

**2009 WESTERN
SECTION PROGRAM**

**JANUARY 29-31, 2009
LOEWS LAKE LAS VEGAS RESORT
HENDERSON, NV**

**29th Thursday
January**

5:00 - Registration - Casablanca Foyer
7:00 pm

5:00 - Speaker Ready Room Open - Agadir A
7:00 pm

6:00 - President's Welcome Reception - Lotus Terrace
7:30 pm (Baraka Ballroom if inclement weather)

**30th Friday
January**

6:30 am - Speaker Ready Room Open - Agadir A
2:00 pm

7:00 - Business Meeting (Members Only) - Fez A & B
7:50

7:00 am - Registration - Casablanca Foyer
2:00 pm

7:15 - Exhibit Hall Open & Poster Viewing - Casablanca D&E
noon

7:15 - Breakfast with Exhibitors
7:50

8:00 - Spouse Hospitality
11:00

8:00 - Scientific Program - Casablanca F-G-H
12:15

* Denotes Fellow

- 8:00** **Welcome and Introduction of President**
Myles L. Pensak, MD*, Cincinnati, OH
Richard E. Hayden, MD*, Phoenix, AZ
- 8:05 -** **Presidential Address**
8:20 Myles L. Pensak, MD*, Cincinnati, OH
- 8:20-** **Introduction of Guest of Honor/Guest of Honor**
8:35 **Address**
Moving Forward in Uncertain Times
Marshall Strome, MD*, New York, NY
- 8:35 -** **Introduction of Citation Awardees**
8:45 Paul J. Donald, MD*, Sacramento, CA
J. Cameron Kirchner, MD, New Haven, CT
John M. Fredrickson, MD*, Vancouver, BC

Laryngology Session

Moderator

Albert L. Merati, MD*, Seattle, WA

- 8:45** **Influence of Age and Gender on Dose and Effectiveness of Botulinum Toxin for Laryngeal Dystonia**
Silvio Vasconcelos, MD, Seattle, WA
Maya G. Sardesai, MD FRCSC, Seattle, WA (Presenter)
Hakan Birkent, MD, Seattle, WA
Albert L. Merati, MD, Seattle, WA*
Allen D. Hillel, MD, Seattle, WA*

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the influence of age and gender on the required dose and resulting efficacy of botulinum toxin injection for adductor laryngeal dystonia.

Objectives: To evaluate the influence of age and gender on the required dose and resulting efficacy of botulinum toxin injection for adductor laryngeal dystonia. **Study Design:** Retrospective chart review. **Methods:** All patients treated with botulinum toxin for laryngeal dystonia between 1991 and 2008 were identified from a large clinical database. Only patients undergoing thyroarytenoid muscle injection for adductor laryngeal dystonia were included in this study. Each patient's gender, age at treatment, stable dose of botulinum toxin, and patient reported duration of beneficial effect was recorded. **Results:** A total of 155 patients (50 males, 105 females) were identified, with average ages of 50.6 years for men and 54.4 years for women. The mean treatment doses of botulinum toxin were 1.85±0.84U for males and 2.15±1.40U for females. The associated mean durations of beneficial effect were 12.8±7.7 weeks for males and 13.9±7.3 weeks for females. Neither the difference in dose nor in duration was found to be statistically significant (p=0.395 and p=0.511 respectively). When analyzed by age, the mean doses of botulinum toxin were 1.87±1.00U for patients younger than 50 years and 2.20±1.41U for the older group. The associated mean durations of beneficial effect were 13.7±7.4 weeks for the younger group and 13.5±7.4 weeks for the older group. Again, neither difference was found to be statistically significant (p=0.113 and p=0.730 respectively). **Conclusions:** Dosage and duration of beneficial effect of botulinum toxin in treatment of adductor laryngeal dystonia do not appear to vary with age or gender.

- 8:53** **Optical Coherence Tomography of the Larynx Using the Niris System**
Marc Rubinstein, MD, Irvine, CA
Esther L. Fine, MD, Irvine, CA
Ali Sepehr, MD, Irvine, CA
Roger L. Crumley, MD MBA, Irvine, CA*
William B. Armstrong, MD, Irvine, CA*
Brian J.F. Wong, MD PhD, Irvine, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the use of optical coherence tomography in imaging tissue microstructure in the larynx.

Objectives: To determine the feasibility and accuracy of the Niris system in optical coherence tomography (OCT) of the larynx. The Niris system is the first commercially available OCT device for use in the head, neck, and upper aerodigestive tract. **Study Design:** In vivo, prospective clinical study. **Methods:** Using the Niris OCT imaging system (Imalux, Cleveland, OH), we obtained OCT images of benign and premalignant laryngeal disease in twenty-five patients undergoing surgical head and neck endoscopy. This imaging system has a tissue penetration depth of approximately 1mm and a scanning range of 2mm. The imaging surface is located at the distal end of a flexible probe that is placed in contact to the area of interest. The tip of the probe was placed into the larynx via direct guidance through a rigid laryngoscope and still images were obtained. **Results:** OCT images of interarytenoid mucosa, arytenoids, aryepiglottic folds, and true and false vocal cords were obtained. Images of laryngeal malignant pathology were compared with benign pathology. Distinct layers and structures were identifiable in the images and correlated with histopathology. Device setup took approximately 5 minutes and the machine required a single operator. **Conclusions:** The Niris system incorporates easily into the operating room and requires minimal setup and staff to operate. OCT imaging with the Niris device potentially offers an efficient, quick and reliable imaging modality in guiding surgical biopsies, intraoperative decision making and therapeutic options of various laryngeal pathologies and premalignant disease.

9:01 The Incidence and Rate of Recovery of Unilateral Vocal Fold Paralysis in Patients that Have Undergone Cardiothoracic Surgery

Daekeun Joo, MD, Los Angeles, CA
Victor M. Duarte, BS, Washington, DC
Murtaza T. Ghadiali, MD, Los Angeles, CA
Dinesh K. Chhetri, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to gain an understanding of the incidence of unilateral vocal fold paralysis in patients that have undergone cardiothoracic surgery (i.e., CABG, valve replacement surgery and heart transplantation). In addition, the subsequent rate and time course of spontaneous recovery in these patients will be presented.

Objectives: To review the incidence and time course of spontaneous recovery of unilateral vocal fold paralysis in adult patients that have undergone cardiothoracic surgery. **Study Design:** This study is a retrospective cohort study of adult patients that have undergone cardiothoracic surgery and developed dysphonia secondary to vocal fold paralysis postoperatively. Patients were followed after discharge in order to assess for spontaneous recovery or persistent paralysis. A retrospective chart review was utilized to identify patients. **Methods:** All patients in this study have previously been diagnosed by the principal investigator after having undergone a diagnostic fiberoptic endoscopic evaluation of swallowing (FEES) in consultation for dysphagia following cardiothoracic surgery. Patients identified with vocal fold paralysis were asked to return to the outpatient head & neck surgery clinic for followup evaluation within 1-3 months of discharge. **Results:** A total of ten patients (20%) with persistent vocal fold paralysis were identified from a database of 50 patients with dysphagia following cardiothoracic surgery. On followup, 5 out of 10 patients had spontaneous resolution (50%). 5 patients had persistent paralysis with 4 requiring intervention to improve voice quality. **Conclusions:** Few studies have outlined the incidence of vocal fold paralysis in adult patients that have undergone cardiothoracic surgery. Less is known about what percentage will experience spontaneous resolution and what the expected time course is for full recovery. Previous laryngeal EMG studies have shown that most spontaneous recovery of idiopathic vocal fold paralysis occurs within 6 months. Our series shows a 50% spontaneous recovery rate within 3 months in this patient population.

9:09 Q&A

9:15 PANEL: COMMON DILEMMAS IN CLINICAL LARYNGOLOGY - A ROCK AND A HARD PLACE

Moderator: *Albert L. Merati, MD*, Seattle, WA*
Panelists: *Joel H. Blumin, MD, Milwaukee, WI*
Dinesh K. Chhetri, MD, Los Angeles, CA
Mark S. Courey, MD, San Francisco, CA*
Roger L. Crumley, MD MBA, Irvine, CA*

10:15 Break with Exhibitors/Poster Viewing - Casablanca E

Head & Neck Session

Moderator

Douglas M. Sorensen, MD*, Tacoma, WA

10:45 SHIRLEY BARON RESIDENT RESEARCH AWARD

Comparison of PET/CT Imaging and Ultrasound in Staging and Surveillance of Head and Neck and Thyroid Cancer

Harry S. Hwang, MD, San Francisco, CA

Daniel A. Perez, BS, San Francisco, CA

Lisa A. Orloff, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to compare and contrast the advantages and disadvantages of ultrasonography versus combined positron emission tomography with computed tomography in the evaluation of head and neck malignancies. Furthermore, participants should be able to explain the utility of ultrasound guided fine needle aspiration as a complementary tool in the detection of cancers of the head and neck.

Objectives: Positron emission tomography (PET) combined with cross-sectional computed tomography (CT) is increasingly used for the staging and surveillance of cancers in the head and neck region. Ultrasonography (US) is an alternative technique for imaging head and neck masses that provides diagnostic information while enabling simultaneous image guided biopsies. A comparison of these diagnostic modalities in terms of cancer detection is warranted. **Study Design:** Retrospective analysis. **Methods:** All patients with malignant neoplasms in the head and neck region who were evaluated by both PET/CT and US were reviewed. Diagnostic accuracy rates of PET/CT and US were determined according to whether cytologically or histologically confirmed cancer was present in specimens obtained by US guided fine needle biopsy or by surgical excision. **Results:** From October 2004 to December 2007, 637 patients underwent a neck US by the senior author. Of those patients, 43 individuals had a PET/CT performed with a confirmed tissue diagnosis of malignancy. The sensitivity and specificity of US in predicting malignancy in the head and neck was 96.8% and 93.3%, respectively. The positive predictive value (PPV) was 96% and the negative predictive value (NPV) was 93%. The diagnostic accuracy rates of PET/CT demonstrated a sensitivity of 90.3%, specificity 20%, PPV 70%, and NPV 50%. **Conclusions:** PET/CT and US, especially when combined with US guided fine needle biopsy, are complementary tools in the detection of cancers of the head and neck. The highly sensitive and specific nature of US is in part, augmented by the senior author's experience and expertise in head and neck US.

10:53 Thyroid Size: An Independent Risk Factor in Total Thyroidectomy

David K. Gallegos, BA (MS IV), Albuquerque, NM

Garth T. Olson, MD, Albuquerque, NM

Fred S. Herzon, MD, Langley, WA*

Michael F. Spafford, MD, Albuquerque, NM

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the effect of the size of the thyroid gland on the operative and postoperative course of patients undergoing total thyroidectomy.

Objectives: To examine the effect of the size of the thyroid gland on the operative and postoperative course of patients undergoing total thyroidectomy. **Study Design:** Retrospective chart review. **Methods:** Fifty-two patients undergoing total thyroidectomy were evaluated. Charts were reviewed for gland weight, size, histology, estimated blood loss, ASA classification, duration of surgery, calcium replacement, voice status, and surgeon as well as for length of hospital stay. **Results:** There was a negative correlation 0.25 ($P=0.05$) between gland weight and postoperative Ca nadir. The mean size of thyroid was larger in the group that required calcium than the one that did not, 114 grams (gm) ($N = 19$, $SD = 157$, $P = 0.12$) as compared to 44 gm ($N = 32$, $SD = 49$, $P = 0.12$), respectively. Patients requiring intravenous and oral calcium versus solely oral calcium replacement had a corresponding fourfold increase in thyroid size, 168 gm ($N = 11$, $SD = 188$, $P = 0.08$) as compared to 40 gm ($N = 8$, $SD = 43$, $P = 0.08$). The correlation between gland weight and length of surgery showed a positive relationship of 0.34 ($P = 0.02$) ($N = 49$). There was one permanent recurrent nerve injury and one instance of permanent hypoparathyroidism, two patients required tracheotomy and there was no difference among surgeons' postoperative complications. **Conclusions:** Increased size of the thyroid gland appears to have a negative short term effect on postoperative Ca nadirs and a positive correlation with length of surgery. It does not predict significant long term unique postoperative thyroid complications.

11:01 Panendoscopy of the Upper Aerodigestive Tract for Patients with Oral Cavity and Oropharynx Squamous Cell Carcinoma: For Some or for All?

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

Stephen J. Joseph, MD, San Francisco, CA

Jafer Ali, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to know the indications for panendoscopy of the upper aerodigestive tract in patients with oral cavity and oropharynx squamous cell carcinoma (SCC).

Objectives: Tobacco leads to increased risk for SCC of the mucosal surfaces of the upper aerodigestive tract. The incidence of synchronous second primary head and neck tumors has been reported as high as 10%. Consequently, patients with oral cancer have routinely undergone “panendoscopy” consisting of direct laryngoscopy, bronchoscopy, and esophagoscopy. As smoking rates have declined, relatively more patients who have never smoked are developing oral cancers. Recent studies indicate these tumors may be linked to the human papilloma virus. The purpose of this study was to evaluate the utility of “panendoscopy” of the upper aerodigestive tract in oral cancer. **Study Design:** A retrospective, matched, case control study of 60 consecutive patients at a university head and neck surgery practice was performed. **Methods:** Analysis of 30 nonsmoking patients with biopsy proven oral cavity/oropharynx SCC who had undergone panendoscopy was performed. These patients were compared to a control group of 30 similarly staged oral cavity/oropharynx SCC patients who were active smokers or had a history of tobacco abuse. The study population consisted of 57% oral cavity cancers and 43% oropharynx cancers. Student t-test statistical analysis was used to ascertain significance. **Results:** No synchronous second primary tumors were discovered in the nonsmoking group of patients. Two of 30 (6%) patients in the smoking group (both oral cavity tumors) had second primary tumors that were biopsy proven during panendoscopy. **Conclusions:** Routine panendoscopy of the upper aerodigestive tract in oropharynx cancer patients who have never smoked may not be indicated.

11:09 Endoscopic Midline Split Approach to Craniocervical Junction and Cervical Spine Avoids Traditionally Invasive Approaches: Report of 5 Cases

Ivan H. El-Sayed, MD, San Francisco, CA

Praveen V. Mummaneni, MD, San Francisco, CA

Chris P. Ames, MD, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) explain complications of approaches used by otolaryngologists to access the craniocervical junction; and 2) discuss novel approaches to the cervical spine.

Objectives: Advances in endoscopic surgery have allowed surgeons to address increasing larger lesions of the anterior and central skull base via the transnasal endoscopic approach. Otolaryngologists are asked to provide access to lesions of the craniocervical junction and cervical spine using traditional transoral approaches such as a palate split, LeForte I osteotomy, glossectomy, mandibulotomy, and a pharyngeal flap. Postoperative complications include wound dehiscence, speech deficits, velopharyngeal insufficiency and significant dysphagia. Using techniques from our endoscopic skull base resections, we began to address patients at our center with transnasal and transoral endoscopic approaches. We aim to describe our initial experience at a major tertiary neurospine center using endoscopic techniques to provide wide of the spine through minimal approaches. **Study Design:** Retrospective cohort. **Methods:** Patient charts, radiographic images, pathology, and surgical videos were reviewed. Outcomes measures included dysphagia, velopharyngeal insufficiency (VPI), adequate decompression/need for revision surgery. **Results:** 5 patients were identified having lesions of the cervical spine approached with endoscopic approaches. Lesion ranged from C4 to C1 clival junction. Two patients had purely transnasal approach, two had transnasal/transoral and one had transoral approach. Surgical indications were for debridement of infectious abscess (2), biopsy (1), decompression (2). A wider surgical approach would have been required for access in 3 cases including a palate split (3), hard palate resection (1), glossectomy (2) and mandibulotomy due to severe trismus (1). No patients had dysphagia or dysphonia longer than one month after surgery. Platybasia allowed transnasal access to the craniocervical junction in two cases. **Conclusions:** Endoscopic and endoscopic assisted approaches through transnasal/transoral trajectories provide wide access to the craniocervical junction while avoiding invasive incisions anterior to the posterior pharyngeal wall. Postoperative VPI and dysphagia is significantly reduced. Indications and limitations are discussed.

11:17 The Successful Utilization of a Pectoralis Major Myocutaneous Flap Implanted with a Bipolar Pacemaker in the Reconstruction of an Oropharyngeal Defect

Shivan H. Amin, MD, Oakland, CA

Deepak Gurushanthaiah, MD, Oakland, CA

Bryan P. Fong, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the correct approach to salvaging a pacemaker from a pectoralis major myocutaneous flap.

Objectives: To surgically and anatomically demonstrate a safe and effective way to perform the successful transfer of a PMMF implanted with a pacemaker. Description of the procedure will be enhanced with high resolution images. **Study Design:** Case report involving one patient with recurrent oropharyngeal cancer. The tumor of the left oropharynx extended from the soft palate inferiorly to involve the posterior tongue and was laterally abutting the maxillary tuberosity and medial surface of the mandible. Also notable is the patient had a bipolar pacemaker placed into the left chest wall several months prior for sick sinus disease.

The patient was consented for definitive resection of the oropharyngeal carcinoma to achieve palliative goals, with a PMMF flap to be used for reconstruction. **Methods:** Due to limitations in free tissue transfer options secondary to patient comorbidities (including quadriplegia), a pectoralis major flap was raised from the left chest for reconstruction of the defect. The implanted pacemaker was adequately exposed with a limited myocutaneous flap within the pectoralis major flap itself and reimplanted into the pectoralis minor. **Results:** The oropharyngeal defect was removed, with excellent reconstruction utilizing the PMMF flap. The pacemaker was fully functional at the completion of surgery. **Conclusions:** We have surgically and anatomically demonstrated a safe and effective way to perform a successful transfer of a PMMF implanted with a bipolar pacemaker.

11:25 Q&A

General/Pediatrics Session

Moderator

Sigsbee W. Duck, MD*, Gillette, WY

11:35 Cleft Palate with Midline Subglossopalatal Synechia: A Case Report

Michael A. German, MD, Irvine, CA

Ali Sepehr, MD, Irvine, CA

Wong Hau Sin, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize and properly diagnose cleft palate with subglossopalatal synechia, understand its implications with regard to neonatal airway management and feeding, and be prepared to correct the deformity surgically.

Objectives: Cleft palate with oral synechia is a rare congenital deformity that is represented in the literature by only a handful of case reports. Midline orientation of synechia is less common than lateral. In either case, failure to recognize and appropriately treat this finding has serious implications for neonatal airway management and feeding. We present a case of cleft palate with midline subglossopalatal synechia that was transferred from an outside institution after a prolonged period of nonsurgical management ultimately requiring intubation for respiratory distress. An endoscopic assisted release of the synechia was performed without complications. Following the procedure the infant was extubated and better able to feed and was subsequently transferred back to the outside institution. We review the current literature on the topic and discuss diagnosis and surgical management of this rare finding. **Study Design:** Case report. **Methods:** This paper includes a case presentation with a review of current literature relating to congenital oral synechia with a focus on management. **Results:** Not applicable for case report. **Conclusions:** Although rare, congenital oral synechia should be recognizable to an otolaryngologist. Furthermore, it is imperative that they be managed in a timely fashion to avoid feeding and airway complications.

11:43 Floor of Mouth Dermoid Cysts: Case Series and Systematic review of the Literature

S. Danielle MacNeil, MD, Vancouver, BC Canada

J. Paul Moxham, MD, Vancouver, BC Canada*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand a classification system for floor of mouth dermoid cysts and the various surgical approaches.

Objectives: To report a series of three cases of floor of mouth dermoid cysts evaluating surgical approaches. To perform a systematic review of the literature to devise a classification system for floor of mouth dermoid cysts with surgical correlations. **Study Design:** Case series and systematic review of the literature. **Methods:** A retrospective review of three cases of floor of mouth dermoid cysts and a systematic review of all reported cases in the literature of floor of mouth dermoid cysts were performed. **Results:** Patients ranged in age from 3 days to 9 years. The preoperative assessment was made using ultrasonography, computed tomography and magnetic resonance imaging. Two patients underwent a midline incision of the oral mucosa along the lingual frenulum. One patient required a submental skin incision for excision of the dermoid cyst. Followup ranged from 6 months to 3 years. None of the patients had major postoperative complications, recurrence of the cyst or malignant degeneration. **Conclusions:** Dermoid cysts are filled with sebum-like material and with evidence of specialized skin derivatives from defective embryonic development. Our examination of the literature includes muscle influence on clinical presentation and surgical approach, location of the cyst, age distribution, histologic distribution, incidence of multiple cysts, surgical and airway complications, fibrous attachments, recurrence rates and malignant degeneration. We also propose an anatomical classification system for floor of mouth dermoid cysts with suggested surgical approaches.

11:51 Removal of Airway Foreign Bodies with the Glidescope(TM) Video Laryngoscope

Lisa M. Morris, MD, Portland, OR

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

Educational Objective: At the conclusion of this presentation, the participants should be able to explain how to use the Glidescope(TM) video laryngoscope to remove hypopharyngeal foreign bodies.

Objectives: To evaluate the safety and effectiveness of the Glidescope(TM) video laryngoscope in the management of hypopharyngeal foreign body removal. The Glidescope(TM) video laryngoscope is already a well known instrument for difficult airways in the field of anesthesia. This remarkable tool has the potential for increasing the speed and success of hypopharyngeal foreign body removal without the need for general anesthesia and intubation. **Study Design:** Case series. **Methods:** We have used the Glidescope(TM) video laryngoscope to remove a non-impacted partial denture from two patients between 2005-2007. History, physical exam, chest x-ray and flexible fiberoptic laryngoscopy were used for diagnosis of foreign body aspiration. The patient was taken to the operating room and placed under monitored anesthesia care (MAC). The Glidescope(TM) unit, including the LCD display, and McGill forceps were used to retrieve the foreign body. **Results:** Two cases of hypopharyngeal foreign body removal were successfully performed utilizing the Glidescope(TM) video laryngoscope while under monitored anesthesia care and breathing spontaneously. **Conclusions:** The Glidescope(TM) video laryngoscope represents a powerful tool in the otolaryngologist's armamentarium for hypopharyngeal foreign body removal without the need for tracheal intubation. This technique is particularly suited for removal of the aspirated intact partial denture.

11:59 Sodium Hypochlorite Accident: A Case Report of Buccal Phlegmon after Dental Procedure

Jonathan W. Boyd, MD, Irvine, CA
Ali Sepehr, MD, Irvine, CA
William E. Rietkerk, MD MBA, Irvine, CA
Jason H. Kim, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate understanding of the signs and symptoms of sodium hypochlorite accident and compare it through history and examination to other causes of facial swelling. The otolaryngologist will be able to recognize and appropriately treat sodium hypochlorite accidents in a timely fashion.

Objectives: We herein report the first case of hypochlorite accident in otolaryngology literature. We review the current literature on the topic and discuss diagnosis and management of this complication. **Study Design:** Case report; literature review. **Methods:** NA. **Results:** Sodium hypochlorite (NaOCl) is a disinfecting irrigant used in endodontic procedures. The most feared complication, termed sodium hypochlorite accident, has been described in endodontics literature. Causing severe pain, facial swelling, cellulitis, vascular injury, hematoma, and tissue necrosis, it is imperative for otolaryngologists to be aware of this complication as they may be consulted on these cases. A 25 year old female presented to an academic medical center for facial pain immediately following an endodontic procedure. Thought to have had an adverse reaction to anesthetic injection, she was sent home. On the third day, facial swelling had expanded, including submental and submandibular spaces. Facial CT demonstrated buccal cellulitis without fluid collection. It was discovered that an inappropriate seal was created, causing NaOCl to penetrate through the alveolus into the buccal tissue. The patient was admitted for IV antibiotics and steroids. With improvement, the patient was discharged after two days. The patient returned with recurrent symptoms on day seven. Repeat face CT demonstrated a 1.8 cm buccal fluid collection. Bedside drainage was performed. Followup one week later demonstrated clinical improvement, which was corroborated by CT. **Conclusions:** Sodium hypochlorite has significant risks if misused for irrigation. Immediate pain and progressive swelling, ecchymosis, and hematoma after endodontics procedures should direct the otolaryngologist to suspect irrigant accident.

12:08 Q&A

12:15 Adjourn

12:20 - Triological Thesis Seminar (Non-Credit - Lunch
1:45 Furnished. Open to Candidates, Potential Candidates and Members - Fez A&B

12:30 Golf Tournaments

6:30 - Meet the Authors Poster Reception - Casablanca E
8:00

31st Saturday January

6:30 am - Speaker Ready Room Open - Agadir A
5:00 pm

7:00 - Business Meeting (Members Only) - Fez A & B
7:50

7:00 am - Registration - Casablanca Foyer
2:00 pm

7:15 - Breakfast with Exhibitors
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noon

8:00 - Spouse Hospitality
11:00

8:00 - Scientific Program - Casablanca F-G-H
12:55

8:00 - Announcements
8:15 Recognition of New Candidates for Fellowship
Recognition of Career Development Award Recipient
Eric Kezirian, MD, MPH, San Francisco, CA
Recognition of Resident Research Award Recipient
Harry S. Hwang, MD, San Francisco, CA
Recognition of Poster Award Winners

Plastics/Aesthetics Session

Moderator

Brian J. F. Wong, MD PhD*, Irvine, CA

8:15 **TRIOLOGICAL SOCIETY THESIS**
Evolving Attractive Faces Using Morphing Technology and Genetic Algorithm: A New Approach to Determining Ideal Facial Aesthetics
Brian J. F. Wong, MD, Irvine, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to better perform nasal aesthetic analysis and incorporate new techniques in rhinoplasty into their practices.

Objectives: The objectives of this study were to 1) determine if a genetic algorithm in combination with morphing software can be used to evolve more attractive faces; and 2) evaluate whether this approach can be used as a tool to define or identify the attributes of the ideal attractive face. **Study Design:** Basic research study incorporating focus group evaluations. **Methods:** Digital images were acquired of 250 female volunteers (18-25 years). Randomly selected images were used to produce a parent generation (P) of 30 synthetic faces using morphing software. Then, a focus group of 17 trained volunteers (18-25 years) scored each face on an attractiveness scale ranging from 1 (unattractive) to 10 (attractive). A genetic algorithm was used to select 30 new pairs from the parent generation, and these were morphed using software to produce a new first generation of

faces (F1). The F1 faces were scored by the focus group, and the process was repeated for a total of four iterations of the algorithm. The algorithm mimics natural selection by using the attractiveness score as the selection pressure; the more attractive faces are more likely to morph. All five generations (P-F4) were then scored by three focus groups: a) surgeons (n=12), b) cosmetology students (n=44), and c) undergraduate students (n=44). Morphometric measurements were made of 33 specific features on each of the 150 synthetic faces and correlated with attractiveness scores using univariate and multivariate analysis. **Results:** The average facial attractiveness scores increased with each generation and were 3.66 (\pm 0.60), 4.59 (\pm 0.73), 5.50 (\pm 0.62), 6.23 (\pm 0.31), and 6.39 (\pm 0.24) for P, F1-F4 generations, respectively. Histograms of attractiveness score distributions show a significant shift in the skew of each curve toward more attractive faces with each generation. Univariate analysis identified nasal width, eyebrow arch height, and lip thickness as being significantly correlated with attractiveness scores. Multivariate analysis identified a similar collection of morphometric measures. No correlation with more commonly accepted measures such as the length facial thirds or fifths were identified. When images are examined as a montage (by generation), clear distinct trends are identified: oval shaped faces, distinct arched eyebrows, and full lips predominate. Faces evolve to approximate the guidelines suggested by classical canon. F3 and F4 generation faces look profoundly similar. The statistical and qualitative analysis indicates that the algorithm and methodology succeeds in generating successively more attractive faces. **Conclusions:** The use of genetic algorithms in combination with a morphing software and traditional focus group-derived attractiveness scores can be use to evolve attractive synthetic faces. We have demonstrated that the evolution of attractive faces can be mimicked in software. Genetic algorithms and morphing provide a robust alternative to traditional approaches rooted in comparing attractiveness scores with a series of morphometric measurements in human subjects.

8:25 Improved Donor Site Healing with Suprafascial Radial Forearm Free Flap Dissection

Joseph D. Brunworth, MD, Irvine, CA

Richard L. Shih, MD, Irvine, CA

Gregory R. Evans, MD, Irvine, CA

Garrett A. Wirth, MD, Irvine, CA

Jason H. Kim, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the techniques used to harvest radial forearm free flaps and compare the donor site morbidity found in subfascial versus suprafascial methods.

Objectives: The radial forearm free flap is a procedure commonly employed to transfer autologous tissue to reconstruct head and neck defects. Traditionally in otolaryngology this procedure is accomplished using a subfascial technique that can lead to exposure of the forearm muscles and ulnar vessels. We hypothesized that the suprafascial dissection during radial forearm tissue harvest would lead to less donor site morbidity. **Study Design:** Retrospective chart review at a tertiary medical center. **Methods:** We reviewed the charts of 34 consecutive patients who previously underwent a radial forearm free flap using a suprafascial approach over a two year period. We analyzed the number of long term donor site complications including tendon exposure, infection, functional deficit, and reoperation. The minimum followup for all patients was four months. **Results:** All of the 34 patients healed without tendon exposure, infection, severe functional deficit, or surgical intervention. There were two patients with compromise of the entire skin graft. One patient had hematoma under the skin graft which was discovered five days after the operation and healed without sequelae. The second patient had the entire skin graft slough off secondary to soft wrist restraint placement. This patient also healed without tendon exposure or requiring surgical intervention. **Conclusions:** In our series, suprafascial dissection during radial forearm tissue harvest is an excellent approach to minimize donor site morbidity. Even when the skin graft failed, there were no long term sequelae. It is our conclusion that harvesting the forearm free flap in a suprafascial fashion improves donor site healing without significant compromise to the reconstruction.

8:33 Reconstruction of Medial Canthal Cutaneous Defects: The Multi-Flap Technique Using the Four Zone Analysis Approach

Ji-eon Kim, MD, Oakland, CA

Charles P. Hybarger, MD, San Rafael, CA

Gregg S. Gayre, MD, San Rafael, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) approach reconstruction of medial canthal cutaneous defects in a systematic and practical manner; 2) understand common complications and pitfalls in reconstructing defects of the medial canthus; and 3) demonstrate understanding of a novel technique to reconstruct very large cutaneous defects of the medial canthus.

Objectives: First, to describe a practical, effective, and systematic approach to reconstructing cutaneous defects of the medial canthus. Second, to explain a novel approach in reconstructing very large cutaneous defects of the medial canthus with excellent functional and cosmetic results. **Study Design:** Retrospective analysis with emphasis on surgical reconstructive technique. **Methods:** All patients referred to a MOHS micrographic surgery center between 1985 and 2007 were reviewed. Patients with surgical defects of the medial canthus secondary to nonmelanoma skin cancers were identified. A practical algorithm for the reconstruction of medial canthal defects was outlined with special attention to large defects requiring the multi-flap technique.

Results: 1900 cases of periorcular cutaneous defects were identified, of which 634 involved the medial canthus. Defects were categorized by their size (two dimensional measurements) and location (one of four assigned zones) to determine the reconstruction technique to be used. Large defects covering multiple zones were reconstructed with the multi-flap technique. The use of our systematic approach resulted in excellent functional and cosmetic results. **Conclusions:** A large series involving defects of the medial canthus after MOHS micrographic surgery shows the challenges of reconstruction. We describe a practical, effective, and systematic approach for reconstruction based on the size and location of the medial canthal defect. We also describe the multi-flap technique, a novel and viable option for reconstructing large medial canthal defects.

8:41 Q&A

8:45 - PANEL: TRENDS IN RHINOPLASTY AND CASE STUDY

9:55 **Moderator:** *Brian J. F. Wong, MD PhD*, Irvine, CA*

Panelists: *Craig Murakami, MD, Seattle, WA*

Behrooz Torkian, MD, Beverly Hills, CA

Deborah Watson, MD, San Diego, CA

Andrew S. Frankel, MD, Beverly Hills, CA

Sinus Session

Moderator

Richard J. Trevino, MD*, San Jose, CA

9:55 **Angiographic Study of the Anatomy and Distribution of Nasal Blood Flow**

Damian C. Micomonaco, MD, London, ON Canada

Andrew Leung, MD FRCP, London, ON Canada

Rodney S. Allan, MD FRACS, Sydney, NSW Australia

Erin D. Wright, MDCM MEd FRCSC, Edmonton, AB Canada*

Educational Objective: At the conclusion of this presentation, the participants should be able to have a greater understanding of the nasal vascular system, their relative contributions to nasal blood flow and their clinical significance in both endoscopic sinus surgery and the surgical management of epistaxis.

Objectives: The relative contributions by the sphenopalatine artery (SPA) and the anterior and posterior ethmoid arteries (AEA, PEA) to the nasal vasculature are not well established. The objective of this study was to quantify the relative contributions of the ethmoid arteries (EA) collectively and SPA to nasal blood flow using angiography. **Study Design:** A prospective cohort study of patients undergoing cerebral angiography with injection of the common carotid artery was evaluated for presence of the EA and the SPA. **Methods:** A single neuroradiologist used a novel 4 point grading scheme to quantify the relative contribution of each vascular system. **Results:** A total of 92 patients yielded 157 sides (65 bilateral, 27 unilateral studies). In the EA group, 27% showed no vessel, 61% showed EA present, 10% showed EA present with mild blush of nasal mucosa, and 3% showed EA present with strong blush. In the SPA group, 2% showed no vessel, 38% showed SPA present, 41% showed SPA present with mild blush, and 19% showed SPA present with strong blush. Comparing relative contributions of the SPA and EA to nasal vasculature, only 2% of cases showed EA greater than SPA whereas 71% showed SPA greater than EA. **Conclusions:** The results suggest that the EA is a significant contributor to nasal blood flow in 13% of cases but rarely exceeds the contribution of the SPA. Despite a relatively low percentage, the contribution of the EA territory to nasal blood flow in epistaxis management and endoscopic sinus surgery needs to be considered as potentially significant.

10:03 **The Increase of Inflammatory Mediator Expression on Airway Epithelial Cells in Response to Pollution Is Decreased with Macrolide Co-Incubation**

Devin M. Lonergan, MD, Stanford, CA

Peter H. Hwang, MD, Stanford, CA*

Chris Vanichsarn, BS, Stanford, CA

Kari Nadeau, MD, Stanford, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the effect of pollution and macrolide exposure on the immunologic phenotype of airway epithelial cells.

Objectives: The interactions of airway epithelial cells with immunogenic stimuli can begin or alter a wide range of inflammatory reactions. Low dose macrolide therapy has recently been used for its anti-inflammatory effects. We wished to further eval-

uate the response of epithelial cells to known inflammatory reagents in the presence of macrolides. **Study Design:** Using in vitro cell culture, airway epithelial cells were exposed to diesel exhaust pollution (DEP) particles with and without macrolide co-incubation. We hypothesized that inflammatory mediators present on epithelial cells and would increase in response to DEP and decrease with macrolide co-incubation. **Methods:** Human nasal epithelial cells were established from intraoperative specimens and compared to human nasal and bronchial epithelial cells from primary cell cultures (Promocell). These cells were exposed to standardized concentrations of DEP (less than 2.5 μ M) in the presence and absence of the macrolides for 0, 24, and 48 hours. At each of these time points, the cells were analyzed for immunologic markers using flow cytometry. **Results:** CCR3 and TSLP receptor, receptors associated with Th2 and pro-allergic pathways, were found on both nasal and airway epithelial cells. Their expression was increased on epithelial cells exposed to DEP. This effect was enhanced upon increasing the time of exposure. Co-incubation of macrolides with DEP on the epithelial cells partly reversed this effect. **Conclusions:** While the anti-inflammatory effects of macrolides have not been fully elucidated, this study suggests a change in the function of airway epithelial cells, seen here as a decrease of pro-inflammatory cell markers, may be responsible for their utility.

10:11 The Safety and Tolerance of a Self-Preserving Nasal Saline Spray: A Randomized Controlled Trial

William R. Ryan, MD, Stanford, CA
Peter H. Hwang, MD, Stanford, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the use of a novel approach to liquid contamination prevention and the evidence that its use appears effective, safe and tolerable, at least, in the short term.

Objectives: To determine the safety and tolerance of a nasal saline spray containing a buffered HCl solution for contamination prevention as an alternative to the use of chemical preservatives. **Study Design:** A randomized placebo controlled double blinded clinical trial. **Methods:** 20 asymptomatic healthy volunteers with healthy appearing nasal cavities used a buffered HCl saline spray and a preservative-containing saline spray for 1 week periods in a random sequence separated by an interceding 1 week period without use of any spray. After each period of spray use, participants completed two symptoms questionnaires and underwent nasal endoscopic exams. We determined the presence of microorganism growth in each spray after use. **Results:** All 20 patients completed followup. We performed 2 separate analyses, one with all patients and one excluding 4 patients who developed upper respiratory illnesses during the study period. No patients had any major complaints or major physical exam findings with use of either spray. None of the nasal spray solutions in either group had any microorganism growth. **Conclusions:** A buffered HCl solution, when used in a nasal spray, appears to be safe, tolerable, and an effective prevention of contamination with, at least, short term use.

10:19 The Endoscopic Approach for Pituitary Surgery Improves Rhinologic Outcomes

Scott M. Graham, MBBS FRACS, Iowa City, IA
Tim A. Iseli, MBBS FRACS, Iowa City, IA (Presenter)
Lucy H. Karnell, PhD, Iowa City, IA
John D. Clinger, MD, Iowa City, IA
Patrick W. Hitchon, MD, Iowa City, IA
Jeremy D.W. Greenlee, MD, Iowa City, IA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain, discuss and compare outcomes of the endoscopic and open approaches for pituitary surgery.

Objectives: To compare the endoscopic to open approach for pituitary surgery with regard to rhinology specific quality of life and tumor outcomes. **Study Design:** Prospective inception cohort with controls. **Methods:** Pituitary cases, identified from the department of neurosurgery database, included all endoscopic cases and consecutive open controls between January 1998 and February 2007. The Sinonasal Outcome Test-22 was mailed. Independent sample t-tests determined significant differences. **Results:** Since January 1998, 71 endoscopic and 122 open pituitary surgeries were performed. Mean followup was longer for open, 49.3 months, vs. 18.8 months for endoscopic cases. Diagnosis was macroadenoma in 77.1% of endoscopic vs. 93.4% of open cases. Tumor recurrence was seen on MRI in 26.1% of endoscopic vs. 32.2% of open cases. Mean hospital stay was 4.1 (endoscopic) vs. 6.0 days (open). For patients presenting with visual deterioration, 100% of endoscopic vs. 98.4% of open cases improved. With normal preoperative hormones, 27.5% of endoscopic vs. 29.4% of open surgeries required replacement >2 months. Complications occurred in 33.3% of endoscopic cases (10.6% CSF leaks) vs. 43.4% of open cases (2.4% CSF leaks). Sinonasal Outcome Test-22 response rates were 59% for endoscopic and 52% for open cases. Mean SNOT-22 scores were lower for endoscopic (20.4) vs. open (23.2) cases, though not statistically significant ($p=0.41$). Endoscopic cases had significantly lower rhinology specific mean score (6.5) vs. open (9.2; $p=0.03$). **Conclusions:** The endoscopic approach to pituitary surgeries offers comparable tumor outcomes with improved rhinology specific quality of life compared with open surgery.

10:27 TRIOLOGICAL SOCIETY THESIS
Letters of Recommendation to an Otolaryngology/Head and Neck Residency
Program: Their Function and the Role of Gender
Anna Hopeman Messner, MD, Stanford, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the role of letters of recommendation on the otolaryngology/head & neck surgery residency application process.

Objectives: To ascertain common features in letters of recommendation (LORs) for applicants to an otolaryngology/head & neck surgery (OHNS) residency program, describe the letter writers and recommendations presented, and determine if there were gender differences in the letters by applicant and letter writer. **Study Design:** Retrospective review. **Methods:** Seven hundred and sixty-three LORs, submitted to one OHNS residency program in 2006, on behalf of 204 applicants (131 males, 73 females) from U.S. medical schools were reviewed. Outcome variables included number of words per letter and 18 elements found in LORs. **Results:** All 763 letters “recommended” the applicant for OHNS residency. Ninety-one percent of letters were written by males, 68.4% by male otolaryngologists (OTOs), 4.2% by female OTOs, and 33% by OHNS department chairs or division chiefs (100% male). Letter features, which were positively correlated with United States Medical Licensing Exam (USMLE) Step 1 applicant scores, included the number of standout adjectives ($P = 0.002$), and the likelihood a letter writer mentioned that the applicant would be highly ranked in the letter writer’s residency program ($P = 0.006$). Negatively correlated with USMLE scores included the presence of one or more “doubt raisers” in a letter ($P = 0.000$), and letters which were of “minimal assurance” ($P = 0.003$). A comparison of female and male letter writers revealed five categories with significant differences: female letter writers were more likely to call an applicant a “team player” ($P = 0.000$), “compassionate,” ($P = 0.001$) and use strings of adjectives ($P = 0.024$). In contrast, they were less likely when compared to male letter writers, to mention an applicant’s personal life ($P = 0.003$), or write “letters of minimal assurance” ($P = 0.035$). Evaluation of the letters by applicant gender revealed two categories with differences: letter writers were more likely to use a gender term in letters for male applicants ($P = 0.004$), and male letter writers were more likely to make reference to a female candidate’s physical appearance ($P = 0.040$). Those differences notwithstanding, the quality of letters written by male and female letter writers were comparable in most aspects studied. Letters for female applicants compared to male applicants did not vary significantly in mean length (323 versus 332 words, $P = 0.394$), even when written by OTO departmental chairs or division chiefs, who wrote significantly shorter letters compared to letter writers who were not department chairs (291 versus 350 words, $p < .001$). **Conclusions:** LORs for OHNS residency universally advocate for the applicant. The letters are written predominately by the highest ranking male OTOs in academic medicine. It is rare for a female OTO to write an OHNS residency LOR. In the LORs, male and female applicants are described similarly. Male and female letter writers, however, often describe applicants in different ways regardless of applicant gender. To minimize these differences, reduce qualitative variation among the letters, and to develop a tool that is more useful for the residency selection process, the specialty should consider using a standardized evaluation form for residency applicants.

10:37 Q&A

10:42 Break with Exhibitors - Casablanca D&E

11:15 - PANEL: RESIDENT BOWL - Otolaryngology programs
12:15 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*, Phoenix, AZ

Otology Session

Moderator

Karen J. Doyle, MD PhD*, Sacramento, CA

12:20 Intratympanic Injection of Autologous Blood for Perilymphatic Fistulas
Rohit Garg, MD MBA, Irvine, CA
Hamid R. Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the role of intratympanic autologous blood injection in the spectrum of treatment options for perilymphatic fistulas.

Objectives: Evaluate feasibility, efficacy, and adverse effects of intratympanic autologous blood injection as a therapeutic option for repairing perilymphatic fistulas. **Study Design:** This study is a retrospective analysis of three cases. **Methods:** From 2006 to 2008, three subjects with clinical and physical exams consistent with perilymphatic fistulas were evaluated at an academic tertiary care center. Initial treatment included of approximately 1 mL of blood was drawn from the subject's arm in a sterile fashion. Consequently, after local anesthesia was attained with phenol, a control hole was made in the anterosuperior quadrant of the affected ear. Afterwards, 1mL of autologous blood was injected in a separate part of the anterosuperior quadrant using a 25 gauge spinal needle. The subject was then placed in a recumbent position to position the blood into the round and oval windows for 20 minutes. Followup was performed in one week. **Results:** One of the subjects demonstrated complete resolution of symptoms. Another subject showed improvement of symptoms but no complete resolution. The last subject showed no improvement in symptoms. **Conclusions:** Intratympanic injection of autologous blood is a relatively easily performed first line of therapy for patients that present with perilymphatic fistulas. Surgery was avoided in one of the patients.

12:28 Early and Accurate Diagnosis of Sudden Sensorineural Hearing Loss: A Clinical Algorithm for the Primary Care Physician

Luke J. Schloegel, MD, Oakland, CA
Barry M. Rasgon, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to educate primary care physicians to accurately manage sudden sensorineural hearing loss.

Objectives: To review the diagnosis and treatment of sudden sensorineural hearing loss (SSNHL) by the primary care physician (PCP) and present a clinical algorithm for management. **Study Design:** Retrospective chart review. **Methods:** The charts of 115 patients with suspected SSNHL by audiometric exam at a tertiary care hospital between 2004 and 2007 were retrospectively reviewed. The progression of care from initial visit to PCP to eventual diagnosis of SSNHL was examined, and all diagnoses, treatment, and delays in referral were recorded. A thorough literature review was also conducted to assess current evidence regarding SSNHL. **Results:** Of the 115 audiograms reviewed, 53 patients met the inclusion criteria for this study: first episode of sensorineural hearing loss, hearing loss of 30 decibels in 3 consecutive frequencies, no history of Meniere's disease, acoustic neuroma, or previous ear surgery. At the initial PCP visit, only 37% (20/53) patients were correctly diagnosed with SSNHL, whereas 63% (33/53) were assigned an inaccurate diagnosis. The majority of these misdiagnoses were eustachian tube dysfunction (ETD) and otitis media. This led to an average delay in referral to audiology and otolaryngology of 20.8 days. However, in 90% (9/10) of patients with a documented tuning fork exam conducted by PCP, the correct diagnosis of SSNHL was assigned and almost no delay in treatment occurred. **Conclusions:** A clinical algorithm, with tuning fork exam by PCP, can be used to accurately diagnose SSNHL and determine who needs urgent referral for audiometric evaluation and otolaryngology consultation.

12:36 Epidural Hematoma Resulting from Blunt Trauma to a BAHA in a 10 Year Old Child

Esther L. Fine, MD, Irvine, CA
John F. McGuire, MD MBA, Irvine, CA
Hamid R. Djalilian, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize epidural hematoma as a risk of trauma to a BAHA implant.

Objectives: We describe a case of an epidural hematoma occurring in a 10 year old child after blunt trauma to a BAHA. **Study Design:** Case report. **Methods:** Case report. **Results:** A 10 year old girl with unilateral atresia presented to the emergency department after falling and striking her head directly on her BAHA implant that had been placed by another surgeon in 2003. She suffered no loss of consciousness, but over the next hour developed lethargy, nausea, and vomiting. CT scan revealed a parietal skull fracture surrounding the implant and a 6.5cm x 1.5cm epidural hematoma. Emergency craniotomy was performed by creating a 3 cm bone flap around the implanted anchor. A small bleeding vessel was coagulated, and hematoma was evacuated. The defect was reconstructed with bone fragments and a mesh plate spanning the defect. The patient made a full recovery. This is to our knowledge the first case of an epidural hematoma resulting from trauma to a BAHA. During BAHA placement, our patient had required bone augmentation for an unusually thin skull. **Conclusions:** Skull thickness and the patient's risk of blunt trauma to the head (i.e. those with high fall risk and those involved in athletic activities) should be considered in selecting pediatric patients for this procedure. We recommend that any patient suffering direct trauma to a BAHA should be immediately evaluated with a neurologic exam and CT scan, regardless of symptoms. Parents of children with BAHA should be made aware of this rare yet serious complication to prevent delay in seeking care should trauma occur.

12:44 Q&A

12:50 Introduction of Vice President-Elect

12:55 Adjourn

SCIENTIFIC POSTER PROGRAM

Head & Neck

W1. Primary Squamous Cell Carcinoma of the Thyroid

Thomas H. Alexander, MD MHS, San Diego, CA
Robert A. Weisman, MD, San Diego, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the presentation, diagnosis, and treatment of primary squamous cell carcinoma of the thyroid.

Objectives: Primary squamous cell carcinoma of the thyroid (PSCCT) is a rare head and neck malignancy. A case of PSCCT is presented and the relevant literature reviewed. **Study Design:** Case report and review. **Methods:** Case report. **Results:** A 62 year old male nonsmoker presented with two months of hoarseness. Examination revealed a rock hard mass in the right thyroid lobe. Fiberoptic laryngoscopy demonstrated an immobile right true vocal fold and no mucosal abnormalities. Ultrasound and CT of the neck showed a 1.1 cm calcified right thyroid nodule. Fine needle aspiration yielded follicular epithelial cells without malignancy. A thyroidectomy was undertaken, but the gland had an atypical appearance, and only an incisional biopsy was performed. A fibrous lesion with inflammatory cells and no malignancy was reported on frozen section. Permanent sections revealed moderately differentiated squamous cell carcinoma. PET showed intense hypermetabolic activity in the right thyroid lobe only. The patient next underwent total thyroidectomy, and frozen sections revealed invasion of the recurrent laryngeal nerve, trachea, and the cricoid and thyroid cartilages. He later underwent total laryngectomy. Final pathology showed clear margins and no evidence of a laryngeal primary. Postoperatively he received 66 Gy of radiation with concurrent cisplatin. **Conclusions:** PSSCT is a rare disorder with few reported cases. It has been associated with poorer outcomes than most other head and neck squamous carcinomas. Aggressive surgery followed by radiation or chemoradiation appears to be the current treatment of choice, with few cures reported for nonsurgical treatment regimens.

W2. Giant Cell Fibroblastoma of the Epiglottis

Marc Cohen, MD, Los Angeles, CA
Vishad Nabili, MD, Los Angeles, CA
Noah Federman, MD, Los Angeles, CA
Jeffrey W. Birns, MD, Los Angeles, CA
Scott D. Nelson, MD, Los Angeles, CA
Elliot Abemayor, MD PhD, Los Angeles, CA*

Educational Objective: At the conclusion of this presentation, the participants should have a thorough understanding of the pathophysiology of giant cell fibroblastoma and the current theories on its relationship to dermatofibrosarcoma protuberans.

Objectives: 1) To present the first reported case of giant cell fibroblastoma (GCF) in the larynx; and 2) to explain the pathophysiology, histology, and clinical behavior of this entity and its relationship to dermatofibrosarcoma protuberans. **Study Design:** Case report including a detailed histopathologic analysis along with a literature review. **Methods:** We present the first reported case of GCF in the larynx. Histopathologic assessment along with radiological details is reviewed. A literature review to describe the background, incidence, disease course, and treatment options are presented. **Results:** GCF is a rare mesenchymal tumor of childhood that is characterized by local aggressive growth and a high rate of local recurrence. GCF has been found on the trunk, extremities, scrotum and neck. We report a case of an 11 year old male who was initially referred for evaluation of snoring, exercise intolerance, dysphonia, and weight loss. He ultimately was found to have a smooth mass on the lingual surface of the epiglottis. The patient underwent transcervical excision of the mass and final pathology was consistent with giant cell fibroblastoma. **Conclusions:** Our case appears to be the first report of GCF occurring in the epiglottis. Whether tumors at this site act differently than those in others remains to be fully elucidated. Whereas wide local excision is recommended, the morbidity of any large surgery in the pediatric larynx must be balanced by the temporal evolution of this tumor.

W3.

Bile Formation in Hepatocellular Carcinoma Metastatic to the Mandible: A Case Report

Mia M. Edwards, MD, Los Angeles, CA

Andrew A. McCall, MD, Boston, MA

Guy F. Juillard, MD, Los Angeles, CA

Celina M. Nadelman, MD, Los Angeles, CA

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

Vishad Nabili, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand an unusual presentation of hepatocellular carcinoma metastatic to the mandible and the associated histologic and radiographic findings.

Objectives: To present a rare case of hepatocellular carcinoma metastatic to the mandible and to present histology showing bile formation in its metastatic location. **Study Design:** Case report including histopathologic and radiographic findings, as well as a literature review. **Methods:** A case report is described from a university hospital. Histopathology and radiologic findings are reviewed and compared with those in the literature. **Results:** We present a case report of a 55 year old patient with known multifocal hepatocellular carcinoma, hepatitis B and C and cirrhosis, who presented with a mandibular mass after sorafenib treatment. Patient underwent an FNA which showed bile canaliculi and bile formation in tissue obtained from the mandible, and immunoperoxidase stains support hepatocellular carcinoma. Based on literature review, hepatocellular carcinoma is a malignant tumor which rarely metastasizes to the mandible, with only approximately 50 cases reported. Common sites of extrahepatic metastatic spread include lung, intraabdominal lymph nodes, bone, brain, and adrenal gland. Hepatocellular carcinoma bony metastases normally appear as osteolytic lesions most likely found in the spine, femur, humerus or ribs. Radiologically, this patient's metastasis presents as a lytic destructive lesion centered in the right mandibular ramus. **Conclusions:** We describe an atypical case of hepatocellular carcinoma metastatic to the mandible with pathologic slides showing bile formation. Radiology findings in this case show the typical osteolytic findings previously described. Due to the vascular nature of this tumor, radiation therapy and embolization have been described to control bleeding, and surgery has been described in at least one case to control severe hemorrhage.

W4.

Kimura's Disease: An Inflammatory Disorder Mimicking a Parotid Mass

David Hu, MD, Los Angeles, CA

Sheeja Pullarkat, MD, Los Angeles, CA

Jian Y. Rao, MD, Los Angeles, CA

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

Educational Objective: To discuss the diagnosis and management of Kimura's disease, which often presents as a mass in the head and neck. To describe the histopathological and laboratory findings in patients with Kimura's disease and understand the treatment recommendations.

Objectives: Eosinophilic hyperplastic lymphogranuloma, more commonly known as Kimura's disease, is an inflammatory disorder most frequently found in middle aged Asian men. It has a predilection for the head and neck region and presents with its own set of clinical characteristics, radiographic findings, and histologic features. The clinical findings, surgical management, and pathologic description of a patient with Kimura's disease are presented. **Study Design:** A case report and literature review. **Methods:** The patient's clinical records were examined for history, laboratory values, biopsy results, operative procedure, and pathologic diagnosis. A literature review for Kimura's disease was also performed in PubMed. **Results:** A fifty two year old Chinese man presented with a left preauricular mass, which initially appeared to be of parotid origin. Laboratory values demonstrated eosinophilia, and fine needle aspiration biopsy showed clusters of epithelioid histiocytes, lymphocytes, and foamy macrophages. He underwent surgical excision without complication. Pathologic examination demonstrated Kimura's disease. **Conclusions:** Although rare, Kimura's disease has been reported in the literature originating from countries in Asia since 1937. Surgical excision is the treatment of choice, followed by steroid and/or other immunosuppressive therapy. As the population seeking medical care becomes more diverse, it is important for the otolaryngologist to include Kimura's disease in formulating the differential diagnosis of head and neck masses.

W5.

Horner's Syndrome after Selective Neck Dissection

Gerald T. Kangelaris, MD MBA, San Francisco, CA

Frederick C. Roediger, MD, San Francisco, CA

Young S. Oh, MD, Anaheim, CA

David W. Eisele, MD*, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the clinical presentation of Horner's syndrome, describe the potential mechanism of injury to and relevant anatomy of the cervical sympathetic chain, and understand techniques for the prevention of this complication during selective neck dissection.

Objectives: To present a case of temporary Horner's syndrome after selective neck dissection and review the relevant literature. **Study Design:** Case report. **Methods:** The clinical course of a 29 year old female treated at a tertiary care center with a biopsy proven T1N0M0 squamous cell carcinoma of the right lateral tongue is reported. Following an uncomplicated right partial glossectomy and supraomohyoid neck dissection, the patient developed temporary Horner's syndrome. Photodocumentation is provided. The literature pertaining to Horner's syndrome following selective neck dissection is reviewed and the relevant anatomy and surgical considerations are discussed. **Results:** Immediately postoperatively the patient was noted to have right-sided miosis and ptosis without other associated cranial, motor, or sensory nerve palsies. Pathology revealed a 1.1 cm well differentiated squamous cell carcinoma of the tongue with zero of 76 lymph nodes positive for disease. Close clinical surveillance was performed throughout the postoperative period. Signs progressively improved and resolved completely by six months postoperatively. The patient continues to be without clinical evidence of disease recurrence at three years followup. **Conclusions:** Injury to the cervical sympathetic chain is an uncommon but potential complication of selective neck dissection. Appreciation of the relevant anatomy and consideration of this complication may help to prevent postoperative morbidity in the form of Horner's syndrome.

W6. A Novel Modular Polymer Platform for the Treatment of Head and Neck Squamous Cell Carcinoma

Ontario D. Lau, MD, Los Angeles, CA
Sherven Sharma, PhD, Los Angeles, CA
Ben Wu, PhD, Los Angeles, CA
Steven M. Dubinett, MD, Los Angeles, CA
Maie A. St. John, MD PhD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the design and clinical benefits of a novel biocompatible modular polymer platform for patients with advanced or recurrent head and neck squamous cell carcinoma (HNSCC).

Objectives: We are developing a novel biocompatible modular polymer platform which will improve the outcome for patients with advanced or recurrent head and neck squamous cell carcinoma (HNSCC). The ability to decrease mortality and improve survival for these patients has been a longstanding goal for cancer researchers. **Study Design:** We are developing a polymer wrap that has the following characteristics: is biocompatible; is slowly degradable; can provide an initial mechanical barrier to metastasis and angiogenesis; and can serve as a platform to deliver immunomodulators and radiosensitizers so as to most effectively kill tumor cells in the proximity of the polymer application. This polymer wrap is designed to be applied intraoperatively to the surgical bed after removing or debulking the tumor, thus allowing for enhanced postoperative radiation treatment, and also functioning as a mechanical barrier to the spread of disease. **Methods:** The safety and efficacy of the polymer platform will be tested in vitro and subsequently in vivo in a mouse model system. **Results:** Once the polymer platform is optimized in an in vivo model, we will plan for the ultimate validation in the context of a prospective trial in patients with unresectable advanced or recurrent HNSCC. **Conclusions:** A novel biocompatible modular polymer platform for the treatment of HNSCC is being developed and tested. Our study will provide the crucial platform to identify a promising intervention that warrants larger scale research efforts or multisite clinical trials.

W7. Sinonasal Malignant Triton Tumor: A Case Report

Ontario D. Lau, MD, Los Angeles, CA
Sunita Bhuta, MD, Los Angeles, CA
Claudia M. Kirsch, MD, Los Angeles, CA
Renee Penn, MD, Los Angeles, CA
Vishad Nabili, MD, Los Angeles, CA
Elliot Abemayor, MD PhD*, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the clinical features and treatment for sinonasal malignant triton tumor.

Objectives: Describe a rare case of malignant triton tumor in the sinonasal region. **Study Design:** Case report including a detailed histopathologic and radiological analysis along with a literature review. **Methods:** We report the case of a 42 year old

man who presented to a tertiary university hospital with nasal airway obstruction and proptosis from a large fleshy mass in his left sinonasal region with intracranial extension. Histopathologic assessment along with radiological details is reviewed. A literature review to describe the background, incidence, disease course, and treatment options is presented. **Results:** The extensive malignant triton tumor was treated with surgical excision via a lateral rhinotomy and craniofacial approach to the anterior fossa with postoperative radiation therapy in planning. Pathology reveals classic findings of rhabdomyoblasts scattered among elongated spindle cells. The literature demonstrates this disease to be rare in the sinonasal region with only 6 cases. The disease occurs predominantly in patients with von Recklinghausen's neurofibromatosis, with treatment being mainly complete resection followed by radiotherapy. **Conclusions:** Sinonasal malignant triton tumor is a rare disease. Clinicians should include that as part of the differentials of a sinonasal mass and be aware of its clinical features and treatment.

W8. Perineural Spread of Cutaneous Head and Neck Malignancies: Imaging Manifestations and Therapeutic Management

Kimberly J. Lee, MD, Los Angeles, CA

Elliot Abemayor, MD PhD, Los Angeles, CA*

Claudia F.E. Kirsch, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to assess critical radiographic features of perineural invasion (PNI) on CT and MRI, to determine which imaging modality is superior for detecting PNI, and to determine the implications of these findings regarding therapeutic treatment.

Objectives: Skin cancer is the most common cancer in the United States with 80% occurring in the head and neck. PNI may be clinically silent and associated with poor local control and recurrence. Therefore, radiographic imaging plays a pivotal role in detecting tumor margins and PNI. The purpose of this study is to analyze the incidence of PNI, with regards to relevant neural pathways, imaging characteristics on CT and MRI, and histopathology; to determine which imaging modality is superior for detecting PNI; and to determine the implications of these findings regarding therapeutic treatment. **Study Design:** Retrospective. **Methods:** This IRB approved study reviewed images of 50 patients with histopathologically proven cutaneous malignancies, which were subdivided into melanoma, basal cell, and squamous cell subtypes. The location in the head and neck was analyzed as well as the potential nerve routes that could be involved and the first order echelon areas of nodal drainage. **Results:** Imaging studies included CT and 1.5 or 3.0 Tesla MRI imaging. Important radiographic features included loss of fat planes surrounding the nerve, nerve enhancement and thickening, and neural foramina widening. 3.0 Tesla MRI imaging proved superior to 1.5 Tesla MRI for neural detail and evaluation of the margins of PNI. The statistical data was analyzed via logistic regression. **Conclusions:** The presence of perineural spread may occur even in asymptomatic patients; therefore accurate imaging of the degree and involvement of perineural spread is essential. This study showed that 3.0 Tesla MRI proved to be superior in determining the extent of perineural spread in all cutaneous malignancies and improved postoperative radiation planning.

W9. Melanoma of the Dorsal Tongue

Frederick C. Roediger, MD, San Francisco, CA

Harvey Z. Klein, 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 recognize the clinical presentation of oral tongue melanoma, describe surgical management, and understand the clinical course of this neoplasm.

Objectives: To present a case of melanoma of the dorsal tongue managed surgically and review the relevant literature. **Study Design:** Case report. **Methods:** The clinical course of an 80 year old gentleman referred to a tertiary medical center for management of a melanotic, midline dorsal tongue lesion is presented. Clinical, pathological, and radiographical findings are reviewed. Management, consisting of midline partial glossectomy with primary closure and bilateral selective neck dissections, is described with pre-, intra-, and postoperative photodocumentation. The literature pertaining to mucosal melanoma of the oral tongue is reviewed. **Results:** Surgical pathology showed negative surgical margins at the primary site and no evidence of cervical nodal metastasis. The wound healed quickly and the patient is currently functioning well with no dysarthria or dysphagia. Close clinical surveillance was performed with periodic imaging. The patient remains alive at three years post-op with no evidence of disease. This disease entity has been described as typically presenting at a late stage with poor prognosis. Primary surgical management appears to have been successful in this case. The literature regarding the use of adjuvant immunotherapy and radiation therapy in more advanced lesions is presented. **Conclusions:** Surgical management of oral tongue melanoma without regional metastasis with close clinical surveillance is an acceptable management strategy for this rare, but aggressive, malignancy.

W10. Nasal Pseudotumor—Effective Management with Corticosteroids

Matthew S. Russell, MD, San Francisco, CA
Jeanne M. Quivey, MD, San Francisco, CA
Helen Bailey, MD, San Francisco, CA
Christine M. Glastonbury, MBBS, San Francisco, CA
David W. Eisele, MD*, San Francisco, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the clinical presentation of nasal pseudotumor, differentiate pseudotumor from other neoplastic lesions, and understand the treatment of this entity.

Objectives: To present a case of pseudotumor of the nasal cavity managed medically with corticosteroids and review the relevant literature. **Study Design:** Case report. **Methods:** The clinical course of a 48 year old woman referred to a tertiary medical center for management of a nasal cavity mass is presented. Clinical, pathologic, and radiographic findings are reviewed. The literature pertaining to sinonasal inflammatory pseudotumor is reviewed. **Results:** Original pathologic diagnosis obtained at an outside hospital of benign plasma cell granuloma was called into question when MRI studies were obtained revealing a bilateral nasal cavity mass with loss of normal tissue planes. This raised concern for an aggressive neoplasm. Rebiopsy confirmed inflammatory pseudotumor—a rare benign lesion. A course of high dose corticosteroids were administered resulting in a complete clinical response. The patient remains free of disease 12 months post-therapy. The literature pertaining to the presentation and treatment for inflammatory pseudotumor of the nasal cavity is presented. **Conclusions:** Pseudotumor is a rare benign entity that may arise in the head and neck. When properly diagnosed, this entity can be effectively treated with corticosteroids.

W11. Pediatric Intraoral Squamous Cell Carcinoma: A Case Report and Literature Review

Doug R. Sidell, MD, Los Angeles, CA
Vishad Nabili, MD, Los Angeles, CA
Sunita M. Bhuta, MD, Los Angeles, CA
Claudia Kirsch, MD, Los Angeles, CA
Bob Armin, MD, Los Angeles, CA
Elliot Abemayor, MD*, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the differences between pediatric and adult squamous cell carcinoma of the oral cavity. The reasons for including this disease process in the differential diagnosis of intraoral lesions should be clear.

Objectives: 1) Describe a rare pediatric malignancy; and 2) discuss the clinical, diagnostic and therapeutic differences between squamous cell carcinoma of the adult and pediatric population. **Study Design:** Case report including a detailed radiological and histopathologic analysis and review of the literature. **Methods:** A case report is described from a tertiary care university hospital. Histopathologic assessment and radiological details are reviewed. A literature review to review the background, incidence, disease course, and treatment options are presented. **Results:** We present the case of a six year old with a two month history of an enlarging oral lesion. The patient denied dysphagia, pain, weight loss, bleeding, or loosening of the teeth. Biopsy demonstrated invasive, well differentiated, exophytic squamous cell carcinoma with perineural and angiolymphatic invasion. MRI demonstrates a 2.7 x 3.0 cm poorly marginated infiltrative mass involving the gingival aspect of the superior alveolar ridge and the adjacent bony marrow, primarily to the right of midline. CT demonstrates multiple small subcentimeter lymph nodes in the posterior cervical triangles bilaterally. **Conclusions:** Squamous cell carcinoma of the oral cavity is an exceptionally uncommon disease in the pediatric population. The pathologic process described herein is thought by some to be a disease distinct from that seen in the adult population. It is different in etiology, more difficult to diagnose pathologically, and often more aggressive than its adult counterpart. Treatment includes wide local excision with the avoidance of radiotherapy wherever possible. Consideration of squamous cell carcinoma in the differential diagnosis of oral lesions in the pediatric population is critical.

W12. Infratemporal Fossa Osteosarcoma: A Rare Presentation

Thomas A. Stewart, MD, Loma Linda, CA
John Y. Kim, MD, Loma Linda, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the current literature involving skull base osteosarcoma including diagnostic workup and treatment options.

Objectives: Osteosarcoma is considered the most common osteogenic malignancy in pediatric patients; however, these lesions usually involve the long bones and in many cases occur after radiation therapy. Osteosarcoma of the head and neck

region is rare. Furthermore, osteosarcoma originating in the infratemporal fossa has not previously been reported. To our knowledge, this is the first case report of a 17 year old male who presents with osteosarcoma originating in the infratemporal fossa. Also presented is a review of the literature and discussion of management options for this rare skull base malignancy. **Study Design:** Case report, literature review. **Methods:** This case report is of a 17 year old male presenting with osteosarcoma of the infratemporal fossa three years after being treated with radiation and bone marrow transplant for leukemia. A full chart review is performed and the treatment involving a transzygomatic, mandibulotomy and transcervical approach and resection of the tumor after failed radiation and chemotherapy is reported. The literature is reviewed utilizing Medline. **Results:** Prior to surgery, the tumor continued to increase in size despite radiation and chemotherapy. He subsequently underwent a salvage surgical resection of the tumor. He is now six years out from surgery and continues to be disease free. **Conclusions:** Osteosarcoma of the infratemporal fossa is extremely rare. The outcome of the current case is consistent with the sparse literature which suggests that surgical treatment is the mainstay of treatment of skull base osteosarcomas.

W13. Transnasal Endoscopic Surgery of the Cavernous Sinus

Audrey P. Sung, MD, Los Angeles, CA
Marvin Bergsneider, 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 demonstrate the efficacy and safety of a transnasal endoscopic approach for biopsy of the cavernous sinus. To discuss the importance of a tissue diagnosis to guide further therapy in patients who present with cavernous sinus syndrome.

Objectives: Head and neck cancer metastases to the cavernous sinus have been rarely reported. Tissue diagnosis and surgical management present unique challenges, given the proximity to the critical cavernous sinus structures, including the internal carotid artery. We describe a transnasal endoscopic approach to the cavernous sinus for tissue diagnosis, ultimately guiding treatment and management. **Study Design:** Retrospective case study. **Methods:** A review of the medical records of two patients who presented to a tertiary medical center with symptoms of cavernous sinus syndrome was done. Radiographic images, videographic demonstration of the operative technique, and pathology slides are presented. **Results:** Both patients presented with ophthalmologic symptoms consistent with cavernous sinus syndrome. Imaging demonstrated a lesion in the cavernous sinus. Videographic demonstration of the operative technique shows that a transnasal endoscopic approach to the cavernous sinus is feasible and safe. A dual surgeon approach was utilized, with the otolaryngologist providing wide exposure of the cavernous sinus through the lateral wall of the sphenoid, and the neurosurgeon taking down the dura to enter the cavernous sinus and collect tissue. The tissue diagnosis was metastatic adenoid cystic carcinoma in one patient and metastatic squamous cell carcinoma in the second. Postoperatively, both patients recovered well without new vision changes, cranial neuropathies or bleeding. **Conclusions:** A transnasal endoscopic approach to the cavernous sinus is a safe and efficacious method to obtain tissue specimens of cavernous sinus lesions. Pathologic diagnoses in patients presenting with cavernous sinus syndrome is critical for guiding further treatment and management.

W14. Malignant Ossifying Fibromyxoid Tumor of the Parapharyngeal Space

Neil Tanna, MD MBA, Washington, DC
Girish Kori, MD, Washington, DC
Nader Sadeghi, MD, Washington, DC
Esma Akin, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand 1) that malignant ossifying fibromyxoid tumor is a rare, recently described, tumor; 2) that malignant ossifying fibromyxoid tumor can occur in the parapharyngeal space; and 3) the radiographic and histopathologic characteristics of malignant ossifying fibromyxoid tumor.

Objectives: Malignant ossifying fibromyxoid tumor is a rare, recently described, mesenchymal tumor of uncertain histogenesis. This soft tissue tumor is usually found in the trunk and extremities, and to the authors' knowledge this neoplasm has not been reported in the parapharyngeal space. The authors describe the clinical, radiologic, and histopathologic features of malignant ossifying fibromyxoid tumor of the parapharyngeal space. **Study Design:** Presentation of a previously unreported location for a rare, recently described, pathology with emphasis on etiology, clinical implications, and management. **Methods:** Case report and review of the literature. **Results:** A 35 year old male presented with a two year history of slow growing right-sided lateral neck mass. On physical examination, a firm mass was palpable, in the midlevel of the right neck, anterior and deep to the sternocleidomastoid muscle. Magnetic resonance imaging demonstrated a 5.2 x 5.0 x 7.0 cm lesion of the right parapharyngeal space. The patient underwent uncomplicated transcervical resection of the lesion. Pathological analysis demonstrated the mass to show histological features consistent with malignant ossifying fibromyxoid tumor of the parapharyngeal space. **Conclusions:** Malignant ossifying fibromyxoid tumor is a rare tumor that has only recently been described. As such, there is a paucity of information in the literature regarding the management of this malignancy. Early clinical diagnosis of this lesion may

affect the patient outcome. As these tumors are reported to have high rates of local recurrence, preoperative suspicion of this lesion may help the surgeon plan a more aggressive tumor extirpation.

W15. Model for Estimating the Threshold Mechanical Stability of Structural Cartilage Grafts Used in Rhinoplasty

Allison J. Zemek, BS, Irvine, CA

Brian J.F. Wong, MD PhD, Irvine, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the quantitative thresholds of mechanical stability (e.g. Young's modulus) for columellar, alar, and L-strut cartilage grafts.

Objectives: Tissue engineered cartilage will inevitably be developed for structural grafting of the nose and other facial features. However, the threshold stiffness values for grafts used in rhinoplasty are unknown. Determining columellar, alar, and L-strut replacements would be of immense value as softer tissues are more cost efficient to engineer. The aims of this study are to 1) quantitatively identify the acceptable mechanical properties of cartilage grafts used in rhinoplasty; and 2) determine the threshold mechanical stability (e.g. Young's modulus) for columellar, alar, and L-strut cartilage grafts. **Study Design:** Ten cartilage tissue "mechanical phantoms" of identical size (5x20x2.3mm) and varying in stiffness from 0.360 to 0.85 MPa in 0.05 MPa were fashioned by combining polyurethane pre-polymer and polyol-plasticizer with phthalic acid, benzyl butyl ester in different proportions. (For comparison, human septal cartilage is approximately 0.8 MPa.) **Methods:** A focus group of experienced rhinoplasty surgeons (n=12, 5-30 years in practice) were asked to examine and flex the phantoms and arrange the specimens in order of increasing stiffness. Next they were asked to identify a specimen from the group that defined the minimum acceptable stiffness for three clinical applications: lateral crural, columellar, and L-strut grafts/replacements. The surgeons were tested again after one week to evaluate intra-rater consistency. **Results:** The linear dependence between ordinal ranking and Young's modulus exceeded a correlation coefficient of 0.99, indicating that surgeons can detect flexural differences of at least 0.05 MPa. For each surgeon, the minimum criteria for adequate stiffness of the three clinical applications differed from the threshold values derived by logistic regression by no more than 0.05 MPa (accuracy to within 10%). Specific thresholds were 0.51, 0.54, and 0.66 MPa for alar, columellar, and L-struts respectively. Studies were repeated 1 week later, and results were identical, indicating good intra-rater consistency. **Conclusions:** The threshold values for adequate graft stiffness in structural rhinoplasty were identified, and there was little inter- and intra-rater variation. The identified threshold values will be useful to guide the design of tissue engineered or semi-synthetic cartilage grafts for use structural nasal surgery.

Laryngology-Bronchoesophagology

W16. Laryngeal Tuberculosis Masquerading as Squamous Papilloma

Murtaza T. Ghadiali, MD, Los Angeles, CA

Jonathan S. Salinas, MD, Los Angeles, CA

Gerald S. Berke, MD, Los Angeles, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) describe the signs, symptoms, and physical exam findings of laryngeal tuberculosis; and 2) learn the clinical and laryngoscopic presentation of laryngeal tuberculosis.

Objectives: To report a case of laryngeal tuberculosis that masqueraded as squamous papillomatosis. **Study Design:** Retrospective case report. **Methods:** Retrospective case report of a patient with laryngeal tuberculosis at a tertiary medical center. **Results:** A 38 year old female presented to the clinic with a chief complaint of throat pain and hoarseness. She also had a 35 pound weight loss in the past 10 weeks and a chronic cough. Videostroboscopy showed a left glottic and supraglottic papillomatous lesion. Microsuspension direct laryngoscopy was then scheduled in order to biopsy and excise this lesion. During the procedure, it was observed that the supraglottis had extensive papillomatous disease, mainly involving the false vocal folds and ventricle, and extending superiorly towards the left aryepiglottic fold. The lesions were debulked and biopsies were sent for permanent section. Pathologic examination showed multiple, tangentially sectioned squamous papillomas with surface ulceration and associated fibrinopurulent exudates. There was also an underlying marked chronic and necrotizing granulomatous inflammation. In addition, AFB stain showed diffusely positive acid-fast bacilli. Interestingly, the specimen was negative for human papillomavirus (HPV) markers. The diagnosis of laryngeal tuberculosis was made and the patient was referred to an infectious disease specialist. She was successfully treated with aggressive antituberculous medications with a marked improvement in her symptoms at 6 month followup. **Conclusions:** This report emphasizes the importance of direct laryngoscopy and biopsy of any suspicious lesions prior to undertaking definitive surgical management. To our knowledge this is the first case in the literature of laryngeal tuberculosis that has masqueraded as squamous papillomatosis.

W17. Bronchoscopic Brushing to Induce Proximal Airway Stenosis in the New Zealand White Rabbit

*Paul Kenneth Holden, MD MS, Irvine, CA
Cara Chlebicki, BS, Irvine, CA
Brian Jet-Fei Wong, MD PhD*, Irvine, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss many of the animal models for airway stenosis. They will understand the new model presented and why it may be beneficial for future work.

Objectives: Proximal airway stenosis is an often difficult to treat condition which is acquired in the majority of cases. Current research in the area requires an airway stenosis animal model. Current models require external approaches (via tracheostomy) which are invasive and may cause undesired collateral effects. We seek to develop a model that avoids external incisions.

Study Design: Prospective pilot study of three New Zealand white rabbits. **Methods:** Circumferential brushing of the subglottis and proximal trachea of three rabbits was performed under general anesthesia. The airway was then monitored via serial bronchoscopy for two weeks. At the end of this time period, the animals were sacrificed and the laryngotracheal complexes harvested. **Results:** All three animals tolerated the procedures well. The severity of stenosis was moderate in all three animals (20-40%). **Conclusions:** Bronchoscopic circumferential brushing of the airway in the NZW rabbit can be a useful animal model which avoids the morbidity and confounding factors of external incisions.

W18. Interarytenoid Adhesions, Stenosis, Posterior Glottic Webs and Granulation Tissue - When to Operate

*Nelson S. Howard, MD, Los Angeles, CA
Marc Cohen, MD, Los Angeles, CA
Dinesh K. Chhetri, MD, Los Angeles, CA
Ali Loffizadeh, MD, Los Angeles, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to differentiate between posterior laryngeal granulation tissue that may be conservatively managed from granulation tissue that is at risk of forming interarytenoid adhesions, glottic stenosis or posterior glottic webs.

Objectives: Using serial photomicrographs of cases of glottic granulation tissue in their transformation process into interarytenoid adhesions or posterior glottic webs, the paper will discuss the 1) signs, symptoms, and physical exam findings of laryngeal granulation tissue, webs, and interarytenoid adhesions; and 2) demonstrate the process by which granulation tissue may create interarytenoid adhesions. **Study Design:** Retrospective case reports. **Methods:** Retrospective case reports of patients with postintubation granulation tissue that developed into posterior glottic webs or interarytenoid adhesions. **Results:** A 30 year old male with a history of traumatic brain injury and subsequent hospitalization requiring prolonged intubation and a 23 year old US Army soldier requiring emergent intubation presented to tertiary medical centers with similar symptoms of acute dysphonia, breathy voice, and vocal fatigue. The patients also reported dyspnea on exertion, mild dysphagia, and a foreign body sensation in the throat. Endoscopic examination of the patients revealed granulation tissue overlying the mucosa of the vocal process of the arytenoid. Nonsurgical management (Botox, steroids, anti-reflux medications) were utilized and monitored via serial videoendoscopies. Thus, transformation of the granulation tissue into these other entities was recorded. The successful management of these entities is discussed with a review of the literature on these topics. **Conclusions:** This report emphasizes the importance of serial examination of the patient with posterior glottic granulation tissue to allow for early definitive surgical intervention for interarytenoid adhesions and posterior glottic webs.

W19. Primary Cryptococcal Infection of the Larynx in a Patient with Severe Chronic Obstructive Pulmonary Disease: A Case Report

*Daekeun Joo, MD, Los Angeles, CA
Sunita M. Bhuta, MD, Los Angeles, CA
Dinesh K. Chhetri, MD, Los Angeles, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to become familiar with the presenting signs and symptoms of cryptococcal laryngitis on patient history as well as to recognize both pathologic and laryngeal physical exam findings in this disease.

Objectives: To review the presenting signs and symptoms and the pathologic and laryngeal exam findings of cryptococcal laryngitis in a patient with a unique medical history. **Study Design:** A case report is presented here of an 82 year old female patient with a history of COPD requiring treatment with systemic and inhaled steroid/bronchodilators, who presented with an 8 month history of hoarseness. She had previously been treated at an outside institution with conservative measures; however, her dysphonia persisted. We report a case in a patient with a unique presentation of this disease along with a review of the

present literature. **Methods:** The patient's history revealed a persistent hoarseness without complaints of throat pain, dysphagia, or weight loss. She underwent a videostroboscopic examination, which revealed multiple raised lesions on the false vocal folds and leukoplakic lesions encompassing both true vocal folds. We then performed an office biopsy of these lesions using a flexible transnasal laryngoscope equipped with a biopsy forceps. **Results:** Both the right false vocal fold and left true vocal fold specimens were shown to be cryptococcal laryngitis on pathologic analysis. GMS, PAS-D, mucicarmine and Alcian Blue stains were all confirmatory. **Conclusions:** Cryptococcus neoformans typically manifests as an opportunistic infection in AIDS patients, usually affecting the lung. It is an organism that is found in soil and avian feces. To date there have been eight case reports of primary infection of cryptococcus of the larynx, of which only about half have presented in immunocompromised patients. We report a unique case in a patient that had been immunocompromised through the use of systemic and inhaled steroids.

W20. Office Based Endoscopic Diagnosis of Esophageal Diverticulum

Jennifer L. Long, MD PhD, Los Angeles, CA
Dinesh K. Chhetri, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, participants should be able to identify esophagopharyngeal reflux (EPR), a diagnostic sign of esophageal diverticulum on fiberoptic endoscopic evaluation of swallowing (FEES). FEES videos will be presented.

Objectives: Diagnostic features of esophageal diverticulum were sought and validated through review of endoscopic studies. **Study Design:** Retrospective cohort review. **Methods:** Medical records of 271 consecutive patients undergoing fiberoptic endoscopic evaluation of swallowing (FEES) were reviewed. All patients with esophageal diverticulum were identified (N=11). All patients with pooling in the pyriform sinuses without history of upper aerodigestive tract malignancy were selected as a control cohort (n=37). Video recordings of FEES and transnasal esophagoscopy (TNE) were reviewed for both cohorts. **Results:** Esophageal diverticulum was present in eleven patients; nine were Zenker's type, one was mid-esophageal, and one was lateral. Nine diverticular patients presented to the dysphagia clinic with a prior esophagogram while two were diagnosed with FEES and TNE alone. Six diverticular patients underwent TNE, which identified the diverticulum in all. All patients with diverticulum demonstrated a characteristic FEES finding of food bolus initially disappearing during the swallow then reappearing in the hypopharynx after the swallow. This esophagopharyngeal reflux (EPR) disappeared or diminished after surgical treatment of the diverticulum. EPR occurred during FEES in only one of the 37 control patients; this patient was found on TNE to have a large chronic esophageal perforation. **Conclusions:** Esophagopharyngeal reflux on FEES indicates esophageal diverticulum with high sensitivity and specificity (100% and 97% in this study). TNE then demonstrates the diverticulum or other pathology for surgical planning.

Otology/Plastics-Aesthetics/General

W21. Intraparotid Kikuchi-Fujimoto Disease with Persistence of Disease: A Case Report

Bob B. Armin, MD, Los Angeles, CA
Sunita M. Bhuta, MD, Los Angeles, CA
Claudia Kirsch, MD, Los Angeles, CA
Renee Penn, MD, Los Angeles, CA
Vishad Nabili, MD, Los Angeles, CA
Elliot Abemayor, MD PhD, Los Angeles, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand an uncommon presentation of Kikuchi-Fujimoto disease as an intraparotid gland tumor with persistence of disease.

Objectives: 1) Describe a rare presentation of Kikuchi-Fujimoto disease (KFD) as a parotid gland tumor; and 2) describe an atypical disease course for KFD. **Study Design:** Case report with histopathologic and radiological analysis along with a literature review. **Methods:** A case report with histopathologic and radiological details is described from a university hospital. Background, incidence, disease course, and treatment options are presented through a literature review. **Results:** We present the case of a 25 year old Filipino female, diagnosed with a left parotid mass at age of 9, who underwent a parotidectomy four years later. She had two re-excisions for recurrences. The tumor was reevaluated at the age of 20 in the U.S. with a biopsy of a left neck mass. On pathology, classic findings of extensive necrosis with karyorrhexis and absence of neutrophils were seen. A recent MRI demonstrates a large left parotid mass with extension into the mandibular space, pterygopalatine fossa, and carotid space. She continues to complain of an ipsilateral growing parotid tumor with facial deformity and oropharyngeal discomfort, but without constitutional symptoms. She will undergo rheumatologic evaluation prior to possible future surgical intervention. **Conclusions:** KFD is an uncommon, idiopathic, and generally self-limiting cause of lymphadenopathy. It commonly

presents with cervical lymphadenopathy in Asian females and typically runs a benign course that resolves spontaneously in weeks to months. We present an atypical case with persistence of disease 16 years after initial presentation and involvement of an uncommon site, parotid gland, with only 6 reported cases in the literature. Although treatment is surveillance, in the setting of symptoms and cosmetic deformity as in this case, surgical options may be entertained.

W22. An Auricular Bolster Dressing Using Polyvinylsiloxane (PVS) Impression Material

Davin W. Chark, MD, Irvine, CA

Joseph D. Brunworth, MD, Irvine, CA

Jason H. Kim, MD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the surgical use of a custom fitted, silicone based auricular bolster dressing and understand its effectiveness in various otoplastic procedures.

Objectives: The complex contours of the auricle hinder the placement of routine pressure dressings following otoplastic surgery. Here, we create a custom fitted and durable bolster dressing using polyvinylsiloxane (PVS) impression material to maximize the functional and aesthetic outcomes following stage I microtia repair and auricular hematoma evacuation. **Study Design:** Retrospective analysis of seven patients that underwent the above mentioned technique at a tertiary care institution. **Methods:** In 2008, six patients underwent stage I microtia repair by a single surgeon. In usual fashion, a vacuum system was used to promote skin adherence to the implanted carved cartilage framework. For the bolster, PVS was injected onto the auricular fossae and allowed to solidify and conform for three minutes. A dressing was then applied to secure the fitted bolster. Separately, one patient underwent evacuation of traumatic auricular hematoma. PVS was injected onto the auricular convolutions in a similar manner and sutured to the ear. **Results:** We demonstrated PVS as an effective auricular bolster in two separate otoplastic procedures. Used in stage I microtia repair, desirable aesthetic relief was achieved as the nourishing skin flap was intimately bolstered against the carved cartilage framework. Used as a bolster following evacuation of auricular hematoma, it provided necessary compression to prevent hematoma recurrence in the potential space between perichondrium and underlying cartilage. No complications or allergic reactions to PVS were observed. **Conclusions:** PVS impression material is a silicone based product that molds to the contours of the ear. This property allows it to function as a bolster to decompress potential spaces following various otoplastic procedures.

W23. External Rhinoplasty Columellar Scar Analysis

Vanessa R. Erickson, MD, Stanford, CA

J. David Kriet, MD, Kansas City, KA

Sam P. Most, MD, Stanford, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to assess external rhinoplasty scars using both objective and subjective validated scar assessment scales.

Objectives: To apply validated objective and subjective scar assessment scales to the columellar scar created via an external rhinoplasty approach. **Study Design:** Case series with objective and subjective arms. **Methods:** 103 consecutive external rhinoplasty patients with a minimum followup of 2 months were enrolled. Two neutral, blinded facial plastic surgeons evaluated high resolution photographs of the columellar region using the validated Stony Brook Scar Evaluation Scale (SBSES). The SBSES assessed five scar components: width, height, color, suture marks and overall appearance. Each component was assigned a score of 0 or 1 with a total sum range of 0 (worst) to 5 (best). Patients were given the Patient Scar Assessment Scales (PSAS). Components assessed on the PSAS included scar symptoms and appearance relative to normal skin. **Results:** 58 patients had photographs available for scar analysis. Average followup was 164 days. The raters gave similarly favorable scores (4.05 ± 1.21 and 4.72 ± 0.64 , mean \pm SD, for raters 1 and 2, respectively). Fifteen revision patients had photographs available for analysis compared to 43 primary rhinoplasty patients. There was a statistically significant difference ($p < 0.05$) with primary patients showing more favorable outcomes. 25 patients completed the PSAS. Itemized scores ranged from 1.08 to 1.96 on a scale from 1 to 10. **Conclusions:** Overall objective results are favorable for columellar scar outcomes. Objective scar outcomes are less favorable in revision rhinoplasties compared to primary cases. Subjective patient satisfaction is high regardless of primary or revision status. These data may be used to counsel future patients considering an external rhinoplasty.

W24. Glossopharyngeal Nerve in the Tonsillar Fossa

Steve S. Liou, MD, Oakland, CA

Raymond L. Hilsinger, MD, Oakland, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate that the lingual branch of the glossopharyngeal nerve is at risk during tonsillectomy.

Objectives: To describe a pediatric patient with achondroplasia who demonstrated unusual anatomy during routine extracapsular tonsillectomy and to review the anatomy of the tonsillar fossa. **Study Design:** Case report. **Methods:** Retrospective chart review. **Results:** Intraoperative photodocumentation demonstrates that the lingual branch of the glossopharyngeal nerve was clearly evident in the tonsillar fossa of our patient. Pathologic analysis confirms that dissection was in the extracapsular plane. The literature regarding glossopharyngeal nerve injury in tonsillectomy reveals isolated case reports and few cadaveric studies but no clear in vivo demonstration of this anatomy. **Conclusions:** The lingual branch of the glossopharyngeal nerve may be injured during tonsillectomy, particularly with unusual anatomy as demonstrated in our patient.

W25. Rattlesnake Bite to the Tongue

Kate Elizabeth McCarn, MD, Portland, OR
Brian W. Downs, MD, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the management of envenomation of the head and neck.

Objectives: The purpose of this poster is to present a case of rattlesnake envenomation of the tongue and illustrate the issues that can arise including acute airway compromise and local wound complications. A review of the pathophysiology and treatment of envenomation will assist the otolaryngologist in identifying and preventing life threatening and disabling sequelae. **Study Design:** Case presentation and review of the literature. **Methods:** Case presentation and review of the literature. **Results:** Envenomation of the head and neck is rare in comparison to the extremities. The short and long term consequences can be life threatening and disfiguring. This patient required emergent cricothyrotomy, treatment in the ICU with antivenin and antibiotics and experienced partial necrosis of his lingual frenulum. **Conclusions:** Envenomation of the head and neck can cause many otolaryngologic sequelae that require an understanding of the pathophysiology.

W26. Trigeminal Trophic Syndrome: A Successful Repair with a Paramedian Forehead Flap

Steven R. Mobley, MD, Salt Lake City, UT
Mark W. Willis, MD, Salt Lake City, UT (Presenter)

Educational Objective: At the conclusion of this presentation, the participants should be able to understand a reliable method in the repair of ulceration due to Trigeminal Trophic syndrome.

Objectives: Trigeminal Trophic syndrome is a rare medical condition that results in facial ulceration, often in the alar region, after damage to the trigeminal nerve or its central sensory connections. There are only about 100 published cases in the English literature that are germane to the otolaryngologic and facial plastic care of patients with this rare condition. These patients often present with clinical signs that mimic other granulomatous, neoplastic, vasculitic, or infectious disease processes. We report a case of a patient that was initially a clinical dilemma to workup. Eventually, the successful diagnosis was made with various collegial consultations. **Study Design:** Case report and review of the English literature relevant to this topic. **Methods:** The patient underwent a four stage forehead flap repair involving three stages dedicated to a full thickness alar reconstruction and an additional stage for postoperative vestibular stenosis. **Results:** Following the repair, the patient had a successful aesthetic outcome with close symmetry of both sides of the ala. Furthermore, she reports normal airflow through both nasal passages. **Conclusions:** Trigeminal Trophic syndrome usually presents with persistent facial ulceration that has been a clinical dilemma to repair. To our knowledge, this is the first case report of successful use of a paramedian forehead flap to repair this condition in the English literature.

W27. Exploring the Parametric Space of Tinnitus Suppression in a Patient with a Cochlear Implant

Vanessa S. Rothholtz, MD, Irvine, CA
Qing Tang, BSc, Irvine, CA
Edward C. Wu, BSc BA, Irvine, CA
Esther L. Fine, MD, Irvine, CA
Hamid Djalilian, MD, Irvine, CA
Fan-Gang Zeng, PhD, Irvine, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the potential role of individualized electrical stimulation of the auditory system in the suppression of tinnitus in patients with cochlear implants.

Objectives: Tinnitus is a debilitating condition in which one perceives sound in the absence of external stimuli. Most treatments consist of masking the tinnitus with an external sound that is louder than the tinnitus. We hypothesize that there exists

a characteristic tinnitus signature map in each individual that when found can be utilized to suppress their tinnitus at a level that is significantly softer than the tinnitus itself. **Study Design:** Prospective randomized single blinded study in a unique individual with a unilateral cochlear implant in an ear with persistent tinnitus and normal hearing in the non-implanted ear. **Methods:** Monopolar electrical stimulation at rates from 40 Hz to 10 kHz, stimulation levels from threshold to the tinnitus mixing point, and stimulation placement from apex to base were administered over a time period of 3 to 10 minutes. Successful suppression was defined as the complete elimination of the subject's tinnitus. **Results:** Six out of seventy (8.6%) conditions tested led to complete suppression of the subject's tinnitus while delivering a stimulus that was perceived to be softer than the initial level of the tinnitus. Two main characteristics of the signal were found to be effective. Mapping of the parametric space demonstrated that success in suppressing the subject's tinnitus was achieved with very low rates of stimulation at the most apical electrodes and in stimulation with high rates at basal electrodes that closely matched the subject's tinnitus. **Conclusions:** Tinnitus suppression is a mechanism specific to the individual. Exploring the parametric space of tinnitus suppression with respect to stimulation rate, sound level, and placement gives insight into the potential treatment of an individual's tinnitus. The development of a clinical algorithm to create individualized maps of tinnitus suppression may lead to the successful treatment of tinnitus.

W28. **Vocal Cord Paresis and Dysphagia Caused by Lymphadenitis of Parapharyngeal Space**

Stephen V. Tornabene, MD, Oakland, CA
Barry M. Rasgon, MD, Oakland, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the causes of parapharyngeal space masses and evaluate whether a conservative approach to management is prudent.

Objectives: We present a case of transient cranial nerve deficits secondary to benign lymphadenopathy of the parapharyngeal space. **Study Design:** Case report. **Methods:** The authors conducted a literature review and case report. **Results:** A 24 year old male presented to the otolaryngology clinic with a four week history of swelling behind the angle of the mandible, dysphagia, and hoarseness. Initial physical exam revealed no discrete mass and an enlarged right tonsil. The patient exhibited decreased gag reflex, poor right-sided palate elevation, and right vocal cord paresis by laryngoscopy. An MRI demonstrated a 2.5cm x 3.0 cm x 4.4 cm multiloculated, cystic mass within the right parapharyngeal space. A CT-guided biopsy was nondiagnostic. The patient was managed conservatively. An MRI three months later revealed complete resolution of the parapharyngeal mass and the patient was asymptomatic. **Conclusions:** Rarely acute cranial nerve deficits are caused by lymphadenopathy. Given that most parapharyngeal neoplasms are benign, a period of watchful waiting may be prudent in the management of these masses.

Pediatrics/Sinus-Rhinology

W29. **Airway Management in Nager Syndrome**

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Sheila E. Cohen, MB ChB FRCA, Stanford, CA
Peter J. Koltai, MD, Stanford, CA
Alan G. Cheng, MD, Stanford, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize Nager syndrome, differentiate it from other similar craniofacial syndromes, understand the intrapartum airway management, and describe expectations for childhood development.

Objectives: Nager acrofacial dysostosis is a rare congenital syndrome characterized by malformations of mandibulofacial structures and pre-axial upper limbs. Patients classically present with malar hypoplasia, micro/retrognathia, cleft deformities, ear anomalies, and hypoplastic thumbs. The combination of trismus and glossoptosis predisposes these infants to life threatening respiratory distress after birth. **Study Design:** A mother with Nager syndrome delivering a similarly afflicted fetus is presented, with approaches to maintaining both tenuous airways described. Postpartum care and development are also described. **Methods:** The mother presented at 34 5/7 weeks gestation with preterm rupture of membranes. Her fetal ultrasound identified findings consistent with Nager syndrome. Evaluation was attempted by direct laryngoscopy. Spine instrumentation made spinal and epidural anesthesia attempts unsuccessful. Intubation was ultimately made via fiberoptic intubation. The infant was delivered via C-section. **Results:** The mother's retropharyngeal area appeared scarred and distorted, the palate was foreshortened, and a vertical band was observed connecting the hard palate to the posterior oropharynx. Direct laryngoscopy could not adequately visualize the larynx. General anesthesia was ultimately induced after fiberoptic intubation. The delivered infant was found to be progressively apneic and cyanotic. After multiple attempts at intubation, an emergency tracheotomy was performed. The patient was successfully discharged while under the care of a multidisciplinary team, requiring mandibular distraction and gastrostomy tube placement. **Conclusions:** Nager syndrome patients warrant meticulous airway management during delivery,

including the possibility of emergent tracheostomy. Once the patient is stabilized, a multidisciplinary team involving neonatology, otolaryngology, audiology, plastic surgery, hand surgery, and genetics is best suited to care for this challenging disorder.

W30. Multidisciplinary Approach to Management of Silent Sinus Syndrome

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Robert A. Weisman, MD*, La Jolla, CA
Donald O. Kikkawa, MD, La Jolla, CA
Mahmood Mafee, MD, San Diego, CA*

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the clinical and radiographic features of silent sinus syndrome and understand its pathophysiology. Participants should also be able to discuss the anatomical variations in sinus and orbital anatomy encountered in the surgical treatment of this condition and explain the advantages of a multidisciplinary or team approach.

Objectives: To report the results of a multidisciplinary approach to silent sinus syndrome, a rare entity with both ophthalmologic and rhinologic manifestations. **Study Design:** Retrospective, interventional case series. **Methods:** The records of all patients with silent sinus syndrome treated at a tertiary medical center in the last three years were reviewed. Inclusion required imaging demonstrating maxillary sinus atelectasis and orbital floor resorption. Data collected included age, gender, findings during endoscopic sinus surgery, measurement of eyelid and globe position, and presence of diplopia on alternate cover testing. **Results:** Five patients were male and one patient was female with a mean age of 42.5 years. Four patients presented initially with ophthalmologic complaints (ptosis or diplopia) and two patients presented with complaints of sinusitis. All 6 patients had a deep superior eyelid sulcus on the affected side with a mean enophthalmos of 2.7mm. All patients underwent endoscopic maxillary sinus surgery with creation of a large antrostomy, and orbital floor reconstruction using either porous polyethylene implants or autologous bone grafting in a staged or concurrent fashion. The uncinate process was uniformly found to be lateralized. All patients experienced improvement of hypoglobus and globe position as measured by exophthalmometry. One patient developed transient hypesthesia of the midface. **Conclusions:** Silent sinus syndrome is rare and may present with either ophthalmologic or rhinologic symptoms. Recognition of the ocular adnexal changes and characteristic findings on imaging are essential in making this diagnosis. Treatment should be multidisciplinary and may involve concurrent or staged maxillary sinus surgery and orbital floor reconstruction.

W31. Traumatic Neuroma of the Trigeminal Nerve at the Foramen Ovale

*Andrew Dean Kroeker, BS, Portland, OR
Jane Weissman, MD, Portland, OR
Steve Cannady, MD, Portland, OR
Mark K. Wax, MD, Portland, OR*

Educational Objective: At the conclusion of this presentation, the participants should be able to use established and newly described diagnostic criteria to assist in the diagnosis of traumatic neuromas within the head and neck. These characteristics will help to compare these benign clinical entities to local recurrence or perineural spread of malignant disease in the context of a recent cancer diagnosis.

Objectives: Traumatic neuromas are formed through a nonneoplastic, proliferative process following injury to a nerve. Accurate diagnosis of these benign lesions is important in order to avoid potentially morbid surgery. When they occur in the context of a previously treated carcinoma one must rule out recurrence. This report describes a unique case of a traumatic neuroma found within the foramen ovale involving the mandibular nerve. The objective of this presentation is to characterize these lesions radiographically and differentiate them from neoplastic growths. **Study Design:** Case report and review of the literature regarding etiology, diagnosis and treatment of traumatic neuromas. **Methods:** Chart review of a woman that underwent extensive resection of the mandible and maxilla for squamous cell carcinoma. Review included five years of CT and MR images. A systematic review of the literature to identify published radiographic criteria of traumatic neuromas within the head and neck was completed. **Results:** MR imaging characteristics specific to traumatic neuromas are described. Important information garnered from gadolinium-enhanced MR include its ability to detect abnormal enhancement of nerves before the nerves are enlarged and infiltration of the normal fat that surrounds nerves as they exit the skull base. Based on the timeline of this patient's presentation and the radiographic characteristics of the MR images over time, a retrospective diagnosis of traumatic neuroma could be made. **Conclusions:** Characterization of neuromas with MR imaging provides a radiographic framework to evaluate this condition.

W32. The Effect of Smoking on Disease Presentation in Chronic Rhinosinusitis

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Jamie R. Litvack, MD MS, Portland, OR
Timothy L. Smith, MD MPH*, Portland, OR

Educational Objective: At the conclusion of this presentation, the participants should be able to compare and contrast smokers and nonsmokers with chronic rhinosinusitis at presentation.

Objectives: Smoking interferes with nasal mucociliary function; this may lead to mycostasis and inflammation of the sinuses. However, studies evaluating the effect of smoking on chronic rhinosinusitis (CRS) and outcomes of sinus surgery have demonstrated inconsistent results. The purpose of this study is to compare the presentation of illness and disease severity of CRS in smoking and nonsmoking patients. **Study Design:** Prospective matched cohort study with cross-sectional analysis. **Methods:** Thirty-four smoking patients with CRS were matched by age and gender with 34 nonsmoking patients with CRS. Patients were compared by multiple measures of disease severity including computed tomography score, endoscopy score, and olfactory score. Disease specific and general health related quality of life (QOL) measures were also analyzed. McNemar's exact test, paired t-tests and linear regression methods were performed with correction for multiple comparisons using Bonferroni's adjustment. **Results:** Smoking patients reported worse QOL as measured by both disease specific and general health related QOL measures. Smokers reported worse QOL on the physical subscale of the Rhinosinusitis Disability Index ($p=0.014$) and physical functioning domain of the Medical Short Form-36 ($p=0.010$). However, when demographic and comorbidity data were examined, smoking patients were 9.5 times more likely to have a low household income (95%CI: 2.3-84.1; $p=0.003$). After adjustment for income, QOL differences were no longer significant. **Conclusions:** Objective and QOL measures of CRS did not differ between smoking and nonsmoking patients after adjustment for income differences. Adjustments for socioeconomic differences should be considered when comparing these two patient populations.

W33. Transnasal Endoscopic Approach for a Pterygopalatine Fossa Schwannoma

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Arthur W. Wu, MD, Los Angeles, CA
Sunita M. Bhuta, 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 demonstrate the role of transnasal endoscopic surgery for select lesions of the pterygopalatine fossa.

Objectives: Tumors of the pterygopalatine fossa are traditionally resected via open approaches such as a Caldwell-Luc. The purpose of the study is to describe the successful use of the transnasal endoscopic approach for a pterygopalatine fossa schwannoma. The advantages and limitations of this technique are discussed. **Study Design:** Case report. **Methods:** Pre- and postoperative imaging, surgical techniques, and pathology are reviewed. **Results:** Magnetic resonance imaging demonstrated a 2.7 x 1.3 cm mass centered in the right pterygopalatine fossa extending anteriorly into the maxillary sinus. This pterygopalatine fossa mass was resected entirely via a transnasal endoscopic approach. Microscopic examination revealed a predominance of Antoni A areas with focal areas of Antoni B consistent with a schwannoma. **Conclusions:** Tumors of pterygopalatine fossa can be a diagnostic and treatment challenge. Schwannomas should be included in the differential diagnosis, especially in patients with a history of neurofibromatosis. The endoscopic transnasal approach appears to be an effective, minimally invasive method for complete resection of select tumors of the pterygopalatine fossa.

W34. Endoscopic Surgery of Sellar and Suprasellar Tumors

Marilene B. Wang, MD*, Los Angeles, CA
Marvin M. Bergsneider, MD, Los Angeles, CA
Neil A. Martin, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) describe the technique of transnasal endoscopic surgery of the sella and suprasellar region; 2) discuss advantages and disadvantages of the technique, potential complications, and operative results; and 3) describe the management of patients' postoperative sinonasal sequelae.

Objectives: Transnasal endoscopic surgery of the sella and suprasellar region has been increasingly utilized by skull base surgeons. A dual surgeon approach, with an otolaryngologist and neurosurgeon operating together, provides excellent visualization and operative maneuverability. We describe our experience with this method, including operative techniques, complications, and sinonasal sequelae. **Study Design:** Retrospective case review. **Methods:** Medical records for patients who underwent transnasal endoscopic surgery for sellar and suprasellar lesions were examined. Pre- and postoperative imaging, video-graphic records, and pathology were reviewed. Patients filled out the Sino-Nasal Outcomes Test (SNOT 20) survey after sur-

gery, describing their postoperative nasal symptoms. **Results:** Tumor pathology in patients who underwent transnasal endoscopic surgery for sellar and suprasellar lesions included pituitary adenomas, a pituitary cyst, meningiomas, and a hypothalamic lesion. Complete tumor removal was achieved in nearly all patients. The incidence of diabetes insipidus postoperatively was rare. The incidence of CSF leak was less than 10%. Most patients were discharged from the hospital in 3-4 days. Sinonasal complaints were frequent in the first few months, but gradually diminished over time. **Conclusions:** Transnasal endoscopic surgery of the sella and suprasellar region of the anterior skull base provides superior visualization and exposure, allowing complete extirpation of tumor. A dual surgeon technique allows maximal maneuverability of instruments within the operative field. A multilayered repair of the sellar defect decreases the risk of CSF leak. Postoperative care of the sinonasal cavity is a critical part of a patient's successful recovery.
