

**SOUTHERN SECTION PROGRAM  
JANUARY 12-14, 2006  
THE REGISTRY, NAPLES, FLORIDA**

**THURSDAY, JANUARY 12, 2006**

4:00 pm - Speaker Ready Room - Sunset I  
8:00 pm

5:00 pm - Registration - Foyer  
8:00 pm

6:00 pm - Exhibit Hall Open - Crystal IV-V  
7:30 pm

6:00 pm - WELCOME RECEPTION - CRYSTAL IV-V  
7:30 pm

**FRIDAY, JANUARY 13, 2006**

7:00 - Registration - Crystal Foyer  
12:30

7:00 - Speaker Ready Room - Sunset I  
5:00

7:00 - BUSINESS MEETING (MEMBERS ONLY) - SUNSET II-IV  
7:45

7:00 - Exhibit Hall Open - Crystal IV-V  
12:30

7:00 - Continental Breakfast with Exhibitors - Crystal IV-V  
7:50

8:00 - Spouse Hospitality - Sunset II-IV  
11:00

8:00 - SCIENTIFIC SESSIONS - Crystal I-III  
12:30

8:00 **Welcome and Introduction of President, Stanley M. Shapshay, MD\*, New York, NY**  
Fred D. Owens, MD\*, Dallas, TX

8:05 **Presidential Address, Stanley M. Shapshay, MD\*, New York, NY**

8:15 **Introduction of Guests and Honorees**  
Fred D. Owens, MD\*, Dallas, TX

**Guests of Honor**

*William C. Morgan, MD\*, Charleston, WV*

*Philip M. Sprinkle, MD\*, Martinsville, VA*

**Honored Guest**

*Mrs. Lloyd (Ethel) Storrs, Lubbock, TX*

**Vice Presidential Citation Awardees**

*Gale Gardner, MD\*, Memphis, TN*

*John W. Youngblood, MD\*, Austin, TX*

*Melton Horwitz, MD, Houston, TX*

*Juan Andrade Pradillo, MD, Mexico City, Mexico*

**MODERATORS: ROBERT H. MILLER, MD\*, HOUSTON, TX  
PAUL R. LAMBERT, MD\*, CHARLESTON, SC**

8:40 **Implementing ACGME General Competencies in Otolaryngology Residency Training Programs**

Brian S. Jewett, MD, Miami, FL

David J. Terris, MD\*, Augusta, GA

Donald T. Weed, MD\*, Miami, FL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the ACGME Outcome Project and the associated six general competencies. Participants should also be able to illustrate implementation of these learning objectives in otolaryngology residency programs and discuss the potential future impact of these ACGME requirements.

**OBJECTIVES:** The Outcome Project is an initiative of the ACGME (Accreditation Council of Graduate Medical Education) that places increased emphasis on educational outcome assessment as related to six general competencies, including: patient care, medical knowledge, professionalism, communication skills, system based practice, and problem based learning. Programs are required to identify dependable, objective methods of assessing residents' attainment of competency based learning objectives, and programs should use outcome data to facilitate continuous improvement in resident and program performance. We sought to evaluate the degree of implementation of these requirements in otolaryngology residency programs. **STUDY DESIGN:** Scientific review. **METHODS:** All program directors were surveyed to determine their

methods for assessing residents' attainment of competency based learning objectives. In addition, a single institutional analysis was performed to determine faculty and resident knowledge of the general competencies, as well as their level of comfort in explaining, implementing, or assessing these competencies. **RESULTS:** A summary of the national survey results detailing the current methods that are being used by programs to assess learning of competency based objectives will be presented. In addition, single institutional analysis revealed that 77% of residents and 33% faculty were not aware of the general competencies. None of the residents or faculty could list all six general competencies; however, the majority could identify some or all of the competencies from a list. At least 66% of faculty and 85% of residents did not feel comfortable explaining, implementing, or measuring the systems based practice competency. At least 77% of residents and 50% of faculty did not feel comfortable measuring the remaining general competencies. **CONCLUSIONS:** We have identified a significant knowledge gap in the understanding of these competencies as well as several challenges that remain in the implementation of validated measurement tools.

**8:48 Discussion/Q&A**

**8:53 PANEL: COMPELLING ISSUES IN THE SOCIOECONOMICS OF OTOLARYNGOLOGY**

**Moderator:** Lee Eisenberg, MD, Englewood, NJ

**Panellists:** C. Ron Cannon, MD\*, Jackson, MS

Richard W. Waguespack, MD\*, Birmingham, AL

**Topics:** *Manpower and the need for otolaryngologists in the future - does geography matter?*

*Understanding the CPT and RUC - what is required to get new CPT codes and how are they valued?*

*CMS payment to physicians - what does the future hold?*

**9:40 Discussion/Q&A**

**OTOLOGY SECTION**

**MODERATORS: DAVID M. KAYLIE, MD, NASHVILLE, TN**

**PATRICK J. ANTONELLI, MD\*, GAINESVILLE, FL**

**9:48 Stapedial Decapitation Technique: As a Management Procedure for Stapedial Otosclerosis**

Mohamed Yahia El-Kotb, MD, Mansoura, DK Egypt

Mohamed Mostafa Abdel Tawwab, MD, Mansoura, DK Egypt

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to compare that the effectiveness and safety of both techniques are the same with advantage of decapitation technique of providing the same hearing results, saving time and preserving the stapedial tendon in comparison with the small fenestra stapedotomy.

**OBJECTIVES:** The aim of this study is to compare between two surgical maneuvers in the management of stapedial type of otosclerosis, small fenestra stapedotomy and decapitation procedure as a new technique. **STUDY DESIGN:** Prospective study. **METHODS:** Included 21 consenting patients, 9 males and 12 females subjected to small fenestra stapedotomy operation and 22 consenting patients, 10 males and 12 females operated upon by decapitation technique. **RESULTS:** Hearing sensitivity and air bone gap of the two groups before and after operations were analyzed. The mean hearing threshold level (500-4000Hz) of preoperative versus postoperative was compared. There was no significant statistical difference between the two techniques used in this study for both improvement of the hearing threshold and air bone gap closure after operations. **CONCLUSIONS:** The effectiveness and safety of both techniques are the same with advantage of decapitation technique of providing the same hearing results, saving time and preserving the stapedial tendon in comparison with the small fenestra stapedotomy technique.

**9:56 Lateral Tympanoplasty for Total or Near Total Perforation**

Jessica L. Kulak, BS, Miami, FL

Simon I. Angeli, MD, Miami, FL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the indications and surgical technique of lateral tympanoplasty surgery and recognize and treat associated complications.

**OBJECTIVES:** To assess the success rate and complications of the lateral technique tympanoplasty for total or near total tympanic membrane perforation. **STUDY DESIGN:** Prospective case series. **METHODS:** Patients presenting with total tympanic membrane perforation who underwent a lateral tympanoplasty from 1997 to 2005. All patients underwent primary or revision tympanoplasty with canaloplasty alone or in combination with mastoidectomy. We collected information regarding demographics, diagnosis (chronic otitis media or cholesteatoma), middle ear mucosa status, ossicular chain, success of graft take, length of follow-up, and specific complications related to the ear canal, tympanic membrane, middle ear, and hearing. **RESULTS:** Sixty-six patients with average follow-up of 17 months and at least 6 months follow-up. The tympanic membrane graft take was 94%. Average air bone gap was 30 dB preoperatively and 17 dB postoperatively. In 76% of cases there was an improvement of the conductive hearing loss of at least 10 dB. Postoperative complications included ear canal epithelitis in 6 cases, epithelial inclusion cyst in 4, tympanic membrane blunting in 3, tympanic membrane atelectasis in 3, and ear canal-eardrum synechia in 1. There were no cases of worsening of sensorineural hearing loss. There were 40 cases of tympanoplasty alone, 21 cases in combination with canal wall up mastoidectomy, and 5 with canal wall down mastoidectomy. **CONCLUSIONS:** The lateral technique tympanoplasty with fascia graft is effective for reconstruction of total perforations. Canaloplasty is indicated for adequate reconstruction of the anterior membrane canal angle but carries a risk of postoperative ear canal complications.

**10:04 Transcanal Suture Guided Approach to Tympanic Membrane Repair in an Animal Model**

Robert T. Deal, MD, Augusta, GA

Mitchell B. Austin, MD, Augusta, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be familiarized with a new approach at closing select tympanic membrane perforations.

**OBJECTIVES:** To assess a novel approach to repair of selected tympanic membrane (TM) perforations using a minimally invasive suture guided technique for placement of prefabricated graft materials. **STUDY DESIGN:** Randomized blinded controlled animal study. **METHODS:** 8 adult chinchillas had uniform central experimental perforations by placement of tympanostomy tubes bilaterally. At 4 weeks the tubes were removed and the perforations repaired. One ear was repaired with a new suture guided acellular dermis/gelatin film patch, with the contralateral ear repaired with a simple gelatin film overlay. Repair technique was randomized by random number generator. At 6 weeks the animals were sacrificed. The repairs were examined grossly via otomicroscopy by a blinded observer. The TM's were then harvested and sent for histopathologic evaluation which was performed by a blinded pathologist. **RESULTS:** Successful TM repair occurred in 7/8 in both experimental and control groups. The successful experimental patches had gross vascular ingrowth into incorporated AlloDerm. Pathology results were similar between control and experimental by presence of keratin deposition, inflammation, and fibrosis. 2 experimental ears had granulomatous change associated with absorbable gelatin sponge. **CONCLUSIONS:** This new technique provides a safe and effective approach to repair of selected TM perforations.

#### 10:12 VVOR—A Diagnostic Tool for Migraine Vestibulopathy

Moises A. Arriaga, MD, New Orleans, LA  
Douglas A. Chen, MD, Pittsburgh, PA  
Rebecca Y. Arriaga, New Orleans, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to 1) understand VVOR (visually enhanced vestibular ocular reflex) testing; and 2) explain the value of VVOR testing in diagnosing migraine vestibulopathy.

**OBJECTIVES:** 1) To compare the incidence of elevated VVOR rotational testing in a normal control group versus a group of patients diagnosed with migraine vestibulopathy; and 2) to discuss the possible application of VVOR in diagnosing migraine vestibulopathy. **STUDY DESIGN:** Prospective control and retrospective cohort comparison. **METHODS:** 1) Prospective rotational chair studies including VVOR in 20 normal controls; and 2) retrospective review of vestibular studies including VVOR in 100 consecutive patients diagnosed with migraine vestibulopathy. **RESULTS:** 1) 20 of the normal controls and 69 of the migraine vestibulopathy patients met all inclusion criteria; 2) 1/20 (5%) of normal control patients had elevated VVOR gain while 49/69 (71%) of migraine vestibulopathy patients had elevated VVOR gain. **CONCLUSIONS:** VVOR gain normal criteria were appropriate in 95% of our normal control test group. VVOR gain was elevated significantly more frequently in migraine patients than in the normal controls. VVOR gain elevation was the most common vestibular test abnormality in this cohort of patients with migraine vestibulopathy. Since VVOR measures visual vestibular interaction and its central connections, this parameter may be a useful diagnostic tool for migraine vestibulopathy. Further study is justified.

#### 10:20 Discussion/Q&A

#### 10:25 Break/Poster Viewing/Visit with Exhibitors - Crystal IV-V & Foyer

**MODERATORS: DEBARA L. TUCCI, MD\*, DURHAM, NC  
DENNIS G. PAPPAS JR., MD\*, BIRMINGHAM, AL**

#### 10:53 John E. Bordley Resident Research Award

**Radiographic Classification of Temporal Bone Fractures: Clinical Predictability Using a New System**  
Stewart C. Little, MD, Charlottesville, VA (*Resident Travel Award*)  
Bradley W. Kesser, MD, Charlottesville, VA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe the traditional classification of temporal bone fractures as well as a new system based on violation of the otic capsule. Participants should also be able to enumerate the clinical sequelae of temporal bone fractures and stratify these complications based on otic capsule involvement. Participants should recognize that this newer system is more clinically relevant and predictive of complications of temporal bone fractures.

**OBJECTIVES:** To compare the traditional system of radiographic classification of temporal bone fractures (transverse vs. longitudinal vs. oblique) to a newer system (otic capsule violating vs. sparing) in their ability to predict sequelae of temporal bone trauma. **STUDY DESIGN:** Retrospective case review of clinical records and CT scans from an academic tertiary care hospital from years 2000-2003. **METHODS:** Temporal bone fractures were classified according to each system. Complications of temporal bone fractures (sensorineural hearing loss, conductive hearing loss, CSF leak, facial nerve weakness, and vertigo) were recorded. The two classification schemes were statistically analyzed and compared in their ability to predict each complication. **RESULTS:** A total of 234 temporal bone fractures were identified and reviewed. 30 cases met our strict criteria for inclusion. The traditional classification system of temporal bone fractures did not significantly predict temporal bone complications. On the other hand, the otic capsule based system did demonstrate statistically significant predictive ability. Patients with otic capsule violating fractures were 5 times more likely to have facial nerve injury, 25 times more likely to have sensorineural hearing loss, and eight times more likely to have csf otorrhea than those with otic capsule sparing fractures. **CONCLUSIONS:** The traditional radiographic classification system failed to demonstrate clinical predictive ability in our series. Furthermore, the newer system of classification (otic capsule sparing vs. otic capsule violating) demonstrated statistically significant predictive ability for serious clinical outcomes associated with temporal bone fractures.

#### 11:01 Role of Angiography in the Management of Patients With Temporal Bone Fractures

Khwaja A. Ahmed, MD, Memphis, TN (*Resident Travel Award*)  
David Alison, Memphis, TN  
Wesley S. Whatley, MD, Memphis, TN  
Rakesh K. Chandra, MD, Memphis, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the role of angiography in the diagnostic algorithm of managing neurocranial injuries in patients with temporal bone fractures.

**OBJECTIVES:** To study the utility of angiograms in the evaluation of patients with temporal bone fractures. **STUDY DESIGN:** Retrospective case control study. **METHODS:** Review of 64 patients with temporal bone fractures over a one year interval at a level I trauma center. Records were reviewed for patient demographics, mechanism of injury, type of fracture, incidence of neurocranial injuries by head CT, and angiography findings. Outcome measures included need for operative versus conservative management and patient mortality. **RESULTS:** Ninety-one percent of the patients were male, with a mean age of 35.3 years. The most common mechanisms of injury were motor vehicle accidents (47%) followed by assault (23%). Fracture patterns included classic longitudinal in 20%, classic transverse in 14%, mixed/oblique in 46%, and comminuted in 20% of patients. Overall 24 patients underwent angiography, which was abnormal in 9 (38%) cases. The most common abnormalities noted were pseudoaneurysm, followed by carotid dissection and vasospasm. Mortality was lowest (0%) when CT was negative for intracranial injury. Angiogram was not done in these patients. Among patients with intracranial abnormalities on CT, those with normal angiography did well (mortality 7%). Mortality was significantly higher, however, in patients who did not undergo angiography (36%, p=0.02), even though their management was as aggressive and their injuries were as severe as patients with abnormal angiograms. **CONCLUSIONS:** The current guidelines for angiography may need to be expanded to include all patients with CT evidence of neurocranial injury in order to detect vascular injuries that might be managed aggressively in an effort to decrease overall mortality.

#### 11:09 Fluorescent Retrograde Axonal Tracing of the Facial Nerve

Matthew R. O'Malley, MD, Nashville, TN  
Justin E. Wittkopf, MD, Nashville, TN  
Troy A. Hackett, PhD, Nashville, TN  
David S. Haynes, MD, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to appreciate the utility of in vivo fluorescence techniques when applied to surgical dissection and gain an understanding of the use of intramuscularly administered retrograde tracers.

**OBJECTIVES:** The application of in vivo fluorescence to aid surgical dissection remains an area of active investigation with substantial clinical significance. Transgenic animals expressing fluorescence in their peripheral nervous system have demonstrated the utility of in vivo fluorescence, though the clinical utility of transgenic tech-

niques remains limited. In this study, we seek to develop a reliable method to generate fluorescence in the axons of peripheral motor neurons of the facial nerve by intramuscular injection of a retrograde tracer into the facial musculature. **STUDY DESIGN:** Prospective animal study in the New Zealand White Rabbit animal model. **METHODS:** Neural tracers consisting of Cholera Toxin B subunit conjugated to fluorescent dyes were injected intramuscularly into the facial muscles of New Zealand White Rabbits. At variable time points following injection (6, 12, 24, 48, 72, 96, 120 hours), the facial nerves were removed and analyzed for fluorescence in the axon. **RESULTS:** Fourteen rabbits underwent injection. All injected animals demonstrated substantial axonal fluorescence. Retrograde propagation of fluorescence occurred at a rate of 6mm per day. As the time from injection to harvest increased, fluorescence occurred at a greater distance from the site of injection. Beyond 96 hours, the propagation of fluorescence became less predictable. **CONCLUSIONS:** Cholera Toxin B subunit tracers, when administered intramuscularly, provide reliable retrograde fluorescence in the facial nerve. These tracers may help facilitate surgical dissection when applied in vivo.

**11:17 Presentation and Management of Facial Nerve Schwannomas**

Alessandro de Alarcon, MD, Charlottesville, VA  
Joe C. Colclasure, MD, Charlottesville, VA  
Clifford D. Phillips, MD, Charlottesville, VA  
Bradley W. Kesser, MD, Charlottesville, VA  
George T. Hashisaki, MD\*, Charlottesville, VA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to recognize the presenting signs and symptoms of facial nerve schwannomas and management strategies for treating these rare lesions.

**OBJECTIVES:** To review the presentation and management of facial nerve schwannomas at a university hospital. **STUDY DESIGN:** Retrospective chart review of patients with facial nerve schwannomas treated at a university hospital. **METHODS:** Patients with facial nerve schwannomas were identified through a retrospective search of radiographic records from 1996 to 2005 using keyword "facial nerve". Patients with facial nerve tumors were identified, and those with facial nerve schwannoma were separated and reviewed for demographic data, operative notes, imaging reports, audiologic data, and facial nerve function. **RESULTS:** Ten patients with facial nerve schwannomas were identified. Clinical presentation included facial paresis, otalgia, conductive hearing loss, sensorineural hearing loss, tinnitus, and palpable mass. Tumor was located at the geniculate ganglion (5), internal auditory canal (4), tympanic segment (4), vertical segment (4), cerebellopontine angle (3), and extratemporal segment (3) (7 tumors spanned multiple sites). Seven patients (average preoperative House-Brackmann score V/VI) underwent surgical resection; three patients (average House-Brackmann score II/VI) were observed, with an average follow-up of 3 years. Tumor location and hearing status dictated surgical approach. Six patients required sacrifice of the nerve; four patients were reconstructed at the time of operation with great auricular nerve cable grafts, and two patients had delayed XII-VII anastomoses. Average postoperative House-Brackmann score was V/VI. **CONCLUSIONS:** Facial nerve schwannomas are rare tumors. Management is dictated by multiple factors including preoperative House-Brackmann grade and hearing. Surgery is recommended when facial function is House-Brackmann grade IV-V or worse. Surgical approach is dictated by location of lesion and hearing status. Observation is recommended for patients with good facial function.

**11:25 Discussion/Q&A**

**11:30 PANEL: PRACTICAL OTOTOLOGY**

**Moderator:** Robert M. Owens, MD, Dallas, TX  
**Panelists:** Moises Arriaga, MD, New Orleans, LA  
J. Douglas Green, Jr., Jacksonville, FL  
David S. Haynes, MD, Nashville, TN  
Craig A. Buchman, MD\*, Chapel Hill, NC

**12:15 Discussion/Q&A**

**12:20 Announcements & Adjournment**

**1:00 Golf and Tennis Tournaments**

**6:00 - MEET THE AUTHORS POSTER RECEPTION - FOYER**

**7:30**

**SATURDAY JANUARY 14, 2006**

**7:00 - Registration - Crystal Foyer East**  
**12:00**

**7:00 - Speaker Ready Room - Sunset I**  
**12:00**

**7:00 - BUSINESS MEETING (MEMBERS ONLY) - SUNSET II-IV**  
**7:50**

**7:00 - Exhibit Hall Open - Crystal IV-V**  
**12:00**

**7:15 - Continental Breakfast with Exhibitors - Crystal IV-V**  
**8:00**

**8:00 - Spouse Hospitality - Sunset II-IV**  
**11:00**

**8:00 - SCIENTIFIC SESSIONS - Crystal I-III**  
**1:00**

**8:00 Announcements and Recognition of Poster Awards**  
Fred D. Owens, MD\*, Dallas, TX

**HEAD & NECK SECTION**  
**MODERATORS: DONALD T. WEED, MD\*, MIAMI, FL**  
**F. CHRISTOPHER HOLSINGER, MD, HOUSTON, TX**

**8:06 The Unknown Primary Carcinoma of the Head and Neck**  
Frank R. Miller, MD, San Antonio, TX  
Randal A. Otto, MD\*, San Antonio, TX

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe the value of the PET scan in the work-up of the unknown primary of the head and neck.

**OBJECTIVES:** To assess the clinical utility and predictive value of a negative positron emission tomography (PET) in the unknown primary carcinoma of the head and neck region. **STUDY DESIGN:** Prospective case series at an academic medical center. **METHODS:** A cohort of 31 patients with a fine needle aspiration biopsy confirmed squamous cell carcinoma of the cervical region were prospectively entered into a protocol to identify the occult primary tumor. The standard evaluation protocol included a comprehensive head and neck examination (including flexible laryngoscopy), computed tomography and/or magnetic resonance imaging, and PET imaging followed by panendoscopy with selected biopsies and tonsillectomy. The accuracy of the PET to predict the presence of an occult tumor at initial staging and to predict the subsequent development of a primary tumor in the upper aerodigestive tract during follow-up. **RESULTS:** The PET detected 9 occult primary tumors at initial staging in the 31 patients (detection rate, 29%). Five occult primary tumors (2 base of tongue and 3 palatine tonsils) were detected during panendoscopy despite a negative PET. The combination of PET and panendoscopy detected 45.2% of the unknown primary tumors. Seventeen patients (N1=7, N2A=4, N2B=2, N3=4) had no primary tumor detected and were treated as an unknown primary carcinoma with primary neck dissection +/- radiation +/- chemotherapy. In this group of 17 patients there were 3 neck recurrences (17.6%). In addition only one patient developed a primary tumor (5.8%) of the upper aerodigestive tract with a mean follow-up of 26.4 months (range 16 to 60 months). **CONCLUSIONS:** 1) A negative PET does not preclude the need for careful panendoscopy with biopsy to detect the occult primary tumor; 2) the risk of subsequent primary tumor appears to be low in the patient with a negative PET and negative panendoscopy (<10%); and 3) the risk of regional neck recurrence is elevated in patients with extracapsular spread and post-operative radiation is recommended. Treatment recommendations will be discussed.

**8:14 G. Slaughter Fitz-Hugh Resident Research Award**  
**The Role of Positron Emission Tomography (PET) in the Management of the N-positive Neck in Head and Neck Squamous Cell Carcinoma After Chemoradiotherapy**  
Victoria S. Brkovich, MD, San Antonio, TX (*Resident Travel Award*)  
Frank R. Miller, MD, San Antonio, TX  
Anand B. Karnad, MD, San Antonio, TX  
David H. Hussey, MD, San Antonio, TX  
H. Stan McGuff, DDS, San Antonio, TX  
Randal A. Otto, MD\*, San Antonio, TX

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe the role of the PET scan in predicting residual squamous cell carcinoma in the cervical lymph nodes after chemoradiotherapy.

**OBJECTIVES:** To determine the sensitivity/specificity and predictive value of PET imaging in patients who have undergone curative radiotherapy/chemoradiotherapy for squamous cell carcinoma (SCC) of the upper aerodigestive tract. **STUDY DESIGN:** Prospective case series of patients (2004-2005) undergoing radiotherapy and chemoradiotherapy for advanced head and neck SCC. **METHODS:** The study entry criteria included N-positive neck disease, a complete response to treatment at the primary tumor site, a post-treatment PET study (6-8 weeks after completion of therapy), and a post-treatment salvage neck dissection. The pathologic findings from the neck dissection were compared to the PET scan findings. The sensitivity, specificity, and predictive value of the PET scan to predict residual cervical metastatic disease was calculated. **RESULTS:** Twenty neck dissections (pre-treatment N1=5, N2A=2, N2B=7, N3=6) were entered into the protocol. Three (15.0%) of the twenty neck specimens were positive for residual cervical metastatic disease while four (20%) demonstrated nonviable necrotic carcinoma. The remaining 13 specimens demonstrated no residual tumor. The overall sensitivity and specificity were 66.6% and 58.8%, respectively. The positive predictive value was 25% and the negative predictive value was 91.7%. **CONCLUSIONS:** While the role of the post-treatment neck dissection remains controversial, the surgeon must rely on a combination of clinical examination and imaging studies. Our practice has been to perform a planned staged neck dissection on all N2/N3 necks as well as N1 necks with an incomplete response to treatment. Based on this small prospective study it appears that PET imaging lacks adequate sensitivity and specificity to reliably predict the presence of residual metastatic disease after treatment.

**8:22 Thyroid Surgery: Changing Patterns of Practice**

David J. Terris, MD\*, Augusta, GA  
Nora A. Siupsinskiene, MD, Augusta, GA  
Melanie W. Seybt, MD, Augusta, GA  
Christine G. Gourin, MD, Augusta, GA  
Edward A. Chin, MD, Augusta, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to recognize the trends in disciplines performing thyroid surgery.

**OBJECTIVES:** The past 10 years have seen substantial evolution in the practice of thyroidectomy (including the introduction of minimally invasive surgery, laryngeal nerve monitoring, and outpatient surgery). We sought to investigate recent trends in the disciplines performing thyroid surgery. **STUDY DESIGN:** Retrospective case controlled comparison of surgical volumes and systematic analysis of publication volumes. **METHODS:** Two surrogates for the proportion of thyroidectomies being performed by otolaryngologists (OTO) and general surgeons (GS) were chosen: 1) the operative case logs of graduates from American training programs in OTO and GS from 1995 through 2004 were compared; 2) the number of scientific articles published relating to thyroid surgery were systematically queried for two timeframes (1990-1994 and 2000-2004); the discipline and region of origin were assigned. **RESULTS:** There was a gradual increase in the average number of thyroidectomy procedures performed by graduating GS residents from  $13.2 \pm 7.0$  in 1995 to  $18.2 \pm 10.0$  in 2004. During the same timeframe, the average number of thyroid procedures performed by OTO residents more than doubled from 15.0 to 33.5. This difference was statistically significant. The number of American OTO thyroid publications increased from 14 during the period 1990 to 1994 to 49 during the period 2000 to 2004, an increase of 250%. During the same timeframe, the number of GS articles increased from 79 to 98, respectively (a 24% increase). The relative proportion authored by otolaryngologists grew by a statistically significant amount from 15.1% to 33.3%. **CONCLUSIONS:** A clear trend is emerging in the pattern of thyroid surgery, in that a greater proportion of publications are being authored by otolaryngologists relative to general surgeons, and the average number of procedures performed by graduating chief residents is now 84% higher in otolaryngology compared to general surgery.

### **8:30 Electrophysiological Monitoring of the Spinal Accessory Nerve During Modified Radical Neck Dissection With Clinical Outcome Measures of "Shoulder Syndrome"**

Robert L. Witt, MD\*, Wilmington, DE  
Theresa A. Gillis, MD, Newark, DE  
Robert E. Pratt, MA D ABNM, Bala Cynwyd, PA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to assess the feasibility and merit of electrophysiological monitoring of the spinal accessory nerve during neck dissection and appreciate the correlation with clinical outcome.

**OBJECTIVES:** To determine 1) the feasibility of electrophysiologically monitoring of the spinal accessory nerve (SAN) during modified radical neck dissection; 2) if a threshold increase in current is required to stimulate the SAN comparing current on initial identification of the SAN and after completion of the dissection prior to closure; and 3) if clinical outcome measures of "shoulder syndrome" are impacted by a threshold increase. **STUDY DESIGN:** Prospective study of 11 consecutive patients receiving modified (zone 1-5) radical neck dissection by one surgeon at one institution. Selective and radical neck dissections were excluded. **METHODS:** Electrophysiological recording of current on initial identification of the SAN was compared to the current recorded at the completion of the procedure. Clinical correlation measured parameters of "shoulder syndrome" (shrug, flexion, abduction, winging, and pain) at 72 hours and 45 days. **RESULTS:** 2 of 11 (18%) patients had significant threshold increases ( $>0.4$  mAmp) on completion of the dissection. 9 of 11 (82%) had less than 0.1 mAmp increases. 8 of 11 patients completed a "shoulder syndrome" evaluation at 72 hours and 45 days. 3 of 8 (38%) had  $<90$  degrees of shoulder abduction, scapular winging, and significant pain on 45 day follow-up. 2 of 3 patients with "shoulder syndrome" had no threshold increase on electrophysiological monitoring. 1 of 2 patients with electrophysiological threshold increase did not have "shoulder syndrome". **CONCLUSIONS:** A threshold increase was not identified in over 80% of patients. Electrophysiological integrity of the SAN did not correlate with clinical outcome measures for "shoulder syndrome".

### **8:38 Discussion/Q&A**

### **8:46 Pretreatment, Preoperative Swallowing Exercises Improves Dysphagia Quality of Life: Dysphagia Protocol**

Brian D. Kulbersh, MD, Birmingham, AL  
Ryan D. Duncan, MD, Birmingham, AL  
J. Scott Magnuson, MD, Birmingham, AL  
Nancy L. McCollough, CCC-SLP, Birmingham, AL  
Benjamin M. McGrew, MD, Birmingham, AL  
E. Brooke Wilkinson, BS, Birmingham, AL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the efficacy of pretreatment as opposed to post-treatment speech and swallowing therapy.

**OBJECTIVES:** Dysphagia is one of the most common and cumbersome morbidities associated with head and neck cancer treatment. Previous dysphagia management strategies have focused on post-treatment therapy. This study evaluated the utility of pretreatment swallowing exercises in improving patient quality of life (QOL) undergoing medical treatment of head and neck cancer. **STUDY DESIGN:** Retrospective chart review and cross-sectional analysis of quality of life. **METHODS:** A total of 37 patients underwent primary radiation or chemoradiation treatment between 1998 and 2005 for hypopharyngeal, laryngeal or oropharyngeal previously untreated primary tumors. There were 25 patients who were started on a protocol of swallowing exercises 2 weeks prior to the start of radiation. The M.D. Anderson Dysphagia Inventory (MDADI) was administered an average of 14 months post-treatment to assess the success of the protocol. Analysis of QOL scores related to concurrent chemotherapy, post-XRT neck dissection, PEG placement, gender, primary site, and stage were obtained. **RESULTS:** Patients who received pretreatment counseling (n=25) showed improvement in the overall MDADI score ( $p=0.0056$ ) compared to the control population (n=12) who underwent post-treatment therapy. Furthermore, subset analysis of all four domains of the MDADI (global, emotional, functional, and physical) demonstrated improved quality of life. Although primary site did predict QOL in this study, other variables such as PEG tube placement or concurrent chemotherapy did not demonstrate significant differences. **CONCLUSIONS:** Implementation of pretreatment swallowing education and exercise improves dysphagia specific QOL in head and neck cancer patients undergoing radiation and/or chemoradiation therapy.

### **8:54 Laboratory Versus Home Polysomnography: A Metaanalysis**

Mark D. Ghegan, MD, Charleston, SC (*Resident Travel Award*)  
Patrick C. Angelos, BS, Charleston, SC  
Angela C. Stonebraker, MD, Charleston, SC  
M. Boyd Gillespie, MD, Charleston, SC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the strengths and weaknesses of home sleep studies compared to laboratory in the evaluation of sleep-disordered breathing.

**OBJECTIVES:** To compare the accuracy of home sleep studies to laboratory polysomnography in the evaluation of obstructive sleep apnea (OSA). **STUDY DESIGN:** Metaanalysis. **METHODS:** Eligible studies included prospective cohort studies comparing the respiratory disturbance index (RDI) of home sleep studies to that of labo-

ratory polysomnography in the same patients undergoing evaluation for sleep disordered breathing. A total of 11 papers were identified in two independent Medline searches. Home sleep studies and laboratory polysomnography were also compared for differences in mean low oxygen saturation, sleep time, percentage of inadequate studies, and average cost per examination. **RESULTS:** RDI values on home sleep studies were 6% lower on average compared to laboratory studies (odds ratio [OR] 0.94; 95% confidence interval [CI] 0.86-1.01), indicating a strong nonsignificant trend toward lower RDI values on home studies. There was no significant difference in the mean low oxygen saturation on home versus laboratory studies (OR 1.0; 95% CI 0.79-1.30). Recorded sleep time was significantly higher by 13% for home compared to laboratory studies (OR 1.13; 95% CI 1.09-1.18), however home studies were significantly more likely to give a poor recording when compared to laboratory exams ( $p=0.0001$ ). The cost of home studies ranged from 35 to 78% lower than laboratory studies across a number of countries. **CONCLUSIONS:** Home sleep studies provide similar diagnostic information to laboratory polysomnograms in the evaluation of sleep disordered breathing. The lower cost of home sleep studies make it a viable screening tool for patients with suspected OSA, however these lower costs are partially offset by the higher rate of inadequate exams.

#### **9:02 Utility of PET-CT in Identification of Residual Nodal Disease Following Chemoradiation for Advanced Head and Neck Cancer**

Christine G. Gourin, MD, Augusta, GA  
Wesley N. Seabolt, MS, Augusta, GA (Presenter)  
Hadyn T. Williams, MD, Augusta, GA  
Beverly Y. Wang, MD, Augusta, GA  
David J. Terris, MD\*, Augusta, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the limitations of PET-CT in detection of occult residual nodal metastatic disease in head and neck squamous cell cancer patients treated with chemoradiation.

**OBJECTIVES:** Planned neck dissection following primary chemoradiation (CR) is often advocated in patients with head and neck squamous cell cancer (HNSCC) with advanced nodal disease who demonstrate a complete response to CR because identification of residual occult nodal disease is difficult. We sought to investigate the utility of PET-CT in identifying patients with occult nodal disease following CR. **STUDY DESIGN:** Nonrandomized retrospective cohort analysis. **METHODS:** The medical records of all patients treated with primary CR for advanced HNSCC with N2 or N3 disease from December 2003—June 2005 were reviewed. Patients with a complete clinical response were eligible for inclusion if PET-CT performed at 6-8 weeks after CR showed no evidence of distant disease and they were treated with a planned neck dissection. **RESULTS:** Ten patients were identified who met study criteria. PET-CT was positive for residual nodal disease in 7 patients (70%) with an SUV range of 2.8-3.8; 2 of these patients had pathologically positive nodal disease. Pathologic examination revealed residual carcinoma in 3 patients (30%), 2 of who had a positive PET-CT. Pathologic nodal disease was present in 1 of 3 patients with negative PET-CT scans. The sensitivity and specificity of PET-CT in predicting occult nodal disease was 66.7% and 28.6%, respectively. There was no significant correlation between PET-CT findings and histological findings ( $P=1.0$ ). **CONCLUSIONS:** A significant proportion of HNSCC patients with advanced neck disease harbor residual occult metastases following CR. PET-CT is not adequately specific or sensitive enough to reliably predict the need for post-treatment neck dissection.

#### **9:10 Discussion/Q&A**

#### **9:16 Ultrasound Guided (UTZ) Guided Laser Interstitial Thermal Ablation of Head and Neck Cancer**

Michael Bublik, MD, Miami, FL (*Resident Travel Award*)  
Marcos B. Paiva, MD PhD, Los Angeles, CA  
Michael Masternan-Smith, MS, Los Angeles, CA  
Amir A. Eshraghi, MD, Miami, FL  
Daniel J. Castro, MD\*, Los Angeles, CA  
Joel A. Sercarz, MD, Los Angeles, CA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the value of intraoperative ultrasound guided procedures for thermal ablation of recurrent head and neck cancer.

**OBJECTIVES:** Laser interstitial thermal therapy (LITT) for cancer is a technique whereby a source of energy (laser, radiofrequency, ultrasonic, cryoenergy, etc.) is directly applied into tumors at various depths. Recent studies have demonstrated the efficiency of ultrasound (UTZ) and magnetic resonance imaging (MRI) for real and/or "near" real time tumor and vessel identification as well as monitoring and quantifying energy induced tissue damage. The objective of this study was to report the use of UTZ monitoring of Nd:YAG laser thermal ablation of head and neck tumors in a phase II study. **STUDY DESIGN:** Clinical setting. **METHODS:** Forty seven patients with a total of 55 recurrent neck tumors were treated on an outpatient basis in the operating room using a Ultramark 7 UTZ equipment for image guided laser interstitial thermal therapy. Laser energy was delivered through a SLT Nd:AYG laser powered at 30 watts (energy density: 2,200 J/cm<sup>2</sup>) **RESULTS:** Most patients tolerated these procedures well and were successfully palliated where smaller slow growing tumors and more differentiated tumors were palliated successfully with a better local therapy response rate than poorly differentiated and rapidly dividing malignancies. Thirteen patients had complete response ranging from 3—47 months (mean 12.48 months). Patient tumor size, individual treatment analysis and final outcome are further discussed. **CONCLUSIONS:** LITT ablation of head and neck tumors was considered safe and feasible. No intraoperative adverse medical reactions were seen. Further development of this technique applying laser energy delivery to mathematical imaging models should lead to more effective tumor palliation as an alternative to surgery.

#### **9:24 EMMPRIN Overexpression in Head and Neck Squamous Cell Carcinoma Promotes In Vivo Tumor Growth**

D. Macy Vidrine, MD, Birmingham, AL  
Wayne P. Zhang, MS, Birmingham, AL  
Donald J. Buchsbaum, PhD, Birmingham, AL  
Eben L. Rosenthal, MD, Birmingham, AL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss potential molecular targets in the treatment of head and neck squamous cell carcinoma.

**OBJECTIVES:** Tumor cell derived EMMPRIN (extracellular matrix metalloproteinase inducer) stimulates tumor cells and fibroblasts to produce matrix metalloproteinases (MMPs) within the tumor microenvironment and is overexpressed in a variety of human carcinomas, including head and neck squamous cell carcinoma (HNSCC). EMMPRIN stimulation of fibroblasts may play an important role in tumor cell growth. **STUDY DESIGN:** Head and neck squamous cell carcinoma (HNSCC) cell line CAL 27 was xenografted into SCID mice. **METHODS:** Human CAL 27 HNSCC cells were transfected with EMMPRIN cDNA or a control vector. Once overexpression of the active protein was confirmed, two sets of experiments were conducted. CAL 27 cells with EMMPRIN or the control vector were xenografted into SCID mice and assessed biweekly for tumor growth. To determine if EMMPRIN acted by stimulation of fibroblasts, EMMPRIN transfected cells and control vector cells were co-injected with normal dermal fibroblasts (NDFs). **RESULTS:** EMMPRIN transfected CAL 27 cells had an increased tumor formation rate and generated larger tumors compared to control vector transfected cells ( $p=0.17$ ). When EMMPRIN transfected cells were co-injected with NDFs there was a significant increase in tumor size compared to control vector transfected cells with NDFs ( $p=0.0038$ ). **CONCLUSIONS:** We propose that expression of EMMPRIN by malignant epithelial cells promotes tumor cell growth in vivo by stimulating fibroblasts.

#### **9:32 Nasopharyngeal Carcinoma in Young Patients: An Outcomes Study and Meta-Analysis of Racial Demographics**

Trinitia Y. Cannon, MD, Chapel Hill, NC (*Resident Travel Award*)  
Adam M. Zanation, MD, Chapel Hill, NC  
Victor L. Lai, BS, Stony Brook, NY  
Mark C. Weissler, MD\*, Chapel Hill, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to 1) define NPC; 2) understand the WHO classification; 3) understand the relationship b/w NPC and the EBV; and 4) understand that the racial demographics of the disease is changing.

**OBJECTIVES:** To evaluate patients 25 years of age or younger who were treated for nasopharyngeal carcinoma. **STUDY DESIGN:** Retrospective review, meta-analysis. **METHODS:** Nasopharyngeal carcinoma (NPC) is rare in the western world. In people under the age of 30 it is even less common with an incidence of 1-2 per million. This retrospective study was designed to analyze the outcomes of patients 25 years of age or younger who were treated for NPC at a tertiary care academic medical center. Between November 1982 and December 2004, 15 patients meeting the above criteria were treated at our institution. These patients form the basis for this report. In addition a meta-analysis of all NPC trials published in the United States since 1990 was done and the results compared with our cohort. **RESULTS:** Young African Americans represented 67% of the cases seen at our institution and between 55% and 67% of the patients in the US. With a mean follow-up of 303 weeks, disease free survival and overall survival were 67% and 87%, respectively. Locoregional control was excellent following treatment with cisplatin based combination chemoradiotherapy; however, 4 (27%) patients developed distant metastasis. Despite this, no patients died of disease. Toxicity was significant but manageable and retreatment met with good success. **CONCLUSIONS:** In patients age 25 or younger, NPC is more common in African Americans. Late stage presentations and distant recurrences are common. Platinum based combination chemoradiotherapy and aggressive management of metastatic disease, however, is associated with good long-term survival.

9:40 Discussion/Q&A

9:46 Break/Visit with Exhibitors/View Posters - Crystal IV-V & Foyer

**PEDIATRIC SECTION**  
**MODERATORS: JOSEPH K. HAN, MD, CHARLOTTESVILLE, VA**  
**RAMZI YOUNIS, MD, MIAMI, FL**

10:15 **Demographics of Pediatric Head and Neck Infections in a Tertiary Care Hospital**

John M. Schweinfurth, MD, Jackson, MS

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss potential patterns and influences in the epidemiology of infectious disease of the head and neck.

**OBJECTIVES:** To investigate patterns in the epidemiology of severe head and neck infections that may reflect the impact of host factors. **STUDY DESIGN:** Population based, historical cohort study. **METHODS:** Information on 1,010 incident head and neck infections occurring over a 5 year period was reviewed for demographics, location, and time of year. A nonparametric Kruskal-Wallis test was used to identify significant differences in the age distributions among the diagnosis groups. A Bonferroni, pairwise comparison procedure was used for comparison of the average age of first onset of severe head and neck infections. Chi-square test was used to identify any significant association between season of the year and disease. **RESULTS:** Significant differences were identified in the age distributions among the diagnosis groups ( $p < 0.001$ ). The average age of first onset of cellulitis of the neck and retropharyngeal abscess is earlier than peritonsillar abscess at 2-3 years and 13 years, respectively. Parapharyngeal and periapical abscesses and cellulitis of the face occur around age 6. The incidence of parapharyngeal abscess and diseases of the pharynx is decreased during spring while peritonsillar abscesses and acute periodontitis occurs more often in spring and summer. Age does not appear to be related to season of first occurrence. **CONCLUSIONS:** Head and neck infections are not random occurrences based on exposure alone; host factors are clearly important. Given the lack of correlation with school age, the results cannot be explained on the basis of exposure alone. The aggregation and migration of sensitized T cell lymphocytes may be responsible for the progression in site incidence of severe infections of the head and neck with age. Patterns identified in the present study are cause for further investigation.

10:23 **Pediatric Airway Consultation Survey in a Tertiary Care Children's Hospital: An Interobserver Analysis**

Iman Naseri, MD, Atlanta, GA  
Steven E. Sobol, MD MSc, Atlanta, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to 1) learn by comparing the different types of "noisy breathing" characteristics and extrapolate a more focused differential diagnosis given various airway consultation scenarios; 2) discuss possible areas that may need educational intervention within their institution; and 3) become more familiar with the assessment patterns of consulting physicians regarding pediatric airway consultations.

**OBJECTIVES:** To determine the accuracy of pediatricians and otolaryngology residents in the initial assessment of pediatric airway problems. **STUDY DESIGN:** Prospective interobserver analysis. **METHODS:** A prospective study designed to independently observe the initial opinion of the consulting PGY-2 resident (pediatric), the corresponding consulting attending (general pediatric or pediatric emergency medicine) physician and the consultant otolaryngology PGY-2 resident when assessing patients for "noisy breathing". Each was asked to define the type of noisy breathing present (i.e., stridor, stertor) and to formulate a diagnosis based on a limited set of choices (i.e., subglottic stenosis, laryngomalacia). The final diagnosis was determined by the consultant otolaryngology attending when the diagnostic assessment was complete. The positive predictive values for characterization of breath sounds and diagnosis were determined using a regression analysis with a 95% confidence rate. **RESULTS:** The positive predictive values for characterization of breath sounds for the consulting resident, consulting attending and otolaryngology resident were 35.3%, 25.4%, and 96.5% respectively. The positive predictive values for the determination of diagnosis were 65.2%, 59.8%, and 94.1%, respectively. **CONCLUSIONS:** The highest agreement between observed and final results within both criteria was seen with the otolaryngology resident (96.5% for breath sound character and 94.1% for final diagnosis). The accuracy of the consulting resident was higher than the attending physician in terms of both characterization and final diagnosis.

10:31 **Cricotracheal Resection With Posterior Cricoid Grafting for Concurrent Posterior Glottic and Subglottic Stenosis**

David R. White, MD, Charleston, SC  
Shyan Vijayasekaran, FRACS, Cincinnati, OH  
Michael J. Rutter, FRACS, Cincinnati, OH  
Robin T. Cotton, MD\*, Cincinnati, OH

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain treatment strategies for combined posterior glottic and subglottic stenosis.

**OBJECTIVES:** Posterior glottic stenosis (PGS) and subglottic stenosis (SGS) are occasionally seen as concurrent lesions. High grade (Myer-Cotton grade III and IV) subglottic stenosis is successfully treated greater than 90% of the time with partial cricotracheal resection (CTR). Treatment of severe forms of PGS, however, generally requires surgical expansion of the posterior glottis with a posterior cricoid split (PCS) and posterior cartilage grafting (PCG), which is typically avoided during CTR due to fear of destabilizing the larynx at the anastomotic site. In complicated airway stenoses, however, the combination of these approaches may allow the surgeon to successfully treat both lesions with a single open procedure. We report our experience in sixteen patients who have undergone CTR with PCS or PCG. **STUDY DESIGN:**

Retrospective case review at a tertiary children's hospital. **METHODS:** After obtaining IRB approval, charts of the sixteen patients who underwent CTR with PCS or PCG were reviewed. Data including age, sex, decannulation status, number of procedures required, and complications were reviewed. **RESULTS:** Fourteen of sixteen (88%) patients who underwent CTR with PCG or PCS are presently decannulated. Ten patients (68%) required only one open operation to achieve decannulation. Two post-operative wound infections and one unilateral true vocal cord paralysis were noted as complications. **CONCLUSIONS:** Concurrent PGS and high grade SGS present a combination of lesions that are difficult to treat, traditionally requiring at least two separate procedures. Extended CTR with posterior cricoid expansion is successful in limiting the number of open procedures required for decannulation.

#### 10:39 Discussion/Q&A

### SINONASAL SECTION

#### 10:42 Radiology and Endoscopic Findings of Silent Maxillary Sinus Atelectasis

Frank W. Virgin, BA, Augusta, GA  
Francis T.K. Ling, MD, Augusta, GA  
Stilianos E. Kountakis, MD PhD\*, Augusta, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to: 1) review the clinical presentation of silent sinus syndrome; 2) understand the endoscopic findings of silent sinus syndrome; and 3) review the management of silent sinus syndrome.

**OBJECTIVES:** Maxillary atelectasis with enophthalmos is a rare condition often referred to as silent sinus syndrome (SSS). The objective of this study is to discuss the presentation and surgical management of patients presenting with this disorder. **STUDY DESIGN:** Retrospective analysis of prospectively collected data of patients with maxillary sinus opacification and associated enophthalmos from 1999-2001. **METHODS:** Patients were evaluated based on physical examination, nasal endoscopy and CT findings. **RESULTS:** Sixty-four patients were identified with unilateral maxillary sinus opacification. Of these, seven had radiographic evidence of maxillary sinus volume reduction (incidence 11%). Five of these seven patients had maxillary sinus atelectasis with enophthalmos (incidence 8%), the components constituting SSS. The average age of the patients was 42 years (range 22-65). None of the patients had any history of nasal trauma or developmental defects prior to presentation. All 5 patients with SSS had uncinate retraction on nasal endoscopy. Uncinate retraction was not seen in the two patients without SSS (chi squared=7, p=0.008). All 7 patients with maxillary opacification were treated with endoscopic sinus surgery with resolution of their maxillary sinus obstruction at 2 years follow-up. Only one of 5 patients with SSS requested orbital floor reconstruction performed by ophthalmology with resolution of enophthalmos. **CONCLUSIONS:** All patients with SSS had evidence of uncinate process retraction on nasal endoscopy, while patients without SSS did not, and the difference was statistically significant. Surgical treatment is the mainstay of therapy for this syndrome with resolution of maxillary opacification at 2 years follow-up.

#### 10:50 Transnasal Endoscopic Surgery of the Pituitary Gland: Lessons Learned in 10 Years

Joseph L. Smith, II, MD, Syracuse, NY  
Gerard S. Rodziewicz, MD, Syracuse, NY  
Richard T. Kelley, MD, Syracuse, NY

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss transnasal endoscopic surgery of the pituitary gland. They should be able to compare different endoscopic approaches for this procedure, explain anatomical variations that would favor one approach over another, and discuss the limitations and potential complications of the procedure.

**OBJECTIVES:** A 10 year retrospective review of the endoscopic approach by the authors for pituitary gland surgery is presented. We will identify and explain changes in our surgical approach over time, review our results, and outline the process we use to individualize the approach based on nasal and sinus anatomical variations. **STUDY DESIGN:** A retrospective chart review. **METHODS:** A chart review and examination of CT and MRI scans of patients who have had endoscopic pituitary surgery by the authors was performed. Specific details of the nasal anatomy, tumor location, operative approach, required ancillary nasal procedures, and postoperative complications are presented. **RESULTS:** Ninety patients were identified. Operative reports were available for 82. Radiologic studies were found for 75. There was a progression from an endoscopic transseptal to a bilateral transosteal to a unilateral transosteal approach. In the subpopulation of patients who had previously undergone an open transseptal approach and subsequently required a second pituitary surgery, all indicated a preference for the endoscopic approach. Septal deflections based on radiologic studies were noted in 43 (61%) of the patients of which 28 (34%) affected the surgery. Abnormalities of the turbinates were found in 46 (61%) with 25 (30%) affecting surgery. Anatomic variances of the sphenoid sinus were identified in 59 (79%) of the patients, 25 (30%) of these affected surgery. A majority, 52 (63%), of the patients had anatomic factors that influenced the sidedness of the approach or required ancillary nasal procedures. Of the 82 procedures performed 4 (4.9%) required further craniotomies secondary to suprasellar tumor extension. One postoperative cerebral spinal fluid leak occurred, requiring an operative closure of a cerebral spinal fluid leak. One postoperative hemorrhage occurred requiring emergent evacuation of an operative bed hematoma. Two patients had new, temporary postoperative visual field cuts that resolved completely. **CONCLUSIONS:** Endoscopic surgery of the pituitary gland has been utilized exclusively for 10 years. Modifications have been made as operator experience and technological advances have occurred. A unilateral transosteal approach is effective and currently used. Abnormalities of the septum and turbinates sometimes necessitated ancillary procedures to allow for the endoscopic approach.

#### 10:58 Objective Measurement of "Maximal Medical Therapy" Duration in Chronic Sinusitis

Marc G. Dubin, MD, Baltimore, MD  
Frederick A. Kuhn, MD\*, Savannah, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to demonstrate that "maximal medical therapy" is advocated in the treatment of chronic sinusitis before surgical intervention is considered. He/she should be able to objectively document the radiographic improvement that occurs in the middle and at the end of a six week course of antibiotic therapy in patients with proven chronic sinusitis. Ultimately, the participants should be able to assess the possible benefit of a longer course of antibiotics over a more limited three week treatment period.

**OBJECTIVES:** "Maximal medical therapy" is poorly defined in chronic sinusitis treatment. To better determine the appropriate length of "maximal therapy", computed tomography (CT) scans were evaluated after three and six weeks of antibiotics in chronic sinusitis patients. **STUDY DESIGN:** Retrospective review. **METHODS:** 41 patients with confirmed chronic sinusitis (disease on initial CT and appropriate symptom duration) were placed on six weeks of antibiotics. If possible, culture directed antibiotics were used, otherwise clindamycin was used empirically. A CT was performed after three and six weeks of therapy. CT's were then retrospectively graded by the Lund-Mackay (LM) staging system. **RESULTS:** 19/41 patients had all three CT scans and completed all six weeks of antibiotics. 3/41 completed only three weeks of antibiotics and 19/41 did not obtain the three week CT. Of the patients who completed all six weeks of antibiotics and had all three CT scans, 16/19 began the trial with a LM score of greater than five. Seven of these sixteen radiographically improved at three weeks (LM less than five). Of the remaining 9/16 who were not significantly improved at three weeks (LM still greater than five), 2/9 improved after six weeks of antibiotics (LM less than 5). Overall, there were seven patients who had additional radiographic improvement between weeks three and six with a 0.26 mean reduction of initial LM score. **CONCLUSIONS:** There are patients who improve and radiographically clear disease with six instead of three weeks of antibiotics. Therefore, "maximal medical therapy" for chronic sinusitis may require six weeks of antibiotics to ensure maximal benefit.

#### 11:06 Functional Endoscopic Sinus Surgery for the Excision of Juvenile Nasopharyngeal Angiofibromas

Mark A. Checcone, MD, Miami, FL (*Resident Travel Award*)  
Soham Roy, MD, Miami, FL  
Roy R. Casiano, MD\*, Miami, FL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the role for functional endoscopic sinus surgery in the treatment of small to moderately sized nasopharyngeal angiofibromas.

**OBJECTIVES:** Classic treatment for juvenile nasopharyngeal angiofibroma (JNA) has included open surgery and/or radiotherapy. Associated with this treatment is a known set of complications and morbidities. Newer endoscopic techniques show promising results particularly for smaller to moderately sized angiofibromas with less morbidity. The purpose of this study is to report the efficacy of endoscopic excision of JNA at our institution. **STUDY DESIGN:** Retrospective review of data from April 1998 to April 2004 was performed. **METHODS:** Six patients diagnosed with JNA were reviewed. All patients received endoscopic resections by the same surgeon at a tertiary care referral center. The staging, average surgical blood loss, hospital stay, postsurgical packing, preoperative embolization, residual and/or recurrent tumor were evaluated. The patients were staged using the Radkowski staging system. **RESULTS:** Patients were all male aged 12 to 34 years old. Tumors were staged as IA in one patient (16.7%), IIA in one patient (16.7%), and IIB in four of the six (66.7%) remaining patients. Embolization was performed preoperatively in three of the six patients (50%). Estimated blood loss averaged 1250cc in the whole group and 590cc in the embolized group. No residual disease was found in postoperative pathological evaluation, and to date no recurrences have occurred. **CONCLUSIONS:** Our results support endoscopic resection of JNA for small to moderately sized tumors. The benefit of transnasal endoscopic surgery includes minimal perioperative complications, complete excision without residual, and short hospital stay. Embolization procedures have been reported to be associated with decreased intraoperative blood loss, but our study could not confirm this correlation.

#### 11:14 Discussion/Q&A

### LARYNGEAL & BRONCHESOPHAGEAL SECTION MODERATORS: MICHAEL M. JOHNS, MD, ATLANTA, GA JUDITH C. MCCAFFREY, MD\*, TAMPA, FL

11:21 *Lester A. Brown Resident Research Award*  
**Coordination of Swallowing and Respiration in Normal Sequential Swallowing**  
Thomas S. Dozier, MD, Charleston, SC (*Resident Travel Award*)  
Bonnie Martin-Harris, PhD, Charleston, SC  
Martin B. Brodsky, MA, Charleston, SC  
Yvonne Michel, PhD, Charleston, SC  
Bobby C. Walters, Jr., MD, Charleston, SC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe normal patterns of breathing and swallowing during sequential swallowing in healthy adults.

**OBJECTIVES:** To establish normative data on laryngeal vestibular closure mechanics and respiratory phase patterns during sequential swallowing in healthy adults. **STUDY DESIGN:** Cross-sectional study. **METHODS:** Combined videofluoroscopic and respiratory phase recordings were analyzed in 70 healthy adults during a 50ml sequential liquid swallowing task. The following dependent variables were measured offline from the digitized recordings: 1) number of swallows, 2) number of ingestion cycles (IC) (period of sustained apnea including one or more swallows), 3) opening of the laryngeal vestibule after each swallow, and 4) respiratory phase surrounding each ingestion cycle. Patients were grouped according to the position of the larynx after each swallow. **RESULTS:** The mean number of swallows was 4.35, and the mean number of ICs was 3.28. Laryngeal vestibular opening following IC was categorized into three groups: Always Open = 67%, Mixed (Open and Closed) = 31%, Closed Only = 2%. Statistical differences were not found in laryngeal opening pattern by age or gender, but the Always Open group had fewer swallows (4.02 vs. 5.23, p=0.008) and greater number of ICs (3.62 vs. 2.41, p=0.001) than the Mixed Group. Respiratory phase following IC was expiration (EX) in 79% and inspiration (IN) in 21%. **CONCLUSIONS:** Normal patterns of laryngeal vestibular closure and respiratory phase coordination during sequential swallowing have been described for the first time. The high occurrence of inspiration and laryngeal vestibular opening that surrounds sequential liquid swallows when compared to previous findings in single, discrete swallows may place patients with swallowing disorders at greater risk during this task.

11:29 **Differentiation of Adductor Type Spasmodic Dysphonia From Muscle Tension Dysphonia by Spectral Analysis**  
Catherine J. Rees, MD, Winston Salem, NC  
Stacey L. Halum, MD, Winston Salem, NC  
P. David Blalock, MA, Winston Salem, NC  
E. Shannon Kemp, MS, Winston Salem, NC  
Jamie A. Koufman, MD\*, Winston Salem, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the clinical challenges in diagnosing adductor type spasmodic dysphonia, especially when there is supraglottic contraction. The participants should be able to identify specific characteristics of adductor type spasmodic dysphonia on spectral analysis as compared to muscle tension dysphonia.

**OBJECTIVES:** Sometimes it is difficult to differentiate adductor type spasmodic dysphonia (AdSD) from (functional) muscle tension dysphonia (MTD), particularly when on laryngeal examination there is marked supraglottic contraction. The purpose of this study was to investigate the diagnostic accuracy of spectral analysis to differentiate the two conditions. **STUDY DESIGN:** This study was a retrospective, single blinded, two observer analysis of spectrography data from 10 AdSD patients and 10 MTD patients. The spectral findings that are characteristic of AdSD are: 1) voice breaks, 2) irregular wide-spaced vertical striations, 3) some high frequency noise, and 4) intact formants. In contrast, MTD is characterized by: 1) no abrupt voice breaks, 2) excessive high frequency spectral noise, and 3) obliteration of formants. **METHODS:** The acoustical records and charts of the study subjects were reviewed for diagnosis and treatment outcome; and the spectrograms from each then were independently evaluated by two experienced, spectral analysis trained, blinded speech language pathologists (SLP). Each SLP independently diagnosed (AdSD or MTD) in study subjects by spectral criteria alone, and those results were compared to the clinical diagnoses. **RESULTS:** Diagnosis made with spectral analysis agreed with the clinical diagnosis in 95% of cases, and the inter-rater reliability between the two SLPs was 100%. Spectral analysis was able to reliably differentiate AdSD from MTD. **CONCLUSIONS:** Spectral analysis is very useful for differentiating adductor type spasmodic dysphonia from functional muscle tension dysphonia.

11:37 **Pharyngeal Swallow Biomechanics: Hyoid Bone and Laryngeal Movement Dependent Upon Presence of a Tracheotomy Tube**  
Alyssa R. Terk, MD, New Haven, CT (*Resident Travel Award*)  
Steven B. Leder, PhD, New Haven, CT  
Morton I. Burrell, MD, New Haven, CT

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the lack of objective evidence that the presence of a tracheotomy tube as well as cuff and tube capping status have any effect on the movement of the hyoid bone and larynx during swallowing.

**OBJECTIVES:** The literature dealing with pharyngeal swallow biomechanics and presence of a tracheotomy tube has been based on conjecture and speculation. There has been no objective research, to date, on hyoid bone or laryngeal movement dependent upon presence of a tracheotomy tube. This study investigated the biomechanical effects, if any, of a tracheotomy tube on hyoid bone and laryngeal movement during swallowing. In addition, tube cuff status, tube capping status, and aspiration status were investigated. **STUDY DESIGN:** Prospective study at one institution. **METHODS:** Videofluoroscopic swallow studies (VFSS) were performed prospectively on seven adult participants. Data were recorded digitally at 30 frames/sec. for analysis. Three 5 cc liquid bolus swallows were performed under three randomized conditions: tracheotomy tube in and open with inflated cuff; tracheotomy tube in and capped with deflated cuff, and tracheotomy tube out (decannulated). Two frames were identified for analysis from each swallow. The first frame captured the bolus in the “hold” position in the oral cavity with the hyoid bone and larynx at rest. The second frame captured the hyoid bone and larynx at maximum displacement during the swallow. **RESULTS:** No significant differences were found for either maximum hyoid displacement or larynx to hyoid approximation during swallowing based upon tracheotomy tube presence, tube cuff status, or tube capping status. No aspiration occurred under any condition. **CONCLUSIONS:** For the first time with objective videofluoroscopic data, it was shown that presence of a tracheotomy tube did not alter significantly pharyngeal swallow biomechanics. The hypothesis that a tracheotomy tube alters pharyngeal swallow biomechanics by anchoring the larynx, and thereby increasing aspiration risk during swallowing, is not supported.

**11:45 Unsedated, Office Based Treatment of Reinke’s Edema (Polypoid Degeneration) with the Pulsed Dye Laser: A Preliminary Report**

Jamie A. Koufman, MD\*, Winston Salem, NC  
S. Carter Wright, Jr., MD, Winston Salem, NC (Presenter)

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the treatment options for Reinke’s edema and understand the newest treatment modalities.

**OBJECTIVES:** The pulsed dye laser (PDL) has been reported to be of benefit in treatment of vascular lesions and certain laryngeal growths such as papillomas; but heretofore, it has not been reported to be effective in treating seemingly avascular lesions such as Reinke’s edema (aka polypoid degeneration, polypoid corditis). Reported is a new and exciting PDL application, namely, unsedated, office based treatment of Reinke’s edema. **STUDY DESIGN:** A retrospective review of four Reinke’s edema cases treated by PDL with dramatic results—including a detailed description of the authors’ surgical technique (and the expected post-operative trajectory of patients undergoing such PDL treatment—constitutes the essence of this report. **METHODS:** Medical records, laryngeal photographs, and acoustical data from the study patients were reviewed and are presented. **RESULTS:** All of the patients herein reported: 1) tolerated their PDL procedures without any discomfort, bleeding, or airway problems during or after their procedures; 2) experienced no complications; 3) resolved their Reinke’s edema completely within six weeks of treatment; and (4) experienced dramatic voice improvement—within 6-8 weeks after surgery, all four were judged to have completely normal voices. **CONCLUSIONS:** PDL treatment of Reinke’s edema is safer, better tolerated, less expensive, more time efficient (for both the patient and the surgeon), and the results are equal to (or superior to) any other treatment method.

**11:53 Discussion/Q&A**

**12:00 PANEL: CONTEMPORARY MANAGEMENT OF FACIAL CUTANEOUS LESIONS**

**Moderator:** William W. Shockley, MD\*, Chapel Hill, NC  
Management of Benign and Premalignant Lesions  
**Panelists:** Stephen S. Park, MD\*, Charlottesville, VA  
Recognition and Treatment of Basal Cell Carcinoma  
Brian S. Jewett, MD, Miami, FL  
Reconstruction of Small Nasal Defects

**12:50 Discussion/Q&A**

**12:55 Introduction of Vice President-Elect, Peter S. Roland, MD\*, Dallas, TX**

Fred D. Owens, MD\*, Dallas, TX

**Adjournment**

## POSTERS

### 1. Transnasal Endoscopic Resection of an Orbital Solitary Fibrous Tumor: A Case Report

Nishant Agrawal, MD, Baltimore, MD  
James J. Sciubba, DMD PhD, Baltimore, MD  
Neil R. Miller, MD, Baltimore, MD  
Andrew P. Lane, MD, Baltimore, MD

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to enhance their differential diagnosis, understand the pathology and pathophysiology of solitary fibrous tumors, and appreciate the surgical approach undertaken to resect the tumor.

**OBJECTIVES:** Solitary fibrous tumors (SFT) are rare mesenchymal tumors that may involve the head and neck, including the orbit. Orbital SFTs are generally removed via an external orbitotomy. We describe the first case of an orbital SFT resected entirely via a transnasal endoscopic approach. **STUDY DESIGN:** Case report. **METHODS:** A 64 year old woman with a previous history of breast cancer presented with 6 months of gradual painless visual loss in her right eye. Her visual acuity was 20/800, with no color vision, and a visual field defect. Neuroimaging revealed a 2.5 cm posterior orbital mass medial to the medial rectus muscle, with intraorbital extension displacing the optic nerve superolaterally. Because of concern for a metastatic process, the patient underwent a transnasal endoscopic biopsy that demonstrated a spindle cell lesion with prominent collagen bundles, hyalinization, and CD34 positivity, consistent with benign SFT. The patient subsequently underwent an image guided endoscopic medial and inferior orbital wall decompression with resection of the tumor. Within 3 weeks postoperatively, her visual acuity, color perception, and visual field had returned to normal. **RESULTS:** Review of the literature reveals this to be the first published case of an orbital SFT resected endoscopically. **CONCLUSIONS:** Growth in experience, anatomic familiarity, and surgical technology has allowed endoscopic techniques to be applied to extra-sinus orbital and skull base pathology. Because it is minimally invasive, endoscopic surgery is the preferred approach whenever feasible. Our successful application of the transnasal endoscopic technique to address a favorably located orbital SFT further extends the evolving indications for endoscopic sinus surgery.

### 2. Benefit of Diagnostic Testing for Thyroglossal Duct Cysts

Gal Aharonov, MD, Richmond, VA  
Ron B. Mitchell, MD, Richmond, VA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the benefits of diagnostic testing for evaluation of thyroglossal duct cysts.

**OBJECTIVES:** The midline neck mass can present a diagnostic challenge. When these masses are presumed to be thyroglossal duct cysts (TGDC), the treatment of choice is surgical excision via the Sistrunk procedure. Several diagnostic tests are readily used to aid in the diagnosis and management of the midline neck mass, including CT scanning, fine needle aspiration (FNA), and ultrasound (US). The positive predictive value of these tests to aid surgical management of TGDCs is evaluated. **STUDY DESIGN:** Retrospective review of patients who underwent the Sistrunk procedure. **METHODS:** Thirty-five patients who underwent the Sistrunk procedure over six years for presumed TGDCs were included. Diagnostic tests ordered (CT scan, fine needle aspiration (FNA), ultrasound) prior to surgery, intraoperative surgical findings, and pathologic results were studied. **RESULTS:** Histology confirmed TGDC in 78.9% of cases. Preoperative diagnostic testing did not increase the likelihood of a correct diagnosis. The positive predictive value (PPV) for each diagnostic test was 53.85% for CT, 53.85% for FNA, and 80% for ultrasound (p=0.04). Multiple preoperative tests increased the PPV to 70%. Intraoperative visualization of a tract had a PPV of 75%. **CONCLUSIONS:** Ultrasound has the highest PPV for detecting TGDC. A diagnosis of TGDC based on a preoperative diagnostic test did not increase the likelihood of a histological diagnosis. Visualization of a tract intraoperatively also had a surprisingly low PPV of 75%. This study suggests that preoperative tests, while increasing the cost of evaluation, may not increase the likelihood that a midline neck mass is a TGDC.

### 3. Esophageal Perforation Secondary to Nasogastric Tube Insertion

Khawaja A. Ahmed, MD, Memphis, TN  
Wesley S. Whately, MD, Memphis, TN  
Emma Kruger, MD, Memphis, TN  
Francisco Vieira, MD, Memphis, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to recognize the rare but extremely serious complication of esophageal perforation secondary to nasogastric intubation.

**OBJECTIVES:** To present a rare case of iatrogenic esophageal perforation after placement of a nasogastric tube. **STUDY DESIGN:** Case report and review of the literature. **METHODS:** A 57 year old male admitted to the hospital after suffering a cerebrovascular accident had a nasogastric tube inserted with reported difficulty. Subsequent plain films did not confirm the tube's location in the stomach, and the patient developed marked bilateral subcutaneous emphysema within 2 hours. Physical examination revealed an elderly white male who was disoriented. He had labored respirations but no frank stridor, and his oxygen saturation levels were adequate on room air. Oral cavity examination revealed dried blood along the surface of the hard and soft palate with no active bleeding. Examination of the neck revealed marked subcutaneous emphysema bilaterally. Computerized tomography revealed diffuse air extending from the oropharynx down to the chest, with a region of mucosal disruption in the anterior cervical esophagus. **RESULTS:** Flexible fiberoptic nasopharyngoscopy revealed an apparently normal upper aerodigestive tract with the only abnormal finding being bloody secretions at the base of tongue. On direct laryngoscopy in the operating room, the patient was noted to have a longitudinal mucosal tear in the left hypopharynx. The neck was explored with the thoracic surgeons and adequate drainage of the contaminated area was performed. **CONCLUSIONS:** Esophageal perforation secondary to nasogastric tube placement is a rare but potentially devastating complication. Clinical suspicion with radiologic confirmation should lead to prompt surgical intervention in an effort to decrease morbidity and mortality.

### 4. Nasal Endoscopy Findings in Patients With Normal and Abnormal Sinus Computed Tomography

Adam M. Becker, MD, Augusta, GA  
Francis T.K. Ling, MD, Augusta, GA  
Stilianos E. Kountakis, MD PhD\*, Augusta, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to compare endoscopy scores between patients with CT scans consistent with chronic rhinosinusitis and those with CT scans indicating an absence of chronic rhinosinusitis.

**OBJECTIVES:** To compare nasal endoscopy scores with CT scan findings in patients seen in a tertiary rhinology practice. **STUDY DESIGN:** Prospective data analysis of two cohorts. **METHODS:** Prospective data analysis of two cohorts. The first cohort consisted of 201 consecutive patients undergoing functional endoscopic sinus surgery (FESS) at a tertiary care medical center for chronic rhinosinusitis (CRS) (previously published). The second cohort consisted of 100 patients with headache referred for evaluation of sinonasal pathology, who had no evidence of rhinosinusitis on computed tomography (CT) (previously published). CRS was diagnosed according to rhinosinusitis task force (RSTF) criteria. CT scans were graded according to the Lund-Mackay criteria. Data analysis was performed using Student's T-test. **RESULTS:** Two hundred and one patients were identified with CRS (104 male and 97 female). Mean CT score was 12.8 and mean endoscopy score was 5.8. Among the 100 patients with headache but without CRS, mean CT score was 3.7 and mean endoscopy score was 0.2 (p < 0.0001). When stratified by diagnosis, CRS patients with nasal poly-

posis showed a mean CT score of 18.0, whereas CRS patients without polyposis had a mean CT score of 9.5 ( $p < 0.0001$ ). Patients with polyposis had a mean endoscopy score of 9.7 versus 3.3 in patients without polyposis ( $p < 0.0001$ ) **CONCLUSIONS:** Patients with evidence of CRS on CT had significantly higher endoscopy scores than patients presenting with primary complaint of headache. Furthermore, patients with nasal polyposis had higher CT and endoscopy scores than patients with CRS without polyposis.

#### 5. Chronic Ear Surgery Outcomes in Previously Irradiated Patients

Marc L. Bennett, MD, Nashville, TN  
Frank M. Warren, MD, Nashville, TN  
David M. Kaylie, MD, Nashville, TN  
C. Gary Jackson, MD\*, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand additional risks associated with chronic ear surgery after radiation.

**OBJECTIVES:** Present outcomes of chronic ear disease surgery in patients who have had previous head and neck irradiation. **STUDY DESIGN:** Case review. **METHODS:** Of the 7800 patients in the chronic ear disease database spanning from 1973 to 2003, 17 have a history of previous irradiation to the head and neck regions. The procedures performed, complications, and hearing results are presented. **RESULTS:** The 17 patients with previous irradiation to the head and neck had a variety of presentations; 8 had tympanic membrane perforations without cholesteatoma, 5 had osteoradionecrosis of the external auditory canal, 3 had tympanic membrane perforations without cholesteatoma, and one had external auditory canal stenosis. 26 cases were performed. 17 cases were primary cases and included 2 canaloplasty, 3 tympanoplasties with modified radical mastoidectomies, 6 tympanoplasties with mastoidectomy, 4 tympanoplasties without mastoidectomy, one flap reconstruction of the external auditory canal, and 1 temporal bone resection. The 9 revision cases included 3 tympanoplasties with modified radical mastoidectomy, 2 canaloplasties, 1 tympanoplasty with mastoidectomy, 1 labyrinthectomy, 1 temporal bone resection, and one postauricular neuroma excision. Preoperative audiograms were obtained in all patients. The mean preoperative air and bone pure tone averages were 45.6 +/- 17.1 dB HL and 31.5 +/- 23.1 dB HL respectively, giving a mean preoperative air bone gap of 17.3 +/- 17.6 dB HL. Postoperative audiograms were obtained in 16 patients. The average air and bone PTA were 57.6 +/- 24.4 dB HL and 48.6 +/- 35.0 dB HL respectively; giving a mean postoperative air bone gap was 22 +/- 11.5 dB. 7 patients experienced complications from the surgery including dural exposure in 3 patients, facial nerve exposure in 6 patients, lateral semicircular fistulas in 3 patients, and one recurrent tympanic membrane perforation requiring a revision procedure. **CONCLUSIONS:** Chronic ear surgery after head and neck irradiation is a safe procedure. While there are insufficient clinical numbers to derive outcome measures, it appears that patients have slightly higher failed graft rates.

#### 6. Composition and Structure of Salivary Gland Extracellular Matrix

Matthew A. Bolinger, MD, Winston-Salem, NC  
Grace A. Lim, PhD, Winston-Salem, NC  
James A. Yoo, MD PhD, Winston-Salem, NC  
Anthony A. Atala, MD, Winston-Salem, NC  
Christopher A. Sullivan, MD, Winston-Salem, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the composition and structure of salivary gland extracellular matrix.

**OBJECTIVES:** The extracellular matrix (ECM) plays a key role in the development and maintenance of salivary epithelial cells. Characterization of salivary extracellular matrix components is necessary for successful engineering of functional salivary tissue. The aim of this study was to study the distribution pattern of various ECM proteins in salivary tissue and to characterize the structure of the ECM. **STUDY DESIGN:** Histological investigation of an animal model. **METHODS:** Fresh submandibular gland tissue was harvested from adult rats and placed through a decellularizing process to remove all cellular material. Control and decellularized tissue were then sectioned and stained with hematoxylin and eosin. Immunohistochemical staining for cytokeratin, collagen I, collagen III, collagen IV, laminin and fibronectin was performed on serial sections. Scanning electron microscopy (SEM) was performed to study the ultrastructure of the decellularized tissue. **RESULTS:** Decellularized salivary gland tissue stained positively for collagen I, III and IV, laminin and fibronectin. Extracellular matrix proteins were distributed in a distinctive pattern along the basement membrane of the ductal and acinar structures. Cytokeratin staining confirmed complete decellularization of all salivary glands. SEM showed a porous honeycomb structure that was traversed by tubular structures. **CONCLUSIONS:** Rat salivary gland extracellular matrix contains collagens, laminin and fibronectin that are distributed characteristically along the basement membrane of ductal and acinar cells. The architecture of the extracellular matrix of rat submandibular glands shows characteristics that would be favorable for use as a scaffold for engineering human salivary tissue.

#### 7. Oncocytic Schneiderian Papilloma of the Larynx: A Case Report

Paul C. Bryson, MD, Chapel Hill, NC  
Robert A. Buckmire, MD, Chapel Hill, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the clinical presentation, pathology, endoscopic management, and other special considerations regarding this uncommon laryngeal pathology.

**OBJECTIVES:** Schneiderian papillomas are typically benign, recurrent, and potentially locally invasive neoplasms arising from and isolated to the Schneiderian epithelium within the sinonasal tract. These papillomas are separated into three pathological subtypes including inverted, fungiform, and cylindrical cell. Oncocytic (cylindrical cell) papillomas are the least common of these variants, comprising about 3-5%, and are believed to be associated with higher rates of both recurrence and malignant transformation. Ectopic papillomas have been reported as arising within the nasopharynx, oropharynx, oral cavity, and middle ear/mastoid, presumably from ectopic rests of this specialized epithelium. We report the first case of oncocytic Schneiderian papilloma arising in the larynx, presenting as a symptomatic laryngeal ventricular lesion. Details of the clinical presentation, pathology, endoscopic management, and special considerations regarding this uncommon laryngeal pathology are discussed. **STUDY DESIGN:** Case report. **METHODS:** Case report. **RESULTS:** Case report. **CONCLUSIONS:** Case report.

#### 8. Long-Term Clarithromycin for Chronic Eosinophilic Sinusitis: A Preliminary Report

Anton Chen, MD, Nashville, TN  
Sveta Karelsky, BA, Nashville, TN  
Jeremy D. Vos, MD, Nashville, TN  
James Duncavage, MD\*, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to describe potential benefits of long-term clarithromycin in chronic sinusitis patients.

**OBJECTIVES:** To determine the efficacy of long-term clarithromycin in patients with chronic sinusitis. **STUDY DESIGN:** Retrospective. **METHODS:** A cohort of chronic sinusitis patients with or without pathologic evidence of eosinophilic sinusitis were started on long-term clarithromycin between April 2003 and December 2003 at a tertiary academic center. Their records were reviewed, and the data analysis included patient symptoms, medical history, as well as operative, radiologic, endoscopic, cul-

ture, and pathology results. **RESULTS:** 51 consecutive patients with chronic sinusitis completed an average of 4 months of clarithromycin and were followed for up to 24 months. 29 of 51 (57%) patients had subjective symptom improvement. A comparison of patients, who gained symptom relief and those who did not, showed no significant difference in the incidence of positive bacterial or fungal sinus cultures, elevated serum eosinophil levels, elevated serum IgE levels, or the need for revision surgery. Patients with eosinophilic sinusitis, documented by pathology, had no significant symptom improvement compared to non-eosinophilic patients. **CONCLUSIONS:** In our cohort, the benefits of long-term clarithromycin in chronic eosinophilic sinusitis patients are unclear. Further study in a larger prospective, randomized series is needed.

#### 9. Cochlear Implantation After Face Lift

Sarah S. Connell, MD, Miami, FL

Thomas J. Balkany, MD FAAP\*, Miami, FL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to evaluate a prior rhytidectomy scar and create a well vascularized flap for cochlear implant surgery.

**OBJECTIVES:** As the number of aging cochlear implant (CI) candidates increases, otolaryngologists will encounter more who previously have undergone rhytidectomy. Some surgeons have expressed concern about how to preserve skin flap viability after facelift. **STUDY DESIGN:** Case report and review of the literature. **METHODS:** Based upon our experience of over two decades, we present an illustrative case to describe skin flap design in post-rhytidectomy patients. **RESULTS:** Our approach to cochlear implant incision design in facelift patients has been utilized without complication in over 50 cases. **CONCLUSIONS:** Cochlear implantation can be performed safely in patients with prior facelift.

#### 10. Eagle's Syndrome: The Rare Pediatric Presentation

J. Matthew Conoyer, MD, Nashville, TN

Shelagh A. Cofer, MD, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the incidence of the elongated styloid process (ESP) and its associated symptomatology in the pediatric population. Current literature will be reviewed in detail. Diagnosis and medical management options are discussed, as are preoperative planning and surgical technique.

**OBJECTIVES:** Eagle's syndrome is defined as the symptomatic elongation of the styloid process or calcification of the styloid ligament. Several studies have suggested a 4% incidence of elongated styloid process (ESP) in adults, though a significant minority of these develops the dysphagia, globus sensation, and cervicofacial pain associated with the syndrome. Few pediatric cases have been reported, as most cases present in the fourth through sixth decades of life. This case report illustrates the importance of entertaining this diagnosis in the child with this nonspecific constellation of symptoms. **STUDY DESIGN:** Case report. **METHODS:** The authors have reported a case of an 8 year old with a 24 month history of bilateral preauricular pain and cervicofacial pain unaffected by head rotation. Medical treatment for presumed otitis media and TMJ dysfunction elicited no relief. Panorex revealed prominent bilateral styloid processes with significant medial orientation. CT confirmation measured each styloid process at 2.3 centimeters without marked stylohyoid ligament calcification. Classic oropharyngeal findings on examination confirmed the diagnosis. **RESULTS:** Bilateral styloid process reduction was performed via a transcervical approach. No stylohyoid ligament calcification was noted on intraoperative exam or permanent pathology. Complete resolution of symptoms was confirmed at one week follow-up. **CONCLUSIONS:** Eagle's syndrome is a rare cause of dysphagia, globus sensation, and cervicofacial pain in the pediatric population. It is associated with reproducible pain on oropharyngeal examination and often with radiographic demonstration of an elongated styloid process. Surgical reduction of the styloid should follow unsuccessful conservative medical management.

#### 11. ~~withdrawn~~

##### The Correlation of Tympanograms and Operative Findings in Patients Undergoing First Time Ventilation Tube Placement

Jamey L. Cost, MD, Morgantown, WV

Jenny L. Cross, MD, Morgantown, WV

Hassan H. Ramadan, MD MSc\*, Morgantown, WV

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the utility of using tympanogram findings in children being considered for ventilation tube placement.

**OBJECTIVES:** To examine the correlation between tympanogram results and operative findings in children undergoing first time ventilation tube placement. **STUDY DESIGN:** A retrospective chart review. **METHODS:** Our study population consisted of patients who had undergone ventilation tube placement at the authors' institution between 1998 and 2004. Patients under the age of 18 were considered for this study. Patient's records were reviewed to ascertain the operative findings as well as the tympanogram results prior to the operation. **RESULTS:** 581 cases of first time ventilation tube placement were identified. In each case, the right and left ears were considered separately. 171 of 222 (77%) ears with an A/As tympanogram were noted to have no fluid in the middle ear intraoperatively while 550 of 706 (78%) ears with a B (flat) tympanogram result had an operative finding positive for middle ear fluid. 50% of ears with C tympanograms had fluid while the other 50% did not. Chi square analysis showed this to be significant with a p-value of <0.0001. The time period between the tympanogram and the operation, gender, age, and diagnosis were controlled for, but no statistical differences were noted. **CONCLUSIONS:** Tympanogram results were found to correlate well with operative findings in children undergoing ventilation tube placement. Therefore, tympanometry is a beneficial tool in determining whether middle ear fluid is present at the time of evaluation and if further management is warranted.

#### 12. Incidence of Dysphagia Following Neck Dissection in Patients With Oropharyngeal Carcinoma

Jennifer L. Daigle, MD, New Orleans, LA

Lauren Anderson, BS, New Orleans, LA

Ryan Matherne, BS, New Orleans, LA

Mary A. Fazekas-May, MD, New Orleans, LA

Paul Friedlander, MD, New Orleans, LA

Ana M. Pou, MD, New Orleans, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the potential risk for dysphagia as a result of performing neck dissections in patients with head and neck cancer.

**OBJECTIVES:** Treatment of advanced head and neck cancer often includes neck dissection. Studies suggest that swallowing is better in patients undergoing (chemo)radiation alone compared to patients undergoing surgery and (chemo)radiation. The objective of this study is to determine the effects of neck dissection/planned neck dissection (PND) on swallowing in patients with oropharyngeal carcinoma. **STUDY DESIGN:** Retrospective review. **METHODS:** 110 patients with oropharyngeal cancer between 1992 and 2004 were identified using the head and neck cancer database. Only 22 patients underwent neck dissection and were eligible for study. Three patients were eliminated due to insufficient data. Information was retrospectively collected regarding demographics, primary site, stage, treatment, history of dysphagia, tracheotomy and/or aspiration pneumonia and outcome. Evidence of dysphagia was defined as an abnormal modified barium swallow, need for gastric tube placement or aspiration pneumonia. **RESULTS:** 19 patients were studied. Primary sites included tonsil (n=15) and base of tongue (n=4). Patients had stage III (n=1) and stage IV (n=16)

disease. Stage was unknown in 2 patients. Treatment groups included surgery alone (neck dissection +/- tonsillectomy) (n=3), neck dissection with postoperative (chemo)radiation (n=5), and (chemo)radiation followed with PND (n=11). 6/19 patients demonstrated dysphagia following neck dissection; 4/11 patients (36%) had dysphagia following PND and 2/8 patients (25%) had dysphagia following neck dissection alone. **CONCLUSIONS:** Although the number of patients in this study is small, results suggests that neck dissection, particularly PND, may have an adverse effect on swallowing in patients with a history of advanced oropharyngeal cancer.

### 13. An Alternate Approach for Surgical Dressing of BAHA Abutment Sites

Bryan M. Davis, MD, Nashville, TN  
Robert F. Labadie, MD PhD, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation the participant should be able to understand how a bolster dressing technique can be applied in bone anchored hearing aid (BAHA) recipients and the benefits of such a technique.

**OBJECTIVES:** Review experience at a tertiary referral center in the use of a bolster technique applied to BAHA surgery. **STUDY DESIGN:** A retrospective review of patients receiving BAHA Hearing Systems over the last 3 years. **METHODS:** All patients who underwent BAHA placement were reviewed. Patients were divided into those who received the company recommended "healing cap" as a postoperative dressing versus those who received the bolster technique as a postoperative dressing. This technique consists of a bolster (petroleum impregnated gauze [Xeroform] surrounding mineral oil soaked cotton balls) which is secured with circumferential tacking sutures of 2-0 silk to immobilize the split thickness skin graft (STSG). The bolster is left in place for 1 week after surgery. Postoperative infections, STSG survival, and osseointegration were evaluated. **RESULTS:** Sixteen of 23 BAHA surgeries utilized the bolster technique. The remaining 7 had the "healing cap". Of these 7, 2 had partial dehiscence of the STSG. The bolster technique resulted in 100% STSG survival. No postoperative infections or failures to osseointegrate were noted in either group. Patients reported satisfaction with the bolster dressing as it was comfortable, maintenance free, and allowed return to normal activities (e.g., showering) in the immediate post-operative period. **CONCLUSIONS:** The standard "healing cap" for BAHA surgery suffers in that it does not effectively immobilize the STSG. A traditional bolster provides superior immobilization and patient compliance. It should be considered for noncompliant patients (e.g., children, Down syndrome.) In the hands of the senior author, it has become the dressing of choice for all BAHA patients.

### 14. ~~withdrawn~~

#### Clinical Outcomes of IgA Subclass Deficiency in Children

Eric J. Dobratz, MD, Charlottesville, VA  
Stephen S. Early, MD, Charlottesville, VA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the importance of considering IgA subclass deficiency in children with frequent upper respiratory infections.

**OBJECTIVES:** Evaluate clinical outcomes of children with IgA subclass deficiency and determine the importance of analyzing IgA subclass deficiency in pediatric patients. **STUDY DESIGN:** A retrospective, case control study. **METHODS:** Sixteen pediatric otolaryngology patients with known IgA subclass deficiency, by nephelometric assay, were identified. Twenty-five age matched control patients were then randomly chosen. The charts were reviewed for the number of office visits, documented upper respiratory infections, antibiotic courses prescribed and surgeries performed by an otolaryngologist. The data were collected as the frequency of episodes (i.e., visits/month). **RESULTS:** Patients with IgA deficiency had significantly increased frequency of visits (0.73 vs. 0.47,  $P = 0.02$ ), URI (0.53 vs. 0.22,  $P < .001$ ) and antibiotics prescribed (0.40 vs. 0.14,  $P < .001$ ) as compared to controls. Of these 16 patients, 4 had total IgA deficiency. The 12 patients with IgA subclass deficiency and normal total IgA were then compared to controls. The frequency of URI (0.48 vs. 0.22,  $P < .01$ ) and antibiotics (0.38 vs. 0.14,  $P < .01$ ) remained significantly increased in the IgA subclass deficient group as compared to controls. The frequency of visits was increased (0.63 vs. 0.47,  $P = 0.09$ ) but did not reach significance. The rates of surgical procedures were similar (0.24 vs. 0.20,  $P = 0.71$ ). **CONCLUSIONS:** Patients with IgA subclass deficiency and normal total IgA have an increased number of upper respiratory infections and prescribed antibiotics as compared to age matched controls. IgA subclasses, as well as total IgA, should be included in the immunodeficiency evaluation of chronically ill pediatric patients.

### 15. Hydroxyapatite Paste Vocal Reconstruction After Laser Cordectomy

Thomas S. Dozier, MD, Charleston, SC  
M. Boyd Gillespie, MD, Charleston, SC  
Terry A. Day, MD, Charleston, SC  
Joshua D. Hornig, MD, Charleston, SC  
Bonnie M. Harris, PhD, Charleston, SC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the advantages and disadvantages of reconstruction of laser cordectomy defects with hydroxyapatite paste injection.

**OBJECTIVES:** Laser cordectomy provides excellent oncologic control of early carcinoma of the glottis but frequently results in post-operative dysphonia. Most patients benefit from vocal fold reconstruction to improve voice and airway protection. The present study reviews the voice outcomes of laser cordectomy patients who underwent vocal fold reconstruction with hydroxyapatite paste injection. **STUDY DESIGN:** Case series. **METHODS:** Five patients underwent laser cordectomy for early (2 patients) or recurrent glottic carcinoma (3 patients). Hydroxyapatite paste (1.0 cc) was injected into the vocal remnant after a 6 month disease-free observation period. Voice satisfaction was measured pre- and post-operatively with the Voice Handicap Index (VHI). Voice satisfaction of the laser cordectomy group was compared to a control group of 7 patients receiving hydroxyapatite injection for vocal cord paralysis. **RESULTS:** There was no significant difference in age of cases ( $63 \pm 10$  years) compared to controls ( $64 \pm 11$  years) or follow-up time after injection ( $64 \pm 23$  days v.  $71 \pm 36$  days). A mean improvement of 24% in the laser cordectomy group was less than the 41% improvement in controls. Both groups demonstrated the greatest improvement in the functional subscale, however this was only significant in the paralysis group ( $p=0.02$ ). Although all laser cordectomy patients demonstrated improvement after paste injection, 4 desired subsequent external vocal fold medialization compared to no controls ( $p=0.01$ ). **CONCLUSIONS:** The reduced tissue volume and increased scar after laser cordectomy limit medialization with hydroxyapatite injection. External medialization is usually required to adequately mobilize the scar and produce the volume necessary for satisfactory voice.

### 16. Cartilage Tympanoplasty: A Technique to Combat Eustachian Tube Dysfunction

Mohamed Yahia El-Kotb, MD, Mansoura, DK Egypt  
Yousef Kamel Shabana, MD, Mansoura, DK Egypt  
Asser Abdel-Raouf ElSharkawy, MD, Mansoura, DK Egypt  
Mohamed Mostafa Abd-Eltwab, MD, Mansoura, DK Egypt

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to demonstrate that the use of cartilage is the preferred graft material for tympanoplasty in cases with poor eustachian tube function.

**OBJECTIVES:** Is to evaluate the effectiveness of using full thickness and partial thickness cartilage graft in reconstruction of tympanic membrane perforation in different grades of eustachian tube function. **STUDY DESIGN:** Prospective. **METHODS:** This study included 199 cases suffering from inactive chronic suppurative otitis media and operated upon from 2000 to 2003. Patients were divided into 3 groups according to their eustachian tube function "good, fair and poor". Tympanoplasties were done

using 3 types of graft materials “full thickness cartilage graft, partial thickness cartilage graft and temporalis fascia graft”. **RESULTS:** The take rate was better with good eustachian tube function than poor eustachian tube function in the 3 groups, in fascia group there was a significant difference between good and poor eustachian tube function. There was no significant difference in hearing results between the fascia group and cartilage groups. Type A tympanogram was obtained in partial thickness cartilage graft and temporalis graft more than the full thickness cartilage graft. **CONCLUSIONS:** According to our results the use of cartilage is the preferred graft material for tympanoplasty in cases with poor eustachian tube function.

**17. Stapes Surgery: Comparison Between Different Prostheses**

Mohamed Yahia El-Kotb, MD, Mansoura, DK Egypt  
Mohamed Mostafa Abdel Tawwab, MD, Mansoura, DK Egypt

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to compare that Teflon piston and Teflon platinum provide better results than House prostheses and are considered the prostheses of choice for otosclerosis surgery.

**OBJECTIVES:** Is to compare the use of three prostheses (Teflon piston, Teflon platinum and House) in stapes surgery for treatment of otosclerosis. **STUDY DESIGN:** Retrospective. **METHODS:** Four hundred and fifty ears with otosclerosis have been operated upon using 3 different types of prostheses (Teflon piston in 217 ears, Teflon platinum in 133 ears, and House prostheses in 100 ears). **RESULTS:** Greater hearing gains were obtained with the use of Teflon piston and Teflon platinum than House prostheses with statistically significant advantage at 2000-4000 Hz. The mean postoperative air bone gap was not statistically significant with the use of the three prostheses but at 2000 and 4000 Hz, the ABG was significantly larger with the use of House prostheses. **CONCLUSIONS:** According to our results we conclude that Teflon piston and Teflon platinum provide better results than House prostheses and are considered the prostheses of choice for otosclerosis surgery.

**18. The Utility of Evaluating True Vocal Fold Motion Prior to Thyroid Surgery**

Tarik Y. Farrag, MD, Baltimore, MD  
Robin A. Samlan, MS MBA, Baltimore, MD  
Frank R. Lin, MD, Baltimore, MD  
Ralph P. Tufano, MD, Baltimore, MD

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand: 1) that preoperative vocal fold examination is critical to identify vocal fold motion impairment (because presence and side of motion impairment cannot be reliably identified based solely on voice change); 2) how VF examination can improve preoperative counseling and influence surgical planning; and 3) the medico-legal implications of preoperative VF examination.

**OBJECTIVES:** To evaluate the utility of screening laryngoscopic examination in evaluating vocal fold (VF) mobility prior to thyroid surgery. **STUDY DESIGN:** Retrospective chart review. **METHODS:** Charts of 340 patients who have undergone thyroid surgery from January 1998 to June 2005 and had preoperative laryngoscopy via mirror, fiberoptic or videostroboscopic examination have been reviewed. Reports of preoperative voice change or complaint, and preoperative VF mobility, including the method of VF examination were recorded. For patients with abnormal VF mobility, reports of the intraoperative condition of recurrent laryngeal nerve (RLN), preoperative diagnosis, and final reports of histopathological examination were recorded. **RESULTS:** 22 patients showed abnormal preoperative VF mobility, of which 7 (32%) patients were asymptomatic and with no detectable objective voice problems. This differed significantly from the hypothesis that patients with abnormal VF mobility are always symptomatic ( $p = 0.009$ ). Five (72%) of these 7 asymptomatic patients had benign slowly progressive disease in final reports of histopathological examination. Six of these asymptomatic patients had their preoperative VF evaluation via fiberoptic examination or videostroboscopy, while 1 patient had indirect mirror laryngoscopy. Out of 22 patients with abnormal preoperative VF mobility, five (22.5%) patients had abnormal VF mobility contralateral to the side of the lesions in their preoperative evaluation, and only 2 of them had nerve injury reported after a previous thyroid surgery. This result differed significantly from the hypothesis that impaired mobility is ipsilateral to the side of the lesion ( $p = 0.05$ ). **CONCLUSIONS:** Patients without voice complaints can have VF mobility impairment. Patients can also have immobile VF contralateral to the side of the thyroid lesion. Preoperative VF examination helps counsel patients appropriately about the risks of surgery and helps to outline the extent of surgery.

**19. Adult Outpatient Tracheostomy Care: Practices and Perspectives**

Justin M. Garner, MD, Jackson, MS  
Michael S. Shoemaker-Moyle, MD, Jackson, MS  
Christine B. Franzese, MD, Jackson, MS

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to compare the current attitudes, opinions, and practice of adult outpatient tracheostomy care from both the surgeon and primary care physician’s perspective. In addition they should be able to identify areas where the efficiency and quality of these patients’ management can be improved.

**OBJECTIVES:** There are an increasing number of chronically ill adult outpatient tracheostomies. Both the otolaryngologist and primary care physician are involved in these patients’ care, raising the question of who provides their outpatient tracheostomy care and follow-up. The purpose of this study is to determine the attitudes, opinions, and current practice of adult outpatient tracheostomy care from both the surgeon and primary care physician’s perspective. **STUDY DESIGN:** Multidisciplinary physician survey. **METHODS:** A short, discipline specific survey created to determine the attitudes, experience, and current practices of adult outpatient tracheostomy care was sent to 1,250 randomly selected general otolaryngologists and 1,400 randomly selected general internists in the United States. **RESULTS:** Almost half the responding otolaryngologists have no standard discharge protocol for adult tracheostomies, and only 25% are the primary provider of tracheostomy discharge education. Although 64% of otolaryngologists felt surgeons should be primarily responsible for tracheostomy care and follow-up, and 76% felt primary care physicians were not qualified or competent to provide this care, over 45% expected the primary care physician to provide some or all of this care. Although the majority of internists had cared for outpatient tracheostomies, the majority received no residency training in tracheostomy care, with the vast majority not knowing how or how often to perform a routine tracheostomy change. **CONCLUSIONS:** The routine care and maintenance of outpatient tracheostomies should be a concerted effort between the patient, surgeon, primary physician, and interdisciplinary team. A more concerted effort should be undertaken by the specialty of otolaryngology to standardize tracheostomy patient discharge, education, and outpatient follow-up practices.

**20. Management of Frontal Sinus Fractures: A Review of 96 Cases**

David G. Gossman, MD, Lexington, KY  
Oneida Arosarena, MD, Lexington, KY

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss important topics related to frontal sinus trauma. Participants will be able to compare methods of surgical management and related outcomes. Participants should be able to demonstrate knowledge of complications associated with frontal sinus injuries and discuss a treatment algorithm based on fracture type.

**OBJECTIVES:** The purpose of this study was to classify the various types of frontal sinus fractures, review management methods, document associated injuries, and determine if there were differences in complication rates associated with varying severities of frontal sinus fractures and with diverse management methods. **STUDY DESIGN:** This is a retrospective chart review. **METHODS:** We reviewed the charts of patients treated for frontal sinus fractures at our institution from 1990-2003. **RESULTS:** The average patient age was 39 years. The most common cause of injury was motor vehicle accident. Fifty percent of the fractures involved the anterior table of the frontal

sinus alone and 50% involved both anterior and posterior tables. Forty-seven percent of the frontal sinus injuries were managed conservatively with observation, while 50% of patients underwent surgical repair. In the surgical group 60% underwent simple open reduction and internal fixation, 23% had a cranialization procedure, and 17% underwent sinus obliteration. The average length of follow up was 9 months. Complications occurred in 17% of the patients. **CONCLUSIONS:** The management of nondisplaced fractures of the frontal sinus is generally straightforward as these injuries can be safely observed. If obstruction of the frontal sinus outflow tract is diagnosed or suspected the sinus should be obliterated. An emerging alternative to obliteration is simple reduction of the fractures and preservation of the sinus. This should be considered in reliable patients willing to undergo close follow-up. Severe fractures involving the posterior table generally require cranialization. Complications seem to increase with severity of injury and extend of surgical intervention, arguing for conservative management when appropriate.

**21. Management of the Post-Tracheostomy Scar**

Nazaneen N. Grant, MD, Washington, DC  
Steven P. Davison, MD DDS, Washington, DC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain 4 main principles in the management of a post-tracheostomy scar. Revision of this scar is an often overlooked procedure that can improve discomfort with swallowing and that can remove a conspicuous wound in an exposed area. Otolaryngologists are well suited to manage these scars in their long term care of the tracheostomy patient.

**OBJECTIVES:** Tracheostomy is a lifesaving procedure used frequently in airway emergencies, head and neck cancer, and prolonged intubation. After full recovery and decannulation, the remaining scar can cause dysphagia from skin adherence to trachea and can be unsightly. This is the first study that explains principles of management for the post-tracheostomy scar and delineates reconstructive goals and methods. **STUDY DESIGN:** Case series and literature review. **METHODS:** Three cases, including z-plasty, t-plasty and flap closure, as well as a literature review, illustrate the major principles involved in the correction of tracheostomy scars. Surgical anatomy is reviewed including planes of the neck and horizontal lines of skin tension. Tracheostomy technique, based on direction of incision, tracheal wall flaps, and subsequent scar formation are also examined. **RESULTS:** Reconstructive principles in tracheostomy scar revision are 1) re-approximation of individual layers of the neck for improved contour and release of tracheal skin tug; 2) filling of tissue deficit, using scar de-epithelialization, muscle flaps, or acellular dermal grafts; 3) excision of hypertrophic scarring or keloids; and 4) horizontal wound closure using simple closure or local skin flaps, such as z-plasty. These goals and techniques can resolve skin adherence to the trachea and scar appearance in this noticeable location. **CONCLUSIONS:** Tracheostomy scar management is aimed at filling lost deep tissue bulk, the correction of tracheal skin tug, and a tension free closure that falls more naturally into the neck folds. The principles and techniques outlined can be used to systematically approach the challenges posed by each individual scar.

**22. Cochlear Implantation in a Developing Country**

J. Douglas Green, Jr., MD, Jacksonville, FL  
Joel N. Anthis, MD, Jos, Plateau St. Nigeria  
Gordon F. Tinley, MA CCC-A, Jacksonville, FL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss cochlear implantation in developing countries.

**OBJECTIVES:** Determine the feasibility of performing cochlear implants in a developing country with close oversight by a cochlear implant center in the US. **STUDY DESIGN:** Pilot study performed at a tertiary referral hospital in a developing country. **METHODS:** Screening for potential cochlear implant candidates was performed by the audiology staff of one of the authors, who serves as a full-time missionary. From a group of seven potential candidates, two postlingually deafened, adult patients were selected and subsequently underwent cochlear implantation in a developing country. Initial cochlear implant stimulation and subsequent programming were performed by trained audiology staff in the developing country with close oversight via WebEx internet linkage by an experienced audiologist in the US. Standard tests of post-implant performance were performed. **RESULTS:** Successful cochlear implant surgery was performed on both patients with a complete electrode insertion. Initial cochlear implant stimulation is planned at 4 weeks for these patients and subsequent results of post-implant performance will be reported. **CONCLUSIONS:** Cochlear implantation in a developing country is possible with close supervision by an experienced cochlear implant team.

**23. Radiation Induced Osteosarcoma of the Head and Neck**

Jan C. Groblewski, MD, Washington, DC  
Ziad E. Deeb, MD\*, Washington, DC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the potential carcinogenic effect of radiation therapy and discuss the risk factors, diagnosis, and treatment of head and neck osteosarcoma.

**OBJECTIVES:** To present a series of three patients who developed osteosarcoma of the facial bones and mandible after undergoing irradiation for squamous cell carcinoma of the upper aerodigestive tract. To provide a review of the current literature. **STUDY DESIGN:** A retrospective review of the clinical records of all patients treated with radiation for head and neck carcinoma at a tertiary care teaching hospital during a ten year period (January 1995–December 2004). **METHODS:** The diagnosis of radiation induced osteosarcoma was based on histological analysis of a surgical specimen from a patient who met defined criteria and had no additional risk factors identified. **RESULTS:** Three patients developed osteosarcoma as a second primary cancer within an irradiated field. Diagnoses were made between 5 and 10 years after completion of radiation therapy. None of the patients had risk factors for osteosarcoma other than therapeutic radiation exposure. In all three cases the sarcoma was surgically resected. **CONCLUSIONS:** As more patients with head and neck cancer choose organ preserving treatments, the use of radiation therapy is expected to increase. Although the benefits of radiation therapy far outweigh its risks, our small series of three patients with radiation induced osteosarcoma should remind clinicians and patients alike of the potential for induction of an additional cancer with radiation treatment. Complete surgical excision remains the only curative management option for radiation induced osteosarcoma.

**24. Vascular Malformations of the Orbit**

Jason M. Guillot, MD, Jackson, MS  
John M. Schweinfurth, MD, Jackson, MS

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss presentation and management of lymphangiomas involving the orbit and present with acute visual impairment.

**OBJECTIVES:** To describe an unusual manifestation and the acute management of lymphangioma involving the orbit and presenting with acute visual impairment. **STUDY DESIGN:** Case presentation. **METHODS:** A 22 year old female with history of a large lymphangioma of the head and neck with acute visual impairment was managed with three wall, orbital decompression. **RESULTS:** Imaging of the orbital mass was consistent with lymphangioma and revealed areas of acute, focal hemorrhage. Endoscopic assisted, three wall, orbital decompression resulted in resolution of orbital symptoms and a return to baseline visual acuity. **CONCLUSIONS:** Lymphangiomas may extend beyond the soft tissue of the head and neck. A case of lymphangioma involving the orbit is described. Acute visual impairment may occur secondary to hemorrhage and can be successfully managed using a combined endoscopic and external, three wall, orbital decompression.

**25. Radiosensitivity Testing in a Patient With Chromosomal Instability Syndrome**

Mark T. Gurley, MD, Shreveport, LA

Cherie-Ann O. Nathan, MD\*, Shreveport, LA  
Mary C. Lowery-Nordberg, PHD, Shreveport, LA  
Rodney E. Shackelford, DO PhD, Shreveport, LA  
Federico L. Ampil, MD, Shreveport, LA  
Sanford R. Katz, MD, Shreveport, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss various chromosomal instability syndromes, their diagnosis, and implications in patients with head and neck cancer.

**OBJECTIVES:** The inherited basis of radiosensitivity is not well studied in HNSCC. Chromosomal breakage syndromes, such as ataxia telangiectasia (AT) in which DNA repair mechanisms are defective result in chromosomal instability resulting in abnormal radiation sensitivity. We present a case of acute sensitivity in a patient with oral cancer to the chromosome damaging effects of radiation. **STUDY DESIGN:** Case report. **METHODS:** Fibroblasts from a patient with oral SCC who had acute toxicity to radiation were cultured under conditions (Mitomycin-C stress) that elicit high numbers of chromosome breaks and rearrangements in cells from persons with chromosome breakage syndromes. Fifty metaphase cells were scored at each of 2 concentrations of MMC. Fluorescence in situ hybridization (FISH) was performed for the 11q23 locus (ataxia telangiectasia mutated - ATM). Conventional cytogenetic analysis of twenty metaphase cells obtained from stimulated cultures of peripheral blood was performed. **RESULTS:** Mean number of breaks detected (1.18 breaks/cell) were elevated compared to the background <1.0 break/cell. Radial formations were observed in approximately 30% of the cells (<6% within normal limits). FISH showed normal signal patterns for all loci tested. Cytogenetic analysis revealed a predominantly normal female karyotype [GTG banding/ISCN banding resolution = 400]. One cell showed an extra X chromosome and another cell showed structurally abnormal ring chromosomes. **CONCLUSIONS:** Patients with chromosome instability syndromes generally exhibit a high degree of chromosome breakage with MMC stressed cultures. Future studies on this patient include colony forming assay on tissue fibroblasts, sister chromatid exchange for diagnosis of Bloom syndrome and ATM mutational analyses.

## 26. Accuracy of Cone Beam Computed Tomography in Determining the Location of the Genial Tubercle

Elizabeth M. Huelman, MD, San Antonio, TX  
Marcel E. Noujeim, DDS DUA DUB, San Antonio, TX  
Robert P. Langlais, DDS MS, San Antonio, TX  
Thomas J. Prihoda, PhD, San Antonio, TX  
Frank R. Miller, MD, San Antonio, TX

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the accuracy and clinical utility of the 3D cone beam CT in locating the genial tubercle which may prove useful in preoperative planning for the mandibular osteotomy in genioglossus advancement procedures.

**OBJECTIVES:** To determine the accuracy of the 3D cone beam computed tomography (CT) to predict the location of the genial tubercle. The cone beam CT is a new radiology technology which offers 8 times the resolution of conventional CT and 300 times less radiation exposure. It has been used in the dental field to assess the mandibular bone thickness and height in preparation for dental implants. In a similar fashion it is critical to identify the genial tubercle in preparation for a genioglossus advancement in the management of obstructive sleep apnea. The purpose of this project was to assess the accuracy and clinical utility of the 3D cone beam CT in locating the genial tubercle in the human skull. **STUDY DESIGN:** Cadaver study for anatomic analysis. **METHODS:** Our initial experience of 13 selected adult human cadaver heads is presented. Each skull/cadaver head underwent radiographic imaging with the cone beam CT. Measurements, including mandibular height, genial tubercle width, genial tubercle height, distance from inferior border of mandible to genial tubercle, and mandibular thickness were recorded based on the radiographic images. Cadaver dissection was then performed to expose the anterior mandible and identical measurements were recorded using cadaver heads/skulls. The two groups (3D cone beam CT versus cadaver dissection) were then compared using a paired t-test. **RESULTS:** The average measurement (cadaver versus 3D cone beam CT) included the width of the genial tubercle (4.68mm +/- 0.69mm vs. 5.07mm +/-1.16), genial tubercle height (4.13mm +/-0.94mm vs. 4.52mm +/-0.93mm), distance from inferior border of mandible to genial tubercle (12.81mm +/- 3.15mm vs. 9.44mm +/-1.71mm). Statistical analysis with a paired t-test revealed no significant difference between the cadaver dissections and the 3D cone beam CT. **CONCLUSIONS:** These results demonstrate the accuracy of the 3D cone beam CT in the anatomic location of the genial tubercle. This radiographic technique may prove useful in preoperative planning for the mandibular osteotomy in genioglossus advancement procedures. In addition, this technique may allow for preparation of a preoperative template to guide the surgeon.

## 27. Management of Complex Head and Neck Wounds Using Vacuum Assisted Closure

Sonu A. Jain, MD, New Orleans, LA  
Brad Lebert, BS, New Orleans, LA  
Christopher G. Trahan, MD, Omaha, NE  
Paul L. Friedlander, MD, New Orleans, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the use of vacuum assisted closure and determine if it is appropriate for their patient.

**OBJECTIVES:** To review our experience with vacuum assisted closure and to evaluate the efficacy of its use in challenging head and neck wounds. **STUDY DESIGN:** Retrospective study of three patients who had vacuum assisted closure of head and neck wounds following primary surgery or failure of primary reconstructive methods. **METHODS:** Assessment of wound beds following vacuum assisted closure, along with any incidences of hematoma, bleeding, pain, infection, or skin graft failure; ease of use was also reviewed. **RESULTS:** In two cases, the purpose of the wound vacuum was preparation for skin graft placement. This was successful in one and partially successful in the other—with failure of graft over exposed bone. In the third case, two areas of large head and neck wounds had a significant decrease in wound size over a period of days. Overall, there was one incidence of wound infection, which readily resolved. There were no incidences of bleeding, hematoma, or increased pain. The placement and changing of the vacuum assisted closure device was without much difficulty in the head and neck region. **CONCLUSIONS:** Vacuum assisted closure is a viable method in the reconstructive surgeon's armamentarium in select wounds of the head and neck.

## 28. Congenital Midline Defect: A Case Report and Review of the Literature

Karen A. Kolln, MD, Chapel Hill, NC  
Brett E. Dorfman, MD, Raleigh, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the differential diagnosis of a congenital midline neck defect and explain the standard of care for treatment of the defect.

**OBJECTIVES:** To review the differential diagnosis of congenital midline neck defects and discuss management options. **STUDY DESIGN:** Case report and literature review. **METHODS:** Case report and PubMed search for all articles in the English literature pertaining to the diagnosis and treatment of congenital midline neck defects. **RESULTS:** Midline congenital neck defects are rare with approximately 50 cases reported in the literature. The differential diagnosis includes congenital midline clefts and congenital tracheocutaneous fistulae. Both abnormalities, however, are benign with no airway compromise and can be monitored conservatively. Surgical excision is usually delayed after initial presentation to allow the child to mature. Excision is the standard of care to avoid contracture or scarring at the site of the defect. We describe a case of a Caucasian female who presented on day of life one with a 0.5 cm midline defect in the epithelium with protruding subcutaneous tissue at the level of the ster-

num. The child was managed conservatively with close follow-up and delayed surgical excision. **CONCLUSIONS:** Midline defects are rare congenital abnormalities which are benign, safe to manage conservatively and are easily treated with surgical excision when the child is able to tolerate the procedure.

### 29. Normal Values for Pharyngeal pH Monitoring

Jamie A. Koufman, MD\*, Winston Salem, NC  
Nikki Johnston, PhD, Winston Salem, NC  
Anne J. Peterson, LPN, Winston Salem, NC  
William C. Johnston, ACITP, Winston Salem, NC  
Bimjana Y. Bishwokarma, PhD, Winston Salem, NC  
Gregory N. Postma, MD, Winston Salem, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the normal pH values of the pharynx.

**OBJECTIVES:** To provide normative values for pharyngeal pH monitoring. **STUDY DESIGN:** Prospective study of 20 asymptomatic adult volunteer subjects. **METHODS:** 20 subjects were enlisted. The primary exclusion criteria included esophageal and laryngopharyngeal reflux (LPR) symptoms or laryngeal findings of LPR or any prior gastrointestinal surgery. All subjects underwent esophageal manometry, ambulatory double probe (simultaneous esophageal and pharyngeal) pH monitoring (pH-metry), transnasal esophagoscopy, and analysis of laryngeal biopsies for human pepsin. **RESULTS:** The mean age of the study group was 56 years. All of the study subjects were asymptomatic, and 85% (17/20) had normal esophagoscopy. Three had active esophageal disease (one esophagitis and two Barrett's). On pH-metry, 75% (15/20) of the subjects had normal esophageal pH-metry values, and 25% (5/20) had silent gastroesophageal reflux disease (GERD). Eighty-five percent (17/20) of the subjects had no pharyngeal reflux events (below pH 4.0); however, using pH 5.0 as the threshold for pharyngeal reflux, 90% (18/20) had some LPR. The mean values for number of pharyngeal episodes pH < 5.0 were 1.2 upright and 6.5 supine. Normative values (mean plus two standard deviations) percent time pH < 5.0 in the pharynx were 6.7% upright, 12.2% supine, and 13.8 total. All of the subjects had mean pH values in the pharynx above pH 5.5, and only one of the subjects had detectible (tissue) pepsin in the larynx. **CONCLUSIONS:** Normative pharyngeal pH monitoring data is provided; however, it is interesting to note that 25% (5/20) of the study group were found to have silent reflux disease.

### 30. Subclassification of Laryngeal Dystonias

Jamie A. Koufman, MD\*, Winston Salem, NC  
Catherine J. Rees, MD, Winston Salem, NC  
P. David Blalock, MA, Winston Salem, NC  
S. Carter Wright, MD, Winston Salem, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain a diagnostic matrix for subclassifying laryngeal dystonias and the implications for treatments and outcomes.

**OBJECTIVES:** To provide a diagnostic matrix for subclassifying the laryngeal dystonias. **STUDY DESIGN:** Retrospective analysis of the acoustical data and medical records of 100 unselected (consecutive) adult patients with laryngeal dystonia (aka spasmodic dysphonia). **METHODS:** Using clinical data, spectral voice analysis, and treatment outcomes subjects were assigned into 11 discrete subgroups, each with clinically distinguishing elements that influence therapeutic outcomes. **RESULTS:** There were 80 female and 20 male subjects, and their mean age was 56 years. The subclassification data are summarized: ADductor-type (All) 80%; ADductor-type (Pure) 41%; ABductor-type (All) 15%; ABductor-type (Pure) 4%; Mixed (Ad/Ab) 11%; Tremor (All) 41%; Dystonia Tremor 19%. Diagnostic criteria of the subtypes and treatment variations are presented and discussed. Some of the dystonia subtypes have important clinical implications. Type DS (aDductor-with-Supraglottic-closure type) is an important subtype, because it is common (19%) and because it may be confused with muscle tension dysphonia and visa versa. Type DT (Dystonia Tremor) (19%) is subtype that is least responsive to traditional botulinum toxin A injection therapy. The tremor in subtype DT is different than that of essential tremor; the later is familial and neither task specific nor focal. For effective treatment of DT, the inter-arytenoideus muscle must be treated. Type BT (aBductor-with-Tremor) is the most common mixed dystonia (6%) and the most difficult to effectively treat. **CONCLUSIONS:** Presented herein is a useful clinical subclassification of laryngeal dystonia that has implications for treatment and outcomes.

### 31. Use of PET/CT Scan for Identification of Primary Site in Head and Neck Carcinoma of Unknown Primary

Victor T. Lai, MA, Chapel Hill, NC  
Adam M. Zanation, MD, Chapel Hill, NC  
Mark C. Weissler, MD\*, Chapel Hill, NC  
William W. Shockley, MD\*, Chapel Hill, NC  
Marion E. Couch, MD PhD, Chapel Hill, NC  
Carol G. Shores, MD PhD, Chapel Hill, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the sensitivity and specificity of PET/CT vs exam under anesthesia with directed biopsies to identify the primary site in patients with unknown primary squamous cell carcinomas of the neck.

**OBJECTIVES:** PET/CT has shown promise for early detection and accurate staging of cancer patients. However, the utility of PET/CT in cervical carcinoma of unknown primary site has been controversial. This study evaluates the use, accuracy, and implications for patient management of PET/CT scans in patients with unknown primary site neck carcinoma. **STUDY DESIGN:** Retrospective cohort study at a tertiary care center. **METHODS:** 795 consecutive PET/CT obtained for all indications were identified at our institution. A total of 15 were obtained for cervical carcinoma of unknown primary; 12 were used in the final analysis. Accuracy, use, and implications for patient care management decisions were correlated with each patient. **RESULTS:** Accuracy, sensitivity, and specificity were measured by comparing the PET/CT results at the primary tumor site, cervical node sites, and distant sites with either pathologic or definitive clinical diagnoses. PET/CT had an accuracy of 66.7%, sensitivity of 40%, specificity of 85.7% positive predictive value of 66.7% and negative predictive value of 66.7% when compared to the gold standard of biopsy proven primary site. **CONCLUSIONS:** Physical exam and evaluation under anesthesia allow detection of unknown primary at slightly greater accuracy, sensitivity and equal specificity as PET/CT. Two cases of distant diseases were found by PET/CT in this study and both were false positives leading to significant morbidity (bronchoscopy, mediastinoscopy, blood loss, delay in treatment). PET/CT may not have adequate added value to justify addition to exam under anesthesia and larger studies are needed to determine if PET/CT may someday replace exam under anesthesia and directed biopsies.

### 32. Metastasis of Prostatic Adenocarcinoma to the Sphenoid Sinus

Leela S. Lavasani, BA MS, Washington, DC  
Philip E. Zapanta, MD, Washington, DC (Presenter)  
Neil S. Tanna, MD, Washington, DC  
Nader Sadhegi, MD FRCS, Washington, DC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to recognize the presentation of a patient with metastatic adenocarcinoma of the prostate to the sphenoid sinus and the orbit, as well as discuss the appropriate evaluation and management.

**OBJECTIVES:** To review the presentation, diagnosis, and management of metastasis of prostatic adenocarcinoma to the sphenoid sinus. **STUDY DESIGN:** Presentation of an unusual case of prostatic adenocarcinoma metastasis to the sphenoid sinus and orbital apex, compressing the optic nerve. **METHODS:** Review of literature. **RESULTS:** A 67 year old man with a history of prostatic adenocarcinoma presented with gradual vision loss. Magnetic resonance imaging revealed a lesion of the left orbital apex with extension into the ipsilateral sphenoid sinus. Operative biopsy of the lesion was significant for adenocarcinoma of the prostate. **CONCLUSIONS:** When an otolaryngologist encounters a mass in the sphenoid sinus there is a diverse differential diagnosis to consider. In evaluating possible etiologies, patient history of malignancies should be elicited. Furthermore, pathophysiology and potential routes of metastatic disease should be assessed for these primary neoplasms. Having a high suspicion for metastatic disease from specific primary sites will help guide pathological evaluation. As in this clinical scenario, for a patient with a history of prostatic adenocarcinoma, appropriate analysis would entail sending specimens for immunohistochemical staining, such as PSA and PSAP. Correct diagnosis is crucial, as these patients can achieve remission and prolong survival with radiation and/or hormonal therapy.

### 33. The Use of Acellular Dermis to Prevent Frey's Syndrome in Parotidectomy Patients

Michael R. Lee, MD, Shreveport, LA  
Timothy S. Lian, MD, Shreveport, LA  
Gloria C. Caldito, PhD, Shreveport, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain Frey's syndrome as a complication of parotidectomy and the use of acellular dermis can be used to prevent this complication.

**OBJECTIVES:** Frey's syndrome is a complication in post-parotidectomy patients. The purpose of this study was to study the efficacy of AlloDerm in preventing Frey's syndrome and to study the complication rate associated with its use. **STUDY DESIGN:** Retrospective review. **METHODS:** A retrospective review was undertaken studying all the patients having a parotidectomy from January 1999 to July 2004. The charts were examined for complications. Patients were then called and a phone survey was conducted to determine the incidence of Frey's syndrome. If patients were unable to be contacted by phone, a letter survey was sent. **RESULTS:** A total of 85 patients had a parotidectomy performed during this time period. 39 patients responded to our survey. 13 of these had AlloDerm implanted while the other 26 did not. One out of the 13 patients with AlloDerm developed Frey's syndrome while 2 out of the 13 had a complication. Six of the 26 patients without AlloDerm developed Frey's syndrome while 4 out of 26 had a complication. Age was significantly different between the two groups ( $p < 0.01$ ). When the highly significant age difference between the AlloDerm and no AlloDerm groups was controlled for using multivariate analysis, AlloDerm use had a significant effect ( $p = 0.07$ ) for preventing Frey's syndrome. Age adjusted for the effect of AlloDerm use had no significant effect on risk for Frey's syndrome. Complication rates were similar between the two groups. **CONCLUSIONS:** AlloDerm helps to prevent Frey's syndrome in parotidectomy patients and was not associated with increased complication rates in our study.

### 34. Hypoparathyroidism After Treatment for Head and Neck Cancer

Kshitij V. Majmundar, MD, Richmond, VA  
Travis L. Shaw, MD, Richmond, VA (Presenter)  
Laurence J. DiNardo, MD FACS\*, Richmond, VA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the incidence and contributing factors for clinical hypoparathyroidism in patients treated for head and neck cancer.

**OBJECTIVES:** To determine the incidence and contributing factors for clinical and subclinical hypoparathyroidism in patients treated for head and neck cancer. **STUDY DESIGN:** Prospective IRB approved single site study. **METHODS:** Sixty-two patients were enrolled and seen at varying intervals after head and neck cancer therapy. A questionnaire to evaluate signs and symptoms of hypoparathyroidism was completed by all participants. Serum calcium and albumin levels were measured and corrected calcium levels obtained. Patient demographics, tumor location and stage, treatment history, past medical history, and medication use were recorded. PTH levels were obtained for patients with an abnormal corrected calcium. **RESULTS:** There were 46 male and 16 female patients with an average age of 59 years. The average time from treatment to enrollment was 30.3 months (2—252 months). Of the 62 patients, 33 (53.2%) were treated for laryngeal/hypopharyngeal tumors, 18 (29.1%) for oral/oropharyngeal, 6 (9.7%) for salivary, 2 (3.2%) for nasal/paranasal sinus, and 3 (4.8%) for unknown primary carcinomas. Four patients had 2 or more signs or symptoms seen with hypoparathyroidism though none were hypocalcemic. Four (6.5%) patients had low corrected calcium levels, 3 with laryngeal/hypopharyngeal tumors and 1 with an oral/oropharyngeal carcinoma. Of these 4, only 1 (1.6%) was hypoparathyroid. Twenty (32.5%) patients manifested post-treatment hypothyroidism: 15 (75%) laryngeal/hypopharyngeal, 4 (20%) oral/oropharyngeal, and 1 (5%) salivary tumor. **CONCLUSIONS:** Evaluation for signs and symptoms of hypoparathyroidism did not identify at risk individuals. Although a high percentage of patients manifest post-treatment hypothyroidism, only four (6.5%) demonstrated post-treatment hypocalcemia, most in the laryngeal/hypopharyngeal group. Of these, only 1 (1.6%) was found to be hypoparathyroid.

### 35. A Unique Case Report of a Sublingual Space Schwannoma

Kavita Malhotra, MD, Shreveport, LA  
Kevin Dowden, MD, Shreveport, LA  
Cherie Ann O. Nathan, MD\*, Shreveport, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the sublingual space in detail and demonstrate a full understanding of the diagnosis and treatment of schwannomas presenting in this space.

**OBJECTIVES:** Schwannomas are tumors of neural crest origin that arise from the Schwann cells of the neural sheath. Extracranial manifestations of schwannomas are rare. We describe a unique case of sublingual space schwannoma presenting as an enlarging mass in the floor of mouth. The clinical aspects, histology, and surgical management are discussed, followed by a brief literature review. **STUDY DESIGN:** Case report. **METHODS:** A 63 year old white male presented with a 2 month history of a painless enlarging mass in the floor of mouth. Examination revealed a 3x2 cm smooth mass extending from Wharton's duct to the retromolar trigone. The CT scan demonstrated a distinct well encapsulated mass in the right floor of mouth not involving the submandibular gland. FNA was consistent with pleomorphic adenoma. A transoral surgical excision of the mass was performed. **RESULTS:** Intraoperatively the mass was dissected off the hypoglossal and lingual nerves. It appeared to be involving the nerve to the mylohyoid. Microscopic examination of the surgical specimen revealed a 4.4x3.5x2.5 cm spindle cell neoplasm with palisading nuclei consistent with schwannoma. The limitations of FNA coincide with the findings of several other authors. All cranial nerves were documented to be intact postoperatively. **CONCLUSIONS:** Schwannoma of the sublingual space is an exceedingly rare entity. This is the first case report of a schwannoma involving the nerve to the mylohyoid. This case highlights the importance of considering schwannoma in the differential diagnosis of a mass noted in the floor of mouth.

### 36. Periorbital Necrotizing Fasciitis: Importance of Determining the Source

Kavita Malhotra, MD, Shreveport, LA  
Fred J. Stucker, MD\*, Shreveport, LA  
Timothy S. Lian, MD, Shreveport, LA  
Cherie-Ann O. Nathan, MD\*, Shreveport, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to demonstrate, explain, and discuss the anatomy, clinical presentation, and management of necrotizing fasciitis in the periorbital region of the head and neck.

**OBJECTIVES:** Necrotizing fasciitis (NF) is a destructive soft tissue infection that rarely involves the head and neck region. We compare the clinical presentation and treatment outcome of two cases of periorbital NF originating from the eyelid and lacrimal sac. **STUDY DESIGN:** Case report. **METHODS:** A 44 year old man with no predisposing disease presented with a five day history of right orbital pain and swelling. Extensive necrotic skin changes in the eyelid were noted with no light perception. CT demonstrated right maxillary and nasal cavity opacification with periorbital air tracking from the lacrimal sac. A 42 year old female, IV drug abuser and hepatitis C positive, presented with facial swelling and pain for 1 day and was noted to have necrotic skin changes of the eyelid with severe periorbital swelling and intact vision. The patient developed DIC and required ventilation support. **RESULTS:** The patients were treated with IV antibiotics, surgical debridement and life supportive measures. Surgical findings ranged from extensive necrosis of the right lateral nasal wall and orbit including bony involvement of the orbital floor and sphenoid wall requiring aggressive surgical debridement and orbital exenteration with delayed closure of soft tissue defects in the first case, to minimal wound debridement in the second case. **CONCLUSIONS:** Conservative management of NF of the eyelids has been proposed due to limitation of spread of infection because of the unique anatomic features of the eyelid. However differentiating the source of infection as seen in the first case of lacrimal sac origin is extremely important as spread of infection to the orbit occurs much more rapidly.

### 37. Predictors of Recurrence Following Parotidectomy for the Treatment of Cutaneous Head and Neck Squamous Cell Carcinoma

Christopher A. Mantle, MPH, Birmingham, AL  
Belinda A. Mantle, MD, Birmingham, AL  
Neil Accortt, PhD, Birmingham, AL  
Jeffrey S. Magnuson, MD, Birmingham, AL  
William R. Carroll, MD, Birmingham, AL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should change their practice habits to routinely examine the parotid and neck basins after diagnosing cutaneous head and neck squamous cell carcinoma. Surgeons will consider parotidectomy and selective neck dissection when planning local resection, followed by appropriate postoperative radiation therapy. Clinicians will also be able to identify patients at increased risk for local-regional recurrence.

**OBJECTIVES:** Recurrent or advanced cutaneous squamous cell carcinoma of the head and neck has a poor prognosis, and disease parameters associated with recurrence have not been well established. **STUDY DESIGN:** Retrospective chart review at a tertiary care hospital. **METHODS:** Medical records of patients who underwent a parotidectomy for cutaneous head and neck squamous cell carcinoma at our hospital between 1996 and 2005 were reviewed. The primary skin cancer location, P and N stage, pathological findings, and treatment modalities were collected. Predictors for time to recurrence were determined using univariate and multivariate analysis. **RESULTS:** There were 82 patients (70 men, 12 women) who underwent parotidectomy for treatment of cutaneous squamous cell carcinoma. Median age was 69 years (range, 44-99) and median follow-up was 5 months. Of the twenty-one parotidectomies performed for clinically negative parotid disease, 13% demonstrated occult disease. Sixty-five patients received neck dissections; 44 of which were for clinically negative neck disease with 20% containing occult disease. Twenty-eight patients (34%) developed regional recurrence, more commonly in the neck than the parotid bed. Statistically significant risk factors for regional recurrence included organ transplantation (P=0.0057), wound necrosis (P=0.03), moderate to poor histological differentiation (P=0.01), and facial nerve weakness at presentation (P=0.02). Postoperative radiation significantly decreased the risk of recurrence (P=0.0005). Neither P nor N stage was a significant predictor of recurrence (P=0.987 and P=0.945 respectively). **CONCLUSIONS:** Patients with regional metastasis of cutaneous squamous cell carcinoma have increased risk of recurrence and may benefit from multimodality treatment.

### 38. Baroreflex Failure After Bilateral Carotid Body Removal

Stephen C. Maturo, MD, San Antonio, TX  
Joseph A. Brennan, MD, San Antonio, TX

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the anatomy and physiology of the carotid body. The participant should also be able to explain the physiology, presentation, and treatment of the rare complication of baroreflex failure.

**OBJECTIVES:** Multiple head and neck paragangliomas are a rare occurrence. We report a patient with removal of bilateral carotid paragangliomas who subsequently developed baroreflex failure. We provide a brief overview of paragangliomas and discuss the physiology, presentation, and treatment of baroreflex failure. **STUDY DESIGN:** Case report and review of literature. **METHODS:** Case analysis. **RESULTS:** Upon review of the literature baroreflex failure is a rarely reported complication. It has a variable post operative presentation, yet when identified can be effectively treated. **CONCLUSIONS:** This case report and literature review describes the infrequently reported baroreflex failure after excision of multiple carotid paragangliomas. The pathology and physiology of this presentation is extremely interesting as it exhibits the complex homeostatic mechanisms involved in the maintenance of steady state blood pressure. It is an important complication to be aware of as its course is variable and hypertensive urgency, if not recognized early, can lead to disastrous post operative complications such as stroke and myocardial infarction.

### 39. Pulsatile Tinnitus After Chiropractic Cervical Manipulation

Kevin E. McLaughlin, MD, Hammond, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to know that chiropractic cervical manipulation has been associated with carotid artery injury and pulsatile tinnitus.

**OBJECTIVES:** To describe the association between chiropractic cervical manipulation and pulsatile tinnitus. **STUDY DESIGN:** Case report. **METHODS:** Chart review. **RESULTS:** This is a case report of a 42 year old female who presented with unilateral pulsatile tinnitus following chiropractic cervical manipulation. During the work-up, she experienced brief episodes of intermittent ipsilateral vision loss. Angiography revealed a pseudoaneurysm of the internal carotid artery with dissection into the skull base. The patient subsequently underwent coiling of the abnormality and anticoagulation with resolution of the pulsatile tinnitus and loss of vision episodes. Illustrative MRA and angiography images will be presented. **CONCLUSIONS:** Chiropractic cervical manipulation with secondary carotid artery injury should be included in the differential for patients presenting with pulsatile tinnitus.

### 40. Factors Affecting Success of Tympanoplasty in the Pediatric Patient: The Role of Tympanometric Values

Daniel J. Merenda, MD, Morgantown, WV (*Resident Travel Award*)  
Hassan J. Ramadan, MD\*, Morgantown, WV  
Majid M. Shafiei, MS, Morgantown, WV

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the role of tympanometric values as a factor in determining success of pediatric tympanoplasty.

**OBJECTIVES:** To determine if preoperative tympanometric volumes have any predictive value in determining success of pediatric tympanoplasty. **STUDY DESIGN:** Retrospective chart review. **METHODS:** 59 patients ages 6-16 who had tympanoplasty surgery between 1997 and 2003 were included. Multiple factors including previous adenoidectomy, recent discharge, perforation size, myringosclerosis, disease of contralateral ear, cause of perforation, age, gender, surgical approach, type of graft, season performed, location of perforation, middle ear findings, and tympanometric volume were reviewed. Univariate and multivariate analysis were performed comparing the factors to success of tympanoplasty. **RESULTS:** Univariate analysis demonstrated a success rate of 88.5% for preoperative tympanometric volumes greater than 3 and only 34.4% for children with volumes 3 or less (p-value<0.0001). All other factors were statistically not significant on univariate analysis. Multivariate analysis demonstrated that both disease of the contralateral ear and a tympanometric volume greater than 3 were statistically significant. All other factors were statistically not

significant. **CONCLUSIONS:** The volume of the middle ear may be an important factor when considering timing of tympanoplasty in the pediatric patient. Larger volumes may correlate with higher success rates. In addition, disease of the contralateral ear may be a prognostic indicator and should also be considered when planning tympanoplasty in the pediatric patient.

**41. The Effectiveness of Magnetic Resonance Imaging in Preoperative Characterization of Parotid Neoplasms**

Michael G. Moore, MD, Boston, MA  
Hugh D. Curtin, MD, Boston, MA  
Mary B. Cunnane, MD, Boston, MA  
Daniel G. Deschler, MD, Boston, MA  
Derrick T. Lin, MD, Boston, MA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should have a better understanding of which magnetic resonance imaging characteristics suggest a benign/low grade process when looking at parotid lesions. In addition, a comparison will be made between the accuracy of MRI versus fine needle aspiration for predicting the final pathology found at the time of surgery.

**OBJECTIVES:** The aim of our study is to establish MRI characteristics of different parotid neoplasms. In addition, our study compares the accuracy of MRI versus FNA for classifying parotid lesions as malignant versus benign/low grade. **STUDY DESIGN:** A retrospective chart review and a blinded MRI review were performed. **METHODS:** MRI studies of 16 patients were reviewed in a blinded fashion. Tumors were characterized by signal intensity on T1 and T2 images, margins, the presence or absence of bosselation, and ability to enhance with contrast. Using this information, each tumor was given a probability of being benign/low grade. Pathology reports for each patient were also reviewed and the results compared with the radiological predictions. Additionally, cytology results of 84 patients were retrospectively reviewed and compared with the patients' surgical pathology results. **RESULTS:** 90% of benign and 100% of malignant lesions studied were hypointense on T1 images. Hyperintensity on T2 images was seen in 85% of pleomorphic adenomas (PAs) compared to 40% of Warthin tumors. 85% of benign/low grade tumors and 100% of malignant tumors had distinct borders. Bosselation was observed in 71.4% of PAs compared with 0% in Warthin tumors. PAs were more heterogeneous in their enhancement with contrast than Warthin tumors. Radiographic classification of lesions as benign/low grade or malignant was accurate 81.0% of the time. The cytologic classification of lesions was accurate 80.1% of the time. **CONCLUSIONS:** MRI is useful in differentiating between certain types of parotid tumors and may be as accurate as FNA for classifying parotid lesions as benign/low grade versus malignant.

**42. ~~withdrawn~~**

**Laryngeal Mucosal Neuromas Causing Dysphonia in a Patient With Multiple Endocrine Neoplasia IIB Syndrome**

Robert E. Ostendorf, MD, New Orleans, LA  
Anna M. Pou, MD, New Orleans, LA  
Andrew J. McWhorter, MD, New Orleans, LA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to recognize an unusual finding in the setting of multiple endocrine neoplasia IIB syndrome

**OBJECTIVES:** Laryngeal mucosal neuromas are a very rare finding in the setting of multiple endocrine neoplasia (MEN) IIB syndrome. MEN IIB (mucosal neuroma syndrome, Wagenmann-Froboese syndrome) is classically associated with medullary thyroid cancer, pheochromocytoma, and mucosal neuromas. These neuromas most often occur on the tongue, palate, and lips. **STUDY DESIGN:** Case Report. Literature review. **METHODS:** A case is presented of a 29 year old female with a known diagnosis of MEN IIB. The patient had previously undergone a total thyroidectomy, bilateral neck dissections for recurrent medullary thyroid cancer, and bilateral adrenalectomies for pheochromocytoma. The patient presented with a several year history of stable dysphonia. Examination revealed bilateral supraglottic and glottic lesions consistent with mucosal neuromas preventing complete true vocal fold adduction. **RESULTS:** A review of the literature reveals no significant description of the laryngeal manifestations of the mucosal neuromas found in MEN IIB. A single case report described laryngeal mucosal neuromas found on autopsy in a MEN IIB patient of unknown clinical significance. In contrast, the patient in this report did have dysphonia as a result of these lesions. **CONCLUSIONS:** Multiple endocrine neoplasia IIB is a well described genetic abnormality. Prior to this report, there were no descriptions of clinically significant mucosal neuromas of the larynx. This patient presented with an extremely rare cause of dysphonia. Laryngeal mucosal neuromas should be considered in the dysphonic patient with known or suspected MEN IIB.

**43. Laryngopharyngeal Abnormalities in Intensive Care Unit (ICU) Patients With Dysphagia**

Gregory N. Postma, MD, Winston-Salem, NC  
Susan G. Butler, CCCP PhD, Cary, NC  
Heather L. Crandall, MS, Ocala, FL  
Lisa W. Markley, MS, Durham, NC  
William F. McGuirt, MD, Winston-Salem, NC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the high prevalence of laryngopharyngeal abnormalities found on FEES in an ICU patient population with dysphagia.

**OBJECTIVES:** Determine the prevalence of laryngopharyngeal abnormalities in ICU patients with dysphagia. **STUDY DESIGN:** Blinded review by two otolaryngologists of 100 consecutive flexible endoscopic evaluations of swallowing (FEES) studies performed jointly by a speech language pathologist (SLP) and otolaryngologists. **METHODS:** Two otolaryngologists reviewed 100 consecutive FEES studies on ICU patients with dysphagia for the presence of laryngopharyngeal findings. **RESULTS:** Sixty-two males and 38 females comprised this cohort. The mean age was 62. Seventy-seven percent had been intubated with a mean intubation duration of 10 days. The overall presence of abnormal laryngopharyngeal findings was 81%. Sixty-three percent of the patients presented with two or more findings. Specific findings were: arytenoid edema = 34%, granuloma = 30%, vocal fold paresis = 29%, mucosal lesions = 17%, vocal fold bowing = 14%, diffuse edema = 11%, airway stenosis = 6%, and ulcer = 5%. **CONCLUSIONS:** Our data suggests that ICU patients with dysphagia, particularly if intubated, may benefit from either: 1) a joint examination by the SLP and otolaryngologist; or 2) otolaryngologist's review of the recorded examination conducted by the SLP due to the high prevalence of laryngopharyngeal abnormalities.

**44. Periorbital Emphysema After Functional Endoscopic Sinus Surgery**

Michael J. Rodriguez, MD, Miami, FL  
Sandeep P. Dave, MD, Miami, FL  
Frank Astor, MD, Miami, FL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to identify and appropriately manage periorbital emphysema.

**OBJECTIVES:** To report two cases of periorbital emphysema following functional endoscopic sinus surgery and review the pertinent literature. **STUDY DESIGN:** N/A. **METHODS:** Retrospective review of two patients at a large urban tertiary care center. **RESULTS:** A 45 year old woman and a 40 year old man developed periorbital emphysema after functional endoscopic sinus surgery. Both patients presented with acute unilateral periorbital swelling after blowing their nose in the recovery room. Palpable crepitus was noted without compromise of extraocular movements or visual acuity. Computed tomography (CT) demonstrated periorbital air and confirmed a defect identified intraoperatively in the medial orbital wall of patient one; there was no appreciable defect intraoperatively or on CT scan in the second patient. Ophthalmology

consultation was obtained and both patients were admitted for observation. The first patient had significant improvement in the periorbital swelling after the first twenty-four hours, with complete resolution by her first postoperative clinic visit one week later. The second patient had complete resolution of the periorbital swelling after the first postoperative day. **CONCLUSIONS:** Periorbital emphysema can occur in patients following orbital and nasal procedures, including functional endoscopic sinus surgery. Patients and nurses should be counseled to avoid nose blowing in the immediate postoperative period. In the event that periorbital emphysema occurs, the proper work-up and management are necessary to prevent more serious eye complications.

**45. Orbital Complications of Rhinosinusitis After Cochlear Implantation in Children**

Emily F. Rudnick, MD, Richmond, VA  
Michael W. Chu, BS, Richmond, VA  
Ron B. Mitchell, MD, Richmond, VA  
Aristides Sismanis, MD\*, Richmond, VA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to recognize rhinosinusitis as a possible preoperative risk factor for orbital complications following cochlear implantation in children.

**OBJECTIVES:** To describe orbital complications in children following cochlear implantation, to define rhinosinusitis as a possible preoperative risk factor, and to suggest a possible pathophysiological mechanism for this previously unreported occurrence. **STUDY DESIGN:** Retrospective case review. **METHODS:** Records of children undergoing cochlear implantation over a seven year period at a tertiary academic medical center were reviewed. Four children who experienced postoperative orbital sequelae were identified. We describe the demographics, clinical course, and radiological findings in these children. **RESULTS:** The records of ninety-one children who underwent cochlear implantation were reviewed. The mean age was 6.0 years (range 0.9 to 16.9 years). Forty-nine children (54%) were female and 51 (56%) were Caucasian. Four children developed postoperative orbital complications on the ipsilateral side to implantation. Orbital complications were characterized by periorbital edema and preseptal cellulitis necessitating prolonged hospitalization in all four children (mean length of stay 3.3 days). Each child's orbital complication resolved with medical therapy that included intravenous antibiotics and nasal saline. Temporal bone images prior to implantation showed evidence of rhinosinusitis in all four cases. Of 76 available preoperative scans from the remainder of children, only 11 (14%) studies showed evidence of rhinosinusitis. **CONCLUSIONS:** Children with preoperative radiological evidence of rhinosinusitis may be at risk of orbital sequelae following cochlear implantation. Positioning of the patient during surgery, length of surgery and minor trauma to the lamina papyracea during drilling of the mastoid may be important etiological factors. A careful review of medical history and CT imaging prior to implantation may identify at-risk children.

**46. Organotypic (raft) Culture of Biopsy Derived Upper Respiratory Epithelium**

John M. Schweinfurth, MD, Jackson, MS  
Craig L. Meyers, PhD, Hershey, PA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand methods for culturing and studying mucosal epithelium in vitro.

**OBJECTIVES:** To derive a reliable technique for culturing biopsy derived upper respiratory epithelium in a system that supports epithelial differentiation and simulates the normal epithelial life cycle. **STUDY DESIGN:** Prospective, modification and development of an in vitro tissue culture method. **METHODS:** Thirty biopsy specimens from 16 individuals with recurrent respiratory papillomatosis and chronic tonsillitis, pretreated to prevent bacterial and fungal overgrowth, were incubated with trypsin to create a supernatant of single cells. The cells were plated and incubated. At 14-16 days, the resulting colonies were placed on a wire cloth raft and fed via diffusion from the underlying culture medium in an air-liquid interface. **RESULTS:** Eight specimens were successfully cultured for an average of over 32 days. The longest duration of sustained growth was 60 days. Low risk human papillomavirus specimen based cultures reproduced infection in cultured squamous epithelium, indicating a high level of stratification and differentiation. **CONCLUSIONS:** Unlike commercially available cell lines, biopsy derived material is predisposed to contamination and successful in vitro culture and experimentation creates many unique challenges. An organotypic culture system, capable of reproducing the differentiation dependent replication cycle of human papillomavirus, may be used for culturing biopsy derived specimens for a variety of studies.

**47. The Epidemiology of Aspiration Pneumonia in a Tertiary Care Center**

John M. Schweinfurth, MD, Jackson, MS  
Kimberly A. Donnellan, MCD CCCSLP, Jackson, MS (Presenter)

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to identify potential risk factors for aspiration pneumonia in the general population and discuss the role of screening in at risk patients.

**OBJECTIVES:** To identify populations at risk for aspiration pneumonia and determine the utilization of swallowing evaluation services in a tertiary care center. **STUDY DESIGN:** Hospital based population retrospective cohort study. **METHODS:** The medical records of incident cases of aspiration pneumonia over a five year period were reviewed for demographics, underlying disease and associated risk factors, length of stay, and history of swallowing and airway evaluation. **RESULTS:** Nearly six thousand patients were hospitalized with pneumonia over the study period; 1,148 cases were further specified as aspiration pneumonia. Of these, the most commonly identified risk factor was cardiovascular disease (16%). The remainder of cases were evenly divided between neoplastic, metabolic, psychiatric, neurologic, and cerebrovascular disorders. Less than 10% of patients underwent any formal evaluation of swallowing. Patients with cerebrovascular disease were more likely to have swallowing evaluation and an indwelling enteral alimentation route (24% vs. 4%). Average length of stay was 12 days for pneumonia and 21 days for aspiration pneumonia. **CONCLUSIONS:** A significant number of hospitalized patients with a wide variety of underlying illnesses are at risk for the development of aspiration pneumonia. Although more likely to undergo formal swallowing evaluation, the observed risk for patients with acquired neurologic and cerebrovascular disease was not significantly higher than for other patients. Inpatient screening for aspiration and other swallowing disorders should be expanded. Speech therapy services appear to be underutilized in the at risk population.

**48. Ultrasonic Technology Facilitates Minimal Access Thyroid Surgery**

Melanie Wilson Seybt, MD, Augusta, GA  
Edward A. Chin, MD, Augusta, GA  
Christine G. Gourin, MD, Augusta, GA  
David J. Terris, MD\*, Augusta, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the impact of ultrasonic technology on the practice of thyroid surgery and its benefits and limitations.

**OBJECTIVES:** The options for controlling the vasculature during thyroid surgery include suture ligatures, vessel clips, and bipolar cautery (particularly the LigaSure system). Ultrasonic technology represents an alternative in which the vessels are simultaneously sealed and divided. We sought to determine the safety and efficacy of thyroidectomy with ultrasonic technology. **STUDY DESIGN:** Nonrandomized, prospective analysis of a series of patients undergoing thyroidectomy. **METHODS:** The records of 51 consecutive patients who underwent thyroid surgery between 12/1/04 and 6/30/05 were evaluated; those in whom ultrasonic technology (Harmonic scalpel, Ethicon) was utilized were identified. Demographic data including age, gender, and race were extracted; clinical parameters assessed included indications for surgery, type and

duration of surgery, incision length, pathology, and incidence of complications. **RESULTS:** Forty-four of 51 patients underwent thyroidectomy with the assistance of ultrasonic technology. There were 4 males and 40 females with a mean age of  $43.5 \pm 15.8$  years. Twenty-two patients had a total thyroidectomy, 18 underwent unilateral lobectomy, and 4 underwent completion thyroidectomy. The overall mean incision length was  $5.0 \pm 2.6$  cm (range 2 to 12), however there was a subgroup of patients who underwent minimally invasive video-assisted thyroidectomy who had a mean incision length of  $29.3 \pm 0.8$  mm. There were no cases of permanent injury to the recurrent laryngeal nerve, and no cases of persistent hypoparathyroidism. The blood loss ranged from 5cc to 100cc with a mean of  $26.7 \pm 21.8$  cc. Twenty-two patients (50%) were discharged on the day of surgery, including 5 patients who underwent total thyroidectomy and 3 who had completion thyroidectomies. **CONCLUSIONS:** Ultrasonic technology facilitates thyroid surgery, particularly when a minimally invasive approach is undertaken. It reliably seals and divides the thyroid vasculature and will likely replace other methods of managing the thyroid blood supply.

**49. Acute Dysphonia After Vardenafil Use**

Vikas P. Singh, MD, Nashville, TN  
Seth M. Cohen, MD MPH, Nashville, TN  
Bernard J. Rousseau, PhD, Nashville, TN  
J. Pieter Noordzij, MD, Nashville, TN  
C. Gaelyn Garrett, MD\*, Nashville, TN  
Robert H. Ossoff, DMD MD\*, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be aware of the association between phosphodiesterase-5 inhibitors and bleeding complications and possible associations with vocal fold hemorrhage.

**OBJECTIVES:** Phosphodiesterase-5 inhibitors through their dilatory effects have become widely used medications for the treatment of impotence. However, several reports have noted an association between epistaxis, variceal bleeding, and hemorrhoidal bleeding and this class of medications. We report a case of vocal fold hemorrhage occurring after vardenafil use. **STUDY DESIGN:** Case report. **METHODS:** A 31 year old male professional singer presented two days after the onset of acute hoarseness. Videostroboscopy revealed an acute left vocal fold hemorrhage. On further questioning, the patient had noticed some baseline, mild dysphonia for several months. He denied use of aspirin, NSAIDS, or other blood thinners. He admitted to trying vardenafil before sexual activity. Within 18 hours of taking vardenafil he performed after which he became severely dysphonic. His hemorrhage resolved with 2 weeks of voice rest and steroids and he is now undergoing voice therapy. **RESULTS:** vardenafil's mechanism of action is mediated via venous congestion. While an obvious varix could not be identified in this case, a submucosal varix could have been present, as the patient has some baseline dysphonia. The combination of increased venous congestion and the trauma from his vocal performance may have contributed to his vocal fold hemorrhage. **CONCLUSIONS:** Male patients presenting with vocal fold hemorrhage should be questioned about taking phosphodiesterase-5 inhibitors. Patients with obvious varices should be cautioned about the potential for hemorrhage while taking these medications.

**50. Presence of Human Papillomavirus DNA in Routine Tonsillectomy Specimens**

Jamie D. Sisk, MD, Jackson, MS  
Xiaohong T. Wang, PhD, Jackson, MS  
John M. Schweinfurth, MD, Jackson, MS  
Kong T. Chong, PhD, Jackson, MS

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to discuss the prevalence of human papillomavirus (HPV) DNA in the normal population and methods of HPV identification.

**OBJECTIVES:** To study the prevalence of human papillomavirus (HPV) in tonsillectomy specimens from pediatric patients without recurrent respiratory papillomatosis (RRP). To study methods of HPV detection. **STUDY DESIGN:** Prospective case control study. **METHODS:** 50 pediatric patients without known RRP undergoing tonsillectomy for hypertrophy or recurrent tonsillitis were enrolled in the study. Following tonsillectomy, a 20mg section was subjected to DNA extraction, and DNA content and purity were confirmed with spectrophotometry. Polymerase chain reaction was performed using consensus primer pools PGMY 09/11 targeted at the L1 region. Amplification products were detected and analyzed with standard agarose gel electrophoresis. Positive samples were then subjected to reverse line blot assay to determine virus genotype. Laryngeal papilloma specimens of 15 patients obtained during routine debulking procedures were also analyzed and served as positive controls. **RESULTS:** Of 50 tonsil samples tested, 2 were positive for HPV DNA following PCR and gel electrophoresis. Only one of these samples was confirmed with typing and tested positive for HPV 11. All 15 papilloma specimens were positive for DNA of HPV types 6 and/or 11. **CONCLUSIONS:** In the current study, the prevalence of HPV DNA in tonsillar tissue of patients without RRP is 2% while the incidence of this disease is 2-4 cases per 100,000. These findings are significantly different ( $p=0.005$  within a 95% confidence interval) suggesting that host factors in addition to infection play a role in pathogenesis of RRP. The molecular methods described in this study are well suited for detection of HPV in tonsillar tissue.

**51. Localized Cochlear Hypothermia**

Lee P. Smith, MD, Miami, FL  
Adrien A. Eshraghi, MD MSc, Miami, FL  
Douglas E. Whitley, BEE, Miami, FL  
Thomas R. Van De Water, PhD, Miami, FL  
Thomas J. Balkany, MD FAAP\*, Miami, FL

**EDUCATIONAL OBJECTIVE:** At the conclusion of the presentation participants should be able to better understand three approaches for inducing localized cochlear hypothermia and its clinical application.

**OBJECTIVES:** To present three techniques for producing localized cochlear hypothermia. **STUDY DESIGN:** A rat model was utilized to evaluate the potential to induce localized cochlear hypothermia. **METHODS:** 24 ears of 12 Fisher 344 rats were prepared by inserting a micro-temperature probe (ETS1 engineering, Ft. Lauderdale, FL) into the basal turn of the cochlea. The cochleostomy was sealed with a piece of waterproof self-adhesive hydrocolloid dressing (ConvaTec, Princeton, NJ). Test ears were subjected to cooling by one or more of three methods: 1) cold saline irrigation (14C or 11C) of the external auditory canal (EAC), or 2) bulla, or 3) the application of a latex bag of ice over the bulla. Cochlear temperature measurements were obtained every 30 seconds during the cooling period until three identical measurements were observed. The cooling stimulus was then withdrawn and cochlear temperature was recorded every 30 seconds until it renormalized. Rectal temperature was monitored during all trials. **RESULTS:** All three techniques resulted in cochlear hypothermia without a concomitant change in rectal temperature. EAC irrigation (14C and 11C) decreased cochlear temperature on average by 1.1C and 1.6C respectively. Bulla irrigation (14C and 11C) decreased cochlear temperature on average by 3.3C and 4.1C respectively. The bag of ice produced an average cochlear temperature decrease of 4.1C. In all cases the cochlear temperature nadir was reached in 5-6 minutes and temperature re-normalization occurred in 5-9 minutes, with no significant differences among groups. **CONCLUSIONS:** Localized cochlear hypothermia can be produced in a rat model with the potential to modulate cochlear temperature to a targeted level.

**52. Intraparotid Facial Nerve Schwannomas: Clinician Beware**

Neil Tanna, MD, Washington, DC  
Phil E. Zapanta, MD, Washington, DC  
Leela Lavasani, BS, Washington, DC

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to demonstrate current concepts in diagnosis and management of intraparotid facial nerve schwannomas.

**OBJECTIVES:** To provide insight into the current diagnosis and management of a rare neoplasm. **STUDY DESIGN:** By reviewing a clinical case from a series of patients within our practice, we will highlight the clinical presentation of intraparotid facial nerve schwannomas and its implications in management. **METHODS:** Case report and review of the literature. **RESULTS:** A 59 year old female presented with complaints of left facial swelling and paresthesias. Physical examination revealed a left facial mass in the parotid area and paralysis consistent with a House-Brackmann grade of 2/6. Fine needle aspiration cytology revealed a group of spindle shaped cells. T2 weighted MRI demonstrated a hyperintense mass involving the mastoid segment of the left facial nerve extending into the parotid gland. Surgical management included a left total parotidectomy, level II neck dissection, tympanomastoidectomy, and facial nerve resection with subsequent neuroorrhaphy. **CONCLUSIONS:** Intraparotid facial nerve schwannomas are rare neoplasms that present a challenge in diagnosis and management. Many patients will often present with a palpable mass in the parotid or facial paralysis. Imaging studies can aid both diagnosis and management. On T2 weighted images these tumors demonstrate the target sign, a higher signal intensity around the periphery. These films can also help evaluate the extent of disease and allow the clinician to discuss possible outcomes with the patient. The management goals of surgery include complete removal of the tumor with restoration of facial nerve function. With early diagnosis of facial nerve schwannoma, operative strategy can be planned, and, ultimately, postoperative outcome of facial function optimized.

**53. Molecular Basis of Post-Transplant Squamous Cell Carcinoma**

Jeremy J. Tiu, MD, Morgantown, WV  
Peilin Zhang, MD PhD, Hurricane, WV  
Christopher H. Rassekh, MD, Morgantown, WV  
Paul G. van der Sloot, MD, Morgantown, WV  
Rodney Kovach, MD, Morgantown, WV

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to recognize the higher incidence of cutaneous squamous cell carcinoma in post-transplant recipients on immunosuppression, understand the applications of gene chip technology in cancer research, and appreciate the role of gene chip technology in preliminary cancer studies.

**OBJECTIVES:** We hypothesize that cyclosporine-A (CSA) can directly influence the cellular function of skin cells and induce malignant transformation. **STUDY DESIGN:** We studied the global effect of CSA on squamous cells using gene profiling with Affymetrix human gene chips containing approximately 40,000 genes (Affymetrix Inc. U133, 2.0 plus chip). **METHODS:** After differential analysis, multiple groups of genes were identified as being responsive to CSA treatment. These genes were grouped as kinases/phosphatases, transcriptional factors, cytokine and growth factors, enzymes important for cell metabolisms, and structural proteins. We used quantitative real time RT-PCR and immunoblot analyses to selectively confirm the results from the chip analysis with emphasis on the regulatory molecules important for the cellular functions of apoptosis, DNA damage repair and cellular transformation, as well as novel genes, not known to be present in skin cells. **RESULTS:** A number of candidate genes were identified as important regulators in epidermal malignant transformation. In addition, many novel genes with unclear functions are present and responsive to CSA. Many genes with known functions in other tissues were also identified in the skin with unclear function. **CONCLUSIONS:** This study represents the first step to understanding the effect of CSA on carcinogenesis of human skin in transplant patients. Future studies may be directed to further investigate the role of these candidate genes in skin carcinogenesis.

**54. Pars Flaccida Retraction and Mastoid Pneumatization: Relationship in Clinically Normal Specimens**

N. Wendell Todd, MD MPH\*, Atlanta, GA

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the pathogenesis of pars flaccida retraction as relates to mastoid size.

**OBJECTIVES:** To depict, in clinically normal specimens, the relationship of pars flaccida retraction with mastoid pneumatization and epitympanic aeration. **STUDY DESIGN:** Postmortem anatomic study of 41 bequeathed adult crania (82 ears) without clinical otitis. **METHODS:** With an operation microscope, pars flaccida retractions were judged using the classification of Sade. Mastoid sizes were determined radiographically (plain Law lateral images). Ten crania, 5 with the largest mastoids and 5 with the smallest mastoids, were studied by computed tomography. **RESULTS:** No specimen had pars flaccida retraction worse than onto the neck of the malleus. Pars flaccida retraction was unrelated to size of mastoid pneumatization. Computed tomography showed aeration of all 20 epitympanic spaces. **CONCLUSIONS:** Pars flaccida retraction is likely related to prior, presumably transient, non-aeration of Prussak's space.

**55. Vestibular Function After Endolymphatic Sac Surgery**

Safer A. Ulubil, MD, Miami, FL  
Adrien A. Eshraghi, MD, Miami, FL  
Fred F. Telischi, MD\*, Miami, FL

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to gain information about the effect of endolymphatic sac surgery on caloric functions of the inner ear, which has never been studied in the literature.

**OBJECTIVES:** To evaluate the effect of endolymphatic sac surgery on vestibular functions using caloric testing on electronystagmography **STUDY DESIGN:** Retrospective chart review. **METHODS:** The charts of 21 adult patients who underwent endolymphatic sac surgery between 1998 and 2004 were reviewed. Using electronystagmography (ENG), the degree of reduced vestibular response rates (RVR) as an indicator of caloric functions, were compared before and after surgery. Average follow-up was 17 (6-52) months. **RESULTS:** The mean change in reduced vestibular response after surgery was found to be 2.9%. In total, there were 6 (28.5%) patients who had an RVR increase more than 10%. Of those, there were 3 (14.2%) patients who demonstrated an RVR increase more than 20%. Only 1 (4.8%) patient had an RVR increase more than 30%. Total loss of vestibular function was not observed in any of the patients. There were 3 (14.2%) patients who exhibited a decrease of more than 10% in their reduced vestibular response. In 2 (9%) patients, the contralateral ear was shown to have less vestibular function than the operated side on ENG postoperatively. Early results of vertigo control and hearing outcomes were comparable to those of in the literature. **CONCLUSIONS:** Endolymphatic sac surgery does not appear to be a vestibular destructive procedure as an efficacious therapeutic alternative for patients who failed medical treatment.

**56. Stereotactic Computer Assisted Image Guided Endoscopic Sinus Surgery: The Changing Role of the External Frontal Sinusotomy (Trepine) Approach**

Daniel J. Van Himbergen, MD, Nashville, TN  
James A. Duncavage, MD\*, Nashville, TN  
Paul T. Russell, MD, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the indications for usage image guidance (IGS) in endoscopic sinus surgery (ESS), discuss the advantages of image guidance in reducing frontal sinus trephinations, and understand how image guided endoscopic sinus surgery is being incorporated into a large rhinology practice in a tertiary care educational setting.

**OBJECTIVES:** 1) Show how image guided endoscopic sinus surgery is being used at our institution; and 2) evaluate the need to perform frontal sinus trephinations with increasing usage of image guided endoscopic sinus surgery. **STUDY DESIGN:** Two six month time periods, before and after the procurement of a new infrared BrainLab image guidance system, were studied. All patients who underwent image guided endoscopic sinus surgery, frontal sinus trephination, or endoscopic frontal sinusotomies during these two time periods were evaluated in a retrospective chart analysis. **METHODS:** All patients' medical records were evaluated in the two time periods selected who underwent the previously mentioned procedures. Data collected included date of surgery, gender, age, intraoperative/postoperative complications, ESS performed, date of surgery, reason for IGS, whether IGS saved further surgery, and whether or not external frontal sinusotomy was needed. **RESULTS:** The number of cases which used image guidance increased over 300% in the second 6 month period with respect to the first 6 month period. With the increasing usage of image guided surgery, the percentage of frontal sinusotomies that were done via trephination decreased from 93% to 50% ( $p < 0.001$ ). There was a negative correlation of -0.44 when comparing image guided surgery to frontal sinus trephination ( $p < 0.001$ ). **CONCLUSIONS:** Stereotactic computer assisted image guidance is being incorporated more frequently into our sinus/rhinology practice. In addition, image guidance is reducing amount of frontal sinus trephinations performed and its associated morbidities.

**57. Synovial Cell Sarcoma of the Epiglottis: Case Report and Review of the Literature**

Jeremy D. Vos, MD, Nashville, TN  
Maria D. Latev, MD, Nashville, TN  
Lesley C. French, MD, Nashville, TN  
James L. Netterville, MD\*, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand the clinical behavior and histopathology of laryngeal synovial cell sarcoma, as well as discuss its treatment and prognosis.

**OBJECTIVES:** Synovial cell sarcomas are rare malignant tumors, accounting for approximately ten percent of soft tissue sarcomas. Only one-tenth of all synovial cell sarcomas present in the head and neck, most often in the hypopharynx and rarely within the larynx. The goal of this presentation is to increase awareness of this disease, to lead to correct diagnosis and prompt initiation of treatment. **STUDY DESIGN:** Case report and a review of the English language literature. **METHODS:** The authors present a case report from a tertiary academic medical center, including the history, physical exam, endoscopy, radiology, and histopathology. We include a review of the literature on laryngeal synovial cell sarcoma and its treatment. **RESULTS:** A 12 year old boy presented with dysphagia and dyspnea. Evaluation revealed an exophytic mass within the epiglottis. Biopsy was consistent with monophasic synovial cell sarcoma. Neoadjuvant chemotherapy was initiated with significant tumor response, followed by resection and post-operative radiation therapy and chemotherapy. He remains disease free more than one year after initiation of treatment. **CONCLUSIONS:** To date, this report marks only the fifteenth documented case of synovial cell sarcoma occurring within the larynx and represents the youngest of those patients, as well as the first case arising from the epiglottis. Given the rarity of synovial cell sarcoma, the clinician must maintain a high index of suspicion in order to correctly identify it and begin appropriate treatment. If appropriate treatment is begun promptly, favorable outcomes are possible, as our case demonstrates.

**58. Second Primary Tumors of the Sinonasal Cavity**

Matthew E. Wolpoe, MD, Baltimore, MD  
David D. Goldenberg, MD, Baltimore, MD  
Wayne M. Koch, MD\*, Baltimore, MD

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to understand risks of acquiring secondary malignancy in sinonasal tract after index cancer elsewhere in upper aerodigestive tract. Also will understand the importance of including this subsite in routine surveillance.

**OBJECTIVES:** Second primary tumors occur frequently in patients with head and neck carcinoma. This may be due to generalized exposure to carcinogens resulting in "field canceration". The paranasal sinuses are not commonly included in the sites considered at risk for this process. We therefore sought to assess the overall risk of contracting a primary cancer in this region after having a tumor elsewhere in the upper aerodigestive tract. **STUDY DESIGN:** Retrospective. **METHODS:** 2475 patients with squamous cell carcinoma of the upper aerodigestive tract were analyzed utilizing a tumor registry at a tertiary care institution. **RESULTS:** Five patients were identified as having a second primary tumor in the sinonasal tract (0.2%). The average interval between the index and secondary tumors was 19 months (range 6-30 months). All five patients had advanced sinus lesions at the time of diagnosis. In three of the five patients surgery combined with adjuvant radiation therapy achieved locoregional control, while two died of progressive disease. However, four of five patients have succumbed to the second primary tumor with an average survival of 26 months after receiving this diagnosis. These findings are typical of those with sinonasal carcinomas in that they presented with nonspecific signs and symptoms and were diagnosed with locally advanced disease despite being in a surveillance program for their index cancer. **CONCLUSIONS:** Although uncommon the data reported here supports inclusion of the sinonasal tract in these surveillance programs. This could result in earlier detection and greater opportunity for curative intervention.

**59. CSF Leak From Cochleostomy During Cochlea Implant Surgery: Etiology, Diagnosis and Management**

Christopher T. Wootten, MD, Nashville, TN  
Doug D. Backous, MD\*, Seattle, WA  
Robert F. Labadie, MD, Nashville, TN  
David S. Haynes, MD, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to: 1) understand the mechanism of CSF otorrhea after cochleostomy; 2) recognize patients at risk for CSF otorrhea during cochlear implant surgery; and 3) discuss the intraoperative and postoperative management of CSF otorrhea.

**OBJECTIVES:** To determine the incidence of CSF otorrhea from the cochleostomy during cochlear implant surgery, to recognize patients at risk and to determine the appropriate preoperative, postoperative and intraoperative management. **STUDY DESIGN:** Retrospective review. **METHODS:** A retrospective chart review from 2 cochlear implant centers was performed to determine the incidence of CSF otorrhea, at risk patients, and appropriate management. **RESULTS:** The incidence of CSF otorrhea is low, encountered in approximately 1% of patients undergoing CI surgery. Preoperative imaging can predict the incidence in most but not all cases. Mechanisms for otorrhea in specific cochlear malformations and in those in which no apparent malformation exists will be discussed. Successful implantation is expected in most cases. Potential complications and avoidance of complications will be addressed. Intraoperative management may require complete packing of the middle ear space in addition to the cochleostomy to control CSF leak. Outpatient management is possible. Vaccination and antibiotic prophylaxis is essential. **CONCLUSIONS:** CSF otorrhea can be encountered in cochlear malformations and in cochleas without apparent malformation. Successful implantation without short-term or long-term complications is expected.

**60. External Auditory Canal Leiomyoma: The First Pediatric Case Report**

Christopher T. Wootten, MD, Nashville, TN  
David M. Kaylie, MD, Nashville, TN

**EDUCATIONAL OBJECTIVE:** At the conclusion of this presentation, the participants should be able to explain the presentation of an external auditory canal leiomyoma, discuss the differential diagnosis in a pediatric patient population and review the treatment of this benign lesion.

**OBJECTIVES:** Leiomyomas are rare tumors in the head and neck and 3 cases of external auditory canal (EAC) leiomyomas have been reported to date. For the first time, we report an EAC leiomyoma in a child, which presented as a well circumscribed, epithelialized EAC mass associated with hearing loss. **STUDY DESIGN:** Case report.

**METHODS:** Pediatric case report and analysis of the literature. **RESULTS:** EAC leiomyomas present with canal obstructive symptoms including hearing loss, pain and otorrhea. The excisional approach depends on the location and size of the tumor. For our case, tumor excision was successful via a postauricular approach. A literature review finds 3 cases of EAC leiomyomas in adult patients (mean age 50 years) with no reported tumor recurrences after complete excision. **CONCLUSIONS:** Pediatric EAC masses require an expanded differential diagnosis. Careful histopathological analysis of tumor mitoses differentiates leiomyomas from their malignant counterparts. Complete excision of EAC leiomyomas represents adequate therapy.