MD, Nashville, TN  
C. Gary Jackson, MD\*, Nashville, TN**

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the clinical indications for the use of VII-XII anastomosis. They should be able to discuss the functional outcomes commonly seen with VII-XII anastomosis. They should be able to compare the functional outcomes of patients who undergo VII-XII anastomosis within 3 months of paralysis versus those who undergo anastomosis 12 months or more after the onset of paralysis. Lastly, they should be able to compare the functional outcomes of men versus women and young versus old.

**OBJECTIVES:** The purpose of this study is to review 28 years of experience with VII-XII anastomosis with emphasis on the significance of delay, age and gender on functional outcome. **STUDY DESIGN:** Patients who had undergone VII-XII anastomosis were divided into groups based on gender, age and timing of VII-XII anastomosis. Functional outcomes were compared. **METHODS:** Data were obtained through a retrospective chart review of 138 patients who underwent VII-XII anastomosis at a private otology-neurotology practice from 1973-2001. **RESULTS:** Acoustic neuroma removal was the most common cause of facial paralysis. 115 of 138 patients underwent VII-XII anastomosis within 3 months of VII sacrifice at tumor removal. 20 patients whose VII nerve was preserved but whose facial function did not return underwent anastomosis after at least a year observation. 3 patients presented after tumor removal elsewhere and were included in the delayed group. 85 cases were graded by the House-Brackmann Grading System. Of the graded patients, 76.5% had VII-XII anastomosis within 3 months of paralysis; 23.5% were performed 12 months or more after paralysis. Grade was not affected by delay, age or the combination of the two variables. Gender had a statistically significant affect on grade in patients over 60 years old with males faring better than females (p=0.035, chi square=7.808, df=3). **CONCLUSIONS:** This review supports the continued use of VII-XII anastomosis for dynamic facial reanimation in delayed cases and in aged patients. Lastly, it finds that men over 60 obtain better facial function than women of the same age group.

**8:35 Infratemporal Fossa Approach to the Hypoglossal Canal: Practical Landmarks for Elusive Anatomy  
Kevin S. Hadley, MD, Salt Lake City, UT  
Clough Shelton, MD\*, Salt Lake City, UT**

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to safely and reliably find the hypoglossal canal using the infratemporal fossa approach.

**OBJECTIVES:** Very little has been written on the regional anatomy of the hypoglossal canal as seen through a trans-temporal approach. This project attempts to further define

the anatomy of the hypoglossal canal and provide the surgeon with guidelines for reaching it. Our hypothesis is that the hypoglossal canal can be safely and consistently reached via the temporal bone with preservation of hearing and cranial nerves IX-XI. **STUDY DESIGN:** Prospective anatomical study. **METHODS:** The study was performed using cadaver temporal bones. Infratemporal fossa fish type-A dissections were performed. The hypoglossal canal was then completely exposed. The distance from the canal to the jugular bulb, carotid artery, round window, lateral canal, and roots of CN IX-XI were recorded. **RESULTS:** Fifteen temporal bones were dissected and measured. The position of the hypoglossal canal is consistently located anterior, inferior, and medial to the jugular bulb. The distance from mid-canal to the jugular bulb and the roots of CN IX-XI at the posterior fossa dura was 5.25mm  $\pm$ 0.82 and 7.1mm  $\pm$ 2.49, respectively. The distance from the carotid artery where it meets the jugular vein to the mid-canal was 15.3mm  $\pm$  2.09. The distance from the round window to the canal was 28.35mm  $\pm$ 2.68. **CONCLUSIONS:** The hypoglossal canal can be consistently reached using the infratemporal fossa approach. Hearing and CN IX-XI can be preserved. The distance from the jugular bulb and roots of CN IX-XI can be used as guideposts. If a tumor is involving the bulb, then the carotid artery and the round window are the next most reliable indicators of position.

**8:45 Long-Term Results of Intratympanic Steroid Injections for Intractable Meniere's Disease**  
David M. Barrs, MD\*, Scottsdale, AZ

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the history of intratympanic steroid injections (ITS), explain the indications and technique for injections, and compare the two year results of these injections with other treatments for vertigo control in Meniere's disease.

**OBJECTIVES:** Intratympanic steroid injections for intractable Meniere's disease is a relatively new treatment. The goal of this study was to compare the short term results of these injections for vertigo control, reported in a previous study by the same author, to a larger group of patients followed for two years. **STUDY DESIGN:** Patients were entered into the study if they had Meniere's disease, failed a trial of a salt and caffeine restricted diet and a diuretic, and were surgical candidates for vertigo control. **METHODS:** Intratympanic dexamethasone, 10 mg/ml, was injected into the middle ear space, usually through an indwelling PE tube, weekly for 4-6 weeks. Audiograms, symptoms, and further treatment were monitored. All patients continued on their dietary restrictions and the diuretic. **RESULTS:** Of the 34 patients in the study, 11 had satisfactory control of vertigo for two years, although 3 patients required reinjection at one year. Nineteen patients had control for only 3 months or less and required endolymphatic sac or a destructive procedure for vertigo control. The remaining 5 patients had vertigo control for 6 months, with 4 patients responding to repeat injections. **CONCLUSIONS:** The previously reported success rate for ITS of 43% vertigo control at 6 months falls to approximately one-third of patients by 2 years. Many of these patients required reinjection. The clinician should know that while ITS is a relatively noninvasive procedure, long-term vertigo control is low.

**8:55 Stapedectomy Outcomes: Titanium vs. Teflon Wire Prosthesis**  
Becky L. Massey, MD+, Salt Lake City, UT  
Clough Shelton, MD\*, Salt Lake City, UT  
Richard J. Kennedy, MD, Salt Lake City, UT

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to compare prosthesis specific hearing results in patients who had stapes surgery for otosclerosis.

**OBJECTIVES:** To compare the effectiveness of two stapes prostheses in hearing improvement of patients undergoing stapes surgery for otosclerosis. **STUDY DESIGN:** Retrospective chart review. **METHODS:** Titanium and Teflon wire stapes prostheses were compared with regard to effectiveness in closing the air-bone gap. The charts of 461 stapedectomies performed by one surgeon from 1996-2001 were reviewed. Patients who underwent stapedectomy for reasons other than otosclerosis, revision cases and those with inadequate preoperative or postoperative bone conduction threshold data were excluded. Small fenestra technique using either laser or drill was used for all patients. Inclusion criteria were met by 218 patients. Patients were then grouped according to type of prosthesis used and hearing outcomes were compared. Measured outcomes were four frequency air-bone gap closure, pure tone threshold and rate of sensorineural hearing loss. **RESULTS:** The study group was comprised of 35 titanium and 183 Teflon wire prostheses. Closure of the air-bone gap to less than 10 dB was achieved in 86% of the patients with Teflon prostheses compared to 73% of those with titanium prostheses. The groups were equivalent in regard to site of otosclerotic disease as well as technique, laser or drill, used to create the fenestra. Rate of sensorineural hearing loss was low for both groups and not significantly different. **CONCLUSIONS:** Both prostheses provided comparable results although the Teflon wire prosthesis was slightly superior. The smaller numbers in the titanium group may confound these results. The design of the titanium prosthesis provides a crimp that is circumferential around the incus and that prosthesis was selected in cases with a narrow incus. The selection bias may also influence the results seen in this study.

**9:05 A National Study of the Epidemiology of Pediatric Cochlear Implant Patients**  
Ryan E. Stern, MD+, Seattle, WA  
Charlotte W. Lewis, MD MPH, Seattle, WA  
Bevan Yueh, MD MPH, Seattle, WA  
Susan J. Norton, PhD, Seattle, WA  
Kathy C. Y. Sie, MD, Seattle, WA

**EDUCATIONAL OBJECTIVE:** At the end of this presentation, the participants have a basic understanding of the epidemiology of pediatric cochlear implant patients. Participants should also be able to compare the relative rates for children who have are eligible for implants with recent rates of implantation.

**OBJECTIVES:** To determine the demographics of pediatric cochlear implant patients. To assess whether recipients of cochlear implant technology were representative of potential implant candidates, especially with regard to race and socioeconomic status. **STUDY DESIGN:** Cross-sectional analysis was completed on national cohort of patients 0-18 years of age who underwent cochlear implantation in 1997. **METHODS:** This study used data from two distinct sources: the Health Care Utilization Project/Kid Inpatient Database (KID) and a database created using information from the only two companies producing approved implants at that time. Epidemiology of the study population was then compared to national estimates using previous research and national census estimates. **RESULTS:** 124 children were identified using the Kid Inpatient Database and 742 children were identified using the company database. Demographic characteristics of the KID implant were similar to information obtained from the two companies that produced cochlear implants in that year. The majority of implant patients in the KID came from higher socioeconomic status backgrounds, with increased median household incomes and using private insurance as their primary form of payment. Of children in the KID dataset, only 3.4% were African American. **CONCLUSIONS:** This study serves as a good baseline epidemiological survey of the pediatric cochlear implant patient population. Children from lower socioeconomic status and minority backgrounds appear to be implanted less frequently compared to more advantaged children. Additional research is needed to better elucidate the current trends in implantation and possible problems facing adequate implantation rates for all children.

**9:15 Congenital Aural Atresia: A Review of Short and Long-Term Surgical Results**  
G. Paul Digoy, MD+, San Diego, CA  
Roberto A. Cueva, MD, San Diego, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to demonstrate the benefit and risk of undergoing surgery for congenital aural atresia at a tertiary otology center. The participants will demonstrate the surgical outcome associated with the use of an ossicular reconstruction prosthetic device compared to an intact ossicular chain. Furthermore, the participants will discuss technical improvements in the procedure that could reduce the incidence of external auditory canal stenosis.

**OBJECTIVES:** To review the short-term (< 1 year) and long-term (> 1 year) surgical outcomes for congenital aural atresia at a tertiary otology center and to analyze the stability of surgical results overtime. Also, to propose technical improvements in the procedure that may reduce the incidence of canal restenosis. **STUDY DESIGN:** Retrospective review of 50 patients (52 ears) who underwent surgery for congenital aural atresia during a 9 year period. **METHODS:** Preoperative and postoperative speech reception thresholds (SRT) were compared and further analyzed for outcome stability over time. Hearing improvement in individuals requiring a prosthetic reconstruction was compared to patients with an intact ossicular chain. The complication rate was reviewed and contrasted with those reported in similar studies. **RESULTS:** Short-term and long-term outcomes were not significantly different. Approximately 50% of patients achieved an SRT of 30 dB or better. In the early postoperative period, the average improvement in SRT was 22 dB compared to 24 dB in the longer term. The use of a prosthetic ossicular chain reconstruction device did not significantly change the hearing outcome. No major immediate postoperative complications were seen. Long-term complications included lateralization of the tympanic membrane (17%), meatal stenosis (8%), chronic myringitis (11%), extruded prosthesis (3%), and exposed bone (3%). The rate of meatal stenosis is lower than that reported in similar reviews. No cases of significant hearing loss or facial nerve paralysis were seen. Revision surgeries were needed in 31 percent of cases. **CONCLUSIONS:** Surgery for individuals with congenital aural atresia at a tertiary otology center can yield reliable and stable hearing results with a low complication rate.

**9:25 SHIRLEY BARON RESIDENT RESEARCH AWARD**

**The Stiletto Phenomenon: Experimental Evidence for a Stapes Surgery Complication**

Paul E. Krause, MD+, Oakland, CA  
Frederick M. Byl, MD\*, Oakland, CA  
Michael J. Babb, MD, Red Bluff, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the stiletto phenomenon and the forces that can cause post-stapedectomy incus erosion and stapes displacement.

**OBJECTIVES:** To describe an experimental model of incus erosion after stapedectomy. Incus erosion is one of the common reasons for revision stapedectomy. **STUDY DESIGN:** An experimental, non-animal model is presented. A wire-loop prosthesis was hooked around a wax marker (the model "incus") and seated on a spring-loaded platform (the model "oval window"). The pattern of prosthesis displacement and time to incus erosion and prosthesis displacement was recorded. **METHODS:** The effects of prosthesis diameter and wire loop surface area on incus erosion rate were tested. The angle of the wire loop was also varied to predict prosthesis rotation and displacement. Five trial runs were performed for each variable for reproducibility. **RESULTS:** Greater incus contact surface area increased the rate of incus erosion ( $p < 0.01$ ). The piston diameter did not appear to affect the rate of incus erosion ( $p = 0.40$ ). The angle between the wire loop and the prosthesis predicted the direction and degree of prosthesis displacement. **CONCLUSIONS:** Incus erosion in a post-stapedectomy patient can be related to concentrated, unrestricted lateral force from the oval window through the stapes prosthesis to the incus. Erosion rate depends on the pressure from the prosthesis on the incus, but not on the pressure from the oval window on the prosthesis. This mechanism is called the "stiletto phenomenon" because the transmitted pressures are analogous to those in a woman's shoe heel. This experimental model suggests modifications to stapes prosthesis design.

**9:35 DISCUSSION**

**9:45 PANEL: ISSUES AND SOLUTIONS FOR COMMON OTOLOGIC MEDICAL AND SURGICAL PROBLEMS**

**MODERATOR:** Clough Shelton, MD\*, Salt Lake City, UT

**PANELISTS:** John W. House, MD\*, Los Angeles, CA  
Karen Jo Doyle, MD\*, Sacramento, CA  
Mark J. Syms, MD, Phoenix, AZ  
Todd A. Hillman, MD, Salt Lake City, UT

**10:15 Break/Poster Presentations/Visit with Exhibitors - Salons 1 & 2**

**MODERATOR: DAVID W. EISELE, MD\*, SAN FRANCISCO, CA**

**10:45 The Role of the "Generalist" in the Subspecialty Otolaryngology Practice**

Bruce W. Jafek, MD\*, Denver, CO  
Mas Takashima, MD, Denver, CO  
John P. Campana, MD, Denver, CO

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to identify and discuss a professionally satisfying role for a "generalist" practicing in a practice that includes subspecialists in otolaryngology (e.g. neurotology, pediatric otolaryngology).

**OBJECTIVES:** A recent review of jobs posted on the AAO-HNS website shows a number of solicitations for "general otolaryngologists". Academic opportunities existed at the time of this submission at such prestigious institutions as Harvard, Pennsylvania, the Mayo Clinic, and Vanderbilt. A number of private opportunities also existed at a number of sites across the country. The question is, "What does this clinician do and how do they develop a professionally satisfying practice?" The senior author has wrestled with this concept for a number of years, especially in maintaining an academic department and a busy multi-subspecialty practice and suggests a satisfying role for this otolaryngologist. **STUDY DESIGN:** With the approval and support of the departmental chair and clinic director, a presentation was initially made to the departmental clerical and nursing staff. The range of otolaryngology services was presented. The various subspecialty interests of members of the faculty were considered. The training of the "generalist" was presented. The policy was initiated that the generalist would see "any patient requesting an appointment" during a half-day/week clinic. Thus, no patient would experience more than a one-week delay (usually much less) before being seen, satisfying both a patient need for prompt care and a clerical need to provide a timely appointment slot. If the generalist was unable to provide the necessary follow-up services (e.g. acoustic neuroma resection or free flap reconstruction), he ordered the initial testing and arranged the follow-up appointment with the member of the practice best able to provide that service. For example, in the case of a unilateral sensorineural hearing loss, the generalist would obtain and interpret the initial hearing loss. If a major discrimination score loss were encountered, possibly with a loss of acoustic reflex as well, the imaging studies are ordered and the follow-up made with the neurotologist, with a presumptive diagnosis of an acoustic neuroma. If a TM perforation were diagnosed, the generalist would work it up and do the tympanoplasty +/- an ossiculoplasty if he is competent or make a similar referral. If the patient were referred in with a diagnosis of Meniere's disease, to the sub-specialist directly, the generalist would not see him at all, or, if he has an opening, he might complete the initial evaluation and arrange the follow-up. A patient presenting with recurrent tonsillitis is scheduled for tonsillectomy. **METHODS:** The diagnoses and dispositions of the first 200+ patients seen with these guidelines were analyzed for patient, clerical, and provider ("generalist" and subspecialist) satisfaction and outcome when these guidelines were initiated. **RESULTS:** The practice was found to run much more efficiently and patients, clerical and nursing staff, and provider satisfaction increased. **CONCLUSIONS:** A professionally satisfying role for "the generalist" in a subspecialty otolaryngology practice can be identified with the cooperation of all involved. He/she can contribute to the general success and productivity of the group, while maintaining their own cadre of patients. The clerical staff is no longer forced to make a diagnosis on the phone and patients appreciate the immediate service.

### 10:55 Anatomic Approach to Identifying the Recurrent Laryngeal Nerve During Thyroid Surgery

Amol M. Bhatki, MD+, San Francisco, CA  
Michael C. Scheuller, MD, San Francisco, CA  
Mark I. Singer, MD\*, San Francisco, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the conventional and variant anatomy and embryology of the thyroid and parathyroid glands and the recurrent laryngeal nerve. Using this as background, the participants should be able to describe the current methods for identifying the recurrent laryngeal nerve as well as discuss, in detail, our technique.

**OBJECTIVES:** To provide a novel, accurate, and safe method of identifying and preserving the recurrent laryngeal nerve during thyroid surgery. **STUDY DESIGN:** Prospective study. **METHODS:** Fifteen patients underwent thyroidectomy using our technique of primarily identifying the recurrent laryngeal nerve (RLN) at the cricotracheal junction. The nerve is in a consistent and reliable anatomic location at this position where it is tortuous before traveling deep to the inferior pharyngeal constrictor. After identification, a plane is developed medial to the RLN which prevents trauma to the nerve and preserves the vascular supply to the parathyroid glands. **RESULTS:** All 15 patients were followed to at least 3 years after the procedure. All patients did well postoperatively with no complications of transient or permanent RLN injury or hypoparathyroidism. **CONCLUSIONS:** We present this novel technique of reliably identifying the RLN using consistent anatomical landmarks while performing thyroid surgery. This method could reduce the incidence of RLN injury especially in the setting of previous neck surgery, thyroid carcinoma, or in a residency training program, without the need for additional equipment.

### 11:05 Does Perineural Invasion of the Margin of a Resected Facial Nerve Affect Functional Outcome After Facial Nerve Grafting?

Rajendra D. Bhayani, MD, Portland, OR  
Satya D. Shreenivas, BA, Portland, OR  
David R. Kylie, MD, Portland, OR  
Mark D. Wax, MD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the outcome of facial nerve function in patients who had facial nerve graft in the presence of positive margins for the perineural spread of cancer of the facial nerve or one of its branches.

**OBJECTIVES:** Patients with parotid cancer may have perineural invasion. When this perineural spread involves the margin of the nerve the benefit of nerve grafting is unclear. We wished to analyze the effect of positive nerve margins with perineural spread on facial nerve function following facial nerve grafting. **STUDY DESIGN:** Retrospective chart review at tertiary medical center from 1997-2002. **METHODS:** 30 patients had sacrifice of the facial nerve and underwent facial nerve grafting, 19 were available for follow-up. The proximal facial nerve and its major peripheral branches were evaluated. Eight patients had positive margins, eleven patients had negative margins. Facial nerve function was analyzed using House-Brackman (HB) scale. **RESULTS:** 8 patients (6 male, 2 female, mean age 63.5 years) had positive margins, 5 proximal, 3 distal. Nerve grafts used were sural (7) and antebachial (1). The final HB scale was III-2, IV-3, V-1, VI-2. 7 patients had postoperative radiation therapy, 1 had preoperative radiation therapy. 11 patients with negative margins (9 male, 2 female, mean age 68 years) were also grafted: sural (6), antebachial (3) and greater auricular (2). Final HB scale was III-3, IV-2, V-2, VI-4 patients. 8 patients had postoperative therapy, 2 patients had preoperative therapy. **CONCLUSIONS:** We demonstrate that the presence of perineural cancer invasion at the margins of the proximal or distal branches of facial nerve does not affect functional outcome after facial nerve grafting.

### 11:15 Fasciocutaneous Free Flap "Patch" Reconstruction Following Total Laryngectomy

Christopher A. Hargunani, MD, Portland, OR  
Judith M. Skoner, MD, Portland, OR  
Mark K. Wax, MD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to: recognize the potential complications associated with total laryngectomy, especially in the setting of previous treatment to the head and neck, extensive tumor spread and recurrent disease; appreciate a novel technique utilizing a vascularized free flap "patch" reconstruction of the hypopharynx as a potential means to decrease complications in the high-risk patient.

**OBJECTIVES:** Complications following total laryngectomy (TL) include immediate (infection, fistula) and long-term (speech/swallowing dysfunction). Reconstruction may be primary or involve free tissue transfer. This study describes our experience using microvascular free flap "patch" reconstruction after TL to potentially decrease complications in high-risk patients. **STUDY DESIGN:** Retrospective study at a tertiary academic medical center. **METHODS:** Patient medical records were reviewed 1999-2003. All patients who underwent TL with fasciocutaneous free flap "patch" reconstruction were included and chart data recorded. **RESULTS:** Twelve patients underwent TL with radial (11) or ulnar (1) forearm free flap "patch" reconstruction. Indications included: 1 nonfunctional larynx following "organ sparing" treatment; 5 recurrent and 6 newly diagnosed SCCa of the larynx (1), supraglottis (3) or hypopharynx (7). Prior treatments in patients with recurrence included surgery (2), chemotherapy (2) and/or XRT (4). Of those newly diagnosed, 5 were Stage IV and 1 Stage III disease. Postoperatively, median inpatient stay was 7.5 days (5-28 range). Follow-up ranged from 1-49 months. Wound complications included: 1 free flap failure requiring staged secondary reconstruction; 3 pharyngocutaneous fistulas that resolved with conservative management; 1 neck hematoma evacuated without further consequence; 1 forearm donor site cellulitis resolved with oral antibiotics. All 12 patients underwent primary TEP; nine demonstrated effective postoperative speech. Nine patients tolerated an oral diet, 2 required supplemental enteral feeds, and 1 remained gastrostomy tube dependent. **CONCLUSIONS:** Fasciocutaneous free flap "patch" reconstruction of the hypopharynx following total laryngectomy offers reasonable postoperative speech and swallow function. It may be useful in carefully selected patients at risk for postoperative wound complications.

### 11:25 Comparison of Quality of Life Following Two Different Methods of Pharyngeal Reconstruction

Sunil P. Verma, BA, Los Angeles, CA  
Alexander Markarian, MD, Los Angeles, CA  
Uttam K. Sinha, MD\*, Los Angeles, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the importance of quality of life in patients with pharyngeal reconstruction and compare outcomes using AlloDerm reinforced with SCM and cervical soft tissue versus a microvascular free flap.

**OBJECTIVES:** To compare functional outcome and quality of life following reconstruction of pharyngeal defects by two different techniques. **STUDY DESIGN:** Retrospective chart review at an academic tertiary care medical center and patient self-assessment using the University of Washington Quality of Life questionnaire. **METHODS:** Fifty consecutive patients who underwent pharyngeal reconstruction following cancer ablative surgery were identified. University of Washington Quality of Life (UW-QOL) questionnaire packets with a validated quality-of-life instrument were mailed to each patient. Thirty patients voluntarily responded to the survey. Out of these thirty patients, nineteen had pharyngeal defects that were reconstructed using human acellular dermal matrix (AlloDerm) and sternocleidomastoid muscle flaps. The remaining eleven patients underwent reconstruction of pharyngeal defects using microvascular free flaps. **RESULTS:** Patients with AlloDerm reconstruction had significantly better ( $P < 0.05$ ) quality of life scores on the swallowing and speech domains than those patients in which closure was performed with a free flap. Comparisons of the eight other domains on the UW-QOL questionnaire did not display a statistical difference in outcomes between the two groups. **CONCLUSIONS:** Better quality of life scores in the swallowing and speech domains suggest that pharyngeal reconstruction using AlloDerm reinforced with SCM muscle provide a viable alternative to the use of microvascular free flaps.

**11:35 Recurrent Respiratory Papillomatosis and the Socio-Emotional Effects of Dysphonia: A Comparison of Juvenile and Adult Onset**

Nadia Huancahuari, BA MA, Boston, MA  
Stanley M Shapshay, MD\*, Boston, MA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to 1) appreciate the impact of recurrent respiratory papillomatosis (RRP)-induced dysphonia on a patient's daily interactions; 2) understand that juvenile onset-RRP (JO-RRP) patients, despite their prolonged disease state, are not better adapted than adult onset-RRP (AO-RRP) patients to deal with the socio-emotional effects of RRP-induced dysphonia; and 3) recognize that the care of RRP patients should include support services which extend beyond surgical interventions.

**OBJECTIVES:** Dysphonia, namely hoarseness and/or voice loss, can have a profound impact on the daily lives of RRP patients. Since RRP is still a poorly understood disease, previous studies have focused on researching its etiology, epidemiology, transmission and treatment. However, literature that explores the effects of chronic dysphonia due to RRP is scarce. The intent of our study is to identify the socio-emotional effects of living with RRP-induced dysphonia and test the hypothesis that JO-RRP patients are better adapted to live with dysphonia than AO-RRP patients. **STUDY DESIGN:** Postal questionnaire and retrospective study of patient medical records at a tertiary care institution. **METHODS:** Twenty-three patients with the diagnosis of RRP answered postal questionnaires regarding the effects of RRP-induced dysphonia on their daily interactions. **RESULTS:** Our findings reveal that RRP patients endure significant psychological side-effects as a consequence of living with RRP-induced dysphonia. JO-RRP patients are not better adapted to live with dysphonia than AO-RRP patients. In fact, 83% of JO-RRP patients as compared to 65% of AO-RRP patients have experienced either melancholy or have been diagnosed with clinical depression due to RRP. **CONCLUSIONS:** We conclude that therapy for RRP patients should extend far past their surgical interventions and must include support services necessary to cope with the far-reaching socio-emotional effects of this disease.

**11:45 A New and Alternative Method for Supra Alar Crease Reconstruction**

Timothy R. Miller, MD+, Salt Lake City, UT  
Steven R. Mobley, MD, Salt Lake City, UT

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to compare and contrast alternative techniques for supra-alar crease reconstruction. The presentation will provide clear photo-documentation of a new surgical technique and clinical results.

**OBJECTIVES:** Reconstruction of the supra-alar crease is a frequent challenge to surgeons performing reconstructive nasal surgery. Current techniques involve local or composite flap reconstruction, which frequently results in blunting or disruption of the supra alar crease. We have had initial good results with the creation of linear open wound defects in the supra-alar crease that are allowed to heal by secondary intention including a purposeful stair-step skin layer closure technique that results in a natural convexity to the crease. **STUDY DESIGN:** Retrospective chart review and clinical follow-up. **METHODS:** Patients presenting with local flap repair of alar defects with resulting blunting or ablation of the natural supra-alar crease were included in the study. The stair-step technique involves the creation of superior and inferior based flaps and the removal of underlying subcutaneous fat and scar. The skin is then sutured in a stair-step fashion, sewing the epidermis of the superior skin flap to the subdermal tissues of the inferior skin flap. The exposed subdermal tissues undergo secondary intention wound healing with the formation of new skin. If scarcity of skin does not permit a stair-step closure, the crease is allowed to heal by secondary intention. **RESULTS:** Five patients were included. Three patients had stair-step closures, while two patients had their supra-alar crease created by targeted secondary intention wound healing. The new technique proved to be effective in establishing a natural appearing supra-alar crease. There were no complications, infections or alar rim retractions. **CONCLUSIONS:** The stair-step skin layer closure technique with targeted secondary intention wound healing has proven effective in creating a natural appearing supra-alar crease.

**11:55 An Approach Towards Reconstructing Congenital Nasal Dermoids**

Albert H. Park, MD, Salt Lake City, UT  
Ryan Gilbert, Salt Lake City, UT

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to appreciate the reconstructive challenges following nasal dermoid removal and learn about a novel technique for repair.

**OBJECTIVES:** To demonstrate a new approach to reconstruct congenital nasal dermoid defects. **STUDY DESIGN:** Retrospective. **METHODS:** All patient information, pre- and post-operative photos and operative technique will be reviewed. **RESULTS:** Four patients with an age range from 8 months to seven years underwent an external septorhinoplasty and subfrontal craniotomy to remove a nasal dermoid. All lesions extended into the anterior cranial fossa. Excision of the tumors resulted in a partial excision of the nasal bone and soft tissue defect between the upper lateral cartilage and bone. All patients underwent reconstruction utilizing an auricular cartilage graft and split frontal bone graft. Postoperative results indicated excellent closure of the bony defect and good soft tissue support. **CONCLUSIONS:** A split frontal bone and auricular cartilage graft can provide a useful technique to address nasal bony defects and soft tissue loss following pediatric nasal dermoid removal.

**12:05 Head and Neck Manifestations of Disseminated Coccidioidomycosis: Case Reports and Literature Review**

Michelle G. Arnold, MD, San Diego, CA  
John C. Arnold, MD, San Diego, CA  
David C. Bloom, MD, San Diego, CA  
Douglas F. Brewster, MD, San Diego, CA  
Jon K. Thiringer, DO, San Diego, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the head and neck manifestations of coccidioidomycosis and demonstrate familiarity with treatment guidelines.

**OBJECTIVES:** Coccidioidomycosis is a fungal disease endemic to semiarid regions in the southwestern United States, northern Mexico and parts of Central and South America. Although primarily a pulmonary disease, approximately 0.5-1.0% of infected individuals develop disseminated disease, affecting skin, subcutaneous tissue, bone, joints, and meninges. Virtually all cases of disseminated disease will involve skin, with a strong predilection for tissues of the central face. The morphology of the skin lesions is highly variable, and other symptoms of the disease, such as fever and cough, are often subtle, making the diagnosis difficult. The number of patients with coccidioidomycosis has been rapidly and steadily increasing in many endemic areas over the past 15 years. **STUDY DESIGN:** We report three patients with disseminated coccidioidomycosis who presented with head and neck manifestations. In addition, current literature, diagnostic tools, and treatment guidelines will be reviewed. **METHODS:** Case presentation only. **RESULTS:** Case presentation only. **CONCLUSIONS:** Otolaryngologists are increasingly being called upon to diagnose and manage the head and neck manifestations of this disease which warrants a familiarity with the various presentations of coccidioidomycosis.

**12:15 Chondrocyte Viability Following Laser-Mediated Cartilage Reshaping in an In Vivo Rabbit Model**

Amir M. Karamzadeh, MD+, Irvine, CA  
John C. Chang, MD, Irvine, CA  
Brian J. F. Wong, MD PhD, Irvine, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the basic background of laser-mediated cartilage reshaping and

the findings concluded from this in vivo study.

**OBJECTIVES:** This study was conducted to evaluate the near term viability of chondrocytes following laser-mediated cartilage reshaping in an in vivo rabbit model. **STUDY DESIGN:** Laboratory live animal investigation. **METHODS:** Four New Zealand White rabbits underwent submucous resection of the cartilaginous septum. The harvested specimens were stripped of perichondrium and secured to a circular reshaping jig and irradiated using a servocontrolled device with an Nd:YAG laser (l=1.32 mm, 6W, irradiation time 10 sec) to create a shape change. The reshaped specimens were then autologously replanted into interscapular subcutaneous pocket. Animals were euthanized after 12-14 months. One animal died of an unrelated cause prior to completion of the study. The septal cartilage specimens were removed and evaluated using photography, flow cytometry and histology. **RESULTS:** Gross examination of the cartilage specimens showed alteration in the physical integrity with varying degrees of tissue resorption. The nonirradiated control specimens demonstrated significantly increased stiffness. There was limited preservation of shape in all samples. Histologically, there was marked depletion of the extracellular matrix and an overall reduction in tissue mass in laser irradiated tissues. However, flow cytometry data identified populations of viable chondrocytes in laser irradiated specimens that were identical to those observed in controls. **CONCLUSIONS:** The findings of this in vivo pilot study have defined important issues that need to be considered in future in vivo studies. The laser exposure time used in this study likely resulted in significant tissue injury which resulted in matrix depletion and loss of tissue mass. Currently, basic studies to determine optimal dosimetry are underway. The implantation of the curved (laser reshaped) cartilage into a flat subcutaneous pocket (interscapular) results in the generation of forces that counter any shape change. This is further exacerbated by the lack of perichondrium or a highly vascularized tissue bed which alters specimen flexibility even in controls. In future work, the reshaped specimen will be implanted in a geometrically favorable location, such as within a vascularized sub-perichondrial pocket of the pinna where the forces favor retention of shape.

**12:25 Microvascular Free Tissue Transfer for Head and Neck Reconstruction in Jehovah's Witness Patients**

Judith M. Skoner, MD, Philadelphia, PA  
Frank M. Warren, MD, Portland, OR  
Mark K. Wax, MD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to appreciate the ethical and clinical issues associated with major head and neck surgery in Jehovah's Witness patients, identify acceptable alternatives to blood products, and recognize that despite challenges, microvascular reconstruction of the head and neck is a feasible endeavor.

**OBJECTIVES:** Jehovah's Witnesses (JW) have deep religious convictions disallowing blood transfusion. Major surgery in these patients is problematic. This study describes our experience with microvascular reconstruction of complex head and neck defects in Jehovah's Witness patients. **STUDY DESIGN:** Retrospective case series. **METHODS:** A retrospective review was conducted at a tertiary academic medical center from 1997-2002. All JW patients undergoing head and neck free flap reconstruction were included. **RESULTS:** Three JW patients underwent 4 free flap reconstructions. Two were immediate reconstructions: one forearm osteocutaneous free flap after total maxillectomy, and one forearm fasciocutaneous flap after hemiglossectomy. One reconstruction was staged, a forearm fasciocutaneous flap for a total nasal defect. One case was a planned secondary reconstruction: a forearm osteocutaneous flap performed months after primary reconstruction for further refinement of the nasal defect. Erythropoietin and iron supplements were administered perioperatively in 2 cases; selective external carotid embolization was performed preoperatively in 1 case. Hematocrit levels were 36.5-46.4% preoperatively, and 30.1-40.7% postoperatively. Average postoperative decrease in hematocrit was 6.05% (5.7-6.4%). No transfusions/blood products were administered. There were no complications. Length of hospital stay ranged from 3-7 days postoperatively. **CONCLUSIONS:** We describe four cases of microvascular reconstruction of complex head and neck defects in Jehovah's Witness patients. This study represents the largest series of such cases reported and further supports the feasibility of head and neck free flap reconstruction in these challenging patients.

**12:35 DISCUSSION**

**12:45 Introduction of Vice President-Elect, Ernest A. Weymuller, Jr., MD\*, Seattle, WA**

C. Phillip Daspit, MD\*, Phoenix, AZ

**12:50 Closing Remarks**

**1:00 Adjourn**

## POSTERS

### 1. Breast Carcinoma Metastatic to the Sphenoid Sinus

Rami K. Batniji, MD, Albany, NY  
Ravinder Dahiya, MD, Toronto, ON Canada  
Allison D. Lupinetti, MD, Albany, NY  
Steven M. Parnes, MD\*, Albany, NY

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the presentation, evaluation, and treatment of breast carcinoma metastatic to the sphenoid sinus.

**OBJECTIVES:** To report a case of metastatic breast carcinoma presenting as a sphenoid mass. **STUDY DESIGN:** Case report and literature review. **METHODS:** The study comprises a case report of a 45 year old female with a medical history significant for breast carcinoma status post-excision and radiation therapy approximately 10 years ago who presented with a 2 month history of progressive headache. The patient denied facial pain/pressure, nasal congestion, rhinorrhea, and fevers. On physical examination, the patient was neurologically intact; anterior rhinoscopy and nasal endoscopy were unremarkable. Computed tomography of the brain and sinuses showed opacification of the right sphenoid sinus. Magnetic resonance imaging of the brain and sinuses confirmed the presence of an invasive mass within the sphenoid sinus with surrounding bony erosion. **RESULTS:** The patient was taken to the operating room for endoscopic right sphenoid sinusotomy. Intraoperative findings included a polypoid mass within the sphenoid sinus; biopsy of the sphenoid mass demonstrated moderately differentiated adenocarcinoma. Further immunohistochemistry testing of the specimen was positive for both estrogen and progesterone receptors, thus confirming the mass to be consistent with breast carcinoma metastatic to the sphenoid sinus. Subsequently, the patient received chemotherapy. **CONCLUSIONS:** Breast carcinoma metastatic to the sphenoid sinus is uncommon. The diagnosis relies upon high clinical suspicion, appropriate imaging studies, and endoscopic biopsy of the mass for histopathology and immunohistochemistry testing.

### 2. Chronic Lymphocytic Leukemia Presenting as Vocal Cord Paralysis

Jason A. Biller, MD, San Francisco, CA  
Annemieke van Zante, PhD, MS, San Francisco, CA  
Brian Schindler, MD, San Francisco, CA  
Jacob Johnson, MD, San Francisco, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss chronic lymphocytic leukemia and its manifestations in the head and neck.

**OBJECTIVES:** The diagnosis of chronic lymphocytic leukemia (CLL) is rarely made by the otolaryngologist. To our knowledge, we report the first case in the English language literature of a woman who had vocal cord paralysis as the presenting symptom of CLL. **STUDY DESIGN:** Case report. A 76 year old female presented with a one week history of sore throat, dysphagia, cough and hoarse voice. The fiberoptic exam showed erythema and edema of the left supraglottis and reduced mobility of the left vocal cord. A presumptive diagnosis of supraglottitis was made. Despite resolution of the supraglottitis with intravenous antibiotics, she had persistent vocal cord paralysis and an increasing white blood cell count with lymphocytosis on differential. **METHODS:** Imaging identified abnormal soft tissue involving the left aryepiglottic fold with mass effect on the left vocal cord. Biopsy revealed an atypical, monoclonal lymphocytic infiltrate. She had multiple lymph nodes in the abdomen and pelvis but was without splenomegaly, anemia or thrombocytopenia. The diagnosis of stage I CLL was established. **RESULTS:** The patient has received two courses of chlorambucil. Her hoarseness, cough and dysphagia have noticeably improved and her white blood cell count has normalized. Fiberoptic examination confirms that her left vocal cord is no longer paretic, but has not yet regained normal mobility. **CONCLUSIONS:** A systematic approach in evaluating the patient's vocal cord paralysis and the inconsistency of an increasing white blood cell count despite clinical improvement lead to the unusual diagnosis of CLL. Although extraordinarily uncommon, hematologic abnormalities can present as a vocal cord paralysis.

### 3. Coccidioidomycosis Causing Massive Cervical Lymphadenopathy

Jason A. Biller, MD, San Francisco, CA  
Michael C. Scheuller, MD, San Francisco, CA  
David W. Eisele, MD\*, San Francisco, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the diagnosis and management of coccidioidomycosis of the head and neck.

**OBJECTIVES:** Head and neck involvement by disseminated coccidioidomycosis is rare. We will discuss its clinical presentation, diagnosis, and management. **STUDY DESIGN:** We report a case of a 24 year old woman with disseminated coccidioidomycosis resistant to multiple antifungal medications. Despite treatment at an outside facility for four months, she remained febrile with evidence of persistent systemic disease. In addition, she had progressively enlarging bilateral submandibular nodes and an unhealed, draining supraclavicular wound from a prior surgical biopsy site. **METHODS:** In order to decrease fungal load while avoiding draining surgical wounds, her massive submandibular nodes were needle aspirated. **RESULTS:** Large quantities of straw colored fluid that grew coccidioides immitis were obtained from the necrotic lymph nodes. Her worsening systemic infection was addressed by modifying her antifungal therapy. Over the following two weeks, she began to defervesce, had a downward trend in her white blood cell count, and clinically improved. She had an incremental decrease of fluid reaccumulation in her lymph nodes that were re-aspirated prior to hospital discharge. Subsequently, she has absence of systemic disease with resolution of her submandibular lymphadenopathy. **CONCLUSIONS:** Needle aspiration is an effective adjunct to systemic antifungal therapy for necrotic cervical lymph nodes due to coccidioidomycosis.

### 4. Solitary Fibrous Tumor of the Retropharynx Causing Sleep Apnea

Ivan H. El-Sayed, MD, San Francisco, CA  
David W. Eisele, MD\*, San Francisco, CA  
Gioia Iezza, MD, San Francisco, CA  
Tony Yang, MD, San Francisco, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the diagnosis and management of solitary fibrous tumors.

**OBJECTIVES:** Solitary fibrous tumors (SFTs), also known as fibrous mesothelioma or submesothelial fibroma, are rare benign spindle cell neoplasms usually located in mesothelial-lined surfaces of the pleura and peritoneum. SFTs are not believed to be of mesothelial origin and have been described in several extrapleural sites. The most common head and neck reported are the oral cavity (30 cases), sinonasal tract (22 cases), and orbit (18 cases). Only three previous cases have been reported in the parapharyngeal space. **STUDY DESIGN:** Descriptive study. **METHODS:** Literature review and case report of a 62 year old male with a 1.5 year history of nasal congestion, snore, dysphagia and a large retropharyngeal mass. Photo-documentation of the intraoperative findings, imaging, and pathology illustrate the diagnostic considerations. **RESULTS:** Preoperative sleep study revealed a respiratory disturbance index of 75. Imaging demonstrated a 7cm x 4cm heterogenous, circumscribed mass in the retropharynx. The mass was removed transorally and postoperative sleep monitoring demonstrated no further obstructive respiratory events. Histopathology revealed a CD 34 positive spindle cell neoplasm consistent with a SFT. **CONCLUSIONS:** SFTs are rare lesions of the head and neck that generally cause symptoms by mass effect. This is the first reported case of a retropharyngeal SFT causing documented sleep apnea. SFTs are histologically similar to hemangiopericytomas. SFTs are usually benign, but have a malignant potential in

up to 10% of extrapleural cases.

#### 5. **Mucoepidermoid Carcinoma of the Lacrimal Sac**

John P. Gavin, MD, Albany, NY  
Steven M. Parnes, MD\*, Albany, NY

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe the presentation, evaluation, and management of patients with lacrimal sac malignancies.

**OBJECTIVES:** To describe the symptomatology, workup, and treatment of malignancies of the lacrimal sac and to review the various epithelial malignancies that occur in the lacrimal sac. **STUDY DESIGN:** Report of a case and review of the literature. **METHODS:** A 47 year old male was referred to ophthalmology for left-sided epiphora of three year's duration. Physical exam revealed a subtle fullness at the left medial canthus. Computed tomography (CT) revealed a mass at the left medial canthus. The patient underwent a dacryocystorhinostomy and biopsy and histologic evaluation showed a transitional papilloma. The epiphora initially resolved but recurred within three months. A repeat CT was obtained showing a 1.6 by 1.8 cm mass at the left medial canthus with associated bony erosion. **RESULTS:** After an otolaryngology consult was obtained, the patient underwent a left orbital exploration and excision of the mass by the ophthalmology service and a medial maxillectomy by otolaryngology. Final pathology showed intermediate grade mucoepidermoid carcinoma and radiation therapy was recommended. The patient is currently six months out from completion of his radiation therapy without evidence of recurrence. **CONCLUSIONS:** Malignancies of the lacrimal sac are rare. However, as definitive treatment typically requires maxillectomy, the otolaryngologist needs to be familiar with these lesions and the appropriate management. With less advanced lesions orbital exenteration may be avoided. Advanced lesions require more aggressive treatment, including orbital exenteration, maxillectomy, and radiation.

#### 6. **Challenges in Fibula Microvascular Free Flap Harvest**

Jason H. Kim, MD, Los Angeles, CA  
Sunil P. Verma, BA, Los Angeles, CA  
Uttam K. Sinha, MD\*, Los Angeles, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to identify difficulties encountered in harvesting fibula free flaps.

**OBJECTIVES:** To discuss the possible difficulties encountered during the harvesting of fibula free flaps. **STUDY DESIGN:** Retrospective chart analysis in an academic tertiary medical center. **METHODS:** Three patients underwent harvesting of fibular free flaps for reconstruction of oromandibular defects following cancer ablative surgery. All patients had magnetic resonance angiograms (MRA) of both lower extremities preoperatively. **RESULTS:** One patient had Engelmann disease with fibrous dysplasia of the mandible and deformity of the long bones. Intraoperatively, a marked distortion of the fibula with juxtaposition to the tibia was noted. Although this patient had preoperative radiographic studies of the lower extremities in addition to an MRA, the vascular anatomy in relation to the bony abnormality could not be assessed. This bony irregularity made it extremely difficult to isolate the peroneal vascular pedicle. The second patient had an absence of fasciocutaneous perforators. In this patient, only the osseous portion of the flap was harvested. The soft tissue defect of the head and neck area was reconstructed with a soft tissue flap. In the third patient, marked narrowing was identified in the common trunk of the posterior tibial and peroneal arteries. The pre-operative MRA did not demonstrate this anatomical variant. The flap was abandoned to prevent ischemic episodes of the lower extremity, and an iliac crest free flap was harvested. **CONCLUSIONS:** Familiarity with bony, soft tissue and vascular anatomical variants of the lower extremity is of utmost importance during harvesting fibular free flap. The surgeon should be prepared to harvest flaps from alternative sites when indicated.

#### 7. **Desmoplastic Neurotropic Melanoma Invading Bilateral Inferior Alveolar Nerves**

Doris Lin, MD, San Francisco, CA  
Mohammed Kashani-Sabet, MD, San Francisco, CA  
Mark I. Singer, MD\*, San Francisco, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe the presentation, incidence, treatment and outcome of desmoplastic neurotropic melanoma involving the head and neck region, with special emphasis on this case report involving invasion of the inferior alveolar nerve.

**OBJECTIVES:** To report a case of desmoplastic neurotropic melanoma (DNM) invading bilateral inferior alveolar nerves. We discuss the treatment and outcome of DNM of the head and neck. **STUDY DESIGN:** This is a report of a single case of a DNM invading bilateral inferior alveolar nerves in addition to a review of the literature. **METHODS:** Case report with twelve month follow-up and literature review. **RESULTS:** The patient is a 60 year old man with a history of excision of melanoma of his lower lip who presented 18 years later with bilateral severe atrophy of his muscles of mastication. Magnetic resonance imaging revealed enhancement along both mental nerves back to the skull base. A biopsy of his inferior alveolar nerve was positive for DNM. He subsequently underwent both intensity modulated radiation therapy and gamma knife therapy. The patient continues to have poor oral intake and progression of symptoms several months later. **CONCLUSIONS:** Locoregional recurrences from DNM are more common than distant metastasis warranting vigilant surveillance following resection of the initial lesion. Radiation and gamma knife therapy may be used for cases of unresectable recurrences.

#### 8. **Asymptomatic Near-Total Airway Obstruction by a Cylindrical Tracheal Foreign Body**

Ronald A. Mathiasen, MD, Oakland, CA  
Raul M. Cruz, MD, Oakland, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to identify the clinical features of an asymptomatic tracheal foreign body with special reference to diagnostic and therapeutic features.

**OBJECTIVES:** To report a case of a near-total airway obstruction with a cylindrical tracheal foreign body in an asymptomatic 3 1/2 year-old child and to systematically review the pertinent literature. **STUDY DESIGN:** Case report and literature review. **METHODS:** Retrospective chart review and Medline literature review. **RESULTS:** A case is presented of an asymptomatic 3 1/2 year-old child with a cylindrical tracheal foreign body causing a near-total airway obstruction. The foreign body was discovered incidentally on screening roentgenogram. It was removed endoscopically the next day when specialized staff was available. It measured 9 mm x 6 mm and had a smallest internal diameter of 2 mm. The patient was kept intubated for 48 hours and extubated in the operating room. Mitomycin C was applied to the resultant circumferential tracheal abrasion. The patient developed a right lower lobe pneumonia and was discharged home after 7 days. **CONCLUSIONS:** An interesting and unusual case of a near-total obstructing cylindrical tracheal foreign body in an asymptomatic child is presented. Timely diagnosis and management of these risky situations is paramount to a good outcome, but sufficient preparation should not be sacrificed in the name of timeliness.

#### 9. **The Transoral Approach to the Benign Accessory Parotid Gland Tumor**

Ryan F. Osborne, MD, Los Angeles, CA  
Manish R. Purohit, MD, Los Angeles, CA (Presenter)

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to identify the appropriate patient suitable for the utilization of a transoral approach to the accessory parotid gland tumor and discuss the advantages over an external approach. Participants should also feel comfortable managing the potential com-

plications of this approach.

**OBJECTIVES:** To describe the anatomy and surgical technique of a transoral approach to the benign accessory parotid gland tumor. To compare this approach to the accepted external approach and discuss the potential complications and their management. **STUDY DESIGN:** Case report with review of the literature and relevant anatomy. **METHODS:** Review of pertinent medical records with analysis of current pertinent literature, and patient outcomes. **RESULTS:** The accessory parotid gland tumor was successfully removed without capsule violation or facial nerve injury. Complications did include hematoma and seroma formation which were managed without compromise to long-term outcomes. **CONCLUSIONS:** The transoral approach is a viable technique for the management of benign accessory parotid gland tumors in a patient with an acceptable risk vs benefit profile. The cosmetic result is superior and the surgical time substantially reduced.

#### 10. The Management of Superior Canal Dehiscence Syndrome with Extensive Skull Base Dehiscence

Steven D. Pletcher, MD, San Francisco, CA  
John S. Oghalai, MD, Houston, TX  
Jay B. Reeck, MD, Medford, OR  
Steven W. Cheung, MD, San Francisco, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the clinical and radiographic findings associated with superior canal dehiscence syndrome and the surgical management.

**OBJECTIVES:** To describe a case of semicircular canal dehiscence syndrome associated with extensive skull base dehiscence and discuss the surgical management. **STUDY DESIGN:** Case presentation and review of the literature. **METHODS:** We review the case of a 50 year old woman who presented with debilitating aural pressure, noise-induced vertigo, and low-frequency conductive hearing loss. Imaging was consistent with superior semicircular canal dehiscence syndrome. **RESULTS:** An extradural middle fossa approach was used to access the dehiscence superior canal. Intraoperatively, our patient was found to have extensive idiopathic skull base dehiscence of the temporal floor. Middle ear and mastoid mucosa were exposed with focal areas of dura prolapsed into the mastoid cavity. Temporalis fascia and bone pate were used to resurface the dehiscence canal as well as a large area of the temporal floor. Additionally, a temporalis muscle flap was rotated between the dura and the dehiscence temporal floor to reconstruct the middle fossa skull base and prevent encephalocele. Postoperatively, the patient experienced resolution of her vertigo. We present intraoperative photographs as well as pre- and post-operative CT scans and audiograms. **CONCLUSIONS:** Superior canal dehiscence syndrome may be associated with extensive skull base dehiscence. Although the reason for such wide-spread dehiscence is unclear, formation of a temporal lobe encephalocele is a concern for such patients. Surgical resurfacing of the dehiscence canal should be combined with reconstruction of the middle fossa floor.

#### 11. Use of the Fibula Free Flap to Repair Osseodestructive Lesions of the Cervical Spine

Eric B. Purdom, DO, Honolulu, HI  
Umesh S. Marathe, MD, Honolulu, HI  
Joseph C. Sniezek, MD, Honolulu, HI  
Daniel J. Donovan, MD, Honolulu, HI

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the use of the vascularized fibula free flap as an adjunct in the repair of cervical spine defects related to osteoradionecrosis and osteomyelitis.

**OBJECTIVES:** Osteoradionecrosis and osteomyelitis are rare, but highly morbid post-operative complications after radiation to the head and neck. When these osseodestructive processes affect the cervical spine, their resultant neurologic and functional deficits can be devastating. Traditional management often involves debridement of the diseased tissue, intravenous antibiotics, hyperbaric oxygen therapy, and stabilization of the remaining vertebral column. We report two cases in which a fibula free flap was used as an adjunct to cervical spine fusion. **STUDY DESIGN:** Report of two cases. **METHODS:** One patient was diagnosed with osteoradionecrosis 20 years following a unilateral cervical lymph node dissection and radiation therapy for a T<sub>x</sub>N<sub>3</sub>M<sub>0</sub> squamous cell carcinoma. The second patient was diagnosed with osteomyelitis 10 months after total laryngectomy and bilateral neck dissection with post-operative radiation therapy for a T<sub>3</sub>N<sub>0</sub>M<sub>0</sub> squamous cell carcinoma of the supraglottic larynx. Both patients were reconstructed with fibula free flaps followed by anterior and posterior spinal fusion. A review of the literature and discussion of the operative technique with photos is included. **RESULTS:** Both patients have healed well, without neurologic sequelae, with at least ten months of follow-up. **CONCLUSIONS:** Reconstruction of osseodestructive lesions involving the cervical spine can be challenging. While cervical spine fusion is the mainstay of treatment, the poor vascularity of infected, necrotic regional bone significantly decreases the rate of successful fusion. The use of a vascularized fibula bone segment increases the efficacy and success of this procedure in the hypo-perfused surgical field.

#### 12. The Use of Toluidine Blue in the Management of Intranasal Neoplasms

Pramod K. Sharma, MD, Salt Lake City, UT  
Kevin S. Hadley, MD, Salt Lake City, UT  
Richard R. Orlandi, MD, Salt Lake City, UT

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the role of vital staining of intranasal mucosal neoplasms using Toluidine Blue and discuss the impact on their management.

**OBJECTIVES:** The surgical treatment of intranasal neoplasms can be challenging due to limited access and visibility. The complex three-dimensional anatomy adds to the difficulty in determining adequate surgical margins. Toluidine Blue is a metachromatic dye that has been used in the detection and management of intraoral carcinomas, carcinoma in situ, and dysplastic lesions. Application of Toluidine Blue results in differential staining of normal mucosa vs. abnormal mucosa. The objective of this study was to evaluate if in vivo staining of intranasal neoplasms would be helpful in guiding the surgical resection of the lesions. **STUDY DESIGN:** A prospective study of consecutive patients with intranasal neoplasms at a tertiary care facility. **METHODS:** Patients with intranasal neoplasms to be treated by surgical excision were identified. Patients were treated with topical 1% aqueous solution of Toluidine Blue intranasally. Surgical excision was then performed, using the staining of the tissue as a guide to surgical margins. **RESULTS:** Toluidine Blue application resulted in vital staining of abnormal intranasal mucosa. This allowed successful resection of the intranasal neoplasms. **CONCLUSIONS:** Topical application of Toluidine Blue appears to be an effective method of visualizing abnormal intranasal mucosa. This valuable use of Toluidine Blue vital staining provides valuable information for guiding resection margins.

#### 13. Concurrent Lymphocytic Lymphoma and Papillary Thyroid Carcinoma in Cervical Lymph Nodes After Thyroidectomy and Neck Dissection

Lesley A. Soine, MD, Denver, CO  
John I. Song, MD, Denver, CO

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the subtle histologic findings of concurrent lymphocytic lymphoma and papillary thyroid carcinoma as well as explain the impact these findings have on treatment.

**OBJECTIVES:** To describe the often subtle histologic presentation of small lymphocytic lymphoma in cervical lymph nodes harboring locally advanced papillary thyroid carcinoma and the impact of this diagnosis on the overall treatment of locally advanced papillary thyroid carcinoma. **STUDY DESIGN:** Case presentation including pathological

findings with review of the literature of concurrent lymphoma and metastatic papillary thyroid carcinoma. A discussion of treatment issues arising from these concurrent diseases will also be presented. **METHODS:** Histologic assessment of regional lymph nodes including a detailed description of the relevant immunohistochemical and special staining findings for both tumor types. Also, Medline search from 1966 through present for reports documenting concurrent papillary thyroid carcinoma and lymphoma of the cervical lymph nodes and treatments of each. **RESULTS:** The reporting of incidental small lymphocytic lymphoma during cervical lymph node dissection for papillary thyroid carcinoma is extremely rare. Only one case is identified in the English literature. Review of the literature demonstrates a 0.2-1.2% rate of incidental lymphoma in pelvic lymph node dissection completed during surgical treatment for prostate cancer. **CONCLUSIONS:** Incidental small lymphocytic lymphoma is a very rare finding during cervical lymphadenectomy for advanced papillary thyroid carcinoma. Careful pathologic examination of lymph node specimens is required to make the diagnosis. Prompt diagnosis of small lymphocytic lymphoma is necessary as this may alter treatment strategies.

**14. Neonatal Seizures Secondary to Maternal Primary Hyperparathyroidism**

Alexander E. Stewart, MD, San Diego, CA  
Brendan Gaylis, MD, San Diego, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the clinical presentation and pathophysiology of neonatal seizures secondary to maternal hyperparathyroidism. Participants should also understand the surgical strategies for managing primary hyperparathyroidism diagnosed during pregnancy.

**OBJECTIVES:** To present a case of neonatal seizures secondary to undiagnosed maternal primary hyperparathyroidism and to review the significant morbidity and mortality associated with surgically untreated disease. An updated literature review was performed to identify any changes in management over the past decade. **STUDY DESIGN:** Case presentation with literature review. **METHODS:** A case of maternal primary hyperparathyroidism is presented as an introduction to an updated literature review. **RESULTS:** Primary hyperparathyroidism diagnosed during pregnancy remains rare with only approximately 150 reported cases. Previous reports of significant perinatal mortality and neonatal morbidity approaching 25% and 50% respectively continue to dictate management strategies. Nonsurgical approaches to management are only anecdotally reported. **CONCLUSIONS:** The rarity of primary hyperparathyroidism during pregnancy and the well documented morbidity and mortality of surgically untreated disease have resulted in no significant changes in management strategies. When diagnosed antepartum, the recommendation is for surgery during the second trimester. Nonsurgical therapies are reserved for asymptomatic cases diagnosed in the third trimester or as an adjunct to surgery.

**15. Subcutaneous Emphysema and Pneumomediastinum Complicating Tonsillectomy**

Alexander E. Stewart, MD, San Diego, CA  
Paul E. Bernstein, MD, San Diego, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the clinical presentation of subcutaneous emphysema and pneumomediastinum complicating tonsillectomy. Participants should demonstrate an awareness of the potential for more serious life-threatening complications.

**OBJECTIVES:** Subcutaneous emphysema and pneumomediastinum are very rare complications of tonsillectomy. The etiology and management will be discussed. **STUDY DESIGN:** Retrospective case study and literature review. **METHODS:** A case is presented of subcutaneous emphysema and pneumomediastinum complicating tonsillectomy. All published reports dating from 1910 of these complications following tonsillectomy are reviewed. **RESULTS:** An additional 31 cases of subcutaneous emphysema and nine of pneumomediastinum have been reported following tonsillectomy. The vast majority of cases resolved without specific treatment or significant sequelae. Some cases were life-threatening and required urgent intervention. Others were misdiagnosed resulting in unnecessary surgery. **CONCLUSIONS:** Subcutaneous emphysema and pneumomediastinum are rare occurrences following tonsillectomy that should alert one to the possibility of more serious complications.

**16. Anatomical Variant of the Facial Nerve Relationship to the Cochleariform Process: Case Report and Cadaveric Anatomical Study**

Frank M. Warren, MD, Portland, OR  
Sean O. McMenemy, MD, Portland, OR

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe a previously undescribed variation in the course of the facial nerve in the middle ear.

**OBJECTIVES:** To describe an anatomical variant in the relationship of the cochleariform process to the facial nerve in an otherwise normal ear discovered as an incidental finding at the time of surgery. An anatomic study of cadaveric specimens was undertaken to further characterize identify the relationship of the facial nerve to the cochleariform process. **STUDY DESIGN:** Case report with anatomic cadaver study. **METHODS:** Case report of an incidental finding at time of surgery. Thirty cadaver heads (sixty ears) were studied, taking note of the relationship between the facial nerve and the cochleariform process. **RESULTS:** We present a case of a patient with a cholesteatoma originating from a marginal perforation. At the time of surgery, an aberrant course of the facial nerve was identified as it passed inferior and anterior to the cochleariform process in the middle ear. The facial nerve was completely dehiscant, but the remainder of the middle ear anatomy was normal. To validate this finding as unique, a cadaveric study was undertaken of thirty specimens (sixty ears). In all sixty ears, the facial nerve was in the classic superior and posterior position relative to the cochleariform process. **CONCLUSIONS:** Knowledge of middle ear anatomy is essential for avoiding complications in middle ear surgery. This report describes a previously undocumented abnormal relationship between the cochleariform process and the facial nerve. It is essential that the otologic surgeon is aware of these potential anatomic variants.