

WESTERN SECTION PROGRAM

THURSDAY, FEBRUARY 3, 2005

4:00 - Speaker Ready Room - Navarra
8:00

4:00 - Poster Set Up - Grand Foyer
6:00

5:00 - Registration - Grand Foyer
8:00

6:00 - President's Welcome Reception - Tazza's
7:30

FRIDAY, FEBRUARY 4, 2005

POSTERS--GRAND FOYER

6:00 - Speaker Ready Room - Navarra
4:00

7:00 - Registration - Grand Foyer
1:00

7:00 - Business Meeting (Members Only) - Andalusia
7:45

7:00 - Continental Breakfast with Exhibitors - Salon C
7:50

7:00 - Exhibit Hall Open - Salon C
12:45

8:00 - Spouse Hospitality - Suite 6200
10:00

8:00 - SCIENTIFIC SESSIONS - SALONS D&E
12:45

8:00 Welcome and Introduction of President, Patrick E. Brookhouser, MD*,
Omaha, NE
Ernest A. Weymuller, Jr., MD*, Seattle, WA

8:05 PRESIDENTIAL ADDRESS
Patrick E. Brookhouser, MD*, Omaha, NE

8:15 Introduction of Guest of Honor, David E. Schuller, MD*, Columbus, OH
GUEST OF HONOR LECTURE
Management of Advanced Head and Neck Cancer

MODERATOR: MARILENE B. WANG, MD*, LOS ANGELES, CA

8:30 The Effect of Oral Fusaric Acid (FA) on the Growth of Subcutaneously Xenografted SCC-1 Cells in a Nude Mouse Model
James M. Ruda, BS, Hershey, PA
Kirt S. Beus, MD, Hershey, PA (*Presenter*)
Christopher S. Hollenbeak, PhD, Hershey, PA
Ronald P. Wilson, DVM, Hershey, PA
Brendan C. Stack, MD, Hershey, PA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand a new class of agents available orally with activity against head and neck squamous cell carcinoma.

OBJECTIVES: To determine whether oral administration of FA inhibits HNSCC tumor growth in an animal model. **STUDY DESIGN:** In vivo murine model, two arm controlled study. **METHODS:** Thirty-eight 5 week old athymic nude mice were randomly assigned to a fusaric acid treatment group (1 mg/mL) (n=19) or a sterile saline group (n=19). A left, lateral flank subcutaneous injection of 2.0x 10⁶ SCC-1 cells were administered to all mice on day 1. Both groups were gavaged daily with either 0.25 mLs of oral FA or sterile saline throughout the experiment (32 days). Latency to a measurable tumor (³65mm³), and tumor volumes were recorded after tumor xenografting using the formula (l²w²)/6. Tumor weights were recorded at the conclusion of the experiment. Tumor volume growth curves were modeled as polynomial functions of time with treatment interaction effects. Survivorship functions for time to measurable tumor were estimated using the Kaplan-Meier product limit estimator. **RESULTS:** Survival analysis showed mice treated with FA developed measurable tumors after a significantly longer interval post-xenografting than control mice (p=0.00451). By day 9, all mice in the control group had developed measurable tumors in comparison to only 78% of mice in the FA group. Likewise, estimated growth curves for both groups suggested that mice receiving FA demonstrated significantly slower tumor growth rates throughout the entire study period (p<0.0001). At the conclusion of the experiment, tumor weights from both the control and FA groups were also significantly different (p=0.0142). **CONCLUSIONS:** Orally administered fusaric acid (1mg/mL) is an inhibitor of SCC-1 in a murine model. It may have a potential role in the treatment of human squamous cell carcinoma of the head and neck.

8:40 Transoral Laser Microsurgery (TLM) for Head and Neck Squamous Cell Carcinoma (HNSCC)

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to compare TLM to traditional open surgery in the treatment of HNSCC and recognize its potential value in multimodality therapy. Using specialized instruments and new concepts of exposure, improvements in both cost and quality of life can be realized while cure is maintained or improved.

OBJECTIVES: To review the author's experience with TLM for HNSCC and communicate results of treatment as well as lessons learned. **STUDY DESIGN:** Prospective single center study. **METHODS:** Data was collected prospectively on all patients undergoing TLM for HNSCC from 1996-2002. Selection for TLM was determined by the author's estimate of resectability via a transoral approach rather than by T stage. One-third of patients had had prior therapy (all types) to the index primary site. A detailed database of demographic, tumor, treatment and follow-up variables was created. **RESULTS:** Two hundred thirty-seven patients were entered into the study with 160 presently having follow-up of at least 3 years. Overall disease stage was evenly distributed between early (stage I and II) and advanced (stage III and IV). T stages were as follows: 113 with T1, 74 with T2, 21 with T3 and 19 with T4. There was one patient with subglottic cancer, 37 with glottic, 16 with hypopharynx (all sites), 27 supraglottic, 73 oropharynx, and 83 oral cavity. There were 10 benign tumors. Overall local recurrence was 9% for all sites. Average hospital stay was 3.3 days. Tracheostomy was placed in fewer than 22% of patients. **CONCLUSIONS:** In the author's experience TLM has proven to be an acceptable and oncologically sound treatment form of treatment for recurrence.

8:50 **Magnetic Resonance Imaging to Predict Persistent Nodal Disease Following Chemoradiation for Head and Neck Squamous Cell Carcinoma**

Doris Lin, MD, San Francisco, CA
Olga Rafaelian, BS, San Francisco, CA
Christine Glastonbury, MD, San Francisco, CA
Steven J. Wang, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation the participants should be able to discuss the role of magnetic resonance imaging (MRI) in predicting persistent nodal disease in head and neck cancer following chemoradiation treatment.

OBJECTIVES: The purpose of this study was to determine the role of magnetic resonance imaging (MRI) in predicting persistent neck disease in head and neck cancer treated with chemoradiation. **STUDY DESIGN:** Retrospective chart review. **METHODS:** We evaluated the chart and radiographic records of 20 patients with head and neck squamous cell cancer and N2/3 neck disease between January 2000 and January 2004 who were treated with chemoradiation followed by an MRI 6-8 weeks later. **RESULTS:** The distribution of primary tumors was 18 in the oropharynx, one in the larynx, and one unknown. Eight patients had MRI findings suggestive of persistent nodal disease (size greater than 1 cm, central necrosis, or extracapsular spread) and were managed as follows: one patient was evaluated by fine needle aspiration which revealed no viable tumor and did not have a neck dissection, 6 patients had neck dissections (3 of which contained tumor), and one patient declined further treatment. All of the patients who had neck dissections have remained disease-free in the neck (average follow-up: 20 months). Of the remaining 12 patients without evidence of nodal disease on post-treatment MRI, one patient has recurred in the neck (average follow-up: 43 months). **CONCLUSIONS:** Patients without MRI evidence of persistent nodal disease following chemoradiation have a low incidence (8%) of eventual neck recurrence, while those with a positive post-treatment MRI have a greater likelihood of pathologic nodes. MRI may supplement physical exam and assist in the decision to perform post-chemoradiation neck dissection.

9:00 **Impact of Socioeconomic Status on the Evaluation and Treatment of Head and Neck Cancer**

Karsten C. Munck, MD, San Francisco, CA
Mir J. Ali, MD, San Francisco, CA
Andrew N. Goldberg, MD, San Francisco, CA
Andrew H. Murr, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to compare the outcomes for treatment of Waldeyer's ring cancers between a county hospital and a tertiary care center medical center.

OBJECTIVES: To compare the outcomes of patients with Waldeyer's ring cancers between a county hospital and a tertiary care medical center. **STUDY DESIGN:** Retrospective review. **METHODS:** The medical records of 107 patients with Waldeyer's ring carcinoma who were diagnosed and treated at either a county hospital or at a tertiary medical center from January 1995 through December 2000 were reviewed. Selection criteria included pathologic diagnosis of Waldeyer's ring carcinoma, primary treatment with radiation, and no prior treatment of Waldeyer's ring carcinoma. The primary outcome measures included time of diagnosis to start of radiation therapy (DTI), dose of radiation, number of days treatment, duration of treatment, and one and three year survival. Differences between the two groups were analyzed with student's t-test. **RESULTS:** Diagnosis to treatment intervals (DTI) were statistically different between the two institutions for nasopharyngeal carcinoma, base of tongue cancers, and tonsillar cancers. For nasopharyngeal carcinoma, DTI was 56 days at the county hospital compared to 34 days at the tertiary medical center (P=0.0001). DTI for base of tongue cancers at the county hospital was 66 days compared to 31 days at the tertiary medical center (P=0.0038). For tonsillar cancers, the DTI was 70 days at the county hospital compared with only 40 days at tertiary hospital. Dose of radiation, number of days of treatment, and duration of treatment were not statistically different. **CONCLUSIONS:** Although actual radiation therapy appears similar between the two medical centers there appears to be a statistically significant delay in the initiation of therapy at the county medical center compared to the tertiary medical center.

9:10 **Treatment Outcomes of Patients With Adenoid Cystic Carcinoma of the Major Salivary Glands**

Theresa A. Gurney, MD, San Francisco, CA
David W. Eisele, MD*, San Francisco, CA
Edward Shin, MD, New York, NY
Vivan Weinberg, BA, San Francisco, CA
Nancy Lee, MD, New York, NY

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the typical patient characteristics and pathological findings of adenoid cystic carcinoma of the major salivary glands. In addition, the participants should be able to describe treatment outcomes for surgery and post-operative radiation.

OBJECTIVES: To examine the patient characteristics, pathological features and treatment outcomes of adenoid cystic carcinoma of the major salivary glands. **STUDY DESIGN:** Retrospective review of patients in an academic medical center. **METHODS:** Review of medical records regarding demographics, extent of tumor, stage, histology and treatment outcomes of patients treated with surgery and post-operative radiation. **RESULTS:** Of the thirty-one patients, 17 (55%) were male and 14 (45%) were female. The average age of presentation was 49 years (range from 21-81 years). Of the 27 patients staged at diagnosis, 7 (26%) presented at AJCC Stage I, 9 (33%) at Stage II, 3 (11%) at Stage III and 8 (30%) at Stage IV. The cribriform histology was predominant (69%). The majority originated in the parotid gland (20, 65%), with the remaining originating in the submaxillary gland (9, 29%) and the sublingual gland (2, 6%). Disease free survival was 74% at 5 years and 41% at 10 years. Overall survival was 85% at 5 years and 69% at 10 years with a median of 12.9 years. **CONCLUSIONS:** Patients treated with surgery and post-operative radiation for adenoid cystic carcinoma of the major salivary gland have a relatively long disease free survival and an even longer overall survival.

9:20 Perioperative Rapid PTH Assay for Diagnosis and Management of Post-Thyroidectomy Hypocalcemia

W. Cooper Scurry, MD, Hershey, PA
Kirt S. Beus, MD, Hershey, PA
Brendan C. Stack, MD, Hershey, PA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the role of the perioperative rapid PTH assay in the diagnosis and management of hypocalcemia following total thyroidectomy.

OBJECTIVES: To understand the role of the perioperative rapid PTH assay in the diagnosis and management of hypocalcemia following total thyroidectomy. **STUDY DESIGN:** In a series of 100 patients undergoing total thyroidectomy, parathyroid hormone levels were measured immediately prior to surgery and at five minutes following the removal of the thyroid gland. We hypothesize a relationship exists between a fall in parathyroid hormone and a patient's need for postoperative calcium supplementation. **METHODS:** A prospective, nonrandomized collection of serum from 100 consecutive total thyroidectomy or completion total thyroidectomy procedures performed by a single surgeon collected over eighteen months. Analysis is made of PTH levels, serum calcium values, need for calcium supplementation, symptoms of hypocalcemia, and incidence of transient vs. permanent hypocalcemia. **RESULTS:** Greater than 50% drops in the PTH assay often predicted immediate postoperative "laboratory" hypocalcemia. Many of these patients were empirically replaced with calcium for short duration. Patients were followed serially with calcium levels and weaned as appropriate for laboratory values and/or symptoms. When postsurgical rapid PTH assay values dropped below 10 pg/mL, patients has prolonged hypocalcemia. **CONCLUSIONS:** Currently it is difficult to predict which patients will develop hypocalcemia following total thyroidectomy based on surgical events or serum calcium values alone. Measuring pre- and post-operative rapid PTH levels can help predict which patients will require calcium supplementation following this surgery.

9:30 Effects of Mitomycin-C on Normal Dermal Fibroblasts

Theodore Chen, MD, Stanford, CA
Shaun S. Kunnavatana, BA, Stanford, CA
R. James Koch, MD, Stanford, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the effects of mitomycin-C on dermal fibroblast cell proliferation and growth factor production.

OBJECTIVES: To evaluate the effects of mitomycin-C on the growth and autocrine growth factor production of human dermal fibroblasts from the face. **STUDY DESIGN:** In vitro study using normal adult dermal fibroblast cell lines in a serum free model. **METHODS:** Cell cultures were exposed to 0.4 mg/ml, 0.04 mg/ml, 0.004 mg/ml, and 0.0004 mg/ml concentrations of mitomycin-C solution. Cell counts were performed, and the cell free supernatants were collected at 0, 1, 3, and 5 days after the initial exposure. Population doubling times were calculated and supernatants were quantitatively assayed for bFGF and TGF- β 1. **RESULTS:** Continuous exposure to mitomycin-C caused fibroblast cell death by day 7 at all tested concentrations. A 4 minute exposure to mitomycin-C caused decreased fibroblast proliferation. Population doubling time increased (cell proliferation decreased) with exposure to increasing concentrations of mitomycin-C. A 4 minute exposure to mitomycin-C at 0.4 mg/ml resulted in a marked increase in the production of both bFGF and TGF- β 2. **CONCLUSIONS:** A clinically ideal concentration of mitomycin-C would slow fibroblast proliferation yet not cause cell death in order to allow for a wound healing response. Mitomycin-C 0.4 mg/ml for 4 minutes satisfies the above criteria in vitro.

9:40 Atypical Carcinoid Tumors of the Larynx

Ann M. Gillenwater, MD, Houston, TX
Jan S. Lewin, PhD, Houston, TX
Adel K. El-Naggar, MD PhD, Houston, TX

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to: 1) understand the presentation and natural history of atypical carcinoid laryngeal tumors; and 2) develop a diagnostic and therapeutic management strategy for patients with these tumors.

OBJECTIVES: Neuroendocrine neoplasms of the larynx are uncommon and comprise a spectrum of phenotypic and biologically diverse entities. Typical (well-differentiated) atypical (moderately-differentiated) carcinoid and small cell neuroendocrine carcinoma constitute the major laryngeal lesions. We evaluated the presentation, pathologic appearance, management and outcome of patients with atypical carcinoid of the larynx, the most common subtype of neuroendocrine carcinoma. **STUDY DESIGN:** Retrospective chart review. **METHODS:** Review of institutional patient and pathology databases was performed to identify patients with atypical carcinoid laryngeal (ACL) tumors. Data on patient demographics, tumor stage and morphology, treatment, and outcomes were obtained from patient records. A literature search identified published cases for comparison. **RESULTS:** Twelve cases of ACL (six female and six male) were evaluated at this institution between 1983 and 2003. Patients presented with either a neck mass or symptoms of dysphagia or globus sensation and a submucosal supraglottic mass. Pathologic review revealed neuroendocrine cells forming cords, nests and islands with marked vascularity. All tumors manifested at least one of the following features: high mitotic rate, cellular pleomorphism, tumor necrosis. Immunostaining showed positive staining for chromogranin, synaptophysin and keratin. Nine patients developed cervical nodal metastases and seven patients developed distant metastases. Five patients developed painful, subcutaneous distant metastases, a phenomenon also described in published case reports of ACL. **CONCLUSIONS:** Atypical carcinoid tumors of the larynx are uncommon malignancies with propensity for supraglottic localization and nodal and subcutaneous distant metastases. Locoregional control is often achieved with conservative surgery and radiation, but patients frequently develop distant metastases that are poorly responsive to chemotherapy.

9:50 Discussion

10:00 Break/View Posters/Visit Exhibits

10:25 Introduction of Vice President's Lecturer, Jay T. Rubinstein, MD PhD,

Seattle, WA

Advances in Cochlear Implant Technologies: Some Predicted Outcomes

MODERATOR: JOSEPH C. SNEZEK, MD*, TRIPLER AMC, HI

10:40 Repair of Full Thickness Oral, Pharyngeal and Tracheal Defects With Acellular Dermis in Head and Neck Surgery

Robert C. Wang, MD*, Las Vegas, NV
Raffi Hovsepian, MD, Las Vegas, NV
Shawn Tsuda, MD, Las Vegas, NV

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss potential uses of acellular dermis in repairing mucosa wall defects.

OBJECTIVES: Examine the use of acellular dermis in the repair of mucosa wall defects in the head and neck. **STUDY DESIGN:** Retrospective review of six cases of defects after cancer resection (one had prior radiotherapy) and two pharyngeal strictures after total laryngectomy and radiotherapy. **METHODS:** Acellular dermis was used to repair or fill mucosal defects or buttress mucosal wall closures. **RESULTS:** A tonsillar cancer resection defect, and an entire unilateral floor of mouth defect, both communicating with the neck were lined with acellular dermis and healed uneventfully. Two oral cavity oropharyngeal closures, following resections of base of tongue and lateral oropharyngeal squamous cell carcinomas, were buttressed by acellular dermis as secondary layers secured intentionally loosely in watertight fashion deep to the normal mucosal-submucosal suture line. Dehiscences occurred in each at 5 and 10 days respectively, exposing the underlying Alloderm layer. No salivary fistula nor neck infection ensued, with the defects healing uneventfully. A large infratemporal fossa pleomorphic adenoma resected through a transoral approach was closed by partially filling the resultant dead space and mucosal defect communicating with the oropharynx with folded acellular dermis, without neck infection nor fistula post-operatively. Two high grade hypopharyngeal stricture after radiotherapy and total laryngectomy had frequent dilatations that failed to maintain patency. Acellular dermis was placed using fibrin glue into the mucosal defect produced by balloon dilatation with much improved duration of patency. One case of papillary thyroid carcinoma invading the muscular wall of the esophagus and tracheoesophageal septum with a posterior tracheal wall defect after resection was reconstructed with acellular dermis. Air leakage ceased after 4 days with no airway problems and without need for tracheostomy. **CONCLUSIONS:** Acellular dermis can be used selectively in repairing mucosally lined wall defects and preventing salivary fistula and neck infection.

10:50 Radial Forearm Osteocutaneous Free Flap for Oromandibular and Maxillofacial Reconstruction

Jason H. Kim, MD, Portland, OR
Eben L. Rosenthal, MD, Birmingham, AL
Tom J. Ellis, 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 utility of radial forearm osteocutaneous free flap in selected, well defined reconstruction of the head and neck after tumor ablation or trauma.

OBJECTIVES: The radial forearm osteocutaneous free flap is an excellent reconstructive modality for oromandibular and maxillofacial reconstruction in certain well defined circumstances. The initial concern over donor site morbidity and the ability of the bone to reconstruct mandibular defects has been addressed by a few authors. We present our medical centers' experience with radial osteocutaneous free flap. **STUDY DESIGN:** A retrospective study from two tertiary academic medical centers. **METHODS:** A retrospective study of 36 patients who underwent radial forearm osteocutaneous free flap reconstruction for cancer (33) and trauma (3). We reviewed bone length harvested, recipient site morbidity (flap failure, mandible or plate exposure, and hematoma), and donor site morbidity (radius bone fracture, plate exposure, and skin graft failure). **RESULTS:** The average skin paddle size was 60.09 cm², range 15 to 112 cm². The average radius bone harvest length was 7.44 cm, range 2.5 to 11 cm. Donor site complications: tendon exposure (3). There were no fractures of the radius bone or exposure of the plate. Recipient site complications: nonunion of the mandible (1), flap failure (1), exposed mandible (1), and venous thrombosis (1). Two patients had perioperative deaths. **CONCLUSIONS:** Radial forearm osteocutaneous free flap is a viable option for oromandibular and maxillofacial reconstruction.

11:00 Second Fibular Osteocutaneous Free Flaps

Bobak A. Ghaehri, MD, Portland, OR
Jason H. Kim, 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 advantages and disadvantages of using a second fibular flap when clinically necessary.

OBJECTIVES: To analyze the morbidity of a second fibular free tissue transfer when necessary in rare instances of initial flap failure in patients who have undergone a previous fibular free tissue transfer. **STUDY DESIGN:** Retrospective analysis of a case series. **METHODS:** A database of patients who underwent resection of head and neck malignancies with resultant free flap reconstruction was analyzed retrospectively. Patients who needed a second fibular osteocutaneous flap were identified; the immediate and late functional morbidity from the second flap was evaluated by use of a standard questionnaire. **RESULTS:** Seven patients underwent a second fibular osteocutaneous flap for reconstruction with data available from six. Indications for the second flap were: initial flap thrombosis and loss (5 patients), osteoradionecrosis (1), and recurrent tumor (1). Follow-up was a minimal of three months (mean 2.4 years). The morbidity of harvesting a second fibular flap was similar to that of a unilateral harvest. Five of 6 patients rated their morbidity as low with one patient rating their morbidity as high. The primary donor site morbidity encountered was mild cellulitis that resolved with antibiotics. Overall time for rehabilitation after the second flap was approximately two months (range 1 to 4 months). **CONCLUSIONS:** Harvest of a second fibular osteocutaneous is a reasonable option for reconstruction when a second bony flap becomes necessary. The morbidities of the second procedure are comparable to those of the first fibular flap harvest.

11:10 The Angular Branch—Maximizing the Scapular Pedicle in Head and Neck Reconstruction

Stephen W. Bayles, MD, Seattle, WA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the dual pedicle anatomy of the scapular bone and the utility of the angular branch in increasing the length of the scapular bone pedicle to avoid use of vein grafts with this flap. A step by step description of flap harvest and alternative pedicle identification will be discussed.

OBJECTIVES: The participant will gain a working knowledge of the subscapular system, with particular attention to the angular artery and vein's use to carry scapular bone in complex head and neck defects. Examples of scenarios where this pedicle proved useful in avoidance of unnecessary vein grafts will be described. **STUDY DESIGN:** Case series. **METHODS:** A personal series of 21 osteocutaneous scapular flaps was performed during August 2000-January 2004. Of these 21 cases, 6 cases of scapular bone solely vascularized by the angular artery and vein were performed to reconstruct head and neck defects. **RESULTS:** The angular vessels were used to reach the contralateral neck for anastomosis in through and through oromandibular defects (N=2), to reach the neck for anastomosis in midfacial reconstruction (N=2), and to carry a separate second bone island in complex oromandibular defects (N=2). Bone scans on postoperative day 5 revealed all bone segments to be vascularized. The pedicle length to the bony segment when based off the circumflex scapular vessels varied from 7.0-9.0cm (mean 7.7cm). The pedicle length offered by the angular vessels varied from 13.0-15.0 cm (mean 14.25 cm). Average increase in pedicle length sacrificing the circumflex scapular perforators to the scapula and allowing the bone to be supplied by the angular vessels was 6.55cm. Vein grafts were not necessary to perform remote anastomoses with the additional pedicle length. **CONCLUSIONS:** The angular vessels can reliably carry the lateral border of the scapula to the scapular wing and a portion of the medial scapula. Use of the angular vessels over the circumflex scapular vessels increases the bone pedicle length by an average of 6.55 cm (84% increase) and is a useful technique to avoid vein grafting for remote anastomosis.

11:20 A Comparison of Speech and Swallowing Function and Morbidity in Patients Reconstructed With Jejunal Flap Versus the Anterolateral Thigh Flap Following Laryngopharyngectomy

Jan S. Lewin, PhD, Houston, TX
Denise A. Barringer, MS, Houston, TX
Annette K. May, MA, Houston, TX

Katherine A. Arnold, MS, Houston, TX
Julie K. Bishop-Leone, MA, Houston, TX
Peirong Yu, MD, Houston, TX

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand functional speech and swallowing outcomes, morbidity, and postoperative complications associated with reconstruction of circumferential defects using jejunal flap versus the anterolateral thigh flap after laryngopharyngectomy.

OBJECTIVES: Reconstruction of circumferential pharyngoesophageal defects must optimize functional outcomes while minimizing donor site morbidity and postoperative complications. We compared speech and swallowing outcomes and complication rates between anterolateral thigh (ALT) flap and jejunal flap reconstruction. **STUDY DESIGN:** None. **METHODS:** We reviewed 57 patients with circumferential pharyngoesophageal defects, 26 with ALT flap reconstruction, and 31 with jejunal interposition. We compared postoperative complications, hospitalization stays, nutritional intake, number of tracheoesophageal punctures (TEPs) performed, speech fluency, and alaryngeal speech preference. **RESULTS:** Patients' characteristics were similar. Total flap loss occurred in 1 patient (3.8%) with ALT flap reconstruction and 2 (6.5%) with jejunal interposition; fistula, in 2 ALT patients (7.7%) and 1 jejunal reconstruction patient (3.2%, $p=0.6$); anastomotic stricture, in 3 ALT patients (11.5%) and 6 jejunal flap patients (19.4%, $p=0.5$). ICU and hospital stays were greater for jejunal patients (overall $p<0.01$). Nutritional and alaryngeal speech information were available for 26 jejunal and 21 ALT flap patients. TEP was performed in 8 patients from each group. Seven (88%) of 8 ALT patients and 4 (50%) of 8 jejunal flap were fluent and used TE speech to communicate. Twenty (95%) of 21 ALT patients and 17 (65%) of 26 jejunal flaps resumed oral intake ($p=0.02$). The most common etiology for dysphagia was stricture in both groups (23% jejunum, 14% ALT). **CONCLUSIONS:** For circumferential pharyngoesophageal reconstruction, the ALT flap results in a slightly higher fistula rate but lower rate of stricture, shorter ICU and hospital stays, and better speech and swallowing compared with jejunal reconstruction.

11:30 Role of Free Tissue Transfer in Management of Persistent Cerebrospinal Fluid Leaks

Stephen M. Weber, MD PhD+, Portland, OR
Jason Kim, MD, Portland, OR
Mark K. Wax, MD, Portland, OR

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to explain the advantages of using free tissue transfer for repair of the persistent cerebrospinal fluid leak.

OBJECTIVES: Cerebrospinal fluid (CSF) leaks can occur following head trauma or cranial base surgery. Persistent leaks should be repaired since they put patients at risk for serious intracranial complications. Numerous methods have been used for repair of significant CSF leaks. Free tissue transfer brings viable, vascularized tissue flaps to the skull base for repair of recalcitrant CSF leaks. **STUDY DESIGN:** Retrospective chart review of patients who underwent free tissue transfer to the skull base for repair of a persistent CSF leak between November 1995 and October 2002 at an academic, tertiary referral center. **METHODS:** Eleven patients with persistent CSF leak underwent free tissue transfer. Ten of 11 patients had recurred following previous repair with a technique other than free tissue transfer. All patients underwent radial forearm free tissue transfer. **RESULTS:** There were 6 female and 5 male patients with an average age of 52.7 (range, 22-80 years). The most common presenting complaint was intracranial abscess or recurrent meningitis (9) followed by CSF otorrhea or rhinorrhea (7). Etiology was head trauma (5), prior surgery (4), cholesteatoma (1) or meningoencephalocele (1). All patients failed prior repair procedures (range, 1-6 procedures, mean, 2.2). Nine of the above flaps were placed in the anterior skull base while 2 were placed in the middle and posterior skull base. Radial forearm free tissue transfer resulted in sustained resolution of CSF leakage in all eleven patients. **CONCLUSIONS:** Free tissue transfer is a robust option in the repair of recalcitrant CSF leaks.

11:40 Complications and the Time to Repair of Mandible Fractures

Jason A. Biller, MD+, San Francisco, CA
Steven D. Pletcher, MD, San Francisco, CA
Andrew H. Murr, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss how a delay in the operative management of mandible fractures affects the incidence of both infectious and technical complications. The reader should also understand the role of substance abuse in the development of postoperative complications.

OBJECTIVES: Treatment delays in the operative management of mandible fractures are often unavoidable. We were interested in determining if delays increased the incidence of complications in these patients. **STUDY DESIGN:** A retrospective chart review was performed on all patients who presented to our institution with an operative mandible fracture in 2002. **METHODS:** Based on the number of days from initial injury to surgery, the patients were divided into two groups- those repaired in 3 days or less and those repaired after 3 days. The incidence of infectious and technical complications was then compared between these groups. Substance abuse was also evaluated for its role in complication risk. **RESULTS:** Of the 84 patients in the study, 11 had infectious complications and 10 had technical complications. While treatment delay did not increase the risk of developing an infectious complication, substance abuse considerably increased this risk. The incidence of technical complications was remarkably higher in patients repaired after 3 days. **CONCLUSIONS:** Although patients with mandible fractures treated after 3 days do not have a higher risk of developing an infectious complication, this risk is elevated in patients who use substances regularly. The risk of technical complications increases with treatment delay and therefore the surgical team must be even more vigilant when reducing these fractures.

11:50 Discussion

12:00- PANEL: HEAD AND NECK ONCOLOGY 2005 - NEW THERAPIES, NEW CHALLENGES

12:45 MODERATOR: William B. Armstrong, MD*, Orange, CA

PANELISTS: Mark K. Wax, MD, Portland, OR
Lisa A. Orloff, MD, San Francisco, CA
Michael G. Glenn, MD, Seattle, WA

Golf Tournament at TPC at the Canyons (registration required)

1:30 - Hoover Dam Tour (sign up required)

5:30

6:30 - Meet The Authors Poster Reception - Grand Foyer

8:00

SATURDAY, FEBRUARY 5, 2005

POSTERS--GRAND FOYER

6:00 - Speaker Ready Room - Navarra
12:00

7:00 - Registration - Grand Foyer
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7:00 - Business Meeting (Members Only) - Andalusia
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7:00 - Continental Breakfast With Exhibitors - Salon C
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7:00 - Exhibit Hall Open - Salon C
12:45

8:00 - Spouse Hospitality - Suite 6200
10:00

9:30 - Spouse Event - Jubilee Backstage Tour (sign up required)
1:30

7:55 - SCIENTIFIC SESSIONS - SALONS D&E
1:05

7:55 am Poster Awards Announcement

MODERATOR: CLOUGH SHELTON, MD*, SALT LAKE CITY, UT

8:00 Antiphospholipid Inner Ear Syndrome
Debbie A. Mouadeb, MD, Sacramento, CA
Michael J. Ruckenstein, MD*, Philadelphia, PA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to 1) better understand the differential diagnosis of progressive sensorineural hearing loss; and 2) understand the mechanisms by which hematologic and immune mechanisms may interact to generate auditory pathology.

OBJECTIVES: To clarify the association between antiphospholipid antibodies (APL)—mediators of microthrombus formation—and SNHL in a large cohort of patients. **STUDY DESIGN:** Prospective cohort study. **METHODS:** The study cohort is composed of 168 adult patients referred for the diagnosis and treatment of progressive SNHL +/- vertigo. All patients were subjected to a comprehensive panel of blood tests for autoimmune and infectious disease, including testing for anticardiolipin antibodies, anti-B2 glycoprotein, and Lupus anticoagulant. Data was collected in a prospective fashion and entered into a cumulative database. **RESULTS:** Forty-two patients had at least one elevated APL marker, while 20 had 2 or more positive tests. Of the 42 patients, 64% met the diagnostic criteria for Meniere's disease, 24 (57%) had unilateral disease, and 18 (44%) had bilateral hearing loss. **CONCLUSIONS:** These data support the hypothesis that APL antibodies may be involved in the pathogenesis of some forms of progressive inner ear pathology, presumably by causing microthrombus formation in the labyrinthine vasculature. Basic science studies are required to better understand the mechanisms by which APL antibodies may mediate inner ear dysfunction. Clinical studies to evaluate the efficacy of anticoagulation in this group of patients are also required.

8:10 Determining the Side of Vestibulopathy Using Vestibular Autorotation Test Asymmetry
Matthew Ng, MD, Las Vegas, NV

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand how vestibular autorotation test asymmetry can provide insight on side of lesion in certain vestibulopathies.

OBJECTIVES: The objective of this study is to determine the ability of VAT asymmetry to correctly identify the side of vestibulopathy. The VAT is routinely performed during the initial patient encounter for dizziness. **STUDY DESIGN:** Retrospective review of VATs performed over a 2 year period from an academic neurotology practice. **METHODS:** Patients presenting with the chief complaint of dizziness and demonstrating directional VAT asymmetry were identified. Side of vestibulopathy determined by VAT asymmetry was compared with that determined by standard neurotologic workup, such as patient history, clinical exam, and diagnostic testing (audiometry, bithermal calorics, imaging). **RESULTS:** Two hundred forty-three patients completed VAT testing. Forty-one patients had been diagnosed as having a unilateral vestibulopathy based on routine neurotologic workup. When excluding the more readily diagnosable disorders of BPPV (21 patients) and Meniere's disease (7 patients), VAT asymmetry correctly identified the side of vestibulopathy in 12 of the remaining 13 cases. These vestibulopathies include acoustic neuromas, labyrinthitis, and cochleovestibular hypofunction. **CONCLUSIONS:** VAT asymmetry can correctly identify the side of involvement in certain vestibulopathies, such as acoustic neuromas, labyrinthitis, and cochleovestibular hypofunction. It is less useful for BPPV and Meniere's disease. The information provided by VAT asymmetry regarding side of vestibulopathy can serve as a diagnostic adjunct for the clinician working up a patient with dizziness.

8:20 Implantation of the Ossified Cochlea: The Results of the Split Electrode Array
D. A. Millar, BS, Salt Lake City, UT
Todd A. Hillman, 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: 1) understand the indications for using a split electrode array in the ossified cochlea; 2) become familiar with the technique for insertion of the split electrode array; and 3) understand the functional outcomes associated with this array.

OBJECTIVES: To describe indications for use, the surgical technique, and the expected functional results of a split electrode array cochlear implant. **STUDY DESIGN:** Retrospective chart review. **METHODS:** Collected data included: etiology of deafness, radiographic findings, pre- and post-operative aided pure tone thresholds, and speech perception testing. Adult speech perception outcomes were measured using the Consonant Nucleus Consonant (CNC) monosyllable words, Hearing in Noise

Test (HINT) in quiet/noise (+10dB). The children were assessed using the Infants and Toddlers Meaningful Auditory Integration Scale (IT-MAIS). **RESULTS:** Five patients were implanted with a split electrode array including two adults and three children. One child did not have follow-up data. Preoperatively both adults had bin-aural aided pure tone averages worse than 50 dB and scores of 0% on both HINT quiet and CNC monosyllable words. The children had undetectable aided thresholds and scored 4/40 on the IT-MAIS. Post-implant, the average gain in thresholds was 38.5 dB in the adults and 81.5 dB in the children. One adult improved to score 51%/22% on HINT quiet/noise at 6 months and 72%/30% at 12 months. The other adult recipient continued to score 0% on HINT at 12 months but had substantial subjective improvements after the first year of device use. The children averaged improvements to 28/40 IT-MAIS at 6 months. Forty-two of forty-eight implanted electrodes were functional. **CONCLUSIONS:** The split electrode array is a useful alternative to traditional cochlear implants in treating deafened patients with cochlear ossification. Patients implanted with the split array show marked improvement in sound and speech perception.

8:30 Jugular Foramen Schwannomas: Radiographic Characteristics and Surgical Management

Matthew Wilson, BS, Salt Lake City, UT
Todd A. Hillman, 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: discuss the presentation, radiographic characteristics, surgical management, and expected post-treatment outcome of jugular foramen schwannomas.

OBJECTIVES: To describe the presentation of jugular foramen schwannomas, radiographic findings that distinguish them from other lesions in this area, and surgical management of six patients who have been diagnosed and treated at our institution. **STUDY DESIGN:** Retrospective chart review. **METHODS:** The charts of seven patients diagnosed with jugular foramen schwannomas were reviewed for presentation symptoms, radiographic findings, and physical exam findings. For the six that underwent surgical excision; the surgical procedure used, cranial nerve function results, audiometric results, perioperative complications, and other follow-up data are presented. **RESULTS:** Seven patients were identified from ages 33 to 69 years. Six of the seven underwent surgical excision. Primary presentation symptoms included dizziness, hearing loss, diplopia, tongue paresis, and hoarseness. In those who underwent surgery, dysfunction of cranial nerve V was noted preoperatively in one patient, VI in another, X in two, and XII in three. Tumor sizes varied between 3.0-4.0 cm. The choice of surgical approach was based on the size and location of the tumor. All patients had complete excisions. The nerve of origin included the glossopharyngeal, vagus, and spinal accessory nerves. Preoperative cranial nerve dysfunction continued postoperatively with the exception of improvement of the Vth nerve palsy. In two cases a temporary feeding tube was required. Both of these cases presented with mild preoperative dysphagia. No recurrences have been noted to date. **CONCLUSIONS:** Jugular foramen neuromas are rare lesions with characteristic imaging findings allowing preoperative detection. With carefully planned excision, expected outcomes are good with morbidity primarily related to the extent of cranial nerve involvement.

8:40 Porcine Dermal Collagen Allograft Sling in Static Reanimation of the Paralyzed Face

Amol M. Bhatki, MD, San Francisco, CA
David W. Kim, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the advantages, physical properties, and technical nuances of utilizing Enduragen, an acellular porcine dermal collagen allograft material, in static reanimation of the paralyzed face.

OBJECTIVES: Static elevation of the lower face in facial paralysis is accomplished by fixation of the deep perioral and peri-nasal tissue to the zygomatic arch with an interposed segment of suspensory material. Autogenous material, such as fascia lata, is effective but requires an additional donor harvest dissection. Allografts such as gortex risk infection or extrusion. Acellular dermal allograft provides excellent support of these areas with minimal infection, low cost, and avoidance of harvest sites. We describe our experience with Enduragen, a porcine dermal allograft in static facial reanimation. **STUDY DESIGN:** Retrospective case series of three patients with complete unilateral facial nerve paralysis who underwent static suspension of the perioral and peri-nasal soft tissue. **METHODS:** Patients completed a postoperative questionnaire determining satisfaction in appearance, oral competence, speech, and nasal breathing. Measurements between the affected oral commissure and nasal alar insertion were made on photographs from the preoperative period (in 2 of 3 patients), immediate postoperative period (2 to 4 weeks), and late postoperative period (4-8 months). Charts were reviewed to determine incidence of postoperative infection, implant extrusion, or other complication. **RESULTS:** All patients reported significant improvement of nasal breathing and oral competence. A postoperative elevation of approximately 1 centimeter of the oral commissure was observed in both patients with preoperative photos. No significant further ptosis of the oral commissure was measured between the immediate and late postoperative periods in any of the three patients. **CONCLUSIONS:** Enduragen is a safe and effective material for use in static suspension of the lower face in patients with facial paralysis.

8:50 Effects of Storage Time and Temperature on Human Septal Chondrocyte Viability Using Confocal Microscopy

David L. Hicks, MD+, San Diego, CA
August B. Sage, BS, San Diego, CA
Barbara L. Schumacher, BS, San Diego, CA
Robert L. Sah, ScD, San Diego, CA
Deborah Watson, MD, San Diego, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the lifespan and cell death pattern of human nasal septal chondrocytes stored for prolonged periods and discuss the use of confocal microscopy for tissue engineering studies.

OBJECTIVES: To analyze the effects of prolonged storage time, at warm and cold temperatures, on the viability of human nasal septal chondrocytes. **STUDY DESIGN:** Basic science. **METHODS:** Septal cartilage was obtained from ten patients and placed in bacteriostatic saline. Four specimens were kept at 25°C and four were placed at 4°C. Viability of chondrocytes was assessed using confocal laser scanning microscopy every five days. Two samples were assessed for viability on the day of harvest. **RESULTS:** Viability on the day of harvest was 96%, implying minimal cell death from surgical trauma. After one week survival of all samples was essentially unchanged from the day of harvest. At 25°C the majority (54%) of cells was alive after twenty days. At 4°C 70% of cells survived one month and 38% were alive at two months. Qualitatively chondrocytes died in a uniform distribution in warm samples, whereas cold samples displayed a more irregular pattern of cell death. **CONCLUSIONS:** Septal chondrocytes remain viable for prolonged periods when stored in simple bacteriostatic saline, and such survival is enhanced by cold storage.

9:00 VICE PRESIDENT'S RESIDENT RESEARCH AWARD

Effect of Growth Factors on Cell Proliferation, Matrix Deposition, and Morphology of Human Nasal Septal Chondrocytes Cultured in Monolayer

Jeremy D. Richmon, MD+, San Diego, CA
August B. Sage, BS, San Diego, CA
Elliot D. Shelton, San Diego, CA
Barbara L. Schumacher, BS, San Diego, CA
Robert L. Sah, MD ScD, San Diego, CA
Deborah Watson, MD, San Diego, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should understand the basic concepts of tissue engineering and the challenges that

must be overcome to develop clinically applicable neocartilage. The participant should be able to explain how the various growth factors affect chondrocyte morphology and proliferation.

OBJECTIVES: Tissue engineering of septal cartilage provides ex vivo growth of cartilage from a patient's own septal chondrocytes for use in craniofacial reconstruction. In order to become clinically applicable it is necessary to rapidly expand a limited population of donor chondrocytes and then stimulate the production of extracellular matrix on a biocompatible scaffold. The objective of this study was to determine the optimal serum-free culture conditions for proliferation of human septal chondrocytes using various concentrations and combinations of four growth factors. **STUDY DESIGN:** Prospective, randomized, controlled study. **METHODS:** Nasal septal chondrocytes from six patient donors were isolated by enzymatic digestion and expanded in monolayer passage in both serum-free media (SFM) and 2% fetal bovine serum (FBS). Both of these groups were exposed to varying concentrations and combinations of transforming growth factor (TGF- β 1), basic fibroblast growth factor (FGF-2) both at 1, 5, and 25 ng/ml; and bone morphogenetic protein (BMP-2) and insulin growth factor (IGF-1) both at 5, 25, and 125 ng/ml in the medium during the expansion phase. Cell morphology was assessed throughout the culture duration. After seven days of monolayer growth cultures were assessed for cellularity and glycosaminoglycan (GAG) content. **RESULTS:** The addition of low dose FBS in culture media consistently led to significantly greater cell proliferation and matrix deposition than the SFM cell cultures. FGF-2 and TGF- β 1 both alone and in combination led to the greatest proliferative effect compared to the other growth factors. In contrast BMP-2 and IGF-1 led to the least expansion of cell number although was most effective in retaining chondrocyte cell morphology. **CONCLUSIONS:** With the addition of TGF- β 1 and FGF-2 to culture media the concentration of serum can be greatly decreased and possibly eliminated altogether without jeopardizing cell proliferation.

9:10 SHIRLEY BARON AWARD

Prospective, Randomized, Controlled Clinical Trial of a Novel Hemostatic Sealant in Patients with Acute Epistaxis

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 demonstrate an understanding of Floseal's utility in controlling acute epistaxis and to compare this to that of nasal packing.

OBJECTIVES: Floseal is a novel hemostatic sealant composed of collagen-derived particles and topical bovine-derived thrombin. It is applied as a high viscosity gel for hemostasis. This study is a prospective, randomized, controlled clinical trial of Floseal compared to nasal packing in patients with acute anterior epistaxis. **STUDY DESIGN:** IRB approved, prospective, randomized, controlled, nonblinded, crossover clinical trial. **METHODS:** 70 consecutive patients presenting with acute anterior epistaxis were randomized to undergo Floseal or nasal packing to control their bleeding. Patients were crossed over to the other technique after 2 unsuccessful attempts of the first technique. Patients were seen in the clinic within 7 days for follow-up. Ten point visual analog scales were used to rank effectiveness (1=failed, 10=effective), physician hemostasis ease (1=difficult, 10=easy), physician satisfaction (1=unsatisfied, 10=satisfied), patient discomfort during hemostasis (0=none, 9=unbearable), patient discomfort at follow-up office visit, and patient satisfaction. Additional data included need for subspecialist consultation to control bleeding, bleeding rates within 7 days, and rebleeding at follow-up visit. **RESULTS:** Floseal (n=35) was equally effective to nasal packing (n=35) at initial control of anterior epistaxis (9.7 vs. 9.2, P = NS). Physicians found Floseal to be easier (9.3 vs. 3.1, P < 0.01) and were more satisfied (9.6 vs. 6.2, P < 0.05). Patients experienced less discomfort with Floseal than with nasal packing both at initial control (2.2 vs. 8.8, P < 0.001) and at follow-up visit (0.0 vs. 8.6, P < 0.001), and Floseal patients were more satisfied overall (9.4 vs. 5.3, P < 0.05). Fewer in-person otolaryngology consultations were requested for Floseal patients (8.5% vs. 17%, P < 0.05). Both groups experienced similar rebleeding rates within 7 days (8.5% vs. 11%, P=NS). Rebleeding rates at follow-up visit were higher in the nasal packing group at time of packing removal (69% vs. 0%, P < 0.001). Four patients (11%) were crossed over from the nasal packing group to the Floseal group when nasal packing was ineffective; one Floseal patient (3%) was crossed over into the nasal packing group. **CONCLUSIONS:** Floseal hemostatic sealant is a better tolerated, safe, effective, and easy alternative to nasal packing in patients presenting with acute anterior epistaxis. Future studies may wish to look at Floseal's use in posterior epistaxis.

9:20 Discussion

9:30 PANEL: COMMON OTOLOGIC DILEMMAS

MODERATOR: Herman A. Jenkins, MD*, Denver, CO

PANELISTS: Sean O. McMenemy, MD, Portland, OR
William H. Slattery, MD, Los Angeles, CA;
Lawrence R. Lustig, MD, San Francisco, CA
Robert Muckle, MD, Englewood, CO
Michael E. Hoffer, MD*, San Diego, CA

10:30 Break/View Posters/Visit Exhibits

MODERATOR: TERRY Y. SHIBUYA, MD*, ORANGE, CA

10:55 Expression of Cyclooxygenase and Lipoxygenase Enzymes in Nasal Polyps of Aspirin Sensitive and Aspirin Tolerant Patients

Jonathan M. Owens, MD+, Denver, CO
Kenneth R. Shroyer, MD PhD, Denver, CO
Todd T. Kingdom, MD, Denver, CO

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the expression of cyclooxygenase and lipoxygenase enzymes in nasal polyps of patients who are aspirin sensitive and aspirin tolerant.

OBJECTIVES: To evaluate the expression of cyclooxygenase and lipoxygenase enzymes in nasal polyps of patients who are aspirin sensitive and aspirin tolerant. **STUDY DESIGN:** Immunohistochemical staining of archived tissue. **METHODS:** Expression of the enzymes cyclooxygenase-1 and -2 (COX-1 and COX-2), 5-lipoxygenase (5-LO), 12-lipoxygenase (12-LO), 15-lipoxygenase (15-LO) was evaluated in nasal polyp tissue of aspirin sensitive (AS) and aspirin tolerant (AT) patients using immunohistochemical techniques. These results were compared to a control group of patients without history of nasal polyposis or chronic rhinosinusitis. **RESULTS:** Characteristic staining patterns of epithelium and submucosal glands were noted for each enzyme. Statistically significant (p < 0.05) differences in staining of columnar epithelium were noted for COX-1, COX-2, 12-LO, and 15-LO between control and AS specimens as well as between control and AT specimens. Significant differences in staining of submucosal glands were noted for COX-2, 12-LO, and 15-LO were noted between control and AS specimens as well as between control and AT specimens. The only significant difference noted between the AS and AT groups was cytoplasmic staining for 5-LO in glands, which was greater for AS patients. No epithelial staining differences were noted between AT and AS patients. **CONCLUSIONS:** Significant differences in expression of COX and LO enzymes exist between nasal polyp patients and controls, irrespective of aspirin sensitivity. With one exception, no significant differences exist between AS and AT groups.

11:05 Isolated Sphenoid Fungal Sinusitis in the Immunocompetent Patient

Mir J. Ali, MD, San Francisco, CA
Krista R. Bruno, BS, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the characteristics of isolated fungal sphenoid sinusitis in the immunocompetent patient, its prognosis, and its management options.

OBJECTIVES: Isolated sphenoid sinusitis is rare, especially in the immunocompetent patient. We provide a review of this rare clinical entity and present our own experience with four such patients. **STUDY DESIGN:** Retrospective case series and literature review. **METHODS:** The medical records of immunocompetent patients with isolated sphenoid fungal sinusitis were reviewed. In addition, a Medline search was performed and the characteristics of all patients identified were recorded and summarized. **RESULTS:** All patients reviewed underwent surgical intervention as primary therapy. Antifungal medications were used most frequently when aspergillus was not suspected to be the involved pathogen. Almost all symptoms fully resolved following surgery with the exception of vision loss. Of the 5 patients with vision loss 2 died and 3 had mild to no improvement following surgical intervention despite resolution of all other symptoms. **CONCLUSIONS:** Surgery is the primary treatment of patients with isolated sphenoid fungal sinusitis. Overall, the prognosis of this disease entity is good in the immunocompetent patient. Vision loss appears to be a poor prognostic factor.

11:15 Overnight Hospitalization Following Uvulopalatopharyngoplasty for Obstructive Sleep Apnea

Krista M. Rodriguez-Bruno, BS, San Francisco, CA

Jafer M. Ali, MD, San Francisco, CA

Andrew H. Murr, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to explain the rationale for keeping patients undergoing uvulopalatopharyngoplasty (UPPP) in the hospital overnight following surgery.

OBJECTIVES: To show that the primary role of overnight hospitalization in patients undergoing uvulopalatopharyngoplasty (UPPP) for obstructive sleep apnea is to provide inpatient care that is not available if the patient is discharged on the day of operation. **STUDY DESIGN:** Retrospective chart review. **METHODS:** 25 patients hospitalized overnight at a university based medical center from 2002 to 2004 following UPPP for OSA were identified. Their medical records were systematically reviewed. Length of hospital stay, amount/type/route and frequency of pain medications, average pain score, care level, intravenous fluid administration, oxygen requirements, consults and complications were recorded. **RESULTS:** The mean hospitalization following UPPP was 3.2 days. On a standard 10 point pain scale, the average pain score of patients throughout their hospital course was 4.4. On average, 7.1 doses IV pain medication were administered. All patients received IV morphine, and the vast majority received fentanyl post-operatively. Overall PO consumption averaged 257.2cc during the first 12 hours of hospitalization. Care levels recorded by the nursing staff which, on a scale of 1 to 4, measures the demands on the hospital personnel in providing services to the patient averaged 3 in this patient population. **CONCLUSIONS:** Recent studies have suggested that overnight hospitalization following uvulopalatopharyngoplasty is unnecessary. These studies have focused on low complication rates as their rationale. However, our results suggest that UPPP patients require a high level of care and utilize inpatient services extensively and that overnight hospitalization is appropriate.

11:25 Dysphagia After Uvulopalatopharyngoplasty (UPPP)

Andrew D. Palmer, MS, Portland, OR

Anna H. Grosz, MD, Portland, OR (Presenter)

Mark K. Wax, MD, Portland, OR

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to summarize previous research on the relationship between sleep apnea and dysphagia and describe physiologic changes in swallowing function after uvulopalatopharyngoplasty (UPPP).

OBJECTIVES: Previous published reports have suggested the possibility of pharyngeal desensitization secondary to OSA, resulting in subclinical dysphagia. We wished to identify whether subclinical dysphagia exists in individuals with obstructive sleep apnea (OSA) and to examine physiologic changes after UPPP versus UPPP with tongue base advancement and hyoid laryngoplasty (TBA). **STUDY DESIGN:** Prospective cohort study. **METHODS:** Twenty-two individuals with OSA underwent video-fluorographic swallow evaluation before and after UPPP. Subjective swallowing complaints were elicited. Pre- and post-operative comparisons were made for all patients and between patients who underwent TBA versus no TBA. **RESULTS:** In addition to UPPP, surgical procedures performed included tonsillectomy (18), TBA (7), tracheostomy (5), septoplasty or septorhinoplasty (5), and adenoidectomy (1). The most common radiographic abnormalities were penetration of liquids (2 pre-op, 6 post-op) and cricopharyngeal bar (2 pre-op, 3 post-op). The most common subjective symptoms post-operatively were the need for a modified diet (13), occasional nasal regurgitation (11), and occasional choking (5). At baseline, objective temporal measurements revealed did not reveal any significant differences in swallowing timing based upon severity of OSA. There was a significant reduction in oropharyngeal transit time post-operatively across all patients. Individuals who underwent TBA demonstrated significant differences both pre- and post-operatively from patients who underwent UPPP alone. **CONCLUSIONS:** In our cohort, there were no differences in the timing of swallowing events based upon OSA severity. Post-operative changes in swallowing function were common in our cohort but resolved as a result of therapy and were generally not long lived.

11:35 Day-to-Day Variability of 48 Hour Wireless pH Testing

Peter C. Belafsky, MD PhD, Sacramento, CA

David A. Godin, MD, New York, NY

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the daily variability of ambulatory 48 hour pH testing.

OBJECTIVES: Ambulatory pH testing is an important diagnostic modality in the evaluation of persons with suspected reflux disease. Although the results of pH testing are widely accepted as valid, the reproducibility of this examination has not been adequately evaluated. The introduction of 48 hour wireless pH testing provides a novel approach to study the variability of ambulatory pH metry. The objective of this investigation was to evaluate the day-to-day variability of 48 hour wireless pH testing. **STUDY DESIGN:** Retrospective chart review. **METHODS:** The charts of all patients at a tertiary swallowing center undergoing 48 hour wireless pH testing between 06/01/03 and 06/01/04 were retrospectively evaluated. Data concerning study indications, route of pH capsule placement, duration of pH recording, and test results were collected. Variability between day one and day two was assessed with the Pearson correlation coefficient. **RESULTS:** One hundred and seventeen studies were performed. The indications for the examination were gastroesophageal reflux disease (66/117), chronic cough (33/117) and laryngopharyngeal reflux (18/117). The route of pH capsule placement was transnasal during unsedated transnasal esophagoscopy (64/117), per-oral during sedated esophagogastroduodenoscopy (38/117), or per-oral during esophageal manometry (15/117). The mean study period was 45 (+/- 7) hours. The mean number of reflux episodes on day 1 and day 2 was 50 (+/- 50) and 45 (+/- 45) respectively (Pearson correlation coefficient = 0.747, $p < 0.001$). The mean percent of the study that the pH was < 4 on day 1 and day 2 was 5% (+/- 8) and 6% (+/- 9) respectively (Pearson correlation coefficient = 0.868, $p < 0.001$). Nine percent had a normal study on day 1 and an abnormal study on the day 2. There did not appear to be any differences in day-to-day variability for each of the different routes of pH probe placement. **CONCLUSIONS:** Day-to-day reliability of 48 hour wireless pH testing is high. The second day of the evaluation, however, can increase the diagnostic sensitivity by 10%. This may have implications for both wireless and traditional hard-wired pH testing.

11:45 Tracheoesophageal Voice Prosthesis (TEP) Life and Gastroesophageal Reflux (GERD): Results After Nissen Fundoplication

Donna J. Graville, PhD, Portland, OR
James I. Cohen, MD PhD, Portland, OR (*Presenter*)
Andrew D. Palmer, MS, Portland, OR
Brett C. Sheppard, MD, Portland, OR
Peter E. Andersen, MD, Portland, OR

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to describe the effect of GERD on the in situ lifespan of the tracheoesophageal puncture voice prosthesis.

OBJECTIVES: To evaluate the in situ lifespan of the tracheoesophageal voice prosthesis pre- and post-Nissen fundoplication. **STUDY DESIGN:** Retrospective chart review. **METHODS:** The records of all total laryngectomized patients using an indwelling voice prosthesis (Blom-Singer or Provox II) who had undergone a Nissen fundoplication for GERD were retrospectively reviewed. The frequency and indications for voice prosthesis change were compared for an equal period before and after fundoplication (mean = 10.8 months; range 3-24 months). **RESULTS:** Eleven subjects were found to have had either a complete (360 degree) or partial (270 degree) posterior laparoscopic fundoplication. The predominant indication for prosthesis change both pre- and post-Nissen was for leakage of liquids through the voice prosthesis (81%) indicating device failure. The results revealed a significant difference between device lifetime pre- and post-Nissen ($p = 0.002$). Average device lifetime increased from 3.09 months preoperatively (range 1 to 8 months) to 4.60 months postoperatively (range 3 to 8 months). The patients who required frequent changes pre-Nissen (5/11) showed the most dramatic improvement in device lifetime ($p = .01$), increasing the duration in situ from 1.8 months to 4.55 months. In effect, decreasing frequency of office visits for prosthesis change by two and a half. **CONCLUSIONS:** This early data suggests that in those laryngectomized patients with well-documented GERD who require frequent tracheoesophageal voice prosthesis changes, fundoplication may prove helpful in increasing device lifetime.

11:55 Non-Invasive Measurement of Ablation Crater Size and Thermal Injury After CO2 Laser in the Vocal Cord Using Optical Coherence Tomography

Behrooz A. Torkian, MD, Orange, CA
Shuguang S. Guo, PhD, Irvine, CA
Li-Huei L. Liaw, MS, Irvine, CA
Zhongping P. Chen, PhD, Irvine, CA
Brian J.F. Wong, MD PhD, Irvine, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to describe the potential use of optical coherence tomography for monitoring of laser injury and ablation.

OBJECTIVES: Optical coherence tomography (OCT) is a minimally invasive noncontact imaging modality that produces cross-sectional images of intact tissues with micrometer resolution. OCT has rapidly evolved as a modality to image tissue in the retina, GI tract, skin, and vasculature. Our goal is to investigate the use of OCT to image vocal cord mucosa in its native state and after laser ablation. **STUDY DESIGN:** Carbon dioxide laser energy was submitted to porcine true vocal fold mucosa to create laser lesions. The craters were imaged using optical coherence tomography (OCT). Observations and measurements of OCT and standard histology were compared using computer imaging. **METHODS:** Fresh porcine larynges were obtained from a local packing company. Laryngofissure was performed to provide exposure. A carbon dioxide laser (Sharplan Lasers 1055, Allendale, NJ) was used to create ten separate lesions on the true vocal cord (TVC) mucosa. Each lesion was created using a single pulse (100 msec) with power settings ranging from 2 to 20 watts in 2 watt increments. OCT images were obtained with a 1310nm central wavelength, 80nm bandwidth OCT device with 10 micron axial and lateral resolution. A separate OCT image was obtained for intact TVC mucosa and each lesion immediately after radiation. The tissue was then fixed in formaldehyde, dehydrated, fixed, sectioned and stained (H&E). Traditional histology was compared with the OCT images. Optical micrometry was used to measure the crater dimensions and thickness of thermally altered tissue in both OCT images and histologic sections. **RESULTS:** The OCT images identified the stratified substructural components of the normal true vocal cord mucosa, glandular, and muscular structures. The OCT images easily identified the changes in TVC mucosa produced by the laser irradiation. The layer of thermal altered tissue lining each crater was also clearly identified in OCT images. Loss of tissue structure in these regions clearly correlated with histology. The OCT images were able to demonstrate increased crater depth and thermal damage with increasing laser power. **CONCLUSIONS:** This study demonstrates the value of OCT in identifying the stratified components of laryngeal mucosa and the potential use in monitoring laser TVC surgery, in particular, with respect to crater depth and extent of thermal injury. Inasmuch as OCT clearly identifies the demarcation between the epithelium, basement membrane, and lamina propria, this technology may also be valuable for use in the evaluation of dysplastic and microinvasive TVC diseases.

12:05 Discussion

12:15 PANEL: LARYNGOLOGY AND EXTRAESOPHAGEAL REFLUX: THE KNOWN AND THE UNKNOWN

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

PANELISTS: William B. Armstrong, MD*, Orange, CA
Nicole Maronian, MD, Seattle, WA
Peter C. Belafsky, MD PhD, Sacramento, CA
Timothy McCulloch, MD, Seattle, WA
Raul M. Cruz, MD, Oakland, CA

12:55 Introduction of Vice President-Elect, Paul J. Donald, MD*, Sacramento, CA

Ernest A. Weymuller, Jr., MD*, Seattle, WA

1:00 Closing Remarks

Adjourn

POSTERS

1. Frontal Sinus Malignant Peripheral Nerve Sheath Tumor: Case Report

Mir J. Ali, MD, San Francisco, CA
Ivan H. El-Sayed, MD, San Francisco, CA
Krista R. Bruno, BS, San Francisco, CA
Michael W. McDermott, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the role of surgery and intensely modulated radiation therapy (IMRT) for malignant peripheral nerve sheath tumors (PNST) of the frontal sinuses.

OBJECTIVES: To present a previously unreported case of a frontal sinus malignant peripheral nerve sheath tumor (PNST) and to discuss its management. **STUDY DESIGN:** Case report. **METHODS:** A 49 year old woman was referred to our clinic after a one year history of persistent headache and left brow pain. She was initially diagnosed

with sinusitis but had no symptomatic resolution on antibiotics. A CT scan revealed a mass in the left frontal sinus region. Further workup with magnetic resonance imaging revealed a homogenous mass of the frontal sinus with intracranial and ethmoidal extension. Transnasal biopsy suggested a schwannoma. The mass was treated surgically with endoscopic assisted anterior craniofacial resection via a frontal craniotomy approach by the neurosurgery and otolaryngology teams. Intraoperatively it was noted that the mass eroded through the anterior and posterior walls of the frontal sinus and the orbital roof. Periorbital biopsies did not reveal tumor invasion. The final pathology revealed a malignant peripheral nerve sheath tumor and the patient was treated with postoperative intensity modulated radiation therapy. **RESULTS:** At the 9 month follow-up the patient is disease free and has had no significant cosmetic, neurologic, or cranial nerve morbidity. **CONCLUSIONS:** Malignant peripheral nerve sheath tumors are rare and aggressive tumors. Optimal management of MPNST has not been defined and surgery combined with radiation is often used. A review of the literature reveals this is the first reported case of a MPNST in the frontal sinus. We describe the clinical, radiographic and pathologic features of this MPNST and our management of this entity in the anatomically complex region of the frontal sinus using modern surgical approaches of endoscopic assisted anterior craniofacial resection with image guidance and postoperative intensity modulated radiation therapy.

2. Iatrogenically Induced Bilateral Inverted Papillomas in an HIV Positive Patient: Case Report

Mir J. Ali, MD, San Francisco, CA
Krista R. Bruno, BS, San Francisco, CA
Steven J. Wang, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to explain why precautionary measures should be taken to avoid cross-contamination when examining a patient with unilateral inverted papilloma.

OBJECTIVES: To present a rare case of bilateral inverted papillomas in which one disease site was thought to have seeded to the contralateral side by cross-contamination during nasal endoscopy and to discuss its significance in terms of future management of patients with unilateral disease. **STUDY DESIGN:** Case report. **METHODS:** Case report: A 59 year old, HIV positive man presented to our clinic with right nasal obstruction for approximately one year accompanied by daily green nasal discharge. A CT scan was done and revealed a right nasal cavity mass with possible erosion of the middle and inferior bony turbinates. Biopsy suggested the diagnosis of inverted papilloma (IP). The patient underwent endoscopic excision with medial maxillectomy. Five months following surgery, a routine follow-up endoscopic exam revealed a right maxillary sinus mass and a new polyp on the floor of the right nasal cavity. In addition, a new polypoid mass was found on the floor of the left nasal cavity following the typical trajectory of the nasal endoscope. All three masses were removed endoscopically. Pathology confirmed a diagnosis of inverted papilloma for all of the resected lesions. **RESULTS:** The patient continues to be followed by our clinic for potential recurrence of his disease. **CONCLUSIONS:** Although no cases of iatrogenic spread of HPV via nasal endoscopes were found in our literature review, a parallel scenario was reported in which a patient reportedly developed anal warts after HPV exposure during a colonoscopy. Given the evidence that HPV is an infectious entity and that it plays a role in the etiology of inverted papilloma, we urge that precautions be used in examining the contralateral side in patients with unilateral inverted papilloma. Safeguards might include using separate endoscopes when examining each nasal cavity or sterilizing the equipment between the examination of one nasal cavity and the other. Further study of this mechanism of spread should be done. In the meantime, awareness and precautionary measures are warranted.

3. A Quick, Simple, Effective and Inexpensive Dental Splint for Operative Endoscopy

William B. Armstrong, MD*, Orange, CA
John F. McGuire, MD, Orange, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand how to make a thermoplastic dental guard for use in patients undergoing operative endoscopy.

OBJECTIVES: Dental injury during direct laryngoscopy is a well documented and frequent complication. Several studies document a predilection of these injuries to occur in a cohort of "high risk" patients who either have poor dentition, a history of previous dental restorations or a difficult to expose airway. Available prefabricated mouth guards may provide insufficient protection for these "high risk" patients. Thermoplastic splints are commonly used following closed nasal reductions and rhinoplasty. They are readily available in most operating rooms. This presentation describes how to manufacture a custom fit durable tooth guard with thermoplastic splint material. The procedure is quick, simple, and provides excellent protection against dental injury in high risk patients. **STUDY DESIGN:** Review of clinical experience using thermoplastic splinting material. **METHODS:** Description and photo-documentation of the manufacture of a custom fit dental guard. **RESULTS:** Functional custom splints can be constructed in approximately 4 minutes from time of heating water to hardening of the splint. The constructed splint is firm, thin, and does not impair laryngoscopic exposure. No thermal or dental injuries have been encountered in approximately 20 cases performed. **CONCLUSIONS:** Custom dental splints made with readily available thermoplastic splinting material are quickly and easily produced. We have found them very useful in patients with fragile dental restorations, poor dentition, and patients at high risk of dental injury during operative laryngoscopy.

4. Unusual Presentation of Thyroid Abscess

Rami K. Batniji, MD, Albany, NY
Gavin Setzen, MD, Albany, NY

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the presentation, evaluation, and treatment of thyroid abscess.

OBJECTIVES: To report a case of thyroid abscess with an unusual presentation. **STUDY DESIGN:** Case report and literature review. **METHODS:** The study comprises a case report of a 52 year old female with a medical history significant for methicillin-resistant staphylococcus aureus infection following orthognathic surgery who presented with progressive odynophagia. On physical examination, the patient demonstrated trismus; however, the remainder of the examination was unremarkable. **RESULTS:** Findings on flexible fiberoptic laryngopharyngoscopy included mild supraglottic edema with normal cord mobility. Laboratory data demonstrated normal white blood cell count, normal thyroid function testing, and negative blood cultures, but elevation of the sedimentation rate. Magnetic resonance imaging of the neck showed inflammation of the thyroid gland. Computed tomography with contrast of the neck demonstrated an abscess within the thyroid gland. Ultrasonography with image guided fine needle aspiration was performed and demonstrated inflammatory cells, white blood cells and no evidence of malignant cells. Cultures were obtained and consistent with staphylococcus aureus. The patient received intravenous antibiotic therapy with subsequent quiescence of symptoms and resolution of the abscess. **CONCLUSIONS:** Thyroid abscess is relatively uncommon. Diagnosis relies upon high clinical suspicion and appropriate imaging studies. Treatment includes fine needle aspiration and antibiotic therapy; surgery is indicated for those abscesses refractory to conservative therapy.

5. Lymphoepithelial Carcinoma of the Submandibular Gland

Amol M. Bhatki, MD, San Francisco, CA
Young S. Oh, 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 discuss the clinicopathologic features of lymphoepithelial carcinoma of the major salivary glands.

OBJECTIVES: Lymphoepithelial carcinoma (LEC) or malignant lymphoepithelial lesion (MLEL) is a rare and unusual squamous cell neoplasm of the major salivary

glands, most commonly the parotid gland. It has a high incidence in the Eskimo and southern Chinese populations and is proposed to be associated with Epstein-Barr virus. Only 18 cases of this malignancy are reported to occur in the submandibular gland. We present a case of lymphoepithelial carcinoma presenting as a mass in the left submandibular region. Our objective is to add another case of this rare malignancy to the literature and summarize its etiology, histological characteristics, therapy, and prognosis. **STUDY DESIGN:** Case report and literature review. **METHODS:** We reviewed the English literature and found 18 cases of LEC occurring in the submandibular gland. Excision of the gland with ipsilateral neck dissection was the treatment of choice. **RESULTS:** The patient underwent ipsilateral modified radical neck dissection. Histological examination revealed lymphoepithelial carcinoma of the submandibular gland with no microscopic evidence of metastatic disease to regional lymph nodes. **CONCLUSIONS:** Lymphoepithelial carcinoma is a poorly differentiated malignancy occurring in major salivary glands with few reports of submandibular gland involvement. It is an unencapsulated tumor with specific histological features that make it difficult to distinguish from metastatic nasopharyngeal carcinoma. It often has a tendency to metastasize early to regional lymph nodes and, therefore, complete surgical excision with neck dissection and postoperative radiation is considered optimal treatment.

6. Acoustic Pharyngometry in a Cadaver Pharynx: A Novel Predictive Model for Sleep Apnea Surgery

Dov C. Bloch, MD+, San Francisco, CA
Andrew N. Goldberg, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the challenges in developing a cadaver model to study sleep apnea treatments; utilize the acoustic reflection technique to obtain pharyngeal measurements; and understand the background and limitations of this technology.

OBJECTIVES: To develop a cadaver model to evaluate novel sleep apnea procedures by demonstrating changes in cross-sectional area of the pharynx using acoustic pharyngometry. **STUDY DESIGN:** Experimental. **METHODS:** Measurements were obtained from six cadaver heads using an acoustic pharyngometer. Multiple variables were manipulated to determine their effects on pharyngeal cross-sectional area. The first five specimens were used to refine the experimental model and become familiar with the use of the equipment. The design of the experiment included placement of a Foley balloon filled with saline in the nasopharynx to close off the nasal cavity. An endotracheal tube was placed retrograde through the glottis to isolate the oro-hypopharyngeal area. This represented the pharyngeal segment evaluated by our model. **RESULTS:** Computer generated curves obtained from reflected acoustic signals measured at the mouthpiece were analyzed. The baseline measurement of the pharyngeal area was defined after delineating the upper and lower borders of the oro-hypopharynx experimentally. Multiple runs with the acoustic pharyngometer were performed to determine its reproducibility. The coefficient of variance was <1%. **CONCLUSIONS:** The acoustic pharyngometer is a powerful research tool, however its use requires an understanding and control of sources of variability. We developed an algorithm that accounts for these issues. Our model to obtain pharyngeal area measurements in a cadaver is a novel application of the technology and may be a useful adjunct to evaluate the efficacy of sleep apnea procedures.

7. The Use of Otic Drops to Obtain Patency of Obstructed Tympanostomy Tubes

Michael T. Cecil, MD, Lexington, KY
Richard C. Haydon, MD, Lexington, KY

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to compare the efficacy of various agents for restoring patency of obstructed tympanostomy tubes.

OBJECTIVES: The objective of this study was to determine the efficacy of hyaluronidase, an enzyme shown to atraumatically remove mucous from rat middle ear mucosa and other various otological agents for achieving patency in an obstructed tympanostomy tube. **STUDY DESIGN:** In vitro, single blinded, non-randomized. **METHODS:** One hundred ninety-two tympanostomy tubes were obstructed with blood (n=96) and mucous (n=96). These tubes were placed in a model simulating a tympanic membrane and treated twice daily for fourteen days with various topical agents. Sixteen tubes from each group were treated with hyaluronidase, hydrogen peroxide, sodium bicarbonate, half-strength vinegar or ofloxacin. Sixteen tubes from each group were not treated and served as a control to test the model. Two blinded observers evaluated each tube for patency with otomicroscopy on days two, ten and fourteen. The results were analyzed by chi-square analysis. **RESULTS:** All tubes in the control group maintained obstruction throughout the study. Hyaluronidase was effective in achieving patency in 69% and 88% of tubes obstructed with mucous and blood, respectively. These patency rates were superior to the other agents tested with the exception of hydrogen peroxide, which also achieved an 88% patency rate with respect to blood. However, hydrogen peroxide only achieved a 44% patency rate with respect to mucous. These results were statistically significant. **CONCLUSIONS:** Hyaluronidase is effective in clearing the mucoid effusions that often obstruct tympanostomy tubes. Hydrogen peroxide and hyaluronidase are equally effective in obtaining patency in a tympanostomy tube obstructed with blood.

8. A Novel Percutaneous Wiring Technique for Resuspension of the Medial Canthal Ligament

Vincent Y. Chen, MD, Orange, CA
Terry Y. Shibuya, MD*, Orange, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the anatomy of the medial canthal ligaments and nasal-orbital ethmoid complex, as well as concepts regarding their reconstruction after trauma and oncologic resection. The participant will understand a novel percutaneous technique of resuspension of the medial canthal ligament.

OBJECTIVES: Traditional techniques to resuspend the medial canthal ligaments have involved transnasal wiring and plating systems. These techniques entail varying degrees of technical difficulty and have variable success at narrowing the intercanthal distance. We present a novel percutaneous wiring technique of reconstruction of the medial canthal ligaments after trauma or oncologic resections. **STUDY DESIGN:** We present experience of the senior author in utilizing a novel percutaneous technique to resuspend the medial canthal ligaments. **METHODS:** Demonstration of a novel percutaneous wiring technique of resuspension of the medial canthal ligaments using diagrams, intraoperative photographs, radiographs. Measurements of intercanthal distances will be performed using postoperative photographs. **RESULTS:** Percutaneous wiring of the medial canthal ligaments is effective in addressing telecanthus in patients. **CONCLUSIONS:** Percutaneous wiring is an easy and effective technique to resuspend the medial canthal ligaments following trauma or cancer resection.

9. A Novel Intranasal Stent for Functional Rhinoplasty and Nostril Stenosis

Kristin K. Egan, MD+, San Francisco, CA
David W. Kim, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the safety and efficacy of the use of nasal stents fashioned from a nasal airway tube to prevent post-operative contracture at these sites.

OBJECTIVES: The surgical correction of nostril stenosis and external nasal valve collapse involves the addition of tissue to widen and strengthen these areas. However, over ensuing months, post-operative scar contracture may reverse the surgical modifications. This study aimed to determine the safety and efficacy of the use of nasal stents fashioned from a nasal airway tube to prevent post-operative contracture at these sites. **STUDY DESIGN:** Retrospective review of 6 patients in a university facial plastic surgery practice who underwent functional rhinoplasty with alar batten graft placement for nasal valve collapse and 1 patient who underwent composite graft repair of unilateral nostril stenosis. **METHODS:** Patients completed a survey inquiring about the ease of use, discomfort, presence of infection, and ability to breathe with these stents. Patients also completed the NOSE (nasal obstruction symptom evaluation) instrument to compare their overall level of pre-operative and post-operative

nasal breathing. The functional rhinoplasty patients were examined for degree of dynamic airway nasal wall collapse and position of the lateral nasal wall on intranasal examination. **RESULTS:** 6 of 7 patients overall reported minimal discomfort, easy application, and minimal to moderate obstruction of nasal breathing with the use of the stents. One patient reported difficulty with application. All patients demonstrated a significant improvement on NOSE scores and a reduction of lateral nasal wall collapse with inspiration on physical exam. **CONCLUSIONS:** The use of nasal stents made from nasal airway tubes is a safe, convenient, and economic treatment for the prevention of contracture after surgical correction of nostril stenosis or nasal valve insufficiency.

10. **Burkitt's Lymphoma Presenting as a Base of Tongue Mass Causing Airway Obstruction**

Steven M. Feinberg, MD, Orange, CA
Terry Y. Shibuya, MD*, Orange, CA
S.H. Ignatius Ou, MD, Orange, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the possibility of Burkitt's lymphoma presenting as a mass of the tongue base. Additionally, participants will understand the incidence, epidemiology, etiology, prognosis, and treatment of this disease.

OBJECTIVES: To review a case of Burkitt's lymphoma presenting as rapidly expanding tongue base mass causing airway obstruction and review its incidence, epidemiology, genetics, prognosis and treatment. **STUDY DESIGN:** Case report and review of the literature. **METHODS:** A case of Burkitt's lymphoma presenting in the base of tongue causing airway obstruction is reviewed. Airway management in this rapidly expanding tumor is discussed. A search of the head and neck literature was performed and all relevant articles were reviewed. **RESULTS:** This is only the 3rd case of Burkitt's lymphoma presenting as a base of tongue mass identified in the English literature. This disease is very rare outside of Africa and is very rare for the nonendemic form of the disease to present in the head and neck region. Burkitt's lymphoma has one of the highest growth rates of any tumor in man and rapid diagnosis and treatment are extremely important. **CONCLUSIONS:** Burkitt's lymphoma is a highly aggressive mature B cell non-Hodgkin's lymphoma occurring as endemic, sporadic and immunodeficiency variants. All variants share in common activation of the C-myc oncogene via a chromosomal translocation, resulting in disordered cell proliferation. The tongue base is an uncommon location for this disease with only two previous cases reported in the English literature. Treatment consists of brief duration, high intensity chemotherapy with central nervous system prophylaxis. It is important for the otolaryngologist to recognize this disease and understand the steps necessary to treat this aggressive tumor.

11. **Adenocarcinoma of the Lung Presenting as Metastatic Disease to the Temporal Bone**

John P. Gavin, MD, Albany, NY
David Foyt, MD, Albany, NY

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to identify elements in the history, physical findings, and radiologic findings that should make the clinician suspicious of malignancy metastatic to the temporal bone in patients presenting with new onset otologic complaints.

OBJECTIVES: To describe a case of adenocarcinoma of the lung presenting as temporal bone disease and review the literature on similar cases. **STUDY DESIGN:** Case report and review of the literature. **METHODS:** We report a case of adenocarcinoma of the lung in a patient presenting with a middle ear effusion that was initially treated with a tympanostomy tube. Shortly thereafter he developed an ipsilateral facial weakness and was noted to have a temporal bone mass on CT scan. Biopsy and histologic evaluation showed adenocarcinoma and further workup revealed a primary tumor in the lung. We performed a literature search for similar cases of this unusual presentation. **RESULTS:** Metastasis to the temporal bone has historically been considered very rare. However, the condition may not be recognized in cases of asymptomatic disease. Additionally, severe complications of late stage malignancy may mask a temporal bone metastasis. Cadaver studies suggest that this condition may be present more frequently than it is recognized clinically. **CONCLUSIONS:** A malignancy presenting as a temporal bone metastasis is a rare occurrence requiring a high index of suspicion for accurate diagnosis.

12. **The Acetabular Reamer: A Unique Tool for Anterior Iliac Crest Bone Graft Harvesting**

David G. Gossman, MD, Lexington, KY
William J. Rosenblum, MD, Lexington, KY
Oneida A. Arosarena, MD, Lexington, KY
Joseph Valentino, MD, Lexington, KY

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation the participants should be able to demonstrate knowledge of a unique method of harvesting iliac crest bone grafts. The participants will be familiar with the surgical technique, including pertinent anatomy, surgical exposure, and graft harvesting methods using the acetabular reamer system. The participants will be able to compare this method to more traditional methods and discuss the advantages and applicability of this technique.

OBJECTIVES: Bone grafting is often required in craniofacial reconstruction. Morselized corticocancellous bone grafts are particularly useful in applications such as contouring irregular bony defects. Obtaining grafts of this consistency by traditional methods is difficult. An efficient harvesting method that can produce such grafting material in clinically useful quantities is needed. We report the use of a mechanical acetabular reamer for the purpose of harvesting a bone graft from the iliac crest. **STUDY DESIGN:** A report of a surgical technique. **METHODS:** An acetabular reamer used to harvest iliac crest bone grafts. **RESULTS:** See conclusions. **CONCLUSIONS:** The acetabular reamer system is a simple and efficient method of harvesting bone graft material from the iliac crest. It is a safe alternative to the traditional methods of graft harvesting with similar morbidity. The power-driven nature of the reamer affords a more controlled application of force, minimizing the chance of accidental injury to surrounding structures. Perhaps the most significant advantage is the nature of the graft itself. The reamer produces a bone paste that is ideal in both consistency and quantity. The product can be taken directly from the reamer cup and put to use without any additional preparation. Overall this mechanized method simplifies graft harvesting and reduces operating time. It is a technique that can be easily mastered with equipment that is widely available. We find it a useful method of bone graft procurement in craniofacial reconstruction.

13. **A Systematic Multidisciplinary Approach To Treating Severely Infected Preauricular Sinuses—Case Presentation**

John A. Hlaudy, DMD, Lacrosse, WI
Edwin M. Overholt, MD, Lacrosse, WI
Mark V. Connelly, MD, Lacrosse, WI

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation the participants should be able to discuss the embryology and pathogenesis of the anterior helicine type of preauricular sinus. They should recognize that complete treatment might require aggressive wound care and prolonged antibiotics for management of the surgical field. They should acknowledge that en-bloc resection is required for complete extirpation and serial scar revision might be necessary for acceptable cosmesis.

OBJECTIVES: 1) Review the etiology of anterior helicine preauricular pits/sinus; 2) describe a systematic, multidisciplinary approach for definitive treatment of a severely infected preauricular sinus so as to perform definitive surgical extirpation in an operative field free of active inflammation; 3) demonstrate that staged cosmetic rehabilitation may be necessary for acceptable cosmetic results; and 4) evaluate surgical treatment outcomes of severely infected preauricular sinuses in three pediatric patients. **STUDY DESIGN:** Retrospective chart review. **METHODS:** Literature review, retrospective analysis of medical records, and review of both pre- and post-operative photographs. **RESULTS:** Our experience with three pediatric patients diagnosed with severely infected preauricular sinuses demonstrates that a multidisciplinary medical/surgical approach can result in excellent outcomes both from the standpoint of avoiding recurrence as well as achieving excellent cosmesis. **CONCLUSIONS:** Severely

infected preauricular sinuses present a challenge to the head and neck surgeon. Long-standing chronic infection of the preauricular skin and soft tissues along with a typical history of multiple surgical interventions creates a clinical problem that requires management in a systematic way. In our experience, calling on the expertise of a pediatrician, otolaryngologist, and facial plastic surgeon has resulted in excellent results. Following this approach, the need for partial parotidectomy, formal facial nerve dissection, large local flaps, or skin grafts is avoided. In one case, serial scar revision was necessary for adequate cosmetic result.

14. **The Effect of Prior Radiation and Head and Neck Surgery on Microvascular Free Flap Complication Rates**

Paul E. Krause, MD, Oakland, CA
Barry M. Rasgon, MD, Oakland, CA
Ron L. Mathiasen, MD, Oakland, CA
Deepak Gurushanthaiah, MD, Oakland, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to compare the free flap success rate in patients who have undergone prior surgery to their head and neck (surgery and/or radiation) and those who have not.

OBJECTIVES: Microvascular free flaps are the reconstructive strategy of choice for complex head and neck reconstruction. While large series of free flap reconstructions have previously been reported, no one to our knowledge has compared the success rate of free flaps in patients who have undergone prior resections with those for whom the free flap is part of their first surgery. **STUDY DESIGN:** A retrospective, case controlled design. **METHODS:** The charts of 49 patients who underwent free flap reconstruction of the head and neck from 1999 through 2004 were reviewed. Age, prior surgery, prior radiation, prior chemotherapy, need for flap exploration, need for wound care, were evaluated. **RESULTS:** Fifty-three percent (26/49) underwent a prior surgery before their combined cancer resection and microvascular free flap reconstruction. These patients had an overall flap failure rate (wound breakdown versus flap failure) of 42 percent. Overall, 11 percent of patients needed to return to the operating room for a flap exploration. Patients who had undergone no prior surgery needed flap exploration six percent of the time. Prior radiation, with or without prior surgery, provided similar percentages of flap failure. Overall, these patients had wound and flap complications 23 percent of the time. **CONCLUSIONS:** Prior cancer surgery, with or without radiation, increases the risk of microvascular free flap exploration and wound complications. Patients who have undergone no prior surgery have complication rates equal to those reported in other series.

15. **Extramedullary Plasmacytoma Presenting Simultaneously in Three Noncontiguous Locations in the Head and Neck: A Case Report**

I-Fan T. Mau, MD PhD, 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 presentation, diagnosis, natural history, and treatment strategy for extramedullary plasmacytoma of the head and neck.

OBJECTIVES: To present an unusual case of extramedullary plasmacytoma with simultaneous manifestations in the nasopharynx, larynx, and trachea, and to discuss the diagnosis, natural history, and management of extramedullary plasmacytoma in the head and neck. **STUDY DESIGN:** Case report and literature review. **METHODS:** A report of a 43 year old man with a history of extramedullary plasmacytoma in the nasopharynx status post primary surgical excision, with subsequent recurrence treated with radiation therapy. The patient then presented with a re-recurrence 10 years after the initial diagnosis and underwent complete otolaryngologic evaluation. **RESULTS:** Evaluation showed recurrence of disease in the nasopharynx. In addition, a new, asymptomatic lesion was found in the glottis, as well as multiple lesions in the tracheal wall. These lesions were biopsied and confirmed to be plasmacytoma. Workup for multiple myeloma was negative. **CONCLUSIONS:** The simultaneous presentation of extramedullary plasmacytoma in three noncontiguous sites in the airway, including a rare tracheal location, is highly unusual. This case highlights the importance of complete surveillance otolaryngologic examinations at regular intervals after the initial therapy. The possibility of late recurrence or systemic progression also mandates a follow-up period that should exceed what is usually deemed appropriate for other head and neck malignancies. While local control is excellent with radiation therapy, close follow-up is required to detect possible development of multiple myeloma, which carries a significantly worse prognosis.

16. **How to Build a Biomarker Discovery Platform From an Office Based Practice**

John F. McGuire, MD MBA, Orange, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the general principles of proteomics based biomarker discovery tools and understand how to construct a biomarker discovery experiment using private sector subcontractors.

OBJECTIVES: Historically, universities have enjoyed a relative monopoly on scientific research due to a monopoly on the tools of discovery. The advent of private sector subcontractors in fields such as proteomics is changing this balance, allowing for office based physicians to compete on par with universities in the basic and transitional sciences. This presentation is designed to introduce the basics of how an office based otolaryngology practice can build a biomarker discovery platform using private sector resources. A review of the general proteomics literature will provide background on how proteomics based biomarker discovery technology works, including examples of recent proteomic experiments in the field of otolaryngology. This is followed by a discussion of how to best construct a high yield biomarker discovery experiment using proteomic technology. Finally, a review of private sector subcontractor resources will be provided, including an estimate of the costs needed to construct an office based biomarker discovery platform. **STUDY DESIGN:** N/A. **METHODS:** Literature review and internet based survey. **RESULTS:** N/A. **CONCLUSIONS:** Biomarker discovery is a perfect example of how office based otolaryngologists can become competitive in the discovery process. A successful biomarker discovery experiment not only drives the scientific process, but it also has the potential to expand the community presence of an office based physician, establish clinical expertise in a particular practice niche, generate revenue through patents and grant monies, and provide personal gratification to the practitioner who wishes to rejoin the scientific process.

17. **The Management of the Difficult Airway in Head and Neck Cancer Patients**

Young S. Oh, 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 use of the Eschmann stylet (ES) and the Holinger laryngoscope (HL) in securing the difficult airway in head and neck cancer patients and to anticipate situations where it may be needed.

OBJECTIVES: The use of the ES in securing the difficult airway has been well documented in the anesthesiology literature. The shape and design of the HL allows visualization of the glottis when even the most experienced anesthesiologist may have difficulty with standard open blade scopes. Combining the ES with the HL in cases of difficult intubation has been previously described. We present our recent experience of using the ES with the HL in securing the airway in head and neck cancer patients where standard attempts have failed and to analyze patient factors that led to each failure. **STUDY DESIGN:** Report of 6 illustrative cases from an academic tertiary referral center. **METHODS:** Retrospective chart review and review of the literature. **RESULTS:** All six patients were intubated without difficulty using the ES and the HL. Three out of the six patients had failed attempts at direct orotracheal intubation and one patient had a failed attempt at flexible fiberoptic intubation. In 2 cases, this technique was used de novo by the otolaryngology service to secure the airway. Four of the six patients had a history of prior radiation therapy. **CONCLUSIONS:** Using the ES with the HL is a safe, reliable, and readily available tool for the otolaryngologist in securing the difficult airway.

18. Detection of Distant Metastasis to the Thyroid by PET Scan

Jonathan M. Owens, MD, Denver, CO
John I. Song, MD, Denver, CO

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to explain the role of PET scan in the evaluation of distant metastatic carcinoma, particularly to the thyroid.

OBJECTIVES: To discuss the utility of positron emission tomography (PET) in the early detection of metastatic disease to the thyroid gland. **STUDY DESIGN:** Case report. **METHODS:** Review of the pertinent medical records, pathology, and radiology studies. A review of the literature was also performed. **RESULTS:** We present a 55 year old female with stage IVA adenocarcinoma of the cervix treated with surgery, chemotherapy, and radiation. Immediately following completion of treatment, a 18F-FDG PET scan was obtained as a part of a metastatic evaluation which showed an area of increased activity within the left thyroid lobe. No other areas showed increased PET activity. Ultrasound and CT confirmed the presence of a 2.6 x 1.7 cm nodule in the left thyroid lobe. The patient underwent thyroid lobectomy and isthmusectomy and a solitary left nodule was encountered intraoperatively. The final pathology was consistent with metastatic cervical adenocarcinoma. **CONCLUSIONS:** Distant metastasis from an adenocarcinoma of the cervix mimicking a primary thyroid nodule is an unusual finding. In the past decade, PET scans have emerged as a powerful diagnostic tool in the evaluation of recurrent, persistent and metastatic disease. The role of PET in evaluation of thyroid nodules has not been clearly elucidated. This case demonstrates the utility of PET scans in the early detection of subclinical distant metastatic disease and its emerging role as a diagnostic tool in thyroid disease.

19. Subcranial Approach to Pediatric Esthesioneuroblastoma—A Case Study

Chuck E. Stewart, MD, Loma Linda, CA
Mark R. Rowe, MD, Loma Linda, CA
Jon Y. Kim, MD, Loma Linda, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to: 1) recognize and discuss the indications and uses for the subcranial approach in children; 2) explain the current staging and management of esthesioneuroblastoma in the pediatric population; 3) demonstrate a knowledge of the follow-up care required for patients recovering from this surgical approach.

OBJECTIVES: Discuss at length the presentation and evaluation of an esthesioneuroblastoma in a pediatric patient. This disease process is very rare in children and little has been written about the surgical approaches and postoperative treatment required. This case study will focus on the subcranial approach for this disease entity and review the literature on staging and adjuvant treatment. **STUDY DESIGN:** Case study in a pediatric patient. **METHODS:** Case study and literature review on esthesioneuroblastoma in the pediatric population. **RESULTS:** We present the case of a young female patient presenting with a large nasal mass. We discuss the evaluation, including radiographic reports, histology, and surgical planning. We demonstrate the successful surgical excision of an esthesioneuroblastoma using the subcranial approach. Postoperative adjuvant treatment required is also briefly explained. **CONCLUSIONS:** Esthesioneuroblastoma is an extremely rare nasal tumor in children. Very little was written about this tumor and how to treat it in the pediatric population. The subcranial approach is an often used technique to approach tumors of the anterior skull base. We present a case of a 12 year old female who presented with a very large nasal mass. After radiographic and histologic studies revealed esthesioneuroblastoma, the lesion was excised using the subcranial approach. We discuss all aspects of this case as well as the current literature on staging and management of this very unusual tumor. This presentation will also discuss how postoperative adjuvant therapy differs in the pediatric patient as compared to the adult.

20. Angioleiomyoma: A Rare Neoplasm Arising on the Auricle

Roy F. Thomas, MD, Tacoma, WA
James M. Poss, MD, Tacoma, WA
Jamie R. Steger-Hanson, MD, Tacoma, WA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the characteristics of angioleiomyomas arising from the auricle. Participants will demonstrate ability to describe histologic features of this rare tumor.

OBJECTIVES: The purpose of this report is to describe a rare neoplasm arising from the auricle. The gross and histologic appearance of the tumor will be characterized. Results of a review of the literature will be presented. **STUDY DESIGN:** Case report of a rare tumor in an uncommon location. **METHODS:** A 34 year old man presented to the otolaryngology clinic with the complaint of a soft tissue mass on the right auricle felt to be a hemangioma. The mass had been present for three years and had arisen after apparent trauma to the auricle. The lesion was compressible, demonstrating its vascular nature. It was excised with primary closure of the cutaneous defect. **RESULTS:** The mass was 1.1 cm in greatest diameter and was excised with clear margins. Pathology was consistent with vascular leiomyoma. **CONCLUSIONS:** Angioleiomyoma is a rare neoplasm arising most commonly on the lower leg. Occurrence in the head and neck is uncommon. Review of the English language literature revealed a total of seven cases reported to arise on the auricle. This case is unique in that it presented at a site of previous trauma. Simple excision yields excellent results.

21. Surgical Removal of a Posterior Mediastinal Thyroid Goiter With Mediastinoscopic Assistance

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Marilene B. Wang, MD*, Los Angeles, CA
Robert B. Cameron, MD, Los Angeles, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss evaluation and management of a patient with a large posterior mediastinal thyroid goiter in the chest cavity.

OBJECTIVES: This is a report of an unusual case of a patient with a large posterior mediastinal thyroid goiter extending to the level of the aorta. Radiographic findings, operative techniques, and pathology will be reviewed. **STUDY DESIGN:** Case report. **METHODS:** A 56 year old male with a mediastinal mass, discovered on a chest X-ray, underwent an initial neck exploration and median sternotomy at a community hospital. The surgical exploration revealed a large right substernal goiter as well as a left thyroid nodule. The left thyroid nodule biopsy returned as papillary carcinoma. A follow-up CT scan of the neck and chest showed a large residual goiter in the posterior mediastinum, as well as a residual left thyroid lobe. The mediastinal goiter was adjacent to the esophagus and extended down to the level of the aorta. **RESULTS:** The patient underwent a left thyroid lobectomy and right neck exploration, using a standard low collar neck incision. Subsequently, a mediastinoscope was used via the neck incision to dissect the large goiter out of the posterior mediastinum and bring it into the neck, where it was removed along with the right thyroid lobe. The patient had no vocal cord weakness or hypocalcemia postoperatively. The final pathology diagnosis was consistent with multinodular goiter without evidence of papillary carcinoma. **CONCLUSIONS:** A thyroid goiter in the chest cavity may be successfully removed via a neck incision using a mediastinoscope. Median sternotomy is not always necessary, particularly for a goiter in the posterior mediastinum.

22. Acute Disseminated Intravascular Coagulation Syndrome in the Head and Neck Cancer Patient

Andrea H. Yeung, MD, San Francisco, CA
Young Oh, 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 discuss the clinical features of disseminated intravascular coagulation syndrome (DICS) in the head and neck cancer patient and to potentially identify those who may be at risk.

OBJECTIVES: To report 3 cases of perioperative DICS in head and neck cancer patients. **STUDY DESIGN:** A retrospective chart review with review of the literature. **METHODS:** Report of illustrative cases from a tertiary care academic medical center. **RESULTS:** All three patients had advanced malignant tumors of the head and neck and history of heavy alcohol use. The patients ranged in age from 59-64 years. Two of the patients had intraoperative DICS while the third patient presented with post-operative DICS, all of which presented with extensive skin and mucous membrane bleeding from surgical incision and catheter sites. **CONCLUSIONS:** Underlying liver dysfunction, operative time, and perioperative blood loss are important factors for predicting the onset and prognosis of DIC in the head and neck cancer patient. This series underscores the importance of prompt diagnosis and treatment of DICS.

23. Intratemporal Cholesteatoma Following Translabyrinthine Acoustic Neuroma Excision

Andrea H. Yeung, MD, San Francisco, CA
Steven W. Cheung, MD, San Francisco, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to discuss the clinical features of an intratemporal cholesteatoma following translabyrinthine acoustic neuroma excision and the possible treatment plans.

OBJECTIVES: Cholesteatoma may arise from implantation of squamous epithelium in the temporal bone as a consequence of otologic surgery. We present an unusual case of an intratemporal cholesteatoma that became evident seven years following translabyrinthine craniotomy for acoustic neuroma excision. **STUDY DESIGN:** A case report and review of the literature. **METHODS:** A 59 year old woman underwent left translabyrinthine excision of a large acoustic neuroma and hypoglossal-facial nerve anastomosis seven years ago presented with otorrhea that was largely clear but occasionally purulent. Physical examination of the left ear revealed a 4mm fistula of the posterior superior osseous ear canal that harbored squamous debris deep to the opening. MRI imaging demonstrated an apparent cholesteatoma integral with the substance of the fat graft located in the petrous apex. **RESULTS:** The patient underwent excision of the intratemporal cholesteatoma and closure of suspected CSF leak. Disease in the petrous temporal bone was completely removed, the Eustachian tube was completely obliterated, and the external ear was closed as a blind pouch. Intraoperative findings were notable for a posterior superior external auditory canal fistula that extended into the petrous apex. Cholesteatoma was admixed with fat and tracked along the labyrinthine facial nerve. Due to chronic infection a latissimus dorsi rotational flap was used to fill the defect. Postoperatively, otorrhea ceased and the patient's facial nerve function remained unchanged. **CONCLUSIONS:** Cholesteatoma following translabyrinthine acoustic neuroma excision is a rare complication. This case highlights the necessity for postoperative surveillance and illustrates a treatment plan.

24. Positron Emission Tomography: Poor Sensitivity for Tonsillar Carcinoma

Brita E. Zaia, BS, Los Angeles, CA
Christian Head, MD, Los Angeles, CA
Keith E. Blackwell, 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 discuss the sensitivity of FDG-PET (fluorodeoxy-glucose positron emission tomography) in detecting primary tonsillar carcinoma in patients with unknown primary tumor, the clinical diagnostic implications behind this finding, and technical explanations of poor PET sensitivity in tonsillar carcinoma.

OBJECTIVES: FDG-PET (fluorodeoxy-glucose positron emission tomography) currently plays an important role in identifying the location of the primary tumor in metastatic cervical squamous cell carcinoma. We have recently observed a poor sensitivity of PET scanning for detection of tonsillar primary tumors that are confirmed at the time of tonsillectomy for unknown primaries. A retrospective review was therefore undertaken of all recent patients with tonsillar carcinoma treated at our medical center to determine the ability of preoperative PET scanning to detect primary tumors of the tonsil. **STUDY DESIGN:** To determine the sensitivity of preoperative PET scans in detection of primary tumors of the tonsils, we designed a retrospective review of patients recently treated at a university medical center for tonsillar squamous cell carcinoma. Within this patient group we identified those who received a preoperative PET scan and analyzed the results to determine PET scan sensitivity in detection of tonsillar carcinoma. **METHODS:** We conducted a retrospective review of 46 patients treated at a university medical center for tonsillar squamous cell carcinoma during the years 2002-2004. Of these patients, 7 underwent a preoperative PET scan. A PET scan was obtained in 6 of these patients to locate an unknown primary tumor. A positive PET scan was defined as increased tracer uptake in the tonsil and/or tonsillar fossa ipsilateral to the side of tonsillar carcinoma, a negative PET scan was defined as the absence of this finding. **RESULTS:** Of the 46 patients, 7 (15.2%) had pretreatment PET scans. Of these 7 patients, 14.3% (n=1) had positive PET, 85.7% (n=6) had negative PET, and 14.3% (n=1) demonstrated increased tracer uptake in tonsils bilaterally with greater uptake on the contralateral side. In this patient population, PET scans used for detection of tonsillar carcinoma show a sensitivity of 0.143 and false negative ratio of 0.857. An additional patient had a positive PET scan but with greatest activity on the contralateral side. **CONCLUSIONS:** Although the patient population in this study is small (n=7), the findings suggest that PET scans have low sensitivity in detection of primary tonsillar carcinoma. Although PET is helpful in the detection of unknown primary tumors in other sites in the head and neck, it is insensitive for tonsillar carcinoma. Technical reasons for this finding, related to the background FDG uptake in the tonsillar area, are discussed.

25. Presentation of Gradenigo's Syndrome in a Child With a Non-Pneumatized Petrous Apex

Jonathan E. Zwart, MD, Loma Linda, CA
Mark R. Rowe, MD, Loma Linda, CA
Charles E. Stewart Sr., MD, Loma Linda, CA

EDUCATIONAL OBJECTIVE: At the conclusion of this presentation, the participants should be able to understand the typical presentation of petrous apicitis including the triad of Gradenigo's syndrome, normal anatomy of a pneumatized petrous apex, and be aware of atypical presentations of infections in the petrous apex.

OBJECTIVES: Create greater awareness of infections in the petrous apex. **STUDY DESIGN:** Case presentation. **METHODS:** We will present a case where a young child was found to have the triad of Gradenigo's syndrome, however CT scan showed non-pneumatized petrous apex. We will discuss our diagnosis and treatment plan, review the normal anatomy and routes of infection to the apex. **RESULTS:** Full recovery after tympanomastoidectomy and antibiotics. **CONCLUSIONS:** Gradenigo's syndrome can still occur in the absence of pneumatization in the petrous apex.