2008 WESTERN SECTION PROGRAM

JANUARY 31-FEBRUARY 2, 2008
RANCHO LAS PALMAS, RANCHO MIRAGE, CA

31st Thursday January

4:00 - 8:00 **Speaker Ready Room - Desert Suite 2**

5:00 - 8:00 **Registration - Las Palmas Foyer**

6:00 - 7:30 pm **President's Welcome Reception - Starlight Terrace**

1st Friday February

7:00 - 7:50 **Business Meeting (Members Only) - Salons B, C**
Breakfast with Exhibitors - Salons E-H

7:00 - 1:00 **Exhibit Hall Open - Salons E-H**
View Posters

7:00 - 1:00 **Speaker Ready Room - Desert Suite 2**

7:00 - 1:00 **Registration - Las Palmas Foyer**

9:00 - 11:00 **Spouse Hospitality - TBN**

8:00 - 12:20 **Scientific Sessions - Salon D**

8:00 **Welcome and Introduction of President, Harold C. Pillsbury, MD*, Chapel Hill, NC**
Sigsbee W. Duck, MD*, Gillette, WY

8:05 **Presidential Address**
Workforce Issues in Otolaryngology/Head & Neck Surgery

*** Denotes Fellow**

Harold C. Pillsbury, MD*, Chapel Hill, NC

8:15 Introduction of Guests and Honorees
Guest of Honor
Harold C. Pillsbury, MD*, Chapel Hill, NC
Vice Presidential Citations
Frederick M.S. McConnell, MD*, Atlanta, GA
Fred Owens, MD*, Dallas, TX
Brian Swain, Winter Haven, FL
Richard Trevino, MD*, San Jose, CA
David F. Wilson, MD*, Portland, OR

8:30 Introduction of Keynote Speaker, The Honorable Judge Jeremy D. Michaels
Sigsbee W. Duck, MD*, Gillette, WY

8:35 Keynote Address
Jackson Heights to Jackson Hole - A New York Lawyer Confronts Practice on the Prairie
The Honorable Judge Jeremy D. Michaels, Gillette, WY

SINUS SESSION MODERATOR
Dale H. Rice, MD*, Los Angeles, CA

9:00 Sinonasal Outcomes after Endoscopic Sinus Surgery in Asthmatic Patients: A Difference between Aspirin Tolerant and Aspirin Induced Asthma?
Osama G. Awad, MD, Iowa City, IA
Scott M. Graham, MD, Iowa City, IA (Presenter)
John H. Lee, MD, Iowa City, IA
Mary Beth Fasano, MD MSPH, Iowa City, IA

Educational Objective: At the conclusion of this presentation, the participants should be able to have an improved understanding of the rhinologic outcomes after sinus surgery in asthmatic patients.

Objectives: This study aims to investigate the role of endoscopic sinus surgery (ESS) in improving chronic rhinosinusitis (CRS) outcomes in patients with concomitant asthma and CRS. Objective and subjective measures were used to compare a group of patients with aspirin induced asthma (AIA) with patients with aspirin tolerant asthma (ATA). **Study Design:** Retrospective charts and records review. **Methods:** The records of 116 subjects with CRS and asthma were retrospectively reviewed and classified into two groups. Fifty-one subjects had AIA and 66 patients had ATA. Ten AIA patients and 15 ATA patients did not have post-operative CT scans and were excluded. In each of the 91 included patients a Lund and Mackay CT score was calculated and used as primary endpoint. The secondary endpoint was patient symptom improvement as measured by a previously reported 5 level classification of cured, much improved, improved, unchanged, or worse. Data was obtained and compared at three time points: immediately before surgery, 6 months and 12 months following ESS. **Results:** At 6 months after surgery 68.3% of AIA and 90% of ATA subjects had CT improvement with significant difference between the 2 groups ($p = 0.016$). 63.4% of AIA subjects had symptomatic improvement compared with 68% of ATA subjects with no significant difference between the 2 groups ($p = 0.821$). At 12 months after surgery 68.4% of AIA and 88% of ATA subjects had CT improvement with significant difference between the 2 groups ($p = 0.011$). 86.3% of AIA subjects had symptomatic improvement compared with 68% of ATA subjects with no significant difference between the 2 groups ($p = 1.00$). **Conclusions:** Both AIA and ATA subjects showed improvement in CRS outcome parameters after ESS. Significantly more ATA than AIA patients had improvement in CT scores at 6 and 12 months following ESS. However this difference didn't correlate with significant difference in symptom scores improvement.

9:08 Endoscopic Reconstruction of Skull Base Defects with the Nasoseptal Flap
Ivan H. El-Sayed, MD, San Francisco, CA
Fredrick R. Roediger, MD, San Francisco, CA
Andrew N. Goldberg, MD, San Francisco, CA*
Andrew T. Parsa, MD, San Francisco, CA
Michael W. McDermott, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the anatomy, rational and utility of the nasoseptal in skull base reconstructions with an endoscopic technique.

Objectives: Endoscopic technology is revolutionizing surgical approaches to the anterior and middle skull base. Resections may expose soft tissue, cartilage, bone, dura, or brain with a resultant leak of cerebrospinal fluid. The optimal method of closure of these defects has not yet been defined. A vascularized pedicled nasoseptal flap (NSF) based on the nasoseptal artery has recently been described for closure of endonasal defects. We aim to describe our initial experience with the NSF for vascularized coverage of skull base defects. **Study Design:** Descriptive study. **Methods:** Retrospective review at a tertiary care skull base center. Over a 12 month period 18 patients were identified. Surgical defects due to malignant (9) and benign disease (9) were located in the anterior skull base (11), central sphenoclival skull base (6), and infratemporal fossa (1). **Results:** Average followup was 4.7 mo (1-11 mo). Nine patients had a dural defect ranging from 6mm2 to 8cm2. NSF harvest was successful in all patients (100%) including the surgeons' first flaps. All NSFs survived although shrinkage of flap size and pedicle width was noted. Postoperatively the average hospital stay was 5.1 days (N=14), time to radiation 5.1 weeks (N=5) and no evidence of CSF leak on postoperative followup. **Conclusions:** The NSF is reliably harvested via the endonasal approach and provides vascularized coverage for a range of skull base defects. Proposed advantages of the NSF include improved closure of rate of CSF leaks, decreased healing time and timely progression to radiation therapy for selected patients.

9:16 Paranasal Sinus Mucoceles with Skull Base and/or Orbital Erosion: Is the Endoscopic Approach Sufficient?

Nathan B. Sautter, MD, Portland, OR
Martin J. Citardi, MD FACS, Cleveland, OH
Julian D. Perry, MD, Cleveland, OH
Pete S. Batra, MD, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the pathophysiology, recognition and treatment of paranasal sinus mucoceles. Additionally they will become familiar with endoscopic treatments for this disease as well as the surgical outcomes.

Objectives: Paranasal sinus mucoceles with skull base and/or orbital erosion pose a unique surgical challenge given their proximity to critical structures. The objective of this study is to review the management of this entity in the endoscopic era. **Study Design:** Retrospective data analysis. **Methods:** A retrospective chart review was performed on 57 patients with radiographically confirmed mucoceles with skull base and/or orbital erosion treated from January 2001 to March 2007. **Results:** The average age at time of presentation was 50.6 years with a 1:1 male:female ratio. The most common presenting symptoms included headaches (31.6%), proptosis/orbital swelling (28.1%), and visual changes (19.3%) with mean duration of 22 months. The most common site was the frontal sinus (54.4%), followed by frontoethmoid (29.8%), sphenoid (8.8%), ethmoid (5.3%), and maxillary (1.8%). Areas of erosion included skull base (40.4%), orbit (50.9%), and both orbit and skull base (8.8%). Endoscopic drainage utilizing image guidance was employed in all 57 patients without complications; adjunct open approaches were only utilized in 4 (7.0%) cases, including endoscopic frontal trephination (3) and frontal osteoplastic flap (1). Nineteen (33.3%) patients required revision endoscopic procedures for restenosis. All patients had resolution or improvement of the primary presenting symptomatology. Fifty-six cases (98.2%) had functionally patent mucocele opening with mean follow-up of 22 months. **Conclusions:** The endoscopic approach was safely employed for management of paranasal sinus mucoceles with skull base and/or orbital erosion in 57 cases. Open adjunct approaches and their associated morbidity can be avoided in most cases.

9:24 Q&A

9:30 PANEL: CHRONIC RHINOSINUSITIS

Moderator: Darrell Hunsaker, MD*, San Diego, CA
Panelists: Scott C. Manning, MD*, Seattle, WA
Winston C. Vaughan, MD, Palo Alto, CA
Christopher A. Church, MD, Loma Linda, CA

10:30 Break with Exhibitors - Salons E-H
View Posters

GENERAL SESSION MODERATOR
Richard J. Trevino, MD*, San Jose, CA

11:00 **First Prize - Shirley Baron Resident Research Award**

Computed Tomography Imaging in the Evaluation of Patients with Obstructive Sleep Apnea

Gregory C. Barkdull, MD, San Diego, CA
Chad Kohl, MD, San Diego, CA
Minal R. Patel, BS, San Diego, CA
Terence M. Davidson, MD, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize CT imaging characteristics that correlate with increasing severity of OSA.

Objectives: This study examines the potential of axial computed tomography (CT) to identify anatomic features that correlate with severity of obstructive sleep apnea (OSA). **Study Design:** An IRB approved radiographic study of 44 patients with OSA. The apnea hypopnea index (AHI) ranged from to 6 to 84 (mean 32 +/- 20). **Methods:** Noncontrast CT was performed from the skull base to thoracic inlet in patients with OSA. Cross-sectional retrolingual airway, cervicomandibular ring, and percentage fat were measured. The anterior foramen magnum to vocal cord and thoracic inlet distances were measured, and the posterior tongue density estimated by measuring the Hounsfield units (HU). These parameters were then compared to clinical information including AHI, age, gender, body mass index (BMI), neck circumference and Mallampati score using linear regression. **Results:** AHI increases with smaller retrolingual cross-sectional airway ($P < 0.0001$) and laryngeal descent ($P = 0.0097$). These radiographic findings are independent of measures of obesity. The posterior tongue was found to have a significantly greater fat content than other muscles of the head and neck. The percentage neck fat increased with measures of obesity but did not directly correlate with AHI or airway size. **Conclusions:** This study describes anatomic findings in patients with OSA that can be easily measured on an upper airway CT and correlate with AHI. Prospective studies are needed to validate these observations and determine whether CT can play a role in the routine evaluation of patients with OSA.

11:08

Diagnostic and Therapeutic Sialoendoscopy in the Treatment of Obstructive Salivary Gland Disorders

Amol M. Bhatki, 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 main indications, advantages, disadvantages, and limitations of interventional sialoendoscopy.

Objectives: Sialoendoscopy has recently emerged as a minimally invasive technique that allows for both diagnosis and therapeutic intervention in patients with obstructive chronic sialadenitis. The purpose of this study is to assess the efficacy of sialoendoscopy in the treatment of these diseases. **Study Design:** Retrospective cohort study of 45 consecutive patients who underwent sialoendoscopy for suspected salivary gland obstruction. **Methods:** Sialoendoscopy initially was used to identify sialolithiasis or stenosis. If present interventions including laser lithotripsy or instrument extraction were performed. Variables including preoperative assessment, postoperative diagnosis, intervention and extraction methods, number of procedures, confounding factors, postoperative and short term outcomes, as well as complications were recorded. **Results:** A total of 56 procedures were performed on 45 patients. Twenty-nine patients (64%) had sialolithiasis. When possible, laser lithotripsy, instrument extraction, and endoscopic assisted sialodochotomy resulted in an overall 73% treatment success rate of stone removal. Success substantially improved with increasing endoscopic experience. The large size or proximal ductal location of stones in 7 (16%) patients precluded endoscopic therapy. Of the 16 patients without sialolithiasis 2 had ductal stenoses that were endoscopically dilated. Four patients, all status post-radioactive iodine therapy, had salivary sludging successfully treated with irrigation. Nine (20%) patients with presumptive obstruction had normal anatomy without stenosis or sialoliths. Complications included 1 ductal perforation and 1 delayed stricture formation. **Conclusions:** Sialoendoscopy is a safe and effective minimally invasive method by which to evaluate and treat obstructive disorders of salivary glands. This technique has a low morbidity and, in many patients, can provide a definitive diagnosis and prevent unnecessary gland excision.

11:16 ***Triological Society Thesis***

Surgical Management of Nasal Septal Perforations

Stephen F. Bansberg, MD, Phoenix, AZ*

Educational Objective: At the conclusion of this presentation, the participants should be able to describe a method of closing perforations of the nasal septum using nasal mucosal flaps.

Objectives: To determine the effectiveness of closing selected symptomatic septal perforations with bipedicle nasal mucosal flaps and an interposition graft. **Study Design:** Retrospective chart review of 67 attempted septal perforation closures performed between September 1992 and June 2006. **Results:** Perforations were classified by vertical height as small (≤0.4 cm;

6 patients), medium (0.5–1.4 cm; 39 patients), or large (?1.5 cm; 22 patients). The endonasal approach was used in 75% of the closures. The overall success rate was 91% (small 83%, medium 97%, large 82%). The success rate for bipedicle flap closures in 60 patients was 92%. The most common flap technique (67%, 40 of 60) was superior and inferior bipedicle flap on the left side and a posteriorly based flap on the right side. There was a 90% closure rate using temporalis fascia (78% of repairs). Six of the 55 patients (11%) successfully closed with flap techniques required revision surgery for obstruction postoperatively. Perforation closure was successful in 88% of patients undergoing sinus surgery (15 of 17) and in 90% of patients with sinusitis (18 of 20). **Conclusions:** Septal perforations less than 2.0 cm have a high probability of closure when bipedicle mucosal flaps and an interposition graft are used. Temporalis fascia is an excellent source of graft material. The endonasal approach is preferred for most perforations. The closure rate is high in patients with sinusitis and in those undergoing sinus surgery. Complications are rare. Persistent flap thickening may require surgical revision. These findings support a growing consensus favoring attempted surgical closure over placement of a button for the management of nasal perforations.

11:24 *Triological Society Thesis*
A Clinical Tool for In Vivo Observation and Documentation of Mucociliary Transport in the Nasal Mucosa, Employing a Tracking Medium

H. Peter Doble II, MD, Twin Falls, ID*

Educational Objective: At the conclusion of this presentation, the participants should be able to use a method and technique that permits the clinical observation and documentation, in vivo, of active mucociliary transport using a blue dye as a tracking substrate.

Objectives: To design a method and technique that permits the clinical observation and documentation, *in vivo*, of active mucociliary transport. To develop a process to assist in identification of accessory ostium (ia) when present. To study in real time, *in vivo*, the flow of the accessory ostium (ia). **Study Design:** A prospective, observational study to observe, *in vivo* and clinically, mucociliary transport in the nasal mucosa by employment of an exogenous tracking substrate. **Methods:** Using endoscopic technique, an exogenous tracking substrate is introduced into the maxillary sinus. The resultant flow is endoscopically visualized and these observations are digitally recorded. **Results:** The active mucociliary transport from the natural maxillary ostium is documented *in vivo*. The maxillary sinus selectively transports the particulate phase of the suspension prior to the liquid phase. A valid technique for the identification of the accessory ostium (ia) is confirmed. The accessory ostium (ia) allowing flow to enter, exit, or both simultaneously, is observed. An accessory ostium is functionally invisible to the mucosal blanket and does not interfere with the mucus flow when covered by a more viscous fluid. Accessory ostia are involved in mucus recirculation and this phenomenon is demonstrated. When the tracking substrate is placed into the maxillary sinus, currents become observable. These currents concentrate particulate from the suspension into distinct streams which are then directed toward the natural ostium along the walls of the sinus by mucociliary transport. **Conclusions:** A method of observing and documenting active mucociliary transport was developed that is technically practicable and consistently demonstrates mucociliary flow. Active mucociliary transport from the natural ostium of the maxillary sinus was documented. A clinical method for identification of accessory ostium (ia) was presented. The recirculation of material through the accessory ostium (ia) and the phenomenon of the mucus covered accessory ostium were well documented. Also shown were the existences of currents within the maxillary sinuses. These currents appeared to selectively and actively remove particulate from the tracking substrate suspension. This tool revealed previously clinically unobservable processes which are now observably present, extremely dynamic, variable in nature, and documentable.

11:32 Primary Hyperparathyroidism in Pregnancy

Mai Thy T. Truong, MD, Palo Alto, CA (Resident Travel Award)
Michael E. Friduss, MD, Santa Clara, CA
Paul C. Robbins, MD, Santa Clara, CA
Mary L. Lalakea, MD, Santa Clara, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the diagnosis, pathophysiology, and maternal and fetal complications of hyperparathyroidism during pregnancy, as well as discuss the medical and surgical treatment options.

Objectives: To discuss three cases of hyperparathyroidism that occurred during pregnancy leading to surgical excision of a parathyroid adenoma, and conduct a review the literature of hyperparathyroidism during pregnancy and discuss the medical and surgical management options. **Study Design:** Retrospective case series. **Methods:** Retrospective review of three cases of hyperparathyroidism during pregnancy was conducted. A review of the world literature published between 1965 and January 2005 was performed through the Medline database using a combination of the search terms “pregnancy”, “hyperparathyroidism”. **Results:** Three patients successfully underwent surgical excision of a parathyroid adenoma during pregnancy. All patients were symptomatic during pregnancy with severe flank pain, protracted nausea, and recurrent nephrolithiasis, respectively. Two patients underwent successful surgical parathyroidectomy in the second trimester. One patient was diagnosed and

underwent surgery late in the third trimester. There were no maternal, fetal or neonatal complications secondary to surgical intervention. **Conclusions:** Primary hyperparathyroidism is a rare but serious condition associated with significant maternal and neonatal morbidity and mortality. We present three cases of surgical excision of a parathyroid adenoma during pregnancy without any maternal, fetal or neonatal complications. A review of the literature reveals significant maternal and neonatal complications as result of the hypercalcemic state. When diagnosed within the first two trimesters, this can be managed medically until surgical parathyroidectomy can be safely performed in the second trimester when organogenesis is complete. If the diagnosis is made in the third trimester, surgical treatment should still be considered unless delivery is imminent. The safety of this surgery has shown to dramatically improve outcomes in maternal and neonatal complications in a review of the literature.

11:40 Q&A

PLASTICS SESSION MODERATOR
Brian J.F. Wong, MD PhD, Irvine, CA

11:45 Keloid Banding Using Suture Ligature: A Novel Technique and Review of Literature

James M. Ridgway, MD, Orange, CA (Resident Travel Award)
Dhavan A. Parikh, BS, Irvine, CA
Norman N. Ge, MD, Irvine, CA
Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) understand the unique roles of inflammatory cells and growth factors/cytokines in normal wound healing; 2) review factors and processes involved in keloid pathogenesis with an emphasis on angiogenesis, TGF-B signaling, senescence/apoptosis and keratinocyte-fibroblast interactions; 3) identify the most widely used therapies for management of keloid scars and understand the novelty of the banding technique relative to these other treatments.

Objectives: Successful wound healing represents the coordinated response of cellular, cytokine, and growth factor mechanisms involved in tissue recovery. Disruptions in TGF-B signaling, senescence/apoptosis, keratinocyte-fibroblast interactions, and other regulatory cascades can lead to the production of hypertrophic scar or keloid tissue formation. Current clinical investigations support surgical excision, meticulous closure, postoperative steroid injections, and post-procedural pressure dressings in the treatment of keloid tissue formation. Unfortunately a universal approach in keloid therapy has yet to be identified. Here we offer a novel banding technique using suture ligature for the removal of these tissues. **Study Design:** Case and technique study with the review of current literature. **Methods:** Using a suture ligature keloid tissues were banded along their base for a five week period. Tissue evaluation and additional suture banding was performed on a weekly basis until complete mummification and spontaneous removal of ligated tissues. No additional pressure dressings were placed after tissue removal as treated sites had essentially undergone pressure therapy from the banding treatment. **Results:** Keloid tissues from multiple sites of the head and neck were effectively removed without complication using the suture banding technique. During a followup period of 12 months no evidence of keloid tissue recurrence was observed. **Conclusions:** Keloid tissue formation remains a formidable challenge for the patient and physician alike. The application of a simple tissue banding technique holds promise in the direct and preventative treatment of keloid tissue formation while the end results merit further clinical and laboratory investigation.

11:53 Human Nasal Cartilage Ultrastructure—Characteristics and Comparison Using Scanning Electron Microscopy

Paul K. Holden, MD MS, Orange, CA (Resident Travel Award)
Lih-huei L. Liaw, Irvine, CA
Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should understand the ultrastructural differences observed between the hyaline cartilage of the nasal septum and that of the lower lateral cartilage. Additionally they will have an understanding of interpretation of SEM micrographs as they pertain to cartilage. Hopefully some participants will see application for this information as cartilage engineering develops.

Objectives: Human nasal cartilage is hyaline cartilage though the function and loads placed upon them are different depending on their location. We hypothesized that important differences exist between septal cartilage and lower lateral cartilage (LLC) ultrastructure. Such differences would be important in the field of cartilage engineering. **Study Design:** Observational study of ten nasal cartilage specimens from 8 patients using scanning electron microscopy. **Methods:** Ten specimens (6 septum and 4 LLC) of cartilage from patients undergoing nasal surgery (rhinoplasty or septoplasty) were obtained and examined using scanning electron microscopy (SEM). Micrographs were then analyzed and measured using photo analysis software. **Results:** The collagen fibers of septal cartilage were found to be arranged in a mesh framework with larger lacunae and fibers measuring 3.18 micron (SD = 0.75 micron) with a 99.9% confidence interval (CI) of 2.74—3.54 microns. LLC fibers on the other hand,

were arranged in tightly bound sheets in a parallel fashion and had narrower lacunae. The fibers from the LLC averaged 2.29 microns with 99.9% CI of 1.17—3.42 microns. **Conclusions:** Significant ultrastructural differences exist between the cartilage of the nasal septum and LLC. These are almost certainly due to the different forces placed upon the structures they support. A more organized pattern yet with smaller collagen fibers is present in the LLC versus the less organized, thicker collagen fibers of the septum. These differences may prove to be critical in the future of cartilage engineering.

12:01 Determining Laser Dosimetry for Cartilage Reshaping in Ex Vivo Rabbit Ears

Paul K. Holden, MD MS, Orange, CA
Cara Chlebicki, BS, Irvine, CA
Dmitry Protsenko, PhD, Irvine, CA
James M. Ridgway, MD, Irvine, CA
Brian J.F. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand and explain the relationship between tissue thickness, laser wavelength, fluence, cycles and cryogen duration as they are employed to have an effect on deeper tissues while preserving skin. The participant will also be able to apply our ex vivo model for other tissue types, animal models and lasers to determine optimal settings prior to starting live animal work. Lastly we demonstrate the use of confocal microscopy to confirm chondrocyte injury.

Objectives: Laser cartilage reshaping (LCR) is currently in development for a variety of laser types, animal and tissue models. This study investigates the use of a 1450nm diode laser combined with cryogen spray cooling (CSC) on the ears of New Zealand White rabbits to determine the suitability for cartilage reshaping and appropriate laser power, cycles and cryogen delivery to optimize treatment. **Study Design:** Prospective, randomized study of 20 ears (containing live cartilage) from freshly killed New Zealand White Rabbits. **Methods:** Twenty ears of freshly killed rabbits of the same age (10-12 weeks) were treated with various settings of a 1450nm diode laser both in power (J/cm2) and cryogen delivery bursts (ms). During treatment the nonirradiated surface of each ear was imaged with an infrared camera after which the data was transformed into numeric data and analyzed. Additionally treated areas were measured for thickness and analyzed using a confocal microscopy Live/Dead assay to determine effect on living chondrocytes. **Results:** Temperature results indicate that total ear thickness plays a significant role in laser energy requirement. The 1450nm laser has adequate tissue penetration to affect the cartilage matrix, and optimal temperatures of 50-70 degrees C can be achieved. We establish a graphical representation of thickness to energy needs and propose cryogen settings to protect the skin on the irradiated surface. Optimal settings for average ear thickness ranged from 13-14 J/cm2 with 30-35ms of CSC at 4-6 cycles. Confocal microscopy confirms a partial thickness injury to the ear cartilage at these settings. **Conclusions:** Thermal imaging and confocal microscopy can be employed along with fresh ex vivo tissue samples for preliminary determination of effective and safe laser applications for cartilage reshaping. This important step will minimize the time the precise dosage determination takes in the live animal model and ultimately in humans.

12:09 *Triological Society Thesis*
A Survey of Louisiana Hospital Ethics Committees

Thomas P. Gonsoulin, MD, Frisco, CO*

Educational Objective: At the conclusion of this presentation, the participants should be able to identify 1) the characteristics of hospital ethics committees (HECs) in Louisiana prior to hurricane Katrina; 2) the three typical functions of HECs; 3) the usual construction of HEC membership; and 4) the similarities and differences of HECs in Louisiana with other states and foreign countries where available data was present.

Objectives: To obtain a picture of hospital ethics committees (HECs) in the state of Louisiana. **Study Design:** Mail in questionnaire to all hospitals in Louisiana with return self-addressed stamped envelopes. **Methods:** A twenty-two-item questionnaire was mailed to the chief executive officer and to the chairperson of the ethics committee for all 194 hospitals listed with the Louisiana State Hospital Association. Questions posed included the prevalence of HECs, membership construction, date of formation, functions and activities, settings, hospital size, teaching status, meeting frequency and attendance plus methodology for case consultation. Similar studies for other states and countries identified by Medline search were reviewed for comparative analysis. **Results:** Eighty-eight hospitals returned the survey for a response rate of 45%. HEC membership is most often multidisciplinary in construction, typically including physicians, administrators, nurses, social workers and clergy. Seventy-seven HECs were standing committees. The growth rate increased to 6-8% per year from 1.7% after 1993 perhaps as a response to the 1992 JCAHO rule requiring some type of mechanism to process ethical issues in hospitals. While the difference was not statistically significant, teaching hospitals tended to have a higher rate of HECs than non-teaching institutions: 91% versus 74%. Larger institutions tended to have a higher frequency rate of the presence of an HEC. An average of 6.6 ethics case reviews were handled annually. Eighty-two percent of the hospitals with HECs utilized the entire committee approach for case consultations while 48% used the small subcommittee approach. Like most US HECs, this state's committee primary functions included case consultation, education and policy review. Differences from Israel included the lack of legal nature of the committee. Australian HECs tended to focus mainly on policy formation. **Conclusions:** Louisiana's HEC con-

struction and function appear similar to those committees found in other US hospitals. Membership is multidisciplinary. The three major functions are education, policy development and case consultation. Larger institutions tend to have a higher frequency of HECs, perhaps due to the greater volume of critical care units where end of life issues are often encountered. The growth rate of HECs increased in the early 1990s. As the ethical issues in contemporary medicine become more complex, especially with technological advances, HECs can anticipate constant new challenges. Future direction may focus on the evaluation of how well HECs function and on how improvements can be made.

12:17 **Q&A**

12:22 **Adjourn**

1:00 **Golf Tournament**

6:30 - 8:00 **Meet the Authors Poster Session - Salons E-H**

2nd Saturday February

7:00 - 7:50 **Business Meeting (Members Only) - Salons B-C**
Breakfast with Exhibitors - Salons E-H

7:00 - 12:00 **Exhibit Hall Open - Salons E-H**
View Posters

7:00 - 12:30 **Speaker Ready Room - Desert Suite 2**

7:00 - 12:30 **Registration - Las Palmas Foyer**

9:00 - 11:00 **Spouse Hospitality - TBN**

8:00 - 12:30 **Scientific Sessions - Salon D**

8:00 **Welcome Remarks and Announcements**
Sigsbee W. Duck, MD*, Gillette, WY

8:05 **Announcements**
Introduction of Resident Research Award Winners
Gregory C. Barkdull, MD, San Diego, CA
Jared C. Inman, MD, Loma Linda, CA
Introduction of Poster Award Winners

OTOLOGY/NEUROTOLOGY SESSION MODERATOR
TBN

8:10 **Vestibular Schwannoma Quantitative PCR Expression of Estrogen and Progesterone Receptors**

Andrew K. Patel, MD, San Diego, CA (Resident Travel Award)
Joni K. Doherty, MD PhD, San Diego, CA
Allen F. Ryan, PhD, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of estrogen and progesterone receptor expression in vestibular schwannomas.

Objectives: Elucidation of growth and proliferation signaling in human vestibular schwannoma (VS) tumorigenesis has direct application in molecular therapeutic targeting. VS carry mutations of the NF2 gene encoding the tumor suppressor, merlin, which has been shown to interact with ErbB2 in Schwann cells, implicating ErbB receptors in VS tumorigenesis. Members of the ErbB receptor family are overexpressed or constitutively activated in many human tumors and are effective therapeutic targets in some human cancers. Estrogen receptor (ER) and progesterone receptor (PR) may also play a role in ErbB pathway activation. Human VS in women are more frequent, larger, and more vascular, with increased growth rates during pregnancy. **Study Design:** Quantitative real time RT-PCR (qRT-PCR) for ER and PR mRNA was performed in greater auricular nerve and vestibular nerve control samples (n=8), sporadic vestibular schwannoma (n=30) and vestibular schwannoma samples from neurofibromatosis-2 patients (n=9). **Methods:** The qRT-PCR data were normalized with standardization to a single constitutively expressed control gene, human cyclophilin. **Results:** Reverse transcription of messenger ribonucleic acid from control and tumor specimens followed by real time quantitative polymerase chain reaction (RT Q-PCR) demonstrated differences in ER and PR gene expression between sporadic and neurofibromatosis-2 vestibular schwannoma. **Conclusions:** Detection of differences in ER and PR expression in vestibular schwannomas might have implications for development of a VS specific drug delivery system to be undertaken using ErbB pathway small molecule inhibitors, due to crosstalk between these hormone and growth factor receptors. These signals may be critical for reestablishing ErbB-mediated cell density dependent growth inhibition.

8:18 *Triological Society Thesis*
Otoprotective Effects of Dexamethasone in the Management of Pneumococcal Meningitis: An Animal Study

Harold H. Kim, MD, Portland, OR*

Educational Objectives: At the conclusion of this presentation, the participants should be able to discuss the physiological and anatomical effect of dexamethasone on the cochlea in cases of pneumococcal meningitis in the animal model. They should also be able to discuss the current controversy regarding the role of corticosteroids in managing acute bacterial meningitis.

Objectives: To determine whether treating pneumococcal meningitis with a combined antibiotic and steroid regime will prevent cochlear damage, a common pneumococcal meningitis side effect. **Study Design:** Prospective animal study. **Methods:** Gerbils were randomly assigned to three experimental groups. Animals in Group 1 received intrathecal saline injections. Animals in Groups 2 and 3 received intrathecal injections of *Streptococcus pneumoniae* to induce meningitis. Group 2 was treated for seven days with intraperitoneal penicillin injections (48,0000 units). Animals from Group 3 received intraperitoneal dexamethasone (0.5 mg/kg) injections for four days in addition to seven days of intraperitoneal penicillin. Three months after the meningitis was induced, the animals' cochlear function was determined using auditory brainstem responses (ABRs). After measuring cochlear function, the animals were sacrificed for cochlear histopathology. Spiral ganglion cell densities at Rosenthal's canal were determined. **Results:** ABR thresholds were significantly elevated in animals from Group 2 when compared to the animals in Groups 1 and 3 ($p<0.05$). ABR thresholds for animals from Group 3 and Group 1 were similar ($p>0.05$). Damage of cochlear structures was detected in animals from Group 2. The degree of the damage varied: one animal in Group 2 had no identifiable hair cells and pillar cells, and showed damage of the tectorial membrane. Spiral ganglion density in the basal turn was significantly less in animals from Group 2, when compared to controls ($p<0.05$). Although spiral ganglion cell density was less in the dexamethasone treated group (Group 3) when compared to Group 1 (control group), but greater than observed in animals treated with antibiotics only (Group 2), the differences were statistically not significant ($p>0.5$). Nuclear diameters of the spiral ganglion cells decreased on average from 7.24±0.48 µm (Group 1) to 6.28±0.76 µm (Group 3, animals received dexamethasone) to 5.57±0.82 µm (Group 2, animals received antibiotics only). Differences were significant ($p<0.05$). Differences in stria vascularis thickness were not significant among the animals. **Conclusions:** Dexamethasone has a protective effect on the cochlea when given together with antibiotics in the treatment of pneumococcal meningitis.

8:26 Skull Base Osteomyelitis: How the Presence of Comorbid Disease and Severity of Illness Affects the Duration and Cost of Hospital Stay

Vanessa S. Rothholtz, MD, Orange, CA
Bahman Shamloo, MD, Los Angeles, CA
Mohsen Bazargan, PhD, Los Angeles, CA
Hamid Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the epidemiol-

ogy of skull base osteomyelitis and how the presence of comorbid disease affects the duration and cost of hospital stay.

Objectives: To perform a more detailed analysis of skull base osteomyelitis in the inpatient population than previously presented. We also provide a more comprehensive evaluation of comorbid disease and severity of illness in this population and describe their effects on the duration and cost of hospital stay. **Study Design:** Retrospective study of 820 patients admitted with the diagnosis of malignant otitis externa. **Methods:** Review of a hospital discharge database between the years 1990 to 2000. Information evaluated included: age, race, insurance, charges and length of hospital stay, comorbid disease, severity of illness and disposition. Data was analyzed utilizing ANOVA, student's t-test and linear regression. **Results:** The overall incidence of skull base osteomyelitis ranged from 57 to 95 cases annually (median 75.5). Caucasians (69.3%) were more likely to present with the disease than Native Americans (13.2%), African Americans (6.5%) or Asians (2.9%). Patients with Medicare and Public Aid (62%) were diagnosed with skull base osteomyelitis more frequently than those with PPO or HMO insurance (27%). Increased length of hospital stay and increased charges incurred during hospitalization were significant ($p < 0.05$) in patients diagnosed with aplastic anemia, kidney disease, pulmonary disease, congestive heart failure, coronary artery disease, facial nerve dysfunction and diabetes. Severity of illness and the presence of more than one comorbid condition also significantly affected the duration and charges incurred during hospital stay ($p < 0.05$). **Conclusions:** The presence of comorbid disease with skull base osteomyelitis significantly affects the duration of hospital stay and charges incurred during hospitalization.

8:34 **Q&A**

8:40 **Panel: Experienced vs. New Faces in Otology/Neurotology: The Family Feud**

Moderator: **Michael E. Hoffer, MD*, San Diego, CA**

Panelists: Joni Doherty, MD, PhD, San Diego, CA
Rick Friedman, MD*, Los Angeles, CA
Peter Weisskopf, Phoenix, AZ
versus
Jeffrey Harris, MD*, San Diego, CA
Derald Brackmann*, MD, Los Angeles, CA
Phillip Daspit, MD*, Phoenix, AZ

Head and Neck Session Moderator
Richard E. Hayden, MD*, Scottsdale, AZ

9:40 **Appropriate Length of Antibiotic Prophylaxis for the Current Head and Neck Surgeon**

Ali Sepehr, MD, Orange, CA (Resident Travel Award)
Koohyar Karimi, GED, Laguna Hills, CA
Zlatko Devcic, GED, Mission Viejo, CA
Jody Chou, BS, Irvine, CA
Barbara-Jean Santos, BS, Irvine, CA
William B. Armstrong, MD, Orange, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the significance of short and long course antibiotic prophylaxis usage on surgical wound infections.

Objectives: Few studies to date have evaluated the effect of short and long course antibiotic prophylaxis on surgical wound infections (SWI) in clean contaminated head and neck surgery (CCHNS). However with the changing face of HNS, most notably increasing invasiveness of cancer resections, use of microsurgical free flap reconstructions, and multidisciplinary approach to the skull base, these studies have been outdated. Therefore there is no clear consensus among head and neck surgeons for the proper length of antibiotic prophylaxis after CCHNS. **Study Design:** Retrospective chart review. **Methods:** The charts of 514 patients undergoing CCHNS at a tertiary referral academic medical center from 1998 through 2006 were reviewed for disease, operation, comorbidities, length of antibiotic course, wound complications, and length of hospital stay (LOS). The data was statistically analyzed using the chi square test and logistic regression analysis. **Results:** The majority of patients received metronidazole and cefazolin. Patients were approximately distributed equally in the short course (five days or less) and long course (more than five days) antibiotic prophylaxis groups. Additionally both groups had patients that underwent microvascular free flap operations. No statistically significant difference in SWI rates, wound complication rates, and LOS was found between the two groups. **Conclusions:** With the increased vigilance that accompanies microvascular free flaps and the resulting ability to perform much more radical resections, our institution has experienced an increase in length and variability of prophylactic antibiotic courses. However our study indicates that long course antibiotic prophylaxis does not have a significant benefit over short course prophylaxis.

9:48 *Triological Society Thesis*

The Role of Elective Parotidectomy in the Surgical Management of Advanced Non-Melanotic Auricular Malignancies - A 10-Year Multi-Institutional Study and Literature Review

Ryan F. Osborne, MD, Los Angeles, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of parotidectomy for advanced non-melanoma auricular carcinomas.

Objectives: The purpose of this study is to determine whether elective parotidectomy is necessary in patients with clinically and radiographically N_0 parotid disease with isolated primary auricular non-melanoma (NM) cutaneous malignancies. Auricular malignancies are typically managed by wedge resection or wide local excision. While small lesions are easily managed by conservative excision, large bulky tumors, those with multifocal involvement, and recalcitrant lesions, often require more extensive resection including total auriculectomy, parotidectomy, and/or neck dissection. **Study Design:** A 10-year retrospective case review from four tertiary university medical centers from 1992 to 2002. **Methods**: Information was retrospectively retrieved using a database of patients from the departments of Pathology. 71 charts were reviewed. Patients with a clinical history of advanced non-melanoma auricular carcinoma undergoing elective parotidectomy and/or neck dissection with clinically and radiographically N_0 nodal disease were evaluated for the presence of occult parotid metastasis. All patients underwent parotidectomy in conjunction with a total auriculectomy for surgical extirpation of their primary auricular carcinoma. Parotid specimens were evaluated for histopathologic evidence of metastatic neoplastic disease. **Results:** Pathologic examination showed no histologic evidence of occult parotid metastasis in all 19 patients who underwent elective parotidectomy in the presence of clinically and radiographically N_0 nodal disease of the parotid or cervical regions. **Conclusions:** Parotidectomy may not be necessary in the surgical management of advanced auricular carcinoma in the absence of clinically positive parotid disease or external auditory canal involvement.

9:56

Neck Dissection as Single Modality Treatment for Unknown Primary Squamous Cell Carcinoma of the Head and Neck

Robert A. Weisman, MD, La Jolla, CA*
Andrew K. Patel, MD, San Diego, CA (Presenter)
Kevin T. Brumund, MD, La Jolla, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to be familiar with different approaches to treating the patient with unknown primary head and neck squamous cell carcinoma, and to understand the role of neck dissection alone in treating selected patients with pathologically N1 (pN1)disease.

Objectives: There is no universally accepted management for unknown primary squamous cell carcinoma of the head and neck (UPSCCHN). Radiation, surgery, and chemotherapy in various combinations have been used to treat this condition. Surgery ranges from biopsy (even fine needle aspiration) to excisional biopsy, to neck dissection (selective, modified radical, and radical). Radiation is frequently employed but requires a large field, bilaterally, from the nasopharynx to the mediastinum resulting in significant morbidity. Our objective was to analyze patients with UPSCCHN treated with neck dissection only at our institution over the last decade to determine if this approach could be used to avoid the morbidity of radiation therapy in selected patients. **Study Design:** Retrospective analysis of patient records. Inclusion criteria were as follows: 1) single neck node metastasis; 2) panendoscopy with directed biopsies, including tonsillectomy, all negative for squamous cell cancer; 3) pathologic N1 with no extracapsular spread; 4) at least one year of followup. **Methods:** Patients with UPSCCHN were identified from the database of the head and neck unit of a university cancer center. Inpatient and outpatient records were reviewed to confirm that inclusion criteria were met. Records were analyzed for demographic data (age, gender, ethnicity), type of neck dissection, length of followup, disease status at last followup visit, and survival status. **Results:** Eight patients were identified. Followup ranged from 1 to 8 years. None of the patients developed a primary tumor, none recurred in the neck or at a distant site, and there were no disease related deaths. **Conclusions:** Based on this small series, it appears that highly selected patients with UPSCCHN can be managed successfully with surgery alone, avoiding the morbidity of wide field radiation.

10:04

Role of Computed Tomography for the Localization of Parathyroid Adenomas

Philip B. Zald, MD, Portland, OR (Resident Travel Award)
Bronwyn E. Hamilton, MD, Portland, OR
Michael L. Larsen, MD, Portland, OR
Babak Givi, MD, Portland, OR
James I. Cohen, MD PhD, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of computed tomography for the localization of parathyroid adenomas.

Objectives: The highly vascular nature of parathyroid adenomas may allow for visualization by contrast enhanced computed tomography (CT) in circumstances where ultrasound (US) and/or Tc-99 sestamibi nuclear scintigraphy (MIBI) are not definitive for preoperative localization. This study sought to determine the utility of CT for localization of parathyroid adenomas under these circumstances. **Study Design:** 5 year retrospective review of 223 parathyroid explorations for primary hyperparathyroidism. **Methods:** 189 were primary and 34 were re-operative cases after prior parathyroid or thyroid surgery. A total of 223 US reports, 74 MIBI reports, 223 operative records, and the results of a blinded review of 81 CT scans were correlated. **Results:** CT was performed in 81 cases and localized 59% of all surgically identified adenomas. For primary and re-operations, CT localized 57% and 63% of all adenomas respectively. Nonlocalizing US occurred in 31 patients, of whom 26 underwent CT, 20 underwent MIBI, and 17 underwent both CT and MIBI. CT localized correctly in 62%, incorrectly in 23%, and was nonlocalizing in 15%, whereas MIBI localized correctly in 50%, incorrectly in 10%, and was nonlocalizing in 40%. Nonlocalizing MIBI occurred in 27 patients. All of these 27 patients underwent US, which localized correctly in 40%, incorrectly in 30%, and was nonlocalizing in 30%. 17 of these 27 patients also underwent CT, which localized correctly in 59%, incorrectly in 6% and was nonlocalizing in 35%. **Conclusions:** When US or MIBI is nonlocalizing in patients with primary hyperparathyroidism, CT is a useful adjunctive imaging modality.

10:12 A Modified Approach to the Cervicofacial Rotation Flap in Head and Neck Reconstruction

Warris A. Bokhari, MD, San Francisco, CA
Vivek V. Gurudutt, 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 use of the cervicofacial rotation flap for reconstruction of large cutaneous defects of the head and neck.

Objectives: Large cutaneous defects of the cheek and external ear present a reconstructive challenge. While free tissue transfer has been increasingly used for such defects, many patients with these malignancies are poor candidates for lengthy reconstructive surgery. The cervicofacial rotation or advancement flap has been previously described as a simple method for reconstructing defects of the face and neck. However for large facial defects this flap typically requires wide undermining with the final closure sometimes under tension. We describe our experience utilizing a modified approach to the cervicofacial rotation flap which has little tension of the defect closure and avoids incisions or undermining of tissue inferior to the clavicle. **Study Design:** Retrospective chart review. **Methods:** Sixteen patients underwent a modified cervicofacial rotation flap for immediate reconstruction of a cheek and/or total auriculectomy defect. **Results:** Primary cutaneous malignancies were the most common surgical indication, followed by parotid tumors with overlying skin involvement. Six patients had total auriculectomy defects while 10 patients had defects involving cheek skin without auriculectomy. Defect diameter size varied from 5 to 12 centimeters. Two patients required skin grafting of the donor site. Four patients had minor wound dehiscences that were treated with local wound care and allowed to close by secondary intention. **Conclusions:** We describe a modified approach to the cervicofacial rotation flap which requires less undermining than the standard method while providing a tension-free closure of the defect. Our approach provides a simple, reliable method for coverage of large cutaneous defects involving the cheek and external ear.

10:20 Q&A

10:25 Break with Exhibitors - Salons E-H
View Posters

10:55 The "Resident Bowl" - Otolaryngology programs represented by their residents will compete by answering otolaryngology questions in a game show format. (Attendees are asked to cheer them on and test their own knowledge).
Moderator: David M. Barrs, MD*, Scottsdale, AZ

PEDIATRICS/LARYNGOLOGY MODERATOR
Mark S. Courey, MD*, San Francisco, CA

11:55 SECOND PRIZE - VICE PRESIDENT'S RESIDENT RESEARCH AWARD
Pediatric Neck Abscesses—Changing Organisms and Implications for Empiric Therapies

Jared C. Inman, MD, Loma Linda, CA
Michelle S. Ghostine, MD, Loma Linda, CA
Mark R. Rowe, MD, Loma Linda, CA
Terry R. Fleck, BA, Loma Linda, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the relative prevalences of pathogenic organisms in pediatric neck abscesses and how they have changed in the last 10 years; delineate the clinical characteristics that occur more frequently in MRSA abscess patients; define patient populations that should be empirically treated with MRSA sensitive antibiotics.

Objectives: Quantify how the etiologic organisms in pediatric neck abscesses have changed over the last 10 years; delineate clinical characteristics in MRSA pediatric neck abscess patients; define patient populations that should be empirically be treated with MRSA sensitive antibiotics. **Study Design:** Retrospective study. **Methods:** 228 consecutive patients were reviewed, ages 0-17, presenting between 1999-2007 for CT proven neck abscess. Characteristics of patients with differing causative organisms were compared using statistical analysis including Student's T-tests, univariate and multivariate analysis. Also a set of expanded characteristics was analyzed for the MRSA group versus other pathogenic bacteria. **Results:** Overall 48% of abscesses revealed S. aureus as the causative organism, 29% of which were MRSA; more recent years showed that up to 66% were MRSA culture positive. When comparing MRSA abscesses with other causative organisms multiple clinical characteristics were found which did not help to differentiate those patients at a higher risk for MRSA. Conversely there were characteristics which did predict a MRSA infection. For example the average age of patients with MRSA was 32.5 months compared to only 16 months for the MSSA patients. MRSA sensitivities and resistances were also examined. **Conclusions:** This study presents the largest cohort of pediatric neck abscess patients in which the emergence and characteristics of MRSA are examined. As community acquired MRSA infections become more prevalent empiric antibiotic therapy must be considered. Empiric therapy covering MRSA is advised based on its rapidly increasing prevalence and the general inability thus far to identify any one specific group for MRSA empiric therapy.

12:03 Pediatric Tracheotomy Indications and Complications: The Experience and a Review of the Literature

Kevin C. Huoh, MD, San Francisco, CA
Kristina W. Rosbe, MD, San Francisco, CA (Presenter)

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the current trends in indications and complications of pediatric tracheotomy and compare their own practice of pediatric tracheotomy with all published literature.

Objectives: The purpose of this study was to review the indications and complications for tracheotomies performed at our institution and to compare this to the published reports in the literature. **Study Design:** Retrospective chart review and literature review. **Methods:** A chart review was conducted to identify indications and complications of 49 pediatric tracheotomies performed at our institution from August 1998 to March 2007. A literature search was completed through PubMed using the search terms "pediatric", "tracheotomy", and "tracheostomy". 390 studies were identified. 30 articles of indications were included in the study for a total of 4108 patients. 26 articles of complications were included in our analysis for a total of 3726 patients. In order to track changes in complications over time the patient population was divided into thirds chronologically. **Results:** At our institution the primary indications for tracheotomy were airway obstruction (57%), ventilator dependence (35%) and surgical prophylaxis (8%). The overall complication rate was 27%. Of those complications 14.6% were tracheal or stomal granulation and 2.4% accidental decannulation. The literature review yielded an overall complication rate of 43.5% with 19.8% major complications and 23.3% minor complications. **Conclusions:** Our experience is consistent with more recent studies in the literature. Indications have evolved from infectious etiologies for airway obstruction to indications more commonly related to congenital or acquired airway obstruction in children. Despite the trend to perform this procedure on younger and sicker children major complication rates have decreased.

12:11 Management of Adult Subglottic Stenosis with Endoscopic Laser Radial Incisions and Mitomycin-C Application

Frederick C. Roediger, MD, San Francisco, CA (Resident Travel Award)
Lisa A. Orloff, MD, San Francisco, CA
Mark S. Courey, MD, San Francisco, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the development of endoscopic techniques for managing the airway in patients with SGS, including the poor historical response to pure dilation and the subsequent introduction of laser radial incisions and mitomycin-C. They should also understand the proper use of contemporary endoscopic techniques and how these methods influence the role of open surgery.

Objectives: To assess the efficacy of endoscopic laser radial incisions with mitomycin-C application (ELRM) in managing adult subglottic stenosis (SGS). **Study Design:** Case series review. **Methods:** Fourteen consecutive cases of adult SGS treated with ELRM at a single tertiary referral center over three years were reviewed. Subjects with SGS secondary to Wegener's granulomatosis (WG) and idiopathic progressive subglottic stenosis (IPSS) were included. Patients with cartilaginous subglottic stenosis were excluded. The primary outcome measure was postoperative reduction in symptoms. Secondary outcome measures included total number of procedures required to relieve symptoms, interval between procedures, and improvement in pulmonary function tests (PFTs) when available. In addition to surgery 13 of 14 patients were treated medically for reflux. **Results:** Nine women and five men with average age 48 years were identified. Nine patients had IPSS and five had WG. The predominant presenting symptom was dyspnea on exertion in all patients. All subjects reported at least a temporary postoperative reduction in symptoms. Seven patients (50%) required only one ELRM and seven patients (50%) required repeat ELRM at an average interval of 10 months. The average interval for the four IPSS patients requiring a second procedure was 12 months. One subject with WG required a third procedure. His interval improved from 2.5 to 7 months between procedures. Evidence of extrathoracic airway obstruction resolved in three of four patients with pre- and postoperative PFTs. **Conclusions:** ELRM is an effective method of managing SGS associated with IPSS. In patients with WG, ELRM reduced airway associated symptoms and avoided need for tracheotomy.

12:19 **Q&A**

12:25 **Introduction of Vice President-Elect, Richard E. Hayden, MD*, Scottsdale, AZ**
Sigsbee W. Duck, MD*, Gillette, WY

12:30 **Adjourn**

12:45 - 2:30 **Triological Thesis Seminar - Hibiscus**

2008 WESTERN SECTION POSTER PROGRAM

W1. Autologous Human Serum for Tissue Engineering of Human Nasal Septal Cartilage

Thomas H. Alexander, MD MHS, San Diego, CA
August B. Sage, BS, 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 be able to explain the benefits of autologous human serum as a media supplement for tissue engineering of human nasal septal cartilage.

Objectives: 1) To compare proliferation and chondrogenesis of human nasal septal chondrocytes during 3 dimensional (3D) culture in medium supplemented with autologous human serum (AHS) or commercial pooled human serum (PHS); and 2) to assess the ability of the growth factors IGF-1 and GDF-5 to augment chondrogenesis with AHS and PHS. **Study Design:** Prospective, within subjects design. **Methods:** Cartilage and AHS were obtained from 8 donors during septoplasty. Chondrocytes were expanded in monolayer for one passage in either AHS or PHS. Cells were then embedded in alginate beads for 2 weeks of 3D culture in each of three conditions for both AHS and PHS: 2% serum alone, 10% serum alone, or 2% serum with IGF-1 (200 ng/mL) and GDF-5 (100 ng/mL). **Results:** There were no significant differences between AHS and PHS with regards to proliferation and glycosaminoglycan (GAG) accumulation during 3D culture. The addition of IGF-1 and GDF-5 resulted in significant increases in proliferation, GAG accumulation, and type II collagen production for both AHS and PHS. There was a 2.7-fold increase in proliferation with 2% AHS + IGF-1 + GDF-5 compared to 10% AHS alone ($P<0.0001$). Collagen accumulation per chondrocyte was 0.05±0.03 pg for 2% AHS, 0.07±0.03 pg for 10% AHS, and 30.0±9.8 pg for 2% AHS + IGF-1 + GDF-5 ($P<0.0001$). **Conclusions:** Chondrogenesis and proliferation are similar with AHS and PHS. AHS may facilitate creation of autologous tissue engineered constructs for use in reconstructive surgery of the head and neck while minimizing risks of infection and immune reaction. The addition of IGF-1 and GDF-5 greatly improves chondrogenesis during 3D culture.

W2. Endoscopic Management of Large Temporal Lobe Encephalocele

Sofia Avitia, MD, Los Angeles, CA
Ryan Fredrick Osborne, MD, Los Angeles, CA*
Ali Mesiwala, MD, Pomona, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the relevant issues surrounding the imaging and clinical signs of a temporal lobe encephalocele. Participants should also become familiar with the endoscopic approach to the skull base and its applications in this area.

Objectives: 1) To present a case of a large temporal lobe encephalocele managed endoscopically; and 2) to propose endoscopic repair as an alternative to an open approach with decreased morbidity and comparable outcomes. **Study Design:** This is a retrospective review of one case of temporal lobe encephalocele repaired endoscopically. **Methods:** The medical record including history, exam, imaging studies, operative report and postoperative records were reviewed retrospectively. The surgical technique is described. The postoperative morbidity and outcomes are evaluated. **Results:** A 46 year old woman presented with clear rhinorrhea from the right nostril for three weeks. The patient had associated headaches and episodes of nausea and vomiting. On exam clear fluid was visualized draining from the right nostril. The remainder of the head and neck exam including nasal endoscopy was normal. MRI was obtained which revealed a dehiscence from the region of the medial temporal lobe into the sphenoid sinus with herniation of brain into the sphenoid sinus. The patient underwent placement of a lumboperitoneal shunt as well as endoscopic intradural resection of brain from the mesiotemporal lobe. Reconstruction of the defect consisted of dural repair with AlloDerm and abdominal fat. Postoperatively the patient was observed in the ICU for 24 hours and was discharged on postoperative day one. One year after surgery the patient has had no recurrence of CSF leak. **Conclusions:** Temporal lobe encephaloceles can be managed endoscopically leading to decreased morbidity and successful outcomes.

W3. Effect of Vocal Cord Height Asymmetry on the Aerodynamic Properties and Vibratory Pattern of Phonation

Dinesh K. Chhetri, MD, Los Angeles, CA
David Shamouelian, BS, Los Angeles, CA
Juergen Neubauer, PhD, Los Angeles, CA
Zhaoyan Zhang, PhD, Los Angeles, CA
Neeta Varshney, BS, Los Angeles, CA
Gerald S. Berke, MD, Los Angeles, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand clinical conditions that result in vocal fold height asymmetry and its effects on laryngeal vibration and voice.

Objectives: To study the effects of vocal fold height asymmetry on the aerodynamic and vibratory patterns of the larynx. **Study Design:** An ex vivo human larynx model of phonation. **Methods:** Supraglottic structures were excised. Vocal cord adduction sutures were placed bilaterally, and a suture was placed on the left vocal process to induce height asymmetry. Airflow was applied via a manually controlled supply. An increasing amount of weight (0-50g) was applied superiorly to the left vocal process suture via a pulley mechanism to induce a graded vocal fold height asymmetry. A high fidelity microphone and a pressure transducer measured phonation onset airflow and subglottic pressure. A high speed camera recorded the vibratory pattern and phonatory area. **Results:** With increasing height asymmetry phonation threshold flow rate increased, subglottic pressure remained relatively constant, and phonation threshold frequency increased. Pre-phonatory area increased, effective vibratory mass appeared reduced, and an increasingly anterior vibratory pattern was seen. **Conclusions:** The breathiness and vocal fatigue seen in clinical conditions associated with vocal fold height asymmetry may be attributed to the increased pre-phonatory area and phonation onset airflow required.

W4. Is Poor Nutritional Status an Indication for Increased Length of Antibiotic Prophylaxis in Clean-Contaminated Head and Neck Surgery?

Jody Chou, BS, Irvine, CA
Ali Sepehr, MD, Irvine, CA
Barbara-Jean Santos, BS, Irvine, CA
Zlatko Devcic, GED, Mission Viejo, CA
Koohyar Karimi, GED, Laguna Hills, CA
William B. Armstrong, MD, Irvine, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize nutritional status as a factor for surgical wound infection. In addition the participants should understand that poor nutritional status is not an indication for prolonged antibiotic prophylaxis.

Objectives: There are separate studies evaluating the effect of nutritional status on surgical wound infection (SWI) and length of antibiotic prophylaxis on SWI. However no study has evaluated the effect of length of antibiotic prophylaxis on SWI in patients with poor nutritional status (PNS). The goal of this study is to determine if PNS is an indication for a longer course of antibiotic coverage after a clean-contaminated head and neck surgery (CCHNS). **Study Design:** Retrospective chart review. **Methods:** The charts of 514 patients undergoing CCHNS at a tertiary referral academic medical center from 1998 through 2006 were reviewed. Wound complication rate and length of hospital stay (LOS) were compared between the well nourished and malnourished groups. In those with PNS these outcomes were compared between the subgroups receiving different lengths of antibiotics. The statistical analysis was done with the two tailed Fishers exact test followed by logistic regression analysis. **Results:** The infection rate for the subgroup of patients with poor and normal nutritional status was 19% and 3.2% respectively. Of the patients with PNS the infection rate of those placed on 4 or less days of antibiotic was 17.6% vs. 19.3% for those on more than 4 days of antibiotics. The majority of patients on antibiotic treatment received metronidazole and cefazolin. **Conclusions:** The infection rate for patients with PNS was found to be significantly higher than those with normal nutritional status. However no statistically significant difference was found between subgroups of malnourished patients. Therefore PNS is not an indication for prolonged antibiotic prophylaxis.

W5. Metastasis from Renal Cell Carcinoma to the Sympathetic Chain and Parotid

Abby Heather Close, MD, San Diego, CA
Kevin T. Brumund, MD, San Diego, CA
Robert A. Weisman, MD, San Diego, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate awareness of

pattern of spread of renal cell carcinoma to the head and neck.

Objectives: Metastasis from renal cell carcinoma to the head and neck is reviewed in two interesting patients. **Study Design:** Case report. **Methods:** We report two cases of metastatic renal cell carcinoma, one to the parotid gland and one to the sympathetic chain. In addition a review of the literature on metastasis to the sympathetic chain was performed. **Results:** Here we present two interesting cases of metastatic renal cell carcinoma seen within a few months of each other. These cases represent the variability of renal cell carcinoma metastasis and the potential for insidious onset of the primary. Our first patient presented with diffusely metastatic disease presenting with a parotid mass. It was not until the preoperative evaluation with a chest x-ray was there concern for this being more than a benign parotid mass. Our second patient represents the other end of the spectrum. His primary tumor initially treated 15 years prior with complete surgical removal. The patient has remained disease free for over 15 years until presentation with a neck mass and Horner's syndrome. Review of the literature revealed no previous description of metastasis to the sympathetic chain. **Conclusions:** Metastatic disease should always be included in the differential diagnosis when evaluating a patient with a mass in the head and neck region. Renal cell carcinoma is the third most common infraclavicular neoplasm to present in the head and neck after lung and breast primaries. As demonstrated metastatic disease may be the initial presentation of a primary malignancy elsewhere in the body.

W6. Schwannoma of the Tongue: Two Case Reports and Review of the Literature

Marc Cohen, MD, Los Angeles, CA
Marilene B. Wang, MD, Los Angeles, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the pathologic, radiographic, and clinical hallmarks of schwannoma of the tongue.

Objectives: 1) To describe clinicopathologic and radiographic features of two cases of schwannoma involving the oral tongue; and 2) to review the literature of this unusual clinical entity. **Study Design:** Two case reports and review of the literature. **Methods:** Case report with review of the pathologic, radiologic and clinical data for two patients with schwannoma of the tongue. Review of the literature of case reports of schwannomas (neurilemomas) of the tongue from 1956 to 2006 with analysis of the patient's age, gender, presenting symptom(s), tumor size, and surgical approach. **Results:** The two patients in our series presented with painless swelling of the tongue. Transoral excision was performed and pathologic examination confirmed the diagnosis of schwannoma in both cases. A total of 126 cases of schwannoma of the tongue have been reported in the English literature over the past 50 years. Schwannomas of the tongue typically present in the 3rd decade of life (33%), display no gender predilection (52.8% female; 47.2% male) and often present as a painless mass (68.4%). Schwannomas are likely to elicit distressing symptoms when they occur in the posterior one-third of the tongue (66.7% vs. 14.3%) or approach 3 cm in greatest dimension (33.0 mm vs. 18.5 mm). The vast majority of cases have been treated with transoral excision (93.1%). Recurrence after surgical excision has not been reported. **Conclusions:** Schwannoma of the tongue is a relatively rare tumor of the head and neck. Transoral resection allows for removal of this tumor in a manner that precludes recurrence, avoids causing morbidity of tongue function, and remains the standard approach for treatment of the vast majority of these tumors.

W7. Is Diabetes Mellitus an Independent Factor for Wound Infection after Clean-Contaminated Head and Neck Surgery?

Zlatko Devcic, GED, Irvine, CA
Ali Sepehr, MD, Orange, CA
Koohyar Karimi, GED, Laguna Hills, CA
Barbara-Jean Santos, BA, Irvine, CA
Jody Chou, BS, Irvine, CA
William B. Armstrong, MD, Orange, CA*

Educational Objective: At the end of this presentation participants should be able to discuss the role of diabetes mellitus as a predictive factor in surgical wound infection rates and compare the efficacy of antibiotic prophylaxis regimens of 5 days or less in patients with diabetes mellitus undergoing clean contaminated head and neck surgery.

Objectives: The most frequent postoperative complications after surgery are wound infections. Data has shown that antibiotic prophylaxis longer than one day does not improve outcomes in all comers undergoing clean-contaminated head and neck surgery (CCHNS). There is ambiguous data regarding diabetes mellitus (DM), an intrinsic risk factor, as a predictor of surgical wound infections (SWIs). Since some intrinsic factors may increase susceptibility to SWIs, the optimal length of antibiotic prophylaxis should be determined for these subgroups. The goal of our study is to determine if there is an association between DM and SWI rates and to evaluate the efficacy of antibiotic prophylaxis regimens of 5 days or less and more than 5 days in patients with DM undergoing CCHNS. **Study Design:** Retrospective chart review. **Methods:** Charts of 514 patients undergoing CCHNS at a tertiary referral academic medical center from 1998 through 2006 were reviewed for disease, operation, comorbidities (including DM), antibiotic prophylaxis, and hospital stay (HS). Data collected were analyzed using chi square tests. **Results:**

There was no statistical difference in SWI rates, wound complication rates, or HS in patients with DM as compared to nondiabetic patients. In patients with DM long course antibiotic prophylaxis did not decrease infections compared to short course prophylaxis. **Conclusions:** It is unclear from the literature if DM increases SWI rates in CCHNS. Our study indicates that DM does not cause a significant increase in SWIs in this subgroup. Furthermore long course antibiotic prophylaxis showed no benefit over the short course prophylaxis. In patients undergoing CCHNS, DM is not an indication for prolonged antibiotic administration.

W8. Microsurgical Bipolar Cautery Tonsillectomy

Esther L. Fine, MD, Orange, CA (Resident Travel Award)
Norman J. Harris, MD, Orange, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the technique of microscopic bipolar tonsillectomy and its potential advantages.

Objectives: To describe our experience performing microsurgical bipolar cautery tonsillectomy in 200 patients. **Study Design:** Case series. **Methods:** All patients scheduled for elective tonsillectomy for chronic tonsillitis or obstruction were included. Tonsillectomy was performed under binocular microscope visualization using standard bipolar electrocautery beginning at the inferior pole. All operations were performed by the same surgeon. Hemostasis was obtained during dissection. Immediate postoperative bleeding was defined as in the first 24 hours postoperatively. Blood loss and operating time were recorded by the anesthesiologist. Patients were routinely given antibiotics postoperatively. **Results:** Mean intraoperative blood loss was 4 cc. Immediate rebleeding occurred in 0.5% of patients. Operative time was comparable to our previous experience with standard tonsillectomy. Overall cost to the patient was marginally increased due to the use of the dissecting scope. **Conclusions:** Microscopic tonsillectomy is a safe, straightforward technique which in our experience results in minimal intraoperative blood loss and a lower rate of immediate postoperative hemorrhage than alternative tonsillectomy techniques presented in the literature.

W9. "Lateral to Medial Approach to the Tracheoesophageal Groove"—Indications and Technique

Brendan Gaylis, MBBCh, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to incorporate this necessary approach into their endocrine surgical practice. The presentation will demonstrate the technique and discuss the indications and outcomes.

Objectives: Present the indications, technique and outcomes of the lateral to medial approach to the tracheoesophageal groove. **Study Design:** 1) Personal description of technique; 2) retrospective analysis of 4 cases; 3) technique utilized in the setting of recurrent or new onset disease in a previously dissected thyroid bed. **Methods:** Chart review. Personal description of technique. **Results:** Four patients were operated on using this technique. These indications included recurrent thyroid cancer and primary hyperparathyroidism in a previously operated thyroid bed. **Conclusions:** Excellent outcome in all 4 patients with no injury to the recurrent laryngeal nerve.

W10. The Role of Free Tissue Transfer in Pharyngeal Defects Following Anterior Cervical Disc Fusion

Tamer A. Ghanem, MD PhD, Portland, OR
Sarah A. Rossmiller, MD, Portland, OR
Mark K. Wax, MD, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the role of free tissue transfer in repair of pharyngeal defects following anterior cervical disc fusion (ACDF).

Objectives: Pharyngeal injury post-ACDF repair is a well recognized postoperative complication which can lead to abscess formation, pharyngocutaneous fistula, and esophageal diverticulum. Various success rates have been proposed including primary repair, pedicled muscle flaps, and free tissue transfer. We review our experience with patients undergoing free tissue transfer for repair pharyngeal defects. **Study Design:** Retrospective review. **Methods:** Data was reviewed from patients undergoing pharyngeal repair in our institution following ACDF surgery from January 2002 to July 2007. **Results:** Four patients were identified who had ACDF repairs for various pathologies followed by pharyngeal leak. Presentation of the pharyngeal leak occurred as early as 8 days and as late as 3 years after the ACDF procedure. Three patients presented acutely with cervical abscesses requiring incision and drainage. Two patients underwent hardware removal at the time of incision and drainage. The fourth patient presented with dysphagia and an esophageal diverticulum. Two of the four patients were smokers. Three of the patients underwent radial forearm fasciocutaneous free flap reconstruction, and one underwent anterolateral thigh musculocutaneous

free flap reconstruction. There were no postoperative leaks following reconstruction over a 2-48 month followup. One patient developed a postoperative abscess which was treated conservatively with antibiotics and wound packing. **Conclusions:** Pharyngoesophageal perforation following ACDF approaches can be managed successfully with free tissue transfer.

W11. Finite Element Representation of the Human Auricular Cartilage Framework: Implications for Otoplasty and Cartilage Reshaping Technologies

Pedram E. Ghasri, BS, Irvine, CA
Allen I. Foulad, BS, Irvine, CA (Presenter)
Paul K. Holden, MD, Irvine, CA
Hai-Nam A. Nguyen, BS, Fountain Valley, CA
Brian J. Wong, MD PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the complex structural geometry of the human ear as well as its potential application in developing new technologies in otoplasty and cartilage reshaping technologies.

Objectives: Optimal correction of external ear malformations requires detailed understanding of the geometry of the complex cartilaginous framework. Our study aims to measure the cartilage and skin thickness of human ears, as well as develop a three dimensional finite element model (FEM) of human ear cartilage. **Study Design:** This was an anatomic study of 20 fresh human cadaver ears. **Methods:** Ear cartilage thickness was determined from full thickness punch biopsies within the scapha, triangular fossa, antihelix, concha cymba, and concha cavum in 20 cadaver ears. Digital micrometry was performed on biopsies after photography using a dissection microscope. For comparison cryosection transverse images of an intact human ear (300 micron thickness) were used to create a 3D FEM of the auricular cartilage rendered in the COMSOL Multiphysics programming software package. **Results:** The cartilage thickness for each region is as follows: scapha ¼=1.1mm (n=11), triangular fossa ¼=1.0mm (n=5), antihelix ¼=1.9mm (n=6), concha cymba ¼=1.4mm (n=5), concha cavum ¼=1.6mm (n=14). The overall mean cartilage thickness is 1.4mm (n=41). The data from the FEM3-D confirmed our punch biopsy data. **Conclusions:** Measurement of human auricular cartilage and skin is needed to guide the development of cartilage reshaping technologies, and a human auricular cartilage framework FEM may become a useful tool to help guide surgery. The thickness differences at various areas of the ear will aid in optimizing cartilage reshaping technology in order to produce better surgical outcomes.

W12. Paraganglioma of the Thyroid

Vivek V. Gurudutt, MD, San Francisco, CA
Lisa A. Orloff, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the etiology of this lesion, propose a working differential diagnosis, as well as compare the histopathological/immunohistochemical characteristics that differentiate these lesions.

Objectives: Paragangliomas of the head and neck are found rarely within the thyroid gland. In the literature they are most frequently described in females. Often they are misdiagnosed and inappropriate treatment algorithms may be pursued. Our objective is to define characteristics of this lesion to aid in definitive diagnosis. **Study Design:** We present a retrospective case study of a male with unilateral paraganglioma of the thyroid. **Methods:** Medical chart review, ultrasound, surgical resection and pathologic analysis all were conducted at our institution. **Results:** The patient presented with a 6 x 8 cm right thyroid lesion with moderate vascularity on ultrasound analysis. Fine needle aspiration revealed benign cytology. Due to compressive symptoms from the mass effect of the tumor surgical resection was completed. Frozen section analysis was inconclusive. Final pathology of the right thyroid lobe revealed nests of tumor cells separated by thin fibrovascular septations. The diagnosis of paraganglioma was determined only after immunohistochemistry revealed positive synaptophysin, chromogranin, and S-100 with negative congo red and calcitonin. No further treatment was initiated as no invasion or other paragangliomas were found in the head and neck. **Conclusions:** Immunohistochemistry in the diagnosis of thyroid paraganglioma is critical and local resection should be sufficient for solitary lesions.

W13. High Speed Cinematography and Videokymography in the Evaluation of Vocal Cord Motion in the Setting of Voice Abuse

Harry S. Hwang, MD, San Francisco, CA
I-fan T. Mau, MD PhD, San Francisco, CA
Margaret Coffey, MSc, San Francisco, CA
Mark S. Courey, MD, San Francisco, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) discuss of the role of high speed cinematography and videokymography as modalities to analyze complex vocal fold vibratory patterns; and 2) explain how

voice abuse alters vocal fold vibratory characteristics specifically the phonatory onset time interval and phonatory onset vibratory period.

Objectives: 1) Discuss of the role of high speed cinematography and videokymography as modalities to analyze complex vocal fold vibratory patterns; and 2) explain how voice abuse alters vocal fold vibratory characteristics specifically the phonatory onset time interval and phonatory onset vibratory period. **Study Design:** Observational cohort study. **Methods:** Four healthy individuals were selected. Voice recording and high speed cinematography images were recorded before and after a voice abuse session. Videokymograms were generated from the high speed cinematography sequences. Changes in voice quality were qualitatively analyzed by an experienced speech language pathologist utilizing the GRBAS perceptual rating scale. Two vocal fold vibratory characteristic measurements were quantitatively analyzed: the phonatory onset time interval and phonatory onset vibratory periods. **Results:** In the qualitative analysis three subjects demonstrated higher scores in multiple parameters of the GRBAS perceptual rating scale after voice abuse. One out of four subjects had statistically significant increase in both vocal fold vibratory characteristic parameters. One other subject showed a trend towards statistical significance in both parameters. When analyzing all phonatory onset time intervals, the mean value for pre-voice abuse samples was 16.7 ± 3.26 msec and the mean value for the post-voice abuse samples was 39.3 ± 6.03 msec. When analyzing the phonatory onset vibratory periods, the mean value for pre-voice abuse samples was 4.67 ± 1.15 and the mean value for post-voice abuse samples was 6.47 ± 3.58. **Conclusions:** In our study we incorporated both qualitative and quantitative analysis of vocal fold vibratory characteristics in the setting of voice abuse. We propose our preliminary data illustrates alteration in the vocal fold vibratory characteristics, specifically the phonatory onset time interval and the phonatory onset vibratory period. These changes resulted from voice abuse leading to voice fatigue and changes in voice quality.

W14. An Unusual Case of Mycobacterial Skull Base Osteomyelitis

Sumana Jothi, MD, San Diego, CA
Alexander S. Battaglia, MD PhD, San Diego, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the differential diagnosis of skull base osteomyelitis and recognize the risk factors for untreated, complicated sinusitis.

Objectives: To report an unusual case of refractory sinusitis that led to a mycobacterial skull base osteomyelitis and to discuss the workup and pertinent literature. **Study Design:** Case report. **Methods:** A 50 year old healthy female was referred for refractory unilateral sinusitis. The patient's symptoms of unilateral headache, nasal congestion and drainage began soon after a dental extraction in Mexico and persisted for 3 months despite several courses of antibiotics, oral steroids, and irrigations. After 4 months, otoscopy revealed bilateral thickened TMs and a pinpoint perforation. Nasal endoscopy showed extensive crusting and poorly vascularized mucosa. Audiogram showed an asymmetric right conductive hearing loss. At 6 months she had worsened bilateral hearing loss and otorrhea and persistent left nasal drainage. Sinonasal cultures grew heavy MRSA, no fungus. The infectious disease service placed her on 4 weeks of IV vancomycin. Endoscopic exam worsened on IV antibiotics with evidence of a widened maxillary ostium and extensive crusting necessitating weekly office visits for cleaning. Bilateral PETs were placed but her audiograms continued to worsen with a new severe bilateral sensorineural component. MRI IAC was normal. CT sinus showed extensive left lateral nasal wall erosion. Repeat cultures continued to grow only MRSA. Autoimmune workup was negative. Patient was taken to the operating room to obtain larger tissue samples for culture and pathology. Minor salivary gland biopsy was normal. **Results:** Gram stain from the operative tissue specimens was AFB+, and fungal cultures grew mycobacterium abscessus chelonae complex. Gallium scan showed evidence of bilateral skull base osteomyelitis. Anti-mycobacterial therapy was initiated for 6 months. All of her symptoms improved significantly. The gallium scan cleared. **Conclusions:** Refractory prolonged sinusitis, especially with sphenoid involvement, should alert the clinician to the possibility of spread to the skull base should any cranial neuropathy develop. Atypical mycobacterium can hide in the nasal tissues and are difficult to culture without adequate tissue specimen.

W15. Postoperative Radiotherapy for High Risk Oral Cavity SCC

Giant Lin, MD, Portland, OR
John Holland, 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 role of postoperative radiation in the management of oral cavity squamous cell carcinoma.

Objectives: 1) To evaluate overall survival, locoregional control and distant metastatic spread in patients receiving postoperative radiation for high risk SCC of the oral cavity; 2) to identify tumor and treatment factors that affect outcomes. **Study Design:** Retrospective chart review. **Methods:** 65 patients receiving postoperative radiation between 1980 and 2005 were analyzed. **Results:** With a median followup of 19 months, the five year actuarial local control was 77% and locoregional control was 75%.

The median time to recurrence was 16 months. Distant metastases developed in 8 patients (13%). The five year progression-free survival was 59%. The median overall survival was 23 months with a 5 year rate of 31%. The most common acute side effect was mucositis (95%). Approximately 1/3 of patients (21/65) required a treatment break. Median weight loss during radiation was 7 pounds (range: 0-31 lbs). The most common late morbidity was xerostomia (29%). Osteoradionecrosis developed in three patients (5%). Twelve patients (19%) developed a second primary tumor. The ten year actuarial rate for the development of a second primary was 43%. Cox regression analysis showed that T stage (T4 vs. others) was predictive for local control (p=0.03). Although not significant log-rank survival suggested overall treatment time may affect progression-free survival (p=0.09) and node negative patients may have improved locoregional control (p=0.06). **Conclusions:** Surgery followed by post-operative radiation results in good locoregional control for high risk oral cavity cancer. Acute and late morbidity of therapy are significant. Special clinical care should be given to these patients seeking to avoid treatment breaks and to decrease side effects.

W16. Mycobacterium Fortuitum Infection of the Neck

Steve S. Liou, MD, Oakland, CA
Deepak Gurushanthaiah, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the clinical signs and risk factors for atypical mycobacterial infections in postsurgical patients and discuss the appropriate diagnostic studies and therapeutic options.

Objectives: Mycobacterium fortuitum is described as a rare but increasingly more clinically recognized cause of iatrogenic soft tissue infection. Though previously reported in otologic surgery and more recently as a local infection after cosmetic procedures of the head and neck, this is the first report to the authors' knowledge of a widespread neck infection. We describe a patient who presented with a diffuse, nodular neck infection with persistent drainage after endoscopic assisted neck lift nonresponsive to oral antibiotic therapy and limited incision and drainage. We review the diagnostic workup in this patient as well as the medical and surgical treatment of the infection. **Study Design:** Case report. **Methods:** Retrospective chart review. **Results:** The diagnosis was established by culture after negative Ziehl-Neelsen staining. Radiographic evaluation demonstrated involvement only of the superficial planes of the neck. After a prolonged course of culture directed antibiotic therapy and surgical debridement complete resolution was achieved. **Conclusions:** Mycobacterium fortuitum should be in the differential diagnosis for refractory postsurgical infections. Treatment includes surgical drainage and prolonged antibiotic therapy.

W17. EGFR Expression in Primary Squamous Cell Carcinoma of the Thyroid

Jennifer L. Long, MD PhD, Los Angeles, CA (Resident Travel Award)
Ali M. Strocker, MD, Los Angeles, CA
Marilene B. Wang, MD, Los Angeles, CA*
Keith E. Blackwell, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the clinical course of primary squamous cell carcinoma of the thyroid and the role of epidermal growth factor receptor (EGFR) in thyroid carcinomas.

Objectives: 1) Present a case report of a primary squamous cell carcinoma of the thyroid (PSSCT); and 2) discuss the evidence for EGFR in pathogenesis of thyroid carcinomas. **Study Design:** Case report and literature review. **Methods:** We present the case of a 57 year old male with a rapidly enlarging thyroid mass. After initial evaluation, surgical resection was performed. The specimen was examined with histochemistry and immunohistochemical staining for epidermal growth factor receptor (EGFR). **Results:** On the patient's presentation CT and PET scanning confirmed a hypermetabolic thyroid mass without other abnormality. Fine needle aspiration suggested papillary thyroid carcinoma. The patient underwent total thyroidectomy with bilateral neck exploration and selective neck dissection. The pathologic diagnosis was squamous cell carcinoma, metastatic to four paratracheal lymph nodes. EGFR staining of the tumor specimen was strongly positive. Postoperative PET scan was negative. The patient was treated with postoperative cisplatin based chemotherapy and radiation. The patient is alive without evidence of disease at 9 months after presentation. **Conclusions:** PSSCT is a rare disease with poor prognosis. Upon review of the literature only one other case of squamous cell carcinoma of the thyroid expressing EGFR has been reported. However EGFR has been described in anaplastic and differentiated thyroid carcinomas and is frequently encountered in squamous cell carcinomas of the aerodigestive tract. Studies have implicated EGFR in facilitating tumor cell invasion, proliferation, and angiogenesis. Monoclonal antibodies targeting EGFR may provide an additional therapeutic option for PSSCT.

W18. Dysphagia after Lung Transplantation

Ali L. Lotfizadeh, BS, Los Angeles, CA

Dinesh K. Chhetri, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the significance of dysphagia in patients undergoing surgical procedures, outline why it is important to examine dysphagia after lung transplantation, explain the prevalence of dysphagia after lung transplantation, and demonstrate an understanding of the risk factors for dysphagia in the lung transplant population.

Objectives: To characterize the prevalence of dysphagia and aspiration postoperatively in patients undergoing lung transplantation. **Study Design:** A retrospective cross-sectional study conducted between January 2005 and February 2007. **Methods:** The medical records of all patients undergoing lung transplantation were reviewed to determine demographic information, comorbid conditions, postoperative airway status, and details of the operative procedure. All statistical analysis was performed using univariate regression at a statistical level of P = 0.05. Swallow function was assessed using fiberoptic endoscopic evaluation of swallowing (FEES) and dysphagia severity was determined using a 7 point grading scale. **Results:** There were 126 patients who received lung transplantation in the study period. Six who died and seven whose charts could not be located were excluded from our study. The prevalence of dysphagia among lung transplant recipients was 32.7% and the prevalence of aspiration was 8.1%. Patients with dysphagia were 3 times more likely to aspirate. Among dysphagic patients 51.4% had severe dysphagia, 13.5% had moderate dysphagia, and 35.1% had mild dysphagia. The incidence of dysphagia was significantly higher in patients with tracheostomies (P = 0.024) and those with prolonged intubations (P = 0.020). **Conclusions:** Dysphagia is a common postoperative finding in patients undergoing lung transplantation and should be closely monitored to avoid potential long term complications such as aspiration pneumonia and allograft rejection.

W19. Total Endoscopic Excision of Transglottic Solitary Fibrous Tumor: First Reported Case

Matthew J. Lutch, MD, Oakland, CA
Gregory S. Moes, MD, Oakland, CA
Barry M. Rasgon, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the classic histologic and radiographic findings associated with solitary fibrous tumors and be able to discuss endoscopic techniques for en bloc excision of benign submucosal laryngeal neoplasms.

Objectives: 1) To describe a novel technique for en bloc endoscopic excision of a submucosal benign laryngeal neoplasm; 2) to describe the histopathologic characteristics of solitary fibrous tumor; and 3) to discuss optimal diagnosis and management strategies for this unusual mass lesion. **Study Design:** Case report. **Methods:** Literature review and retrospective chart review. **Results:** No evidence of recurrent disease eight months post-excision with excellent voice outcome. **Conclusions:** Solitary fibrous tumors are predominantly benign neoplasms of mesenchymal origin which are extremely rare in the larynx. We present the first case of transglottic solitary fibrous tumor as well as our technique for a complete endoscopic excision. A complete excision is curative and can be accomplished with an excellent voice outcome.

W20. Positron Emission Tomography (PET)/Computed Tomography (CT) Findings in Cancer Patients with Unilateral Vocal Fold Paralysis

Frederick C. Roediger, MD, San Francisco, CA
Mark S. Courey, MD, San Francisco, CA*
Christine Glastonbury, MBBS, San Francisco, CA
Randall A. Hawkins, MD PhD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the hallmarks of unilateral vocal fold paralysis on PET/CT and distinguish this entity from cancer recurrence or metastasis.

Objectives: To describe the appearance of unilateral vocal fold paralysis (UVFP) on PET/CT in cancer patients. **Study Design:** Case series review. **Methods:** Fifteen patients with a history of cancer (head and neck 6, thoracic 4, breast 3, other 2) and dysphonia underwent PET/CT in the workup or surveillance of their disease. Images were reviewed by professors of nuclear medicine and neuroradiology at a tertiary referral center and correlated with findings on head and neck examination. The PET/CT and exam findings are summarized. **Results:** In this group of patients dysphonia was confirmed to be secondary to UVFP by endoscopic laryngeal examination. The unmanipulated immobile vocal folds uniformly exhibited decreased uptake of 2-(F-18)-fluoro-2-deoxy-D-glucose (FDG). As a result the contralateral vocal fold shows relatively increased FDG uptake and could have been mistakenly interpreted as worrisome for malignancy by radiologists not aware of the endoscopic laryngeal findings. The surgically medialized paralyzed vocal fold also exhibited abnormal uptake; two cases UVFP treated with prior Teflon injections are presented in which the resultant granuloma demonstrated increased FDG uptake on PET/CT (average SUV 8.3). **Conclusions:** UVFP leads to decreased FDG uptake in the involved, non-manipulated vocal fold. This leads to relative

increased FDG uptake on the mobile side. Teflon injected vocal folds exhibited increased FDG uptake, which is thought to be secondary to granuloma formation. In either situation correlation with neck CT findings is critical to making the correct diagnosis. Knowledge of the PET/CT appearance of UVFP and the postintervention vocal fold avoids false-positive diagnoses and unwarranted interventions.

W21. The Relationship between Anatomic Variations and Mucosal Abnormalities in the Paranasal Sinuses

David M. Saito, MD, San Francisco, CA
Steven D. Pletcher, MD, San Francisco, CA
Christine M. Glastonbury, MD, San Francisco, CA
Amol M. Bhatki, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe common anatomic variations of the paranasal sinuses and their relationship to mucosal changes within the paranasal sinuses.

Objectives: To describe the prevalence of anatomic variations of the sinuses on computed tomography (CT) scans and to examine their relationship to mucosal abnormalities and symptoms of sinusitis. **Study Design:** Retrospective review of 60 sinus CT scans. **Methods:** Each scan was evaluated for a variety of bony anatomic variations and the presence of sinus mucosal abnormalities (>2 mm mucosal thickening). The reason for obtaining each study (symptoms of sinusitis versus non-sinus) was recorded. All CT scans had a slice thickness of 0.625 mm and were reformatted into coronal and sagittal planes. **Results:** 36 scans (60%) were performed for symptoms of sinusitis and 24 scans (40%) for non-sinus reasons. No differences were noted in the incidence of anatomic variations among these two groups. Total pneumatization of the middle turbinate (vertical lamella and inferior bulbous portion) was noted in 12.5% of CT sides, and this finding correlated with mucosal abnormalities of the ipsilateral ostiomeatal complex ($p = .05$) and the anterior ethmoid sinuses ($p < .05$). A Haller cell was recorded in 20.0% of sides and was associated with mucosal abnormalities in the ipsilateral anterior ethmoid sinuses ($p < .05$) but not the maxillary sinus ($p = 0.18$) or OMC ($p = 0.45$). **Conclusions:** Anatomic variations of the paranasal sinuses such as a concha bullosa and a Haller cell are associated with a higher incidence of mucosal abnormality within adjacent paranasal sinuses. This finding suggests a possible role of some anatomic variations in the pathogenesis of sinusitis.

W22. Evaluating the Efficacy of Prolonged Antibiotic Prophylaxis in Patients Undergoing Clean-Contaminated Head and Neck Surgery with or without Tracheostomy

Barbara-Jean G. Santos, BA, Orange, CA
Ali Sepehr, MD, Orange, CA
Jody Chou, BS, Irvine, CA
Zlatko Devcic, GED, Mission Viejo, CA
Koohyar Karimi, GED, Laguna Hills, CA
William B. Armstrong, MD, Orange, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the efficacy of prolonged antibiotic prophylaxis in preventing lung infection following clean contaminated head and neck surgery.

Objectives: To evaluate the presence of tracheostomy as a risk factor for lung infection after clean contaminated head and neck surgery (CCHNS). To evaluate the efficacy of prolonged antibiotic prophylaxis (defined as greater than 5 days) vs. antibiotic prophylaxis of 5 days or less on postoperative lung infection (LI) incidences in patients who had a tracheostomy performed. **Study Design:** Retrospective chart review. **Methods:** In this study 514 CCHNS performed at a tertiary referral academic medical center from 1998 through 2006 were reviewed for disease, operation (including tracheostomy), LI, hospital length of stay (LOS), and length of antibiotic prophylaxis. LI was defined as the development of pneumonia or tracheitis during the postoperative hospital stay. The data were analyzed using the two tailed Fishers exact test. **Results:** Rates of LI were significantly higher for the tracheostomy group versus non-tracheostomy. The majority of patients were given metronidazole and cefazolin. In patients with tracheostomy prolonged antibiotic prophylaxis did not significantly decrease the incidence of LI. **Conclusions:** We herein report the largest series of patients on this subject to date. Our results indicate that tracheostomy is a risk factor for LI after CCHNS. A prolonged antibiotic regimen did not prevent the development of postoperative lung infections in patients undergoing clean-contaminated head and neck surgery, with or without tracheostomy. Therefore the presence of a tracheostomy alone is not an indication for prolonged antibiotic prophylaxis.

W23. Middle Turbinate Medialization with Bovine Serum Surgical Adhesive

Paul Schalch, MD, Orange, CA

Michael Friedman, MD, Chicago, IL*

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the indications for middle turbinate medialization with serum bovine tissue adhesive after endoscopic sinus surgery and understand the principles of the technique as well as its effectiveness and safety over short term followup.

Objectives: The purpose of this study was to describe the microdebrider assisted middle turbinate medialization technique followed by application of bovine serum tissue adhesive (BioGlue®) for the formation of a controlled synechia following endoscopic sinus surgery, thus avoiding the need for postoperative nasal packing to prevent middle turbinate lateralization. **Study Design:** Retrospective analysis of 212 patients that underwent endoscopic middle turbinate medialization with the above-mentioned technique following conventional endoscopic sinus surgery for maxillary, ethmoid and/or frontal sinus disease between January 2006 and January 2007 at a tertiary care level institution. Revision cases were excluded. **Methods:** After performing conventional functional endoscopic sinus surgery the middle turbinate is gently displaced medially. Two areas of mucosa on the septum and on the medial aspect of the anterior portion of the middle turbinate are then abraded with a straight blade microdebrider. The tissue adhesive is then applied over these areas of denuded mucosa and the middle turbinate is medially displaced with the Freer elevator, bringing both surfaces together. After 3 minutes the glue hardens and the middle turbinate is stabilized in position, allowing the maxillary antrostomies to remain open and the anterior ethmoid cells widely exposed. Patients were followed per routine and findings were documented during office endoscopy. **Results:** A total of 212 patients underwent middle turbinate medialization with BioGlue® during endoscopic sinus surgery between January 2006 and January 2007. No immediate complications or allergic reactions to the adhesive were observed. No nasal packing was used after the procedure. Mean followup was 6 months. Six middle turbinate lateralizations were observed during the study period. **Conclusions:** Microdebrider assisted middle turbinate medialization with BioGlue® is a quick, easy and safe procedure that is effective for stabilizing the middle turbinate in a medial position by means of the formation of a controlled synechia, without the need for postoperative nasal packing. Further studies are needed to evaluate its impact in patients with chronic sinusitis and their need for revision procedures.

W24. Symptom Based Presentation of Chronic Rhinosinusitis and Outcomes after Endoscopic Sinus Surgery

Zachary M. Soler, MD, Portland, OR
Timothy L. Smith, MD MPH, Portland, OR*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the range of symptoms associated with chronic rhinosinusitis and symptom based outcomes after endoscopic sinus surgery.

Objectives: Define the symptoms of a cohort of patients with medically refractory chronic rhinosinusitis (CRS) as well as report symptom based outcomes after endoscopic sinus surgery (ESS). **Study Design:** Prospective longitudinal analysis. **Methods:** Patients with medically refractory CRS presenting for surgical management were asked to evaluate baseline symptoms using visual analog scales (VAS). Participants were asked to rank their most debilitating symptoms in descending order. VAS scores were assessed postoperatively at 3 months, 6 months, 12 months, and 18 months. Analysis of variance (ANOVA) was used to assess differences in individual symptom VAS scores from baseline to each of the postoperative time points. **Results:** Nasal congestion elicited the highest preoperative VAS score with an average of 6.5, followed by fatigue (6.0), headache (5.8), decreased sense of smell (5.5), nasal drainage (5.5), and facial pain-pressure (5.5). Headache was the most commonly reported disabling condition. Followup data after ESS was available for 207 patients. Average VAS scores for 6 out of 7 symptoms showed significant improvement after surgery compared to baseline for time points of 3 months, 6 months, 12 months, and 18 months ($P<0.001$). The average improvement in VAS score ranged from 1.3 for nasal discharge to 2.3 for fatigue. VAS scores for headache improved by 0.4 which was not statistically significant ($p > 0.90$). **Conclusions:** This study demonstrates that patients with medically refractory CRS presenting for surgery complain of associated symptoms with great frequency. ESS results in both statistically and clinically significant improvements in 6 out of 7 symptoms. Headache, which was the most highly ranked disabling symptom, did not show significant improvement from baseline.

W25. Coccidioidomycosis of the Infratemporal Fossa and Masseteric Space: A Review of the Radiographic and Histopathologic Findings

Jeffrey D. Suh, MD, Los Angeles, CA
Marilene B. Wang, MD, Los Angeles, CA*
Claudia F. Kirsch, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to identify the significant radiographic characteristics and histopathology of extensive coccidioidomycosis in the head and neck.

Objectives: 1) Educate the otolaryngologist about the radiographic and histologic findings of coccidioidomycosis involving the infratemporal fossa and masseteric space; 2) recognize the salient radiographic features of coccidioidomycosis to avoid false

positive misinterpretation and potentially unnecessary interventions; and 3) understand the current treatment options for a disease that is becoming increasingly more common in nonendemic areas. **Study Design:** Case report. **Methods:** A case of extensive coccidioidomycosis involving the infratemporal fossa and masseteric space in a 14 year old male is reviewed. The radiographic and histopathologic features are discussed. **Results:** Computed tomography demonstrated a 4.4 x 4.2 cm mass centered in the masticator space, involving the infratemporal fossa with erosion of the mandibular condyle and ramus. Multiple enlarged lymph nodes were present in level 1 and 2 cervical lymph node regions. Fine needle aspiration of the lesion revealed acute inflammation with numerous thick walled spherules containing non-budding endospores. Gomori methenamine silver stain (GMS) stain confirmed the diagnosis of coccidioidomycosis. The patient underwent treatment with amphotericin B. **Conclusions:** Coccidioidomycosis, caused by coccidioides immitis, is a disease with a wide range of clinical manifestations that can affect both immunocompetent and immunocompromised individuals. Coccidioidomycosis in the head and neck can present as a mass with aggressive features such as bony erosion, lymphadenopathy, and trismus that may be misinterpreted as a neoplasm. Knowledge of the radiographic and histopathologic characteristics of disseminated coccidioidomycosis is essential to provide an accurate diagnosis, correct treatment, and to prevent unnecessary interventions.

W26. The Submental Island Flap for Buccal Reconstruction

Pao Vang, MD, Phoenix, AZ
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Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate a good understanding of the submental island flap and its use in reconstructing deep buccal defects.

Objectives: Complex defects following surgical excision of head and neck cancer often require reconstructions with pedicle or free tissue transfers. The submental island flap is a pedicle myocutaneous flap. It has the advantage of proximity, pliability, and color match to reconstruct deep buccal defects. **Study Design:** Retrospective chart review and review of the literature. **Methods:** Chart review of 11 patients. **Results:** We used the submental flap to reconstruct buccal defects on 11 patients following cancer surgery from 2003-2007. Ten patients experienced an uneventful recovery. One patient developed a hematoma at the donor site which was treated conservatively. The average hospital stay was 3.5 days. At 6 months there was good integration of the submental flap into the oral cavity. Our series showed the versatility of the submental flap and its ease of use in reconstructing buccal defects. **Conclusions:** The advantages of the submental flap are numerous. The proximity of the flap to the buccal defects allows for one surgical field, and the incision can be incorporated into the neck dissection if one is indicated. The postoperative course is generally uncomplicated. Additionally the scar on the donor site is cosmetically well hidden. One drawback is that the skin may be hair bearing. The flap may also be thick in obese patients and may not be feasible in patients with clinically positive neck diseases. We found the submental flap to be an excellent choice to reconstruct buccal defects. We experience no flap loss and tedious microvascular surgery was not required in this series. The submental island flap can be a good option for treating deep buccal defects.

W27. Cancellous Bone Grafts in Head and Neck Reconstruction

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Tamer Ghanem, MD, Portland, OR
Thomas Albert, MD, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the use of the accurtane bone harvester for obtaining cancellous bone and its role in head and neck reconstruction.

Objectives: Reconstruction of bony defects of the mandible can be problematic. Large defects are best reconstructed with composite free tissue transfer. Smaller defects may be bridged with a plate. Occasionally one encounters a patient who has a small nonunion of the mandible at a site that has undergone trauma or free tissue transfer with a bony flap. We describe our experience using iliac crest cancellous bone grafts in this setting. **Study Design:** Retrospective chart review. **Methods:** Chart review at a tertiary referral academic center. **Results:** Thirteen patients underwent iliac bone grafting during this time period. Five patients had undergone previous severe mandibular trauma. These mandibular fractures had been plated but a nonunion with a small bony gap was noted at followup. All patients underwent cancellous bone grafting and re-plating. Union was accomplished in all of these patients. Seven patients underwent free tissue transfer reconstruction, either primarily following tumor ablation (2), or secondarily for osteoradionecrosis (3), or nonunion of a mandibulotomy (2). Alternatives for reconstruction in this patient population were a second bony free tissue transfer or bone grafting. Four out of seven patients had successful closure of the nonunion with no need for further treatment. Three patients developed recurrence of nonunion with infection necessitating a second free tissue transfer. Pain and disability at the donor site was minimal. **Conclusions:** In a select patient population where requirements for bone are minimal and free tissue transfer may not be desired, cancellous bone grafting using the Accutane system should be considered.

W28. Bone Marrow in the Cochlea: A Unique Presentation of Cochlear Ossification

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Educational Objective: At the conclusion of this presentation, the participants should be able to explain the various types of cochlear ossification that may occur and their likely etiologies. They should also be able to understand the mechanisms by which bone marrow might form in the ossified cochlea.

Objectives: Cochlear ossification may occur in cases of temporal bone trauma, advanced otosclerosis, and meningitis. Typically such ossification contains a predominance of fibroosseous elements and is minimally cellular. The objective of this report is to discuss the various forms of cochlear ossification and show their histopathologic characteristics. An unusual case of bone marrow formation in an ossified cochlea is shown, and this finding is related to currently held theories of the mechanism of cochlear ossification. **Study Design:** Case report, review of the literature, and histopathological study. **Methods:** The temporal bone of a 61 year old woman with a history of meningitis was prepared using standard temporal bone histopathology techniques. Serial sectioning was performed. A review of the literature on cochlear obliteration was performed. Histopathological sections from other temporal bones showing fibroosseous elements were included for comparison. **Results:** Theories of cochlear ossification hold that cochlear ossification occurs by either 1) metaplasia of labyrinthine connective tissue; 2) new bone formation from the endosteal lining of the labyrinth; 3) fibrosis of granulation tissue after infection; or 4) an ectopic focus of ossification spurred by undifferentiated mesenchymal cells in perimodiolar capillaries. The case temporal bone demonstrates a completely ossified cochlea with multiple areas of bone marrow filled with hematopoietic cells. This case suggests that capillary inflow may play an important role in cochlear ossification.