

2008 SOUTHERN SECTION PROGRAM

JANUARY 10-12, 2008
NAPLES GRAND RESORT, NAPLES, FL

10th Thursday January

- 4:00 - Speaker Ready Room - Hibiscus
8:00
- 5:00 - Registration - Royal Palm Foyer
8:00
- 6:00 - President's Welcome Reception - Sunset Deck
7:30 pm

11th Friday January

- 7:00 - Business Meeting (Members only) - Royal Palm 6
7:50 am Breakfast with Exhibitors - Royal Palm 4-5
- 7:00 - Exhibit Hall Open - Royal Palm 4-5
12:00 View Posters
- 7:00 - Speaker Ready Room - Hibiscus
1:00
- 7:00 - Registration - Royal Palm Foyer
1:00
- 9:00 - Spouse Hospitality - Banyan 1
11:00
- 8:00 - Scientific Sessions - Royal Palm 1-3
12:10
- 8:00 Welcome and Introduction of President,
Harold C. Pillsbury, MD*, Chapel Hill, NC
Paul A. Levine, MD*, Charlottesville, VA

* Denotes Fellow

Presidential Address

Workforce Issues in Otolaryngology/Head & Neck Surgery

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

8:15 Introduction of Guest of Honor, Robert W. Cantrell, MD*, Charlottesville, VA
Paul A. Levine, MD*, Charlottesville, VA

8:20 Introduction of Vice Presidential Citations
Kenneth M. Grundfast, MD*, Boston, MA
Paul R. Lambert, MD*, Charleston, SC
Ellen Desper, RN, Clinician IV, Charlottesville, VA
Traivahn K. Somchay, RN, Charlottesville, VA
Maryann S. Desaulniers, RN, Charlottesville, VA

8:35 Vice Presidential Address
Who Will Care for Me When I Get Sick?
Paul A. Levine, MD*, Charlottesville, VA

8:45 Introduction of Guest Speaker, Craig L. Slingluff, MD, Charlottesville, VA
Melanoma in the 21st Century

9:05 Head and Neck Panel: Controversies in Melanoma - Case Discussions
Moderator: Paul A. Levine, MD*, Charlottesville, VA
Panelists: Craig L. Slingluff, MD, Charlottesville, VA
Christine G. Gourin, MD*, Augusta, GA
Samuel R. Fisher, MD*, Durham, NC

HEAD & NECK MODERATOR

Christine G. Gourin, MD*, Augusta, GA

9:35 *Triological Society Thesis*
The Role of Microvascular Density in Non-Localizing Parathyroid Sestamibi Scans
Glenn E. Peters, MD, Birmingham, AL*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand what is not contributing to localizing sestamibi scans in hyperparathyroidism

Objectives: Sestamibi scans for localization of abnormal parathyroid glands in patients with hyperparathyroidism are widely used at many institutions. Minimally invasive parathyroid surgery demands accurate preoperative localization imaging; however, non-localizing sestamibi scans occur in 15% of patients with primary hyperparathyroidism. It remains unknown why some Sestamibi scans fail to localize. It has been suggested that an increase in microvascular density (MVD) within an adenoma will result in rapid tracer washout and a subsequent non-localizing scan. This study investigates the role of MVD in sestamibi localization. **Study Design:** Retrospective chart review with immunohistochemical staining and data analysis. **Methods:** Medical records of 83 patients who had a sestamibi scan for evaluation of primary hyperparathyroidism and underwent initial parathyroidectomy from 2000-2002 were retrospectively reviewed. Patients' age, sex, preoperative imaging results, operative procedure, gland weight and histological findings were collected. Immunohistochemistry was performed to assess MVD. **Results:** Of the 75 pre-operative sestamibi scans used, 51 patients had a localizing scan and 24 were non-localizing. Localizing sestamibi scans for primary hyperparathyroidism demonstrated a sensitivity of 94% and specificity of 85%. By identifying multiglandular hyperplasia, non-localizing sestamibi scans produced a sensitivity of 83%. The localizing group had a greater percentage of solitary adenomas (94%) compared to the non-localizing group (15.6%) (p<0.001). The mean gland weight for the non-localizing group was less than 398gm compared to the localizing group weight of 1113gm (p<0.001). The mean MVD for localizing scan group was 229 vessels per high power field and the mean for the non-localizing scans was 213 vessels per high power field (p=0.2). **Conclusions:** Microvascular density does not predict whether sestamibi scans are localizing or non-localizing.

9:43 **Fluorescent Detection of Rat Parathyroid Glands Via 5-Aminolevulinic Acid**

Scott A. Asher, BS, Birmingham, AL
Glenn E. Peters, MD*, Birmingham, AL
Stephen F. Pehler, BS, Birmingham, AL
Kurt R. Zinn, PhD DVM, Birmingham, AL
J. Robert Newman, MD, Birmingham, AL
Eben L. Rosenthal, MD*, Birmingham, AL

Educational Objective: At the conclusion of this presentation, the participants should be able to adequately depict the overall results of this preclinical study, fully recognize the need for an intraoperative parathyroid specific contrast agent, and intelligently discuss the prospect of 5-aminolevulinic acid fulfilling that role.

Objectives: Anatomic identification of parathyroid glands during surgery is challenging and time consuming. We sought to determine if 5-aminolevulinic acid (5-ALA) could produce parathyroid gland fluorescence to improve their detection in a preclinical model. **Study Design:** N/A. **Methods:** Thirty-two rats were administered 0-700 mg/kg of 5-ALA by intraperitoneal injection prior to neck exploration under the illumination of a blue light (380-440 nm). Tissue fluorescence was assessed at 1, 2, or 4 hours post-injection and then removed for histologic confirmation of parathyroid tissue. **Results:** Rat parathyroid glands could not be visualized under ambient light. At dosages of 300 mg/kg or greater, bilateral parathyroid glands were visualized in 18 of 19 rats using blue light illumination. At dosages less than 300 mg/kg parathyroid gland fluorescence was detected in only 1 of 13 rats. At 2 hours after 5-ALA administration the net mean intensity of parathyroid gland fluorescence was optimal with a dose of 500 mg/kg. At both 1 and 4 hours post 5-ALA injection the net mean intensity of parathyroid gland fluorescence was optimal at the highest dose (700 mg/kg) and positively correlated with dosage increases. **Conclusions:** 5-ALA can be used to selectively detect parathyroid tissue from surrounding tissue in a preclinical model. Our data supports the use of this technique in the clinical setting.

9:51 **The Effect of Occult Nodal Metastases on Survival and Regional Control in Patients with Head and Neck Squamous Cell Carcinoma**

Bryant T. Conger, BS, Augusta, GA
Christine G. Gourin, MD*, Augusta, GA
Edward S. Porubsky, MD, Augusta, GA
Paul A. Bilodeau, MD, Augusta, GA
Teresa A. Coleman, MD, Augusta, GA
W. Chris Sheils, MD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the effect of node number and extracapsular spread on outcome in patients with occult nodal metastases.

Objectives: To determine factors associated with disease free survival (DFS) and regional control in clinically node-negative (cN0) head and neck squamous cell cancer (HNSCC) patients with occult metastasis. **Study Design:** Nonrandomized retrospective analysis. **Methods:** Patients who underwent elective neck dissection (END) from 1985-2002 were analyzed. **Results:** A total of 337 patients underwent END. The majority of patients (67%) had advanced stage disease (T3/T4). Occult metastases (pN+) were present in 168 patients (50%). The presence or absence of extracapsular spread (ECS) was mentioned in only 83 of 168 pN+ patients (49%) with ECS present in 72 (87%). Postoperative chemotherapy was used in 11 patients. DFS for pN+ patients was 35% and was not significantly influenced by the use of postoperative XRT, regardless of the number of positive nodes. XRT improved regional control rates in patients with <3 positive nodes (72% vs. 62%) and patients with ≥3 positive nodes (55% vs. 50%). When ECS was present, XRT did not affect DFS in patients with <3 nodes (36%) or patients with ≥3 nodes (20% vs. 0%). Regional control rates were improved with XRT in ECS+ patients with < 3 nodes (75% vs. 50%) but were unaffected when ≥3 nodes were involved (34%). **Conclusions:** There is a high incidence of occult metastases in cN0 patients. The use of XRT did not affect survival but resulted in improved regional control in patients with < 3 positive nodes. When ECS was present survival was poor regardless of node number. These data highlight the need for the development of novel therapeutic regimens to improve HNSCC disease control and survival.

9:59 **Q&A**

10:05 **Break with Exhibitors - Royal Palm 4-5 View Posters - Foyer**

10:35 **OTOLOGY PANEL: MANAGEMENT OF CHRONIC EAR DISEASE IN THE 21ST CENTURY: HAS ANYTHING CHANGED?**

Moderator: Paul R. Lambert, MD*, Charleston, SC
Panelists: Kenneth M. Grundfast, MD*, Boston, MA
Bradley W. Kesser, MD*, Charlottesville, VA
Harold C. Pillsbury, MD*, Chapel Hill, HC

OTOLOGY MODERATOR

Bradley W. Kesser, MD*, Charlottesville, VA

11:25 Middle Ear Effusion in Adult ICU Patients: A Case Control Study

Charles R. Woodard, MD, Charlottesville, VA (Resident Travel Award)
Nicholas G. Stowell, BS, Charlottesville, VA
Samuel S. Becker, MD, Charlottesville, VA
Bradley W. Kesser, MD, Charlottesville, VA*

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate the incidence of middle ear effusion in intensive care unit patients, understand risk factors associated with middle ear effusion in this patient population, and conclude that middle ear effusion is an unlikely cause of fever in these patients.

Objectives: Objectives of this study are to determine the prevalence of middle ear effusion (MEE) in intensive care unit (ICU) vs. non-ICU hospitalized patients, to identify risk factors associated with MEE in ICU patients, and to evaluate any association with fever. **Study Design:** Prospective nonrandomized case control study of ICU and non-ICU hospitalized patients. **Methods:** 74 (37 ICU and 37 non-ICU) adult patients ages 18-90 were enrolled. Otosopic finding of MEE and/or flat tympanogram with appropriate ear canal volume were deemed positive for MEE. The presence of MEE was then correlated with endotracheal intubation, length of time intubated, length of hospital stay, presence of a feeding tube, position of the patient, and presence of fever. **Results:** 19/37 (51.3%) patients in the ICU group and 2/37 (5.4%) patients in the control group exhibited MEEs (odds ratio 18.5; 95% CI 3.9 to 88.3). There was a significant association between endotracheal intubation and MEE ($p < 0.001$; chi-squared test). No significant relationship was seen with length of time intubated, length of stay, presence of a feeding tube, or position of the patient. 8/37 (21.6%) patients in the ICU and 3/37 (8.1%) non-ICU patients demonstrated a fever when examined. Of the eight ICU patients with fever four had MEEs, all but all eight patients had a documented source of fever other than MEE. Of the three non-ICU patients with fever none exhibited a MEE. **Conclusions:** Perhaps unrecognized, adult ICU patients have a high (51%) prevalence of MEE most likely related to endotracheal intubation. MEE is an unlikely source of fever.

11:33 Otitis Media with Effusion: A Possible Role for Helicobacter Pylori?

Tanya Fancy, MD, Morgantown, WV
Peter H. Mathers, PhD, Morgantown, WV
Hassan H. Ramadan, MD MSc, Morgantown, WV*

Educational Objective: At the conclusion of this presentation, the participants should be able to explain why Helicobacter pylori has been investigated for its role in otitis media with effusion (OME). They will develop a knowledge of the colonization rates and prevalence of H. pylori in the nasopharynx of pediatric patients with OME. They will learn whether these rates differ from those in pediatric patients with no history of OME. They will also be able to compare these numbers with H. pylori prevalence rates in middle ear effusions.

Objectives: To test for the presence of Helicobacter pylori in the nasopharynx of pediatric patients with and without otitis media with effusion (OME), and to determine whether there is a difference in H. pylori prevalence rates between these two groups. There is scant research on this topic in the US population. **Study Design:** A prospective study in which patients undergoing adenoidectomy for recurrent OME were enrolled over a four month period. A control group with no history of OME undergoing adenoidectomy (as part of an adenotonsillectomy procedure) for either obstructive sleep apnea or chronic adenotonsillitis was simultaneously enrolled. **Methods:** Forty-five study group patients and 37 control group patients were enrolled. Adenoid tissue biopsies were taken from both groups. As a sub-study middle ear effusion samples from our study group and from an additional 39 pediatric patients undergoing ventilation tube placement during the same timeframe were also collected. Polymerase chain reaction (PCR) assays were run on all samples using primers to target the H. pylori 26kDa SSA gene. **Results:** Helicobacter pylori was detected in the adenoids of 10 of 45 study group patients and 6 of 37 controls (22.2% vs. 16.2%, $p = 0.49$). Twenty-seven percent of middle ear aspirates were positive for H. pylori. H. pylori positivity was not associated with a history of reflux. **Conclusions:** The current study confirms the presence of H. pylori in the adenoids and middle ear space but our results do not support a role for this bacterium in the pathogenesis of OME.

11:41 Tumor Size as a Predictor of Growth in Acoustic Neuromas

C. Arturo Solares, MD, Cleveland, OH (Resident Travel Award)

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the natural history of acoustic neuromas.

Objectives: Treatments for vestibular schwannomas include surgical removal and radiotherapy. Observation is a reasonable alternative given the slow growth of these tumors. The goal of this study was to determine the 5 year “no growth” rate in patients managed initially by observation at our institution in attempts to define indications for treatment. **Study Design:** Retrospective chart analysis of prospectively collected patient series. **Methods:** Patients with vestibular schwannomas who presented in the last ten years were reviewed. Those managed initially by observation were reviewed. At least two consecutive imaging studies were required. The following information was recorded from the charts: age, sex, tumor size at presentation and subsequent followup sessions, treatment in the event of growth, and time interval between presentation and last imaging available. The institutional ethics committee approved the study. **Results:** Ninety-two patients were included. There were 53 males and 39 females. The mean age was 62.9 years (range 32 to 91 years). The mean followup was 33.5 months (range 6 to 156 months). Thirty patients demonstrated evidence of growth with an overall 5 year no growth rate of 54.6%. Despite growth, only 9 (9.8%) patients required intervention. Interestingly 8 (8.7%) patients demonstrated tumor regression. Patients with tumors 8 mm or less had a 5 year no growth rate of 74.3% compared to 36.7% for those with larger tumors. This difference was statistically significant ($p = 0.013$). **Conclusions:** Our data suggests that treatment can be delayed in a large proportion of vestibular schwannoma patients and that this is particularly true in patients with small tumors. Despite growth only a small percentage of patients require intervention. Thus we recommend a period of observation to determine the need for treatment in patients without indications for urgent intervention.

11:49 Effect of Blood and Mucus on Tympanostomy Tube Biofilm Formation

John Malaty, MD, Gainesville, FL

Patrick J. Antonelli, MD, Gainesville, FL (Presenter)*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the impact of blood and mucus exposure on tympanostomy tube biofilm formation.

Objectives: Tympanostomy tube (TT) biofilm formation may lead to refractory otorrhea and occlusion. The aim of this study was to determine if TT biofilm formation may be promoted by mucus or blood exposure. **Study Design:** In vitro, controlled. **Methods:** Fluoroplastic TTs were exposed to blood, mucoid effusion, or saline. Half were allowed to dry. TTs were cultured with *Pseudomonas aeruginosa*. After 4 days gentamicin was added to kill planktonic bacteria. Biofilm formation was assessed by quantitative bacterial counts and scanning electron microscopy. **Results:** Mucus pretreatment (dry and wet) did not increase biofilm formation. Both dry and wet blood exposure increased biofilm formation by bacterial counts ($p < 0.0001$). Biofilm formation was demonstrated by electron microscopy in all groups. **Conclusions:** *P. aeruginosa* biofilm formation on fluoroplastic TTs is enhanced by blood exposure. Care should be taken to minimize bleeding with TT placement to reduce the risk of biofilm formation.

11:57 Titanium versus Non-Titanium Prostheses in Ossiculoplasty

Charles S. Coffey, MD, Charleston, SC

Paul R. Lambert, MD, Charleston, SC*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the hearing outcomes and complications observed following ossicular chain reconstruction performed with titanium prostheses as compared to those performed with non-titanium prostheses.

Objectives: Although titanium has been used in the design of ossicular prostheses since the 1990s, reports in the American literature comparing the hearing outcomes of ossicular chain reconstruction performed with titanium versus non-titanium implants have been limited. The purpose of this study was to analyze and report the outcomes and complications of a consecutive series of ossiculoplasties performed by a single surgeon over a seven year period using either titanium or non-titanium prostheses. **Study Design:** Retrospective chart review was made of all ossicular reconstructions performed by the senior surgeon from October 1999 to January 2007. **Methods:** Of 131 cases reviewed a total of 77 had sufficient audiometric data available for analysis including 58 performed with titanium implants and 19 with non-titanium implants. Followup ranged from 1.2 to 51.5 months with a mean of 13.1 months. Preoperative and postoperative air bone gaps and speech reception thresholds were recorded for each case, and baseline surgical characteristics and postoperative complications were also noted. **Results:** The average improvement in air bone gap following ossicular chain reconstruction with titanium prostheses was 17 dB, compared to 13 dB for the non-titanium group ($p = 0.43$). The rate of successful rehabilitation ($d20$ dB pure tone average air bone gap) was 68% for patients receiving titanium implants versus 53% for those receiving non-titanium implants a difference which was not statistically significant ($p = 0.59$). Observed extrusion rates were less than 3% for both groups. **Conclusions:** Titanium ossicular prostheses provide equal or better hearing outcomes when compared to non-titanium prostheses and have extrusion rates

comparable to non-titanium implants.

12:05 Q&A

12:10 Adjourn

1:00 Golf & Tennis Tournaments

6:30 - Meet the Authors Poster Reception - Royal Palm 4-5
8:00 pm

12th Saturday January

7:00 - Business Meeting (Members only) - Acacia 1-3

7:50 am Breakfast with Exhibitors - Royal Palm 4-5

7:00 - Exhibit Hall Open - Royal Palm 4-5

12:00 View Posters

7:00 - Speaker Ready Room - Hibiscus

1:00

7:00 - Registration - Royal Palm Foyer

1:00

9:00 - Spouse Hospitality - Banyan 1

11:00

8:00 - Scientific Sessions - Royal Palm 1-3

12:45

8:00 **Announcements**

Introduction of Resident Research Award Winners

Matthew L. Bush, MD, Lexington, KY

Eric J. Dobratz, MD, Charlottesville, VA

VyVy N. Young, MD, Louisville, KY

Introduction of Poster Award Winners

8:10 **THIRD PRIZE - FRANCIS LEJEUNE, SR. RESIDENT RESEARCH AWARD**

**Salvage Laryngectomy after Failure of Radiation or Combination Chemoradiation
Therapy for Squamous Cell Carcinoma of the Larynx and Hypopharynx**

VyVy N. Young, MD, Louisville, KY

Brannon D. Mangus, BS, Louisville, KY

Jeffrey M. Bumpous, MD, Louisville, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) compare the effect of treatment type, T-stage, site of origin, and histopathologic differentiation on overall survival, interval to recurrence, and pre-expiration survival following salvage laryngectomy; 2) recognize other factors which will not affect these outcomes; and 3) discuss the overall survival rate after salvage total laryngectomy for failure of primary conservative treatment.

Objectives: Determine rate of salvage laryngectomy after failure of radiation or chemoradiation over ten year course, identify factors associated with increased risk of treatment failure, assess survival after salvage laryngectomy. **Study Design:** Retrospective chart review. **Methods:** Twenty patients who underwent salvage total laryngectomy were studied. Overall interval to recurrence (ITR) was 9.9 months, survival after laryngectomy (OAS) 25 months, and pre-expiration survival (PES) 15.8 months. Mortality was 75%. Treatment type as well as T-stage, site, and histopathologic differentiation of the tumor were compared. **Results:** Four patients failed chemoradiation; 16 failed radiation alone. Based on treatment there was no difference in ITR (12.8 vs. 8.8 months, $p=0.27$) or OAS (27.5 vs. 24.4 months, $p=0.86$). PES was significantly higher following chemoradiation (27.5 vs. 12.2 months, $p=0.02$). Advanced T-stage patients were significantly younger than early stage (53 vs. 64 years, $p=0.02$) but there was no significant difference in ITR (12.7 vs. 6.8 months, $p=0.08$), OAS (20.1 vs. 33.6 months, $p=0.35$), or PES (12 vs. 21.6 months, $p=0.1$). Analysis by site and differentiation did not reveal significant differences. There was no difference in complication rate or rate of pectoralis flap closure for any group. Heavy alcohol use/alcoholism was reported in >50%. Rate of fistulization was <25%. **Conclusions:** Salvage laryngectomy is an uncommon procedure (4% over ten year period). There is no difference in survival after salvage laryngectomy for radiation or chemoradiation failure. Patients failing chemoradiation have longer PES than those failing radiation alone. Patients with T3-4 tumors tend to be younger. Neither location nor differentiation affects survival. Surgical salvage after primary conservative treatment is associated with an approximately 2 year survival.

8:18 SECOND PRIZE - JAMES A. HARRILL RESIDENT RESEARCH AWARD
To POP or Not: Ossiculoplasty in Congenital Aural Atresia Surgery
Eric J. Dobratz, MD, Charlottesville, VA
Akhil A. Rastogi, BS, Charlottesville, VA
Robert A. Jahrsdoerfer, MD, Charlottesville, VA*
Bradley W. Kesser, MD, Charlottesville, VA*

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the indications for ossiculoplasty in aural atresia surgery and appreciate the different audiometric outcomes and revision rates between intact native chain reconstruction and ossiculoplasty in surgery for congenital aural atresia.

Objectives: To examine indications for ossiculoplasty in aural atresia surgery and to compare audiometric results and revision rates of ossiculoplasty (OP) to intact native chain reconstruction (INCR). **Study Design:** Retrospective chart review. **Methods:** Charts of patients undergoing surgery for congenital aural atresia were reviewed for demographic data, preoperative Jahrsdoerfer score, ossicular chain status, and audiometric data. Patients undergoing OP were compared with an equal number of age and Jahrsdoerfer grade matched patients who had an INCR during aural atresia repair. The preoperative and postoperative average air bone gap (ABG), speech reception thresholds (SRT), and rates of revision surgery were compared between the two groups. **Results:** Nineteen patients (20 ears) underwent OP during aural atresia repair and were compared to twenty matched patients who had INCR. Mean age, Jahrsdoerfer scale, preoperative ABG, and SRT were similar for both groups. Mean postoperative audiometric followup was 33.1 months for the OP group and 20.4 months for the INCR group ($p=0.24$). Mean postoperative ABG was 33.8 dB HL for OP and 23.8 dB HL for INCR ($p<0.05$). Mean improvement in ABG was 16.8 dB HL for OP and 29.9 dB HL for INCR ($p<0.001$). Mean improvement for SRT was 24.6 dB HL for OP and 34.8 dB HL for INCR ($p<0.05$). Nine ears (45%) in the OP group and 4 ears (20%) in the INCR group underwent revision surgery ($p=0.09$). **Conclusions:** Patients reconstructed with an intact native chain during aural atresia surgery have better audiometric outcomes than those undergoing ossiculoplasty and are less likely to undergo revision surgery.

8:26 FIRST PRIZE - G. SLAUGHTER FITZ-HUGH RESIDENT RESEARCH AWARD
Long Term Hearing Results in Gamma Knife Radiosurgery for Acoustic Neuromas
Matthew L. Bush, MD, Lexington, KY
Jennifer B. Shinn, PhD, Lexington, KY
A. Byron Young, MD, Lexington, KY
Raleigh O. Jones, MD, Lexington, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the current indications and limitations of gamma knife radiosurgery in the treatment of acoustic neuromas, to explain the classification and monitoring of auditory function in patients with acoustic neuromas, and to discuss long term effects of gamma knife radiation on auditory function in patients with acoustic neuromas.

Objectives: Many studies examine functional outcomes following gamma knife treatment; however, few have reported long term audiometric data. This study analyzed the long term hearing results of patients with acoustic neuromas treated with gamma knife radiosurgery. **Study Design:** Retrospective cohort study. **Methods:** 17 patients were selected from our acoustic neuroma gamma knife registry of 113 patients treated from 1991 to 2005. Pre-treatment audiograms were analyzed for pure tone average (PTA) and word recognition scores (WRS) and assigned a Gardner-Robertson Classification score (GRC).

Current audiograms were obtained and compared with the pre-treatment results. Audiometric data of the pre- and post-treatment normal ear was obtained and used as a control. **Results:** Patient followup ranged from 3-82 months with a mean of 33.6 months. Pre-treatment PTA for the involved side group was 30.6 dB HL with a WRS of 74%. Pre-treatment mean GRC was 1.76. Post-treatment PTA for the group was 59.7 dB HL with a WRS of 37%. Post-treatment mean GRC was 3.29. This was found to be a statistically significant difference ($p < 0.001$) for both the PTA and the WRS in the treatment ear. Of those patients with useful audition pre-treatment 42% maintained useful hearing post-treatment. The group "normal" ear PTA and WRS revealed no statistically significant change when comparing the pre- and post-treatment audiograms. **Conclusions:** Patients with acoustic neuromas treated with gamma knife radiosurgery were found to have a significant decrease in auditory function over time. This provides information that can be used to educate patients when choosing a treatment regimen for acoustic neuromas.

8:34 Q&A

8:40 RHINOLOGY PANEL: SURGICAL FAILURES OF FESS FOR CHRONIC SINUSITIS - CASE DISCUSSION

Moderator: Michael J. Sillers, MD, Birmingham, AL

Panelists: Brent A. Senior, MD, Chapel Hill, NC
Stilianos E. Kountakis, MD PhD*, Augusta, GA
John M. DelGaudio, MD*, Atlanta, GA

RHINOLOGY AND FACIAL PLASTIC MODERATOR

William W. Shockley, MD*, Chapel Hill, NC

9:10 *Triological Society Thesis*

Radiofrequency Turbinate Reduction: A Nose Evaluation

Willard C. Harrill, MD, Hickory, NC*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand outcomes techniques used to evaluate the nose and algorithms to treat nasal obstruction.

The symptoms and treatments for nasal obstruction are numerous and common. Yet a consensus on a surgical approach, or even more importantly, how to define the success of any approach is lacking in the literature. A disease specific outcomes instrument recently developed by the American Academy of Otolaryngology, known as the Nasal Obstruction Symptom Evaluation (NOSE) scale, has allowed for a validated, uniform method to compare different treatments for nasal obstruction. Using the NOSE scale, we prospectively compared the use of bilateral radiofrequency inferior turbinate reduction (BRITR) only to that of BRITR with septoplasty in the treatment of nasal obstruction caused by the combination of septal deviation and turbinate hypertrophy. NOSE scores were obtained pretreatment and at 3 month and 6 month follow-up. Our data demonstrated significant improvement from baseline after 6 months for the NOSE scores in both the BRITR ($p < 0.001$) and BRITR/Septoplasty groups ($p = 0.023$). No statistical difference was noted in the amount of postoperative improvement between the two treatment groups ($p = 0.304$). Both groups did demonstrate a large clinically important effect using a distribution-based assessment of clinical change. Despite equal clinically effective results, estimated costs for each treatment option differed significantly with the office-based BRITR only group providing significant cost savings compared with the hospital-based BRITR/Septoplasty group. This study suggests that BRITR should be considered as an initial treatment option for nasal obstruction rather than a septoplasty with turbinate reduction in patients with the clinical findings of both a septal deviation and turbinate hypertrophy following failure of medical therapy.

9:18 Proteomics Blood Testing to Distinguish Chronic Sinusitis Subtypes

Subinoy Das, MD, Augusta, GA

Patricia A. Maeso, MD, Augusta, GA

Adam M. Becker, MD, Augusta, GA

John Drew Prosser, BS, Augusta, GA

Bao Ling Adam, MD, Augusta, GA

Stilianos E. Kountakis, MD PhD, Augusta, GA*

Educational Objective: At the conclusion of this presentation, the participants should be able to assess the potential of surface enhanced laser desorption and ionization time of flight mass spectrometry (SELDI-TOF-MS) proteomic profiling of serum to distinguish subtypes of chronic rhinosinusitis.

Objectives: To evaluate the potential of surface enhanced laser desorption and ionization time of flight mass spectrometry

(SELDI-TOF-MS) proteomic profiling of serum samples to distinguish chronic rhinosinusitis subtypes. **Study Design:** Translational study of serum samples from prospectively enrolled patients undergoing sinus surgery. **Methods:** Patients undergoing endoscopic sinus surgery for chronic rhinosinusitis with nasal polyposis were prospectively enrolled in an ongoing, IRB approved proteomics study. SELDI-TOF-MS was performed on serum samples from 25 patients diagnosed with allergic fungal rhinosinusitis or Samter's triad and compared to 17 patients with chronic rhinosinusitis with nasal polyposis. Classification tree analysis on protein spectra developed from peaks detected in the 0 to 100 kilodalton range was performed to identify disease subtypes. **Results:** SELDI-TOF-MS correctly identified patients with allergic fungal rhinosinusitis from serum samples with 84% sensitivity and 90% specificity and correctly identified patients with Samter's triad with 88% sensitivity and 88% specificity in 2 subtype comparison groups. SELDI-TOF-MS correctly identified patients with allergic fungal rhinosinusitis with 76% sensitivity and 82% specificity and correctly identified patients with Samter's triad with 80% sensitivity and 90% specificity in 3 subtype comparison groups. **Conclusions:** SELDI-TOF-MS is a promising technology that could lead to the development of a rapid blood test to identify severe chronic rhinosinusitis subtypes. Further investigation into the utility of this technology is warranted.

9:26 Clinico-Demographic Predictors for Extensive Reconstruction Following Mohs Removal of Skin Cancer of the Head and Neck

Kristen R. Boyle, MS IV, Galveston, TX

Shawn D. Newlands, MD PhD MBA FACS, Galveston, TX*

Richard F. Wagner, MD JD, Galveston, TX

Vicente A. Resto, MD PhD, Galveston, TX

Educational Objective: Presentation will discuss and compare clinico-demographic predictors of the need for advanced reconstruction following Mohs micrographic surgery removal of skin cancers of the head and neck. At the conclusion participants should be able to preoperatively identify patients with a high likelihood of needing advanced reconstruction after MMS is performed.

Objectives: Mohs micrographic surgery (MMS) has been a highly successful modality for treating skin cancer of the head and neck and is associated with high cure rates and the maximal preservation of normal tissue. Most surgical defects following MMS will be closed primarily; however, Mohs surgeons occasionally encounter tumors whose resection results in complex defects that require the use of advanced reconstructive techniques. We sought to assess patient clinico-demographic characteristics available before definitive tumor resection as predictors of the need for advanced reconstruction. **Study Design:** This study is a retrospective analysis of MMS cases completed by the department of dermatology between December 2001 and June 2007. **Methods:** Variables examined were: age, sex, race, marital status, and insurance status, past medical history, personal history of skin cancer, family history of skin cancer, use of tobacco and/or alcohol, history of radiation therapy, history of reconstruction, history of immunosuppression, tumor size, tumor site, histological classification, and whether primary or recurrent, number of tumors treated, and history and location of previous skin tumors. The outcome variable assessed was the need for advanced reconstruction. All information was extracted from the patient's medical record. SPSS pc software 14.0 was utilized to create contingency tables and perform chi-squared, t-tests, and logistic regression analysis. **Results:** A total of 754 consecutive patients were identified and analyzed, 246 of which required reconstruction. Patient variables that correlated with the need for reconstruction were the site of the tumor ($p=0.000$), whether the tumor was being primarily treated or local recurrence ($p=0.015$), and a past history of reconstruction ($p=0.012$), with p -values <0.05 conveying significance. The most common locations were the nose (228 tumors) and the ear (171 tumors). The odds of a female requiring reconstruction were 2:1 over males and was significant (p -value= 0.000). The mean age of the reconstruction group was 64.3 years old versus the mean age of the group without reconstruction was 67.2 years old; there was significant difference between these groups (p -value= 0.039). **Conclusions:** The patient's sex, age, location of a skin cancer, classification of tumor as a primary or local recurrence, and patient's history of previous reconstruction are patient specific characteristics available before definitive tumor resection that predict the need for advanced reconstruction in patients undergoing tumor resection via MMS.

9:34 The Perichondrial Cutaneous Graft: A Facial Reconstructive Option for the Ages (1 Week to 94 Years Old)

Fred J. Stucker, MD, Shreveport, LA*

Mark O. Dammert, MD, Shreveport, LA (Presenter)

William E. Walsh, MD, Shreveport, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the perichondrial cutaneous graft.

Objectives: The perichondrial cutaneous graft (PCCG) possesses unique characteristics that make it a propitious reconstructive option in facial plastic surgery. The PCCG is easily harvested with alacrity from the conchal bowl, it does not contract. The color match is excellent for facial skin and minimal donor site morbidity is observed. This free graft offers an expeditious solution to an otherwise more complicated reconstructive effort. **Study Design:** Retrospective review. **Methods:** Setting: Academic

otolaryngology and facial plastic surgery practice. Patients: Patients requiring head and neck reconstruction for cutaneous deficiencies. Interventions: The PCCG is harvested from the anterior conchal bowl. This is technically easy and the perichondrium is tightly adherent to the dermis in this area. The donor site is closed by resecting a window of conchal cartilage and rotating a posterior auricular interpolated island flap into the defect (the "flip-flop-flap"). The posterior auricular defect is easily closed in a linear fashion. Main outcome measures: Cosmetic result, graft survival, donor site morbidity, complications. **Results:** There are 406 PCCGs in our series. Patients ranged in age from 7 days to 94 years old. There were 170 grafts used for trauma and 236 employed for reconstruction following skin cancer resection. Over the past 30 years in observing these grafts there are no contractions noted, and in infants and children it actually grows with maturity. Cosmesis is excellent and in most cases superior to other skin grafting techniques. We have had 4 total failures and 6 partial losses of less than 30%. All complete failures were in patients with a smoking history. **Conclusions:** The PCCG is a very reliable flap for reconstruction of facial defects. It has been employed in elderly and heavy smoking patients with minimal complications, attesting to its viability. The graft provides excellent cosmesis and it is a much quicker alternative than some local flaps. It is also useful in pediatric patients because the graft does not contract and the lack of skin laxity in children discourages local flaps.

9:42 Q&A

9:45 Guest Lecture
Universal Canons of Rhinoplasty
M. Eugene Tardy, MD, Naples, FL

10:10 Break with Exhibitors - Royal Palm 4-5
View Posters - Foyer

GENERAL, PEDIATRIC & LARYNGOLOGY MODERATOR
Ellen M. Friedman, MD*, Houston, TX

10:35 Radiofrequency Ablation for Obstructive Sleep Apnea: A Meta-Analysis
Joshua D. Farrar, MD, Charleston, SC
James M. Ryan, BS, Charleston, SC
M. Boyd Gillespie, MD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) explain the effectiveness of radiofrequency ablation (RFA) in the treatment of obstructive sleep apnea syndrome (OSAS); and 2) better understand the methods to achieve effective outcomes for OSAS patients using RFA.

Objectives: Radiofrequency ablation (RFA) of the upper airway has been offered as an alternative to continuous positive airway pressure (CPAP) in the treatment of obstructive sleep apnea syndrome (OSAS). The purpose of this study was to investigate the effectiveness of RFA in the treatment of OSAS. **Study Design:** Critical literature review with meta-analysis. **Methods:** Two independent searches of PubMed 1966-present were performed using the terms radiofrequency ablation, somnoplasty, and volumetric tissue reduction. Included studies used RFA of the palate, tongue base, or both as the only surgical modality for OSAS. Procedure effectiveness was measured by pre- and post-treatment Epworth Sleepiness Scale (ESS) score, respiratory disturbance index (RDI), and lowest O₂ saturation. **Results:** Fifteen studies met the inclusion criteria. RFA demonstrated a significant 31% reduction in short term (<12 months) RDI (OR 0.69, 95%CI 0.62-0.78), and a 32% reduction in short term ESS scores (OR 0.68, 95% CI 0.62-0.64). RFA was associated with a significant 45% decrease in long term (>12 months) RDI (OR 0.55, 95% CI 0.45-0.72) and a 32% decrease in long term ESS (OR 0.68, 95% CI 0.43-0.73). Lowest O₂ saturations demonstrate a minimally significant short term 1% rise in lowest O₂ levels (OR 1.01, 95% CI 1.01-1.02). **Conclusions:** Radiofrequency ablation appears to be clinically effective treatment with significant improvements in both RDI levels and ESS scores. Rare complications and low morbidity make RFA an attractive alternative to current treatment. Further studies are needed to ascertain whether RFA is more effective when used as a replacement for or as an adjunct to CPAP.

10:43 Revision Adenoidectomy in the Pediatric Population
Adam C. Augenstein, MD, Louisville, KY
Julie L. Goldman, MD, Louisville, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the clinical variables associated with patients undergoing revision adenoidectomy.

Objectives: To assess the incidence of and identify clinical variables that correlate with revision adenoidectomy. **Study Design:** Retrospective chart review. **Methods:** All adenoidectomy procedures performed over a six year period at a single chil-

dren's hospital were reviewed with data obtained from patients in this group who underwent a revision adenoidectomy procedure. **Results:** Over the study period 8442 adenoidectomies were performed. Of those thirty-eight revision procedures were completed (0.5%) with a mean age of 48.1 and 72.6 months respectively at the time of their initial and revision adenoidectomies. Three of the 38 revision patients (7.9%, 0.04% overall) required a second revision procedure. Most initial procedures were performed with tonsillectomy and for obstructive symptoms. Forty-seven percent of patients requiring revision were less than three years of age at the time of initial adenoidectomy. Comparing this age group to those greater than 3 years at time of initial excision, comorbidity rates approached statistical significance and occurred twice as frequently in the younger group ($p=.054$). Significant differences in revision rates were seen when comparing children less than three years of age at the time of their initial adenoidectomy to those greater than three years of age at their initial procedure ($p<0.0001$). **Conclusions:** Over six years 0.5% of patients undergoing primary adenoidectomy required a revision procedure. These children may be more likely to have other comorbidities seen at the time of this diagnosis. Our study revealed a statistically significant difference in the rate of revision adenoidectomy in patients undergoing their initial procedure at an age of three years or less.

10:51 Outcome of Adenoidectomy vs. Adenoidectomy with Maxillary Sinus Wash for Chronic Rhinosinusitis in Children

Jamey L. Cost, MD, Morgantown, WV (Resident Travel Award)
Hassan H. Ramadan, MD*, Morgantown, WV

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize the benefits of adenoidectomy with maxillary sinus wash in children with chronic rhinosinusitis.

Objectives: To compare postoperative outcomes of adenoidectomy versus adenoidectomy with maxillary sinus wash as surgical treatment of chronic rhinosinusitis (CRS) in children. **Study Design:** A retrospective review of prospectively collected data. **Methods:** Children who failed medical therapy for CRS and had an adenoidectomy alone or an adenoidectomy with a maxillary sinus wash were reviewed. Outcome was assessed at least 12 months postoperatively. **Results:** Sixty children who satisfied the inclusion criteria were reviewed. Thirty-two had a sinus wash at time of adenoidectomy. The age range was 3 to 13 years (mean 6.3 years) and the mean CT score was 6.1. The 2 surgical groups were comparable with regard to age, gender, presence of allergies, asthma and smoking in the household. Twenty-eight (87.5%) of 32 patients who underwent wash/A showed improvement of their symptoms at the 12 month followup visit compared with 17 (60.7%) of 28 patients who underwent A ($p = 0.017$). Multivariable analysis using logistic regression analysis with age, gender, asthma, allergy, and CT score as covariables showed that the success of wash/A compared with adenoidectomy was higher (93% to 60%) for children with a high CT score compared to those with a lower CT score ($p = .011$). None of the other variables showed any statistical significance. **Conclusions:** Children with more severe sinus disease as evidenced by a high CT score had a higher success rate if a maxillary sinus wash was performed at the time of adenoidectomy. Those children with a low CT score did not have that benefit.

10:59 Treatment of Reinke's Edema (Polypoid Degeneration) with the Pulsed Dye Laser: A Multi-Institution Outcomes Review

Stephen Carter Wright Jr., MD, Winston Salem, NC
Jamie A. Koufman, MD*, New York, NY
Gregory N. Postma, MD, Augusta, GA
Stacy L. Halum, MD, Indianapolis, IN
Catherine J. Rees, MD, Winston Salem, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the pathogenesis of polypoid degeneration, the tissue/laser interaction of the pulsed dye laser, and treatment outcomes.

Objectives: The pulsed dye laser (PDL) has been used with great success in a variety of laryngeal lesions. The PDL has been used to treat polypoid degeneration but only a preliminary report has been presented. In this work we present on the outcomes of 33 patients. **Study Design:** A retrospective chart review of 33 patients treated at 3 universities over 3 years. **Methods:** A complete chart review with pre- and post-laryngeal imaging and a description of the technique with inter-institution differences discussed. **Results:** 33 patients underwent 57 procedures. All were performed in-office in the unsedated patient with topical anesthesia only. Only one patient was unable to complete a second procedure, and one required general anesthesia for removal of a concurrent granuloma. 30/33 patients achieved a class I or II voice outcome (normal or near normal voice). **Conclusions:** In-office treatment of polypoid degeneration of the vocal folds in the unsedated patient with the pulsed dye laser is safe and extremely effective.

11:07 Fistula Analysis after Radial Forearm Free Flap Hypopharyngeal Reconstruction

Christopher F. Baranano, MD, Birmingham, AL
Stephen F. Pehler, BS, Birmingham, AL
Jeffery S. Magnuson, MD, Birmingham, AL

Eben L. Rosenthal, MD*, Birmingham, AL
William R. Carroll, MD, Birmingham, AL
Patricio P. Andrades, MD, Birmingham, AL

Educational Objective: The radial free forearm flap (RFFF) is frequently used procedures hypopharyngeal reconstruction because it is a reliable and safe flap. Fistula formation commonly occurs in this population and prolongs the postoperative recovery, alters the functional result, and often necessitates additional operations. At the conclusion of this presentation, the participants should be able to understand the course of fistula management after RFFF reconstruction of the hypopharynx.

Objectives: To evaluate risk factors and management options for fistulas that form after hypopharyngeal reconstruction using the RFFF. **Study Design:** Retrospective cohort study. **Methods:** Patients undergoing RFFF reconstruction for laryngectomy, laryngopharyngectomy and partial pharyngectomy were evaluated. From 2001-2007, 104 reconstructions of hypopharyngeal defects were performed at our institution. Thirty (28.8%) patients suffered postoperative fistulas and were stratified as mild (conservative treatment) or severe (requiring surgical intervention). Deformity, diet, defect size, and type of reconstruction (tube vs patch) was assessed by the treating physician. **Results:** The mild fistula group included 10 (9.6%) patients and had an average hospital stay of 8.4±0.7 days. The severe fistula group consisted of twenty (19%) patients. Bilateral neck dissections (p=0.0025) was a predisposing factor, while partial pharyngectomy without total laryngectomy (p=0.0464) was a protective factor in predicting severe versus mild fistula. Age, gender, cancer stage, defect size, and tube or patch reconstruction were not statistically significant between groups. Surprisingly severe fistulas did not significantly affect hospital stay, final diet outcome, or speech. However, deformity score was significantly worsened (p<0.001). Twenty-two additional operations were required in 20 patients including 5 (25%) secondary free flaps, 6 (30%) local flaps and 7 (35%) pectoral flap. There were 6 (5.7%) major vessel hemorrhages, one mortality secondary to cardiac arrest and one case of incapacitating stroke. **Conclusions:** Fistula formation remains a significant cause of morbidity associated with hypopharyngeal reconstruction. Postoperative course and successful treatment strategies are discussed.

11:15 Analysis of Head and Neck Verrucous Carcinoma and Its Relationship to Squamous Cell Carcinoma

Farhad Ardeshirpour, BS, Chapel Hill, NC
Charles S. Ebert, MD MPH, Chapel Hill, NC
Mark C. Weissler, MD*, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the association between head and neck verrucous carcinoma and squamous cell carcinoma and explain diagnosis and treatment strategies.

Objectives: Head and neck verrucous carcinoma (VC) is a rare, slowly growing neoplasm that historically has been reported not to metastasize. At times squamous cell carcinoma (SCCA) is found with concomitant VC. Although these tumors have historically been separate pathological entities, the number of coexisting diagnoses begs the question whether a diagnosis of VC is the only entity or whether SCCA with verrucous features may also be present. The objectives of this study are to describe our experience with these tumors and make recommendations for diagnosis and management. **Study Design:** This is a retrospective database review study. **Methods:** From 1973 through 2007, 47 patients were diagnosed with VC of the head and neck at our institution. We reviewed the histological diagnoses for VC and SCCA, treatments, and outcomes in these patients. **Results:** Of the 47 patients with VC, 13 (28%) had a pathological diagnosis of coexisting SCCA at the same location. Thirty out of 47 (64%) patients with a pathological diagnosis of VC had a preexisting or later diagnosis of SCCA. Of these 10/30 (33%) patients subsequently developed SCCA. Nine out of 10 patients developed SCCA at the same location of their previous VC. There were 16 total recurrences of VC in 9 patients after wide local excision. Six of these 9 patients with VC recurrences also had SCCA. **Conclusions:** The large volume of coexisting tumors calls into question the pathophysiological relationship between these tumors. It is important for the clinician to take adequate biopsy to ensure more invasive SCCA is not missed in cases of VC especially with local regional or nodal spread. If a verrucous lesion appears more aggressive, the clinician should consider further biopsy or more aggressive management to account for the high correlation between VC and SCCA.

11:23 Q&A

11:30 PANEL: How I Do It

Moderator: C. Gaelyn Garrett, MD*, Nashville, TN

Panelists:

Robert H. Ossoff, DMD MD*, Nashville, TN

Use of the Endoscopic Microflap for Excision of Polyps

Roy Casiano, MD*, Miami, FL

Navigating without Intraoperative Navigation: Critical Endoscopic Anatomical Landmarks

for ESS in Advanced Sinonasal Disease
Ellen M. Friedman, MD*, Houston, TX
CO2 Laser Fiber in Pediatric Bronchoesophagology
Stephen S. Park, MD*, Charlottesville, VA
Nuances for Repair of Small, Cutaneous Nasal Defects
Brian B. Burkey, MD, Nashville, TN
Excision of Parapharyngeal Space Masses
Thomas J. Balkany, MD *, Miami, FL
Cartilage Tympanoplasty for Severe Atelectasis
M. Eugene Tardy, MD, Naples, FL
Tips and Tricks for Rhinoplasty Embellishment
David J. Terris, MD*, Augusta, GA
Thyroid Surgery: Finding the Nerve, Staying out of Trouble

12:40 Introduction of Vice President-Elect, Thomas J. Balkany, MD*, Miami, FL
Paul A. Levine, MD*, Charlottesville, VA

12:45 Adjourn

1:00 - Triological Thesis Seminar - Acacia 1-3
2:30

2008 SOUTHERN SECTION POSTER PROGRAM

S1. Management of Substernal Goiter: A 20 Year Experience

Nadir Ahmad, MD, Nashville, TN
James L. Netterville, MD, Nashville, TN*
Eugene P. Chambers, MD, Nashville, TN
Brian B. Burkey, MD, Nashville, TN
Robert J. Sinard, MD, Nashville, TN
Wendell G. Yarbrough, MD, Nashville, TN*

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the presentation, evaluation, and treatment of patients with substernal goiters. Furthermore participants will be able to analyze the treatment results from a large tertiary care center and compare these with data from other studies.

Objectives: To analyze the salient features of substernal goiters and to delineate the presentation, evaluation and management of patients with large substernal goiters. **Study Design:** A retrospective chart review of 90 patients who underwent thyroidectomy for substernal goiter over a 20 year period. **Methods:** A substernal goiter patient database kept in a large academic tertiary center was accessed and the individual charts of patients undergoing thyroidectomy were reviewed. Substernal goiter was defined as a major portion of the goiter within the mediastinum. Radiographic studies, when available, were reviewed by a staff neuroradiologist. **Results:** Fifty-seven patients were identified with substernal extension of goiter. The mean age of these patients was 57 years with 74% being female. Compressive symptoms such as dyspnea, choking, and dysphagia occurred in 63%, hoarseness in 41%, and 28% had undergone previous thyroid surgery. Seventeen percent were asymptomatic. Preoperative radiologic studies demonstrated tracheal compression (72%), tracheal deviation (75%), esophageal compression (26%), and major vessel displacement (55%). Histology revealed multinodular goiter (72%), thyroiditis (11%), and malignancy (18%). The average size of the resected specimen in greatest dimension was 8.0 cm (range 3.0-14.0 cm) and weighed 148g (range, 39-426g). A transcervical approach successfully addressed all substernal goiters without need for sternotomy and total thyroidectomy was performed in 85% of the cases. No major complications were noted and no evidence of tracheomalacia was encountered. **Conclusions:** Substernal goiters are characterized by their large size and intimate relationship to mediastinal structures. In spite of these anatomic constraints and the challenge they pose surgically, substernal goiters are effectively managed through a transcervical incision, followed by careful and meticulous dissection. In our series all were approached through a transcervical incision. Although significant tracheal impingement and involvement resulted from these goiters, there were no cases of tracheomalacia or major complication encountered a result of the transcervical approach. The authors advocate the routine use of either preoperative CT or MRI scanning for operative planning.

S2. Findings from a Public Thyroid Screening Protocol: Ultrasound and Disease Characteristics

Susan K. Anderson, DO, Augusta, GA
Christine G. Gourin, MD, Augusta, GA*
Melanie W. Seybt, MD, Augusta, GA
David J. Terris, MD, Augusta, GA*

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the value and expected findings from a public thyroid screening exercise.

Objectives: A public thyroid screening protocol incorporating ultrasonography was developed and implemented as a feature of National Thyroid Cancer Awareness month. Findings and lessons learned are described. **Study Design:** Prospective analysis of participants in a one day thyroid screening protocol and review of findings and referrals generated during the screening process. **Methods:** Demographic data were gathered, outcome measures determined, and followup of patients was pursued. Data were submitted to statistical analysis. **Results:** A total of 39 patients participated in the thyroid screening protocol. Thirty-two (82%) patients were female and 7 (18%) were male with an overall mean age of 52.9 ± 14.1 years (range = 20 to 79). Seventeen (44%) patients indicated a known history of thyroid pathology and five (13%) patients reported a family history of thy-

roid disease. The most common complaints offered on a patient intake survey were weight gain (38%) and dysphagia (36%). Thirty patients (77%) underwent thyroid ultrasound (US). The majority of patients (69%) had an abnormal US; the most common abnormality found was multinodular goiter (21%). Eighteen participants were referred to endocrinology for further evaluation, 13 have been evaluated and 3 patients have had fine needle aspirations performed. Two patients have undergone thyroid surgery. The majority of patients (67%) believed that the thyroid screening increased their awareness and knowledge of thyroid and head and neck cancer. **Conclusions:** A public thyroid screening activity proved to be a valuable mechanism for the dual purpose of identifying individuals with thyroid pathology needing further evaluation and increased public awareness and knowledge of thyroid and head and neck cancer. Additional value related to the provision of a community service and opportunity to increase experience with ultrasonography.

S3.

WITHDRAWN

Surgical and Adjunct Management of Keloids

Farhad Ardeshirpour, BS, Chapel Hill, NC

Krishna G. Patel, MD PhD, Sacramento, CA

William W. Shockley, MD, Chapel Hill, NC*

Educational Objective: At the end of this presentation, participants should be able to compare and discuss the different management strategies for keloids.

Objectives: The literature describing surgical management of keloid either alone or with adjunct therapies has been difficult to interpret. The success rates for these treatment modalities are widely variable. The objectives of this paper are to 1) review the literature on surgical and adjunct therapies for the treatment of keloids; and 2) analyze the scientific quality of the literature on adjunct therapy and to report success rates across treatment modalities. **Study Design:** This study is a comprehensive review and analytical comparison of the literature. **Methods:** We conducted a comprehensive search of the literature on the management of keloids from 1990 to 2006 and included primary studies which treated keloids with surgery alone or in combination with other treatment modalities. The studies were grouped based on treatments, and the success rates were calculated for each study as well as within the treatment group. We also analyzed whether the sample size and length of followup affected the success rate. **Results:** The following percentages for success (lack of recurrence) were calculated for studies that had a minimum followup of 12 months after excisional surgery and adjunctive therapy: skin grafts 100%, steroid injection 83.7%, radiation 79.9%, interferon injection 67.5%, verapamil injection 60.2%, mitomycin C application 50.0%, pressure dressing 60%, keloid flap 55.5%. **Conclusions:** The majority of studies reviewed used radiation as an adjunct to surgery. Taking into account sample size and followup time, postop radiation reports the highest efficacy. However many of these alternative treatment modalities provide improved convenience for treatment within a clinical setting.

S4.

The Use of Ultrasound in Defining Nasal Fractures

Farhad Ardeshirpour, BS, Chapel Hill, NC

Keith M. Ladner, MD, Chapel Hill, NC

Paul B. Bryson, MD, Chapel Hill, NC

Carol G. Shores, MD PhD, Chapel Hill, NC

William W. Shockley, MD, Chapel Hill, NC*

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the criteria by which nasal fractures are defined on ultrasound and compare ultrasonography to other imaging modalities for diagnosing nasal fractures.

Objectives: Nasal fractures are most commonly diagnosed by clinical exam. Other forms of imaging lack sensitivity, specificity, or cost efficiency in diagnosing nasal fractures. Ultrasound is a safe and easy imaging tool which may be used in the diagnosis of nasal fractures; however currently no criteria has been established to identify nasal fractures in adults. The objective of this study is to create a set of criteria defining what nasal fractures look like on ultrasound. **Study Design:** This is a prospective, nonrandomized, control, observational study. **Methods:** We used ultrasonography to image 12 patients with clinically or radiographically (CT scan) diagnosed nasal fractures within 2 weeks of the time of injury. We also imaged 12 control subjects. Subjects with previous nasal fractures, rhinoplasty, or sinus surgery were excluded. Ultrasound images were taken from both lateral views and the dorsal view. **Results:** By comparing the nasal fracture and control groups we were able to establish parameters by which nasal fractures can be identified on ultrasound. The criteria used to identify a fracture in the lateral view are 1) disruption of bone continuity; and/or 2) displacement of fracture segments. We were able to confidently differentiate between control and fracture ultrasound images taken from the lateral view, however we were not as consistent when analyzing the dorsal view images and thus do not think that it is an adequate imaging view. Of the 12 patients with fractures 10 had CT scans confirming nasal fractures. Of these 10 patients only one had a nasal fracture appear on ultrasound and clinical exam but not on the CT. In only one patient the nasal fracture was seen on CT but not on ultrasound. **Conclusions:** Lateral view ultrasound can be used to detect nasal fractures in adults, but further studies are needed to assess the sensitivity, specificity, cost effi-

ciency, and practicality of ultrasound in diagnosing nasal fractures.

S5. Incidence of Seropositivity to *Bordetella Pertussis* and *Mycoplasma Pneumoniae* in Patients with Chronic Laryngotracheitis (CL)

Mary Es A. Beaver, MD, Knoxville, TN
Colleen M. Karow, PhD, Knoxville, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the role of *Bordetella pertussis* and *mycoplasma pneumoniae* infection in the patient with chronic laryngitis and understand the management of pertussis infection and the role of booster vaccination in the young adolescent and adult population.

Objectives: Determine the incidence of current or recent *Bordetella pertussis* and *mycoplasma pneumoniae* infection in patients with chronic laryngotracheitis. **Study Design:** Prospective case study. **Methods:** 53 consecutive adult patients presenting with symptoms of chronic laryngotracheitis (throat clearing, hoarseness, cough, globus for greater than 12 weeks) and signs of chronic laryngotracheitis (laryngeal and subglottic erythema and edema) were included in the study. No patient had received DTaP booster. A single blood draw for antipertussis toxin (PT) IgG, IgA, and IgM as well as *mycoplasma* IgM was performed at presentation. Symptom score (reflux symptom index or RSI) and physical exam score were recorded and compared to determine trends in presentation. **Results:** 14 patients (26%) had elevated IgA and IgG to PT indicating recent past infection. Mean IgA in this group was 18.5 units (SD 5.1) and mean IgG was 18.4 units (SD 4.3). 9 patients (17%) had elevated IgM to PT indicating current infection. 33 patients (62%) had elevated IgG to PT indicating previous exposure. 4 cases had elevated IgM to *mycoplasma pneumoniae*. **Conclusions:** *Bordetella pertussis* and *mycoplasma pneumoniae* infection play a significant role in the pathogenesis of chronic laryngitis. Booster vaccination for adolescents and adults is recommended to prevent chronic upper respiratory inflammation.

S6. Intravenous Antibiotics for Treatment of Radionecrosis of the Larynx

Deidra A. Blanks, MD, 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 understand the appropriate use of antibiotics in patients who have undergone chemoradiation for head and neck cancer.

Objectives: To examine the role of intravenous antibiotics in the treatment of radionecrosis of the larynx after chemoradiation therapy. **Study Design:** Retrospective case series conducted at a tertiary care center. **Methods:** A series of six patients with history of laryngeal or hypopharyngeal carcinoma irradiation and chondroradionecrosis with a negative biopsy for recurrent cancer were placed on at least 6 weeks of IV ceftriaxone and clindamycin. **Results:** Of the six patients treated five demonstrated resolution of the radionecrosis with acceptable functional outcomes. One of these patients had a persistent tracheocutaneous fistula which healed after surgical repair. One patient required total laryngectomy with recurrence of cancer discovered after improvement of his radionecrosis. **Conclusions:** Clinicians should consider intravenous antibiotics as a viable treatment option of radionecrosis.

S7. Predictive Value of Clinical Indicators in Head and Neck Cancer

Lori M. Burkhead, PhD, Augusta, GA
Christine G. Gourin, MD*, Augusta, GA
Jennifer L. Waller, PhD, Augusta, GA
Gregory N. Postma, MD, Augusta, GA

Educational Objective: At the completion of this presentation, the participants should be able to discuss the value of clinical assessment versus objective swallowing assessment in head and neck cancer for the identification of dysphagia and aspiration.

Objectives: Identify value of clinical predictors of aspiration in head and neck cancer. **Study Design:** Retrospective chart review. **Methods:** 100 consecutive patients were examined through an interdisciplinary head and neck tumor board. Presence or absence of 7 clinical signs was documented (swallowing complaint, abnormal voice, abnormal articulation, absent/weak gag, absent/weak cough, cough on 3 ounce water trial, voice change on 3 ounce water trial). During endoscopic examination Secretion Severity score (Donzelli et al, 2003) and Penetration-Aspiration score (Rosenbek et al, 1996; Colodny, 2001) was documented while swallowing 3 ounces of water, two 5ml boluses of puree and a cracker. **Results:** Of 100 consecutive patients 93 were analyzed (inadequate view of glottis in 4, trismus limited evaluation of gag in 3). Penetration/aspiration occurred in 42% (39/43) with 26% of those (10/39) aspirating silently. Three signs occurred more often in those who penetrated/aspirated

($p < .005$): swallowing complaint, cough after water trial, and Secretion Score of > 2 . Positive predictive value was greatest for Secretion Severity > 2 (PPV=90%), followed by cough after water trial (PPV=75%), and swallowing complaint (PPV=56%). Negative predictive value was greatest for swallowing complaint (NPV=79%) with cough after water trial and Secretion Severity < 2 yielding 67% and 64% negative predictive value respectively. **Conclusions:** Aspiration is common in new onset or recurrent head and neck cancer. Clinical signs can be helpful in identifying patients at risk for aspiration but only with moderate sensitivity and specificity. Direct endoscopic examination and documentation of secretion severity and airway protection during swallowing is the most reliable method of predicting aspiration risk in this population.

S8. A Novel Treatment of Nasopharyngeal Stenosis

Neil N. Chheda, MD, Augusta, GA
Gregory N. Postma, MD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to describe a safe, efficacious, easy to perform technique for the treatment of nasopharyngeal stenosis.

Objectives: Nasopharyngeal stenosis is an uncommon clinical entity that may occur after radiation therapy or uvulopalatopharyngoplasty. Patients may present with complaints of nasal obstruction and hyponasal speech. Treatment options include rotational flaps, laser excision and stenting. Balloon dilation has been described in a feline and canine model but has not been reported in humans. We present a novel technique for the treatment of nasopharyngeal stenosis involving balloon dilation with topical anesthetic and no sedation performed in an outpatient, office setting. **Study Design:** A description of 3 patients (mean age=60; 100% male) who underwent balloon dilation of a nasopharyngeal stenosis secondary to radiation therapy. **Methods:** A retrospective review of all patients who underwent dilation of a nasopharyngeal stenosis with a controlled radial expansion [CRE] balloon. Average followup was one year. **Results:** All three patients tolerated nonsedated, office based CRE balloon dilation of their nasopharyngeal stenosis. One patient required two treatments while the other two required only one session. All patients had improvement of symptoms of nasal obstruction and hyponasal speech. No complications occurred as a result of the balloon dilation. **Conclusions:** Balloon dilation of nasopharyngeal stenosis can be safely and efficaciously performed in an office, nonsedated setting with only topical anesthetic.

S9. An Institutional Review of Surgical Treatment of Thyroid Associated Ophthalmopathy

Eugene Alwen Chu, MD, Baltimore, MD
Neil Robert Miller, MD, Baltimore, MD
Andrew Peter Lane, MD, Baltimore, MD

Educational Objective: At the conclusion of this presentation, the participants should be able to compare the indications and expected outcomes of the most common orbital decompression procedures used for patients with Graves' ophthalmopathy.

Objectives: We present the joint experience of otolaryngology and ophthalmology services in a major tertiary care academic center in the treatment of thyroid associated ophthalmopathy over a 6 year period. **Study Design:** Retrospective case series. **Methods:** The results of orbital decompressions on 104 orbits of 64 patients from 2001—2007 were analyzed. Patients were categorized by indication and by surgical approach. Pre- and postoperative parameters assessed included exophthalmometry, visual acuity, and presence or absence of exposure keratopathy and diplopia. **Results:** 87.5% of orbital decompressions were performed primarily for correction of proptosis, while the remainder was indicated for dysthyroid optic neuropathy. Maximum reduction of proptosis was achieved with an endoscopic medial and inferior orbital wall decompression combined with a lateral orbitotomy with fat removal. The average reduction in proptosis was 7.2 mm (max. 12 mm). External approaches for 2 or 3 wall decompression were less effective. The endoscopic approach alone provided the least average proptosis reduction, but was highly successful in the treatment of dysthyroid optic neuropathy. Resolution of preoperative diplopia was rare in all groups as was new onset postoperative diplopia. No significant complications or morbidities occurred. **Conclusions:** Cooperation between otolaryngology and ophthalmology achieves the best care for thyroid eye disease patients. Endoscopic medial and inferior decompression combined with lateral orbitotomy and fat removal is most effective in reduction of proptosis. The endoscopic approach as a single modality is best suited for patients with a mild degree of proptosis and for patients with dysthyroid optic neuropathy in whom a posterior decompression is essential.

S10. Use of Restylane in a Pediatric Cleft Lip Revision: A Case Report and Review of the Literature

Michael W. Chu, MD, Norfolk, VA
Denton D. Weiss, MD, Suffolk, VA

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

tissue fillers and the use of Restylane as an option in a minimally invasive approach to lip reconstruction and correcting contour irregularities in the pediatric patient population.

Objectives: 1) Understand the advantages of drawbacks of currently available soft tissue filler agents; 2) understand the current treatment options and alternatives for soft tissue reconstruction; and 3) report the safe and effective use of Restylane in a pediatric patient. **Study Design:** Case report. **Methods:** 5 year old female status-post cleft lip repair with contour and vermilion border irregularities was revised with Restylane injections. Safety, effectiveness, and patient satisfaction was monitored with long term outpatient followup. **Results:** 5 year old female status-post cleft lip repair with soft tissue contour irregularities and distortion of philtral column and vermilion border was successfully revised with a minimally invasive approach using Restylane. The semipermanent nature of the injectable filler allows for future modifications and reapplications to account for continued growth and developmental changes in a pediatric patient. **Conclusions:** Restylane is a non-animal stabilized hyaluronic acid derivative produced from streptococcal bacterial fermentation that offers a safe and effective alternative and a minimally invasive approach to soft tissue reconstruction. The semipermanent nature is ideal in a pediatric patient to allow for future reapplications to adjust for growth changes.

S11. Free Abdominal Fat Transfer (FAT) for Reconstruction of the Total Parotidectomy Defect

Bryant T. Conger, BS, Augusta, GA

Christine G. Gourin, MD, Augusta, GA*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the advantages and disadvantages of free abdominal fat transfer to reconstruct total parotidectomy defects.

Objectives: Free abdominal fat transfer (FAT) grafts have been used after parotidectomy to restore facial contour. We sought to determine the effect of FAT grafts on operative time, blood loss, and the amount and duration of postoperative drainage.

Study Design: Nonrandomized retrospective analysis. **Methods:** The medical records of all patients who underwent total parotidectomy with the harmonic scalpel from 2004 to 2007 were reviewed. Patients with a prior bleeding disorder, facial nerve weakness or who underwent concurrent neck dissection were excluded. **Results:** Nineteen patients met study criteria: 8 patients underwent free abdominal fat transfer (FAT) grafting at the time of surgery. There were no significant differences between the 2 groups with respect to demographic data, tumor size, or pathology, although there was a greater percentage of malignancy in the FAT group (63%) compared with controls (18%) ($p=0.07$). FAT grafting was associated with significant increases in length of surgery (327.8 ± 32.7 minutes vs. 197.0 ± 16.9 minutes for controls, $p=0.001$) and intraoperative blood loss (153.8 ± 31.9 ml vs. 41.8 ± 7.2 ml, $p=0.001$). There were no significant differences between the FAT or control groups with respect to postoperative drain output (38.8 ± 12.7 ml vs. 52.6 ± 13.0 ml, $p>0.05$), duration of drainage (30.0 ± 3.9 hours vs. 34.6 ± 4.7 hours, $p>0.05$), or facial nerve function. **Conclusions:** Use of FAT grafts to prevent a cosmetic deformity at the time of total parotidectomy is safe but is associated with greater blood loss from the FAT donor site. The increased surgical time observed in patients undergoing FAT grafting was likely related to a higher incidence of malignant disease in this group.

S12. Anatomic Location of the Sphenopalatine Foramen in Relation to the Posterior Insertion of the Middle Turbinate

Mark O. Dammert, MD, Shreveport, LA

Kavita P. Malhotra, MD, Shreveport, LA

Timothy S. Lian, MD, Shreveport, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to better appreciate the location and anatomic variation of the sphenopalatine foramen.

Objectives: An endoscopic approach to ligation of the sphenopalatine artery requires detailed knowledge of the nasal wall anatomy. The sphenopalatine foramen (SPF) has been described in past literature in relation to various surrounding landmarks; however, several anatomic variations exist that can make surgical identification of the foramen challenging. In this study we examine the anatomic location of the SPF in relation to the posterior insertion of the middle turbinate (PIMT). **Study Design:** Thirty-one midsagittal sections of human cadaver heads with intact nasal landmarks were harvested and measurements of the lateral nasal wall were made. The range and average distance of the SPF to the PIMT was determined. **Methods:** The mucosa of the lateral nasal wall posterior to the middle turbinate was elevated to expose the SPF. Fine calipers were used to measure the horizontal (X-axis, in an AP direction) and vertical (Y-axis) distance from the PIMT to the anterior edge of the SPF. **Results:** The horizontal distance of the SPF ranged from 0.1mm to 17mm posterior to the PIMT, and the vertical distance ranged from 6mm below to 2mm superior to the axis of the PIMT. The average horizontal distance was 9.1mm posterior to the turbinate. The average vertical distance was 1.25 mm inferior to the axis of the turbinate. **Conclusions:** The endoscopic surgeon must be aware of potential variations in the location of the SPF. The range of its location demonstrated in this study can result in failure of isolating the SPA for ligation as well as unintended exposure during endoscopic sinus surgery.

S13. Has the Advent of PET Scans Changed the Incidence of Distant Metastasis in Advanced Stage HNSCC Patients?

Marc Richard Dean, MD, Shreveport, LA (Resident Travel Award)

Joshua Maier, MD, Shreveport, LA

Gloria Caldito, PhD, Shreveport, LA

David Lilien, 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 incidence of distant disease in HNSCC, compare the use of CXR and PET in the screening of HNSCC patients for lung metastasis, and understand the difference in resource consumption utilized by the two modalities.

Objectives: PET scans are increasingly used for TNM staging of advanced stage HNSCC. The question we ask is whether the advent of PET scans has altered the incidence of lung metastasis at the time of initial diagnosis compared to CXR. **Study Design:** Retrospective review. **Methods:** Medical records of all advanced stage HNSCC patients that received PET scans at the time of initial diagnosis from 1998-2005 were obtained. Results of lung lesions on PET scan reports were tabulated into three categories: positive, negative, suspicious. PET positive and suspicious lesions were then definitively evaluated by the pulmonary service. The one sample test for a proportion was used to determine if the observed proportion of lung metastasis was greater than 10%. **Results:** There were a total of 151 patients that met our criteria of advanced stage HNSCC. 12 patients with lung lesions on PET that were never resolved were excluded from the analysis. There were thus a total of 139 patients for determining the lung metastasis rate and the sensitivity and specificity of PET scan. The observed proportion with lung metastasis was 17/139 (12.2%) not significantly greater than 10% ($p=0.19$). The sensitivity and specificity of PET scan for lung cancer were 94.1% and 91.8% respectively. **Conclusions:** The advent of PET scans does not appear to have changed the true incidence of distant metastasis in the lung in advanced stage HNSCC, providing CXR a distinct advantage as a screening tool due to its minimal recourse consumption.

S14. Virus-Like Particle Based Treatment of Oral Papillomatosis in a Canine Model

Joanna B. D'Elia, MD, Washington, DC (Resident Travel Award)

Hang Yuan, PhD, Washington, DC

C. Richard Schlegel, MD PhD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) discuss the merits of using a canine model for papillomavirus therapy experiments; 2) explain the principle of virus-like particle therapy which is the basis for the current cervical cancer vaccine; and 3) discuss the potential role of VLP based therapy in preventative and therapeutic intervention against papillomavirus.

Objectives: To determine the efficacy of virus-like particle based treatment on oral papillomatosis using a canine model. **Study Design:** Human papillomavirus (HPV) cannot be studied directly in animals secondary to its species specificity. Canine oral papillomavirus (COPV) closely mimics the biology of HPV and was thus used in this study. It was previously demonstrated that the L1 major capsid protein of HPV 16 expressed in baculovirus vector will self-assemble into virus-like particles (VLPs), structures closely resembling the PV virion. Injection of VLPs based on COPV-L1 into naive beagles has been shown to prevent formation of papillomas upon subsequent COPV challenge. Our study is designed to evaluate the therapeutic efficacy of COPV-L1 VLP on oral papillomatosis. **Methods:** Fifteen beagles were inoculated with COPV onto their oral mucosa. Subjects were divided into three groups which were subsequently treated with either PBS buffer (Control, Group A), intact COPV-L1 VLP solution (Group B) or denatured COPV-L1 VLP solution (Group C). For 12 weeks the subjects were given biweekly treatments. After 12 weeks the papilloma growth curves of each group were compared to each other to determine the effect of treatment. In addition the mucosal site of inoculation of one subject from each group was biopsied and analyzed. **Results:** The pattern of papilloma growth curve was nearly identical for the control group as for both treatment groups. Biopsy specimens for each group were identical in histology. No significant differences in outcome were noted. **Conclusions:** Our study showed that there is not a role for VLP based therapy for oral papillomatosis in a canine model.

S15. Cleft Palate Lateral Synechia Syndrome in a Family

Sreekrishna K. Donepudi, MD, Memphis, TN (Resident Travel Award)

Corey W. Mineck, MD, Memphis, TN

Rose Mary S. Stocks, PharmD MD, Memphis, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the constellation of findings known as cleft palate lateral synechia syndrome (CPLS), discuss the differential diagnosis of this syndrome, gain

insight into the genetics of this disease, explain the current theories regarding its etiology and discuss the surgical approach.

Objectives: To report a case series of a family with CPLS and review the literature. **Study Design:** Case series and literature review. **Methods:** A case series is presented with a review of the literature of cleft palate in conjunction with lateral synechia. Clinical presentation with photographic images of surgical repair is presented as well as a genetic workup with pedigree. **Results:** A 6 week old male presented for evaluation of a cleft palate. Mucosa lined, fibromuscular tissue bands were noted connecting the floor of mouth and the lateral edges of a bilateral complete secondary cleft palate. No other craniofacial, digital, genital or extremity abnormalities were noted. The patient's 13 month old sister had similar synechial bands and cleft palate at birth. An older sibling had cleft palate without synechia. The patient's mother and maternal great grandmother had cleft palates at birth without synechia. The three children share a common mother but have three different fathers. Genetic analysis failed to reveal chromosomal defects or a mutation in the IRF6 gene, a locus linked to Van der Woude syndrome. At 2 years of age the index patient was growing and feeding well. His intraoral bands remained intact and were incorporated in the surgical repair. **Conclusions:** Since more otolaryngologists are performing cleft surgeries the awareness of the differential diagnoses associated with a cleft palate is important. CPLS is an extremely rare condition. The report of this family supports the suspected pattern of autosomal dominant inheritance with variable expressivity. The unusual surgical approach will be discussed.

S16. Adenoid Cystic Carcinoma of the External Auditory Canal

Fei Dong, BS, Houston, TX
Paul W. Gidley, MD, Houston, TX (Presenter)
Tang Ho, MD, Houston, TX
Mario A. Luna, MD, Houston, TX
Lawrence E. Ginsberg, MD, Houston, TX
Erich M. Sturgis, MD, Houston, TX*

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) describe the clinical signs of adenoid cystic carcinoma of the external auditory canal; and 2) to explain the clinical outcomes of patients with adenoid cystic carcinoma of the external auditory canal.

Objectives: To describe the clinical history and outcome of patients with adenoid cystic carcinoma (ACC) of the external auditory canal (EAC). **Study Design:** Retrospective case series. **Methods:** A search of our institution's tumor registry identified 22 patients with ACC of the EAC who had been treated at our institution between 1975 and 2005. Both clinical histories and pathology slides, when available, were reviewed. **Results:** The mean age at diagnosis was 42 years (median 38.5 years) and the most common presenting complaints were otalgia and ear canal mass. Nine patients (41%) developed recurrences at a mean of 8 years (median 8 years) after initial diagnosis. Of these nine patients seven eventually developed pulmonary metastasis, six died of their cancer, and three were living with distant metastases at their last followup. The mean duration of symptoms at the time of diagnosis was 7.7 years (range 2-30 years) for patients who developed a recurrence after treatment versus 1.2 years (range 0-2 years) for patients who remained disease free ($P = 0.137$). Every patient who had recurrent disease reported a duration of symptoms of ≥ 2 years ($P = 0.007$). **Conclusions:** ACC of the EAC often recurs many years after definitive treatment. Although our sample size was too small for us to make definitive conclusions, it appears that aggressive local therapy with lateral temporal bone resection and adjuvant postoperative radiotherapy can help prevent local recurrences. In addition to successful local therapy early diagnosis may be the only other effective means of preventing distant metastases.

S17. Large Retropharyngeal Mass in a Pediatric Patient with Neurofibromatosis Type I

Kimberly A. Donnellan, MD, Jackson, MS
Jeffrey D. Carron, MD, Jackson, MS
Elizabeth S. Piazza, BS, Jackson, MS
Aimee P. Goodier, MD, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the presentation and management of patients with retropharyngeal masses and neurofibromatosis type I.

Objectives: The clinical history of a pediatric patient with neurofibromatosis type I and a large retropharyngeal tumor will be reviewed. **Study Design:** Case report and review of the literature on the topic of neurofibromatosis type I and the rare presentation of a large retropharyngeal mass will be presented. **Methods:** An eleven year old female with a past medical history significant for neurofibromatosis type I was referred to our clinic secondary to a complaint of sleep disordered breathing and tonsillar hypertrophy. On physical exam the patient was noted to have a 1.5 cm firm, mobile mass to her right neck. MRI revealed a large retropharyngeal mass spanning from Passavant's ridge to the thoracic inlet and laterally to the carotid arteries. **Results:**

Surgical intervention included a large subplatysmal apron flap. Cranial nerves X and XI as well as the recurrent laryngeal nerves were identified and spared bilaterally as the lateral aspect of the tumor was dissected and freed. The esophagus served as the anterior border of the tumor indicating the nerve of origin was in the pharyngeal plexus. A tracheostomy was performed at the time of surgery which was removed on postoperative day ten. Postoperative calcium levels were stable and she was discharged home on the twelfth postoperative day. She was able to tolerate a regular diet and had a normal voice. **Conclusions:** Pediatric retropharyngeal tumors in patients with neurofibromatosis type I have rarely been presented in the literature. Radical resection is a viable option for treatment of these patients.

S18. Disease Specific Quality of Life after Treatment for Advanced Oral Cavity and Oropharyngeal Cancer

William B. Gambrell, MD, Louisville, KY

Jeffrey M. Bumpous, MD, Louisville, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to compare and discuss outcomes in advanced oral cavity and oropharyngeal cancer patients based on treatment type.

Objectives: To compare disease specific quality of life measures after treatment for advanced (stages III and IV) oral cavity and oropharyngeal cancers. **Study Design:** Retrospective chart review and patient response to the University of Washington Quality of Life (UW-QOL) questionnaire. **Methods:** This study included 160 patients identified from tumor registry databases who were diagnosed and treated between 1995 and 2004. Demographics, tumor data, and treatment information were obtained from these databases. Questionnaires were mailed to all patients. Comparative data and responses were analyzed for the 33 patients who responded to the survey. **Results:** Twenty-one patients were treated with surgical extirpation and postoperative radiation therapy. Twelve patients were treated with chemotherapy and radiation therapy. Demographics, patient, and tumor characteristics did not differ between the two groups. Twelve domains were assessed by the UW-QOL: pain, appearance, activity, recreation, swallowing, chewing, speech, shoulder, taste, saliva, mood, anxiety. An overall score also was calculated. No statistical differences were found between the surgical and chemoradiation groups in these domains. There were statistically significant differences within the surgical group with regard to primary tumor site in the saliva domain, with a mean of 35.3 and standard deviation of 22.8 in oropharynx cancer patients and a mean of 80.2 and standard deviation of 18.1 in oral cavity cancer patients ($P = 0.0007$). **Conclusions:** Assessment of disease specific quality of life in long term survivors of advanced stage oral cavity and oropharyngeal cancer reveals no significant difference in twelve measured domains based on treatment type. There is a significant difference in saliva domain scores among surgical patients based on primary tumor location. These results may prove valuable to physicians wishing to inform head and neck cancer patients about potential influence of treatment type on their quality of life.

S19. Health Related Quality of Life after Treatment for Advanced Oral Cavity and Oropharyngeal Cancer

William B. Gambrell, MD, Louisville, KY

William W. Heckman, BS, Louisville, KY

Jeffrey M. Bumpous, MD, Louisville, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to compare and discuss the health related quality of life in advanced stage oral cavity and oropharyngeal cancer patients based on treatment type.

Objectives: To compare health related quality of life measures after treatment for advanced (stages III and IV) oral cavity and oropharyngeal cancers. **Study Design:** Retrospective chart review and patient response to Short Form-12 version 2 (SF-12v2). **Methods:** This study included 152 patients identified from tumor registry databases who were diagnosed and treated between 1995 and 2004. Demographics, tumor data, and treatment information were obtained from these databases. Questionnaires were mailed to all patients. Comparative data and responses were analyzed for the 43 patients who responded to the survey. **Results:** Twenty-six patients were treated with surgical extirpation and postoperative radiation therapy. Seventeen patients were treated with chemotherapy and radiation therapy. Stage IV tumors were more common in the surgical group than in the chemoradiation group ($P = .03$), and oral cavity tumors made up a higher percentage of surgical patient responders ($P < .01$). Eight domains were assessed by the SF-12v2: physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health. No statistical differences were found between the surgical and chemoradiation groups in these domains. There were statistically significant differences within the surgical group with regard to primary tumor site in the role emotional domain, with a mean of 37.4 norm based scoring and S.D. of 14.6 in oral cavity cancer patients and a mean of 48.5 norm based scoring and standard deviation of 11.7 in oropharynx cancer patients ($P = .04$). Differences in the mental component summary with regard to primary tumor site approached statistical significance with a mean of 42.5 and standard deviation of 14.8 in oral cavity cancer patients and a mean of 52.3 and standard deviation of 10.2 in oropharynx cancer patients ($P = .057$). **Conclusions:** Assessment of general health related quality of life in long term survivors of advanced stage oral cavity and oropharyngeal cancer reveals no significant difference in eight measured domains based on treatment type. There is also no significant difference in mental or physical component summaries between the two groups. There is a signif-

icant difference in the role emotional domain and a substantial difference in the mental component summary among surgical patients based on tumor location. Global health assessments may represent a useful and practical method for the head and neck surgeon in determining his or her patients' quality of life.

S20. Cervical Thoracic Duct Cyst: An Uncommon Source of Left Sided Neck Mass

Matthew T. Gill, MD, Shreveport, LA
Timothy S. Lian, MD, Shreveport, LA
Enrique A. Gonzales, 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 clinical presentation, appropriate evaluation, and treatment options available for management of cervical thoracic duct cyst.

Objectives: Thoracic duct cysts are rare with only 18 cases of cervical thoracic duct cysts reported in the English literature. We review the clinical presentation, evaluation and treatment of two cases of large thoracic duct cysts treated with surgical resection. **Study Design:** Case report. **Methods:** Two patients presented with slowly enlarging left supraclavicular masses that were firm on palpation. Ultrasound showed anechoic cystic lesions which on CT were located posterior to the sternocleidomastoid and displaced the great vessels medially. FNA revealed monotonous lymphocytic populations in a proteinaceous background. Thoracic duct cysts were suspected in both patients and given the large size of the lesions (between 7-9 centimeters) surgical excision was recommended. **Results:** Operative findings revealed a cystic mass posterior to the sternocleidomastoid that had displaced the great vessels medially and filled the supraclavicular fossa extending partially below the clavicle. The thoracic duct was almost obliterated by both these cysts but care was taken to identify and ligate the duct. Pathology revealed benign lymphangiomatous cysts lined with endothelial cells consistent with thoracic duct cyst. Both patients had an uneventful postoperative course. **Conclusions:** Cervical thoracic duct cyst is a rare clinical entity. The high suspicion for thoracic duct cyst based on location and radiographic findings is sufficient for surgical excision. However enlarged cysts as noted in our cases can obliterate or attenuate the thoracic duct making it difficult to identify the duct. The high suspicion of thoracic duct cyst is important in identifying and ligating the duct to prevent complications such as chylothorax.

S21. A Unique Method of Airway Management in a Patient with Type IV Laryngotracheal Cleft: Case Report and Review of the Literature

Michael A. Goodier, MD, Jackson, MS (Resident Travel Award)
John M. Reed, MD, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to maintain long term airway stability in patients with type 4 laryngotracheal cleft.

Objectives: To describe a unique method of airway management in a patient with type 4 laryngotracheal cleft using a combination of two endotracheal tubes and to review the various techniques of airway management in these patients. **Study Design:** A case report describing a unique method of airway management in a patient with a type 4 laryngotracheal cleft and a review of the literature regarding various techniques of airway management in these patients. **Methods:** A secure airway was established using the combination of two endotracheal tubes. First, a 5.0 endotracheal tube was directed into the esophageal lumen to fill the dead space. Secondly, a 3.0 endotracheal tube was modified by cutting a hole 1.5 centimeters above the tip to ventilate the right mainstem bronchus as the tube intubated the left mainstem bronchus. A review of the literature was performed to identify various techniques used in the airway management in patients with type 4 laryngotracheal clefts. **Results:** A significant portion of dead space and air leak was eliminated allowing for a substantial improvement in ventilation. As a result the patient was able to have long term airway stability while awaiting surgical repair. **Conclusions:** Type 4 laryngotracheal cleft is a rare congenital anomaly that presents a significant challenge in airway management. We present a unique method of airway management using a combination of two endotracheal tubes.

S22. Trigeminal Trophic Syndrome: A Case Series and Literature Review

Mary E. Gorman, MD, Memphis, TN
Christopher J. Hall, MD, Memphis, TN
John M. Hodges, MD FACS, Memphis, TN*
Merry E. Sebelik, MD, Memphis, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate the key components of trigeminal trophic syndrome and discuss and compare the various treatment options for this disorder.

Objectives: The objectives of this study are to add to the current knowledge of trigeminal trophic syndrome, and increase awareness of this disorder and the importance of a thorough patient history in evaluation of facial ulcers, while discussing issues that present in the management of these patients. **Study Design:** Case series and literature review. **Methods:** A retrospective review of three cases and review of the literature. Four cases of trigeminal trophic syndrome were identified and their individual histories, presentation, and management are discussed, in addition to a literature review. **Results:** Three cases of trigeminal trophic syndrome were identified and their individual histories, presentation, and management are discussed, in addition to a literature review. **Conclusions:** The importance of a thorough history in the evaluation of chronic facial ulcers cannot be overemphasized and may help prevent unnecessary therapies. One must address the underlying cause of trigeminal trophic syndrome before attempting surgical correction to avoid therapeutic failure.

S23. Differences in Patient Satisfaction between Post-Traumatic and Cosmetic Rhinoplasty

Manu Gujrati, MD, Lexington, KY (Resident Travel Award)
Thomas J. Gal, MD MPH, Lexington, KY*
Sanford M. Archer, MD, Lexington, KY

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) determine if differences exist in levels of patient satisfaction after rhinoplasty performed following acute traumatic injury compared with those patients seeking rhinoplasty for longstanding cosmetic deformities; and 2) discuss the utility of outcomes measures in cosmetic surgery.

Objectives: It has been observed that patients undergoing cosmetic surgery frequently suffer from various psychosocial difficulties including body dysmorphic issues, social pressures, and psychological distress, all of which may impact their satisfaction with the procedure. This study seeks to determine if motivation for cosmetic surgery such as rhinoplasty can affect patient satisfaction. The goal is to determine if differences exist in levels of patient satisfaction after rhinoplasty performed following acute traumatic injury compared with those patients seeking rhinoplasty for longstanding cosmetic deformities. **Study Design:** Patient questionnaire/survey. **Methods:** Twenty-nine patients undergoing rhinoplasty were surveyed postoperatively using a validated Rhinoplasty Outcome Evaluation (ROE) questionnaire. Patient motivation was classified as traumatic (N=10) if their surgery was within three months of a significant traumatic nasal injury or cosmetic (N=19) if no such acute event was noted by the patient. A nonparametric analysis of numeric survey responses was performed. **Results:** Level of satisfaction was evaluated with respect to functional, emotional, social, and psychological perspectives. Overall satisfaction with surgery was considered to be favorable. No significant differences were seen in survey responses between the two groups. **Conclusions:** Outcomes evaluations can serve as a means to ascertain patient satisfaction from cosmetic procedures, a situation where objective measurement is difficult to obtain. While motivations for cosmetic surgery such as rhinoplasty may differ, it would appear from these findings that the ability or inability to achieve patient satisfaction following these procedures does not.

S24. Interaural Attenuation in Gerbils with Unilateral Hearing Loss

Jeffrey J. Houlton, Galveston, TX
Anousheh Ashouri, Galveston, TX
Golda A. Leonard, PhD, Galveston, TX
Robert B. Leonard, PhD, Galveston, TX
Shawn D. Newlands, MD PhD, Galveston, TX*
Tomoko Makishima, MD PhD, Galveston, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to understand interaural attenuation in gerbils and to discuss how the gerbil model of unilateral hearing loss compares to that of humans with similar conditions.

Objectives: While studying hearing loss in rodents it would be important to estimate interaural attenuation (IAA) to determine whether or not masking is necessary to obtain reliable testing results during auditory assessment. Our objective is to calculate IAA in gerbils and to provide a standard to compare with other rodent models. **Study Design:** Auditory threshold of the normal ear and the deafened ear in a unilaterally deafened gerbil model was compared to estimate IAA. **Methods:** Eight gerbils underwent unilateral labyrinthectomy in right ear preserving the tympanic membrane and middle ear structures. Three of the eight gerbils also underwent intratympanic gentamicin injection prior to labyrinthectomy in right ear. Auditory brainstem response (average of 500 stimuli) to click stimulus (1-4 kHz, 0.1ms, descending 5dB steps) were recorded in each ear to determine the threshold. IAA was calculated by subtracting the threshold in the left ear from the threshold in the right ear. Inner ear histology was observed bilaterally. **Results:** IAA in gerbils averaged 32.5 + 9.2 dB (range 20-45 dB). Histological analysis revealed a normal cochlea and vestibule in the left inner ear, while destruction and degeneration of the cochlear cells was observed in the right inner ear confirming complete deafening. **Conclusions:** IAA in gerbils is approximately 32.5 dB. Masking is necessary for gerbils with asymmetric hearing loss when the difference between the two ears is around 30 dB. The results would serve as a

S25. Gamma Knife Treatment for Vestibular Schwannomas: What Is the Neurotologist's Role?

Lana L. Jackson, MD, Augusta, GA

John R. Vender, MD, Augusta, GA

Brian J. McKinnon, MD MBA, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the role of the neurotologist in the use of radiosurgery for the treatment of vestibular schwannomas.

Objectives: To consider the possible role of a neurotologist by reviewing the experience of an academic tertiary medical center's gamma knife program without integrated neurotology. To evaluate outcomes with respect to tumor control, hearing preservation and facial nerve function. **Study Design:** Retrospective chart review. **Methods:** Medical records of patients treated with gamma knife radiosurgery for vestibular schwannoma from 6/2000 to 3/2007 were reviewed. Tumor size, audiology evaluation and facial nerve function were recorded as documented pre-treatment and post-treatment. **Results:** Fifty patients underwent radiosurgery during the time period specified. One patient had bilateral lesions. Pre- and post-treatment tumor size was documented in 20/51 lesions. Of these lesions 80% (16/20) had stable lesion or decrease in size of the lesion at the last documented MR. Twenty percent (4/20) showed some increase in the size of the lesion, one of which had evidence of recurrence and underwent microsurgical excision. Eight patients (16%) of the original 50 had a documented audiology evaluation. One patient had pre- and post-treatment audiology evaluation. Five patients had pre-treatment testing only and 2 patients had only post-treatment testing. Facial nerve function was documented in 15 patients before and after treatment. Facial nerve function was preserved in 93% (14/15) nerves at risk. **Conclusions:** While outcome measures with the available data were consistent with the favorable results reported by others, the data was markedly limited data with respect to the perioperative audiology examination. This starkly points to the importance of integrating the neurotologist into the evaluation of gamma knife radiotherapy.

S26. Unusual Delayed Presentation of Extensive Facial and Cervical Subcutaneous Emphysema Resulting from Iatrogenic Nasopharyngeal Perforation

Benjamin T. Jeffcoat, MD, Jackson, MS

Christine B. Franzese, MD, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to recognize nasopharyngeal perforation from placement of intraoperative temperature probe as a possible cause of postoperative cervical and/or facial subcutaneous emphysema.

Objectives: The aim of this case report is to present a patient with delayed extensive subcutaneous cervical and facial emphysema resulting from iatrogenic nasopharyngeal perforation caused by intraoperative temperature probe placement. **Study Design:** Case report. **Methods:** The patient presented six weeks after placement of a left vagal nerve stimulator with extensive bilateral facial subcutaneous emphysema and persistent left ear and jaw pain. **Results:** Nasopharyngoscopy revealed a perforation which correlated with previous nasal temperature probe placement. The perforation was closed endoscopically and the patient has done well since. **Conclusions:** This is the first reported case that we found describing iatrogenic nasopharyngeal perforation caused by temperature probe placement resulting in delayed subcutaneous facial and cervical emphysema. Once identified the perforation was able to be closed endoscopically with no postoperative complications.

S27. Assessment of Regional Laryngopharyngeal Mechanoreceptor Response

Murtaza Kharodawala, MD, Galveston, TX

Seckin O. Ulualp, MD, Galveston, TX

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the assessment of laryngopharyngeal sensation in healthy individuals and patients with suspected laryngopharyngeal reflux.

Objectives: Laryngopharyngeal sensation, tested by stimulation of aryepiglottic fold, reported to be diminished in patients with suspected laryngopharyngeal reflux (LPR). Given the variety of laryngeal signs in LPR we aimed to map mechanoreceptor response in various regions of the laryngopharynx. We hypothesized that laryngopharyngeal sensory deficit in LPR is not limited to aryepiglottic fold and involves the majority of laryngopharyngeal sites. **Study Design:** Prospective controlled study. **Methods:** Five patients with suspected LPR and six healthy control subjects were studied. An air stimulator connected to a flexible laryngoscope was used to deliver an air pulse (50ms) to stimulate mechanoreceptors in hypopharynx, interarytenoid area, arytenoids, aryepiglottic folds, and piriform sinuses. The intensity of air pulse sensed by subjects was recorded for each region.

Results: In controls an air pulse with 2mmHg pressure evoked mechanoreceptor response in all regions except bilateral aryepiglottic folds of one control requiring 4mmHg and 8mmHg. In patients intensity of air pulse to elicit mechanoreceptor response ranged between 2mmHg and 10mmHg and varied among the stimulated regions. Air pulse intensity differed between right and left sides of the regions in the majority of patients. **Conclusions:** Air pulse intensity to evoke mechanoreceptor response in the laryngopharynx was uniform among the regions and subjects in healthy subjects. Patients with suspected LPR showed inter- and intraregional variations of threshold stimulus to elicit laryngopharyngeal mechanoreceptor response. Our findings show that laryngopharyngeal sensory deficit in LPR is not limited to aryepiglottic folds, other supraglottic structures and hypopharynx are also involved. Clinical significance of regional variations in laryngopharyngeal mechanoreceptor response in LPR merits further investigation.

S28. Cochlear Implantation in Children with Hearing Loss as a Result of Hyperbilirubinemia

Joe W. Kutz, MD, Dallas, TX
Brandon S. Isaacson, MD, Dallas, TX
Kenneth H. Lee, MD PhD, Dallas, TX
Peter S. Roland, MD, Dallas, TX*

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the success of cochlear implantation in children with hyperbilirubinemia.

Objectives: To evaluate the performance of children after cochlear implantation with a history of hyperbilirubinemia. **Study Design:** Retrospective chart review of children undergoing cochlear implantation over a 15 year period. **Methods:** Of the 368 children undergoing cochlear implantation during this period, 11 patients were identified as having hyperbilirubinemia as an etiology of hearing loss. The mean age at implantation in these 11 children was 5.2 years old with a range of 1.4 to 12.1 years old. **Results:** Ten children were born premature with an average gestational age of 29.9 weeks and a weight of 1862 grams. Five children were found to have audiologic evidence of auditory neuropathy. Age appropriate speech and language testing after cochlear implantation demonstrated benefit from implantation in all children. In addition the presence of auditory neuropathy did not appear to decrease the potential benefit from cochlear implantation. **Conclusions:** Children with bilateral severe to profound hearing loss secondary to hyperbilirubinemia should be screened for hearing loss and specifically for auditory neuropathy. After appropriate evaluation children with hearing loss associated with hyperbilirubinemia can benefit from cochlear implantation.

S29. Speech Performance after Deep Implantation of the MED-EL Combi40+ Medium Electrode

Keith M. Ladner, MD, Chapel Hill, NC
Oliver F. Adunka, MD, Chapel Hill, NC
Marcia S. Clark, AuD, Chapel Hill, NC
Emily Buss, PhD, Chapel Hill, NC
Harold C. Pillsbury, MD, Chapel Hill, NC*

Educational Objective: To compare post-cochlear implant speech perception performance in subjects with a fully implanted electrode array sparing the basal cochlea with standard electrode performance. To demonstrate that the MED-EL Combi40+ medium electrode is a suitable alternative to standard electrodes in suitable candidates.

Objectives: To assess post-cochlear implant speech perception performance in subjects with a fully implanted electrode array sparing the basal cochlea. **Study Design:** Prospective case series. **Methods:** Three postlingual adult subjects received full implantations with the MED-EL Combi40+ medium electrode. Full implantation with this electrode entails lack of basal stimulation for the first 9 mm of the cochlea. Radiological and speech perception data were collected 6 months after implantation for the three study subjects and for eight fully implanted adult controls. **Results:** Radiological evaluation demonstrated an average insertion depth of 570 and 499 degrees for the study and control groups respectively. The most basal electrode contact was at 75 and 34 degrees for the study and controls respectively. Average 6 month speech perception measures for the study group were: CUNY 97%, CNC 48%, HINT Quiet 86%, HINT +10dB 63%. For the adult controls these results were: CUNY 72%, CNC 37%, HINT Quiet 60%, HINT +10dB 40%. **Conclusions:** These findings indicate equal speech perception in adults implanted with the medium and standard electrodes despite a lack of approximately 9 mm of basal cochlear stimulation. It also suggests that the importance of basal coverage may have been previously overestimated.

S30. The Use of an Intraoperative CT Scanner as an Educational Tool for Functional Endoscopic Sinus Surgery

William D. Leight, MD, Chapel Hill, NC
Brent A. Senior, MD, Chapel Hill, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the potential benefits of intraoperative CT scanning and understand common areas of deficiency in endoscopic sinus surgery.

Objectives: To examine the usefulness of intraoperative CT scanning as an educational tool and as a means to achieve improved results in functional endoscopic sinus surgery. **Study Design:** Descriptive survey. **Methods:** 14 participants were enrolled in the study. Participants were otolaryngology residents or attendings enrolled in a course teaching techniques in endoscopic sinus surgery. Each performed a complete bilateral endoscopic sinus surgery including maxillary antrotomy, total ethmoidectomy, sphenoidotomy, and frontal sinusotomy on a fresh cadaver. Each cadaver was scanned before and after surgery using a mobile CT scanner. At the completion of the course each participant completed a survey rating the quality (levels 1 to 4) of the dissection in the following areas: maxillary, ethmoid, sphenoid, and frontal. Pre- and postop scans were reviewed with the course director. **Results:** Post-op scans revealed several common areas of deficiency. The most common site to perform an incomplete resection was the posterior ethmoid floor followed by the frontal recess and the lamina papyracea. Self-assessment ratings were lower in ethmoid and frontal areas. Junior level residents were more likely to have more areas of incomplete resection. Self-assessment scores increased with seniority. **Conclusions:** Intraoperative CT scanning is a useful teaching tool for sinus surgery. It provides the surgeon instant feedback regarding the quality and extent of the dissection and identifies areas needing improvement. Combining this tool with image guidance systems will give surgeons the ability to assess the completeness of the surgery while the patient is still asleep and to use the postoperative images for guidance if further surgery is needed.

S31. Extraocular Myogenic Potentials (OVEMP) Evoked by Acoustic Tone Pips with Different Frequencies

Andrea F. Lewis, MD, Jackson, MS

William D. Mustain, PhD, Jackson, MS

Yougou Xu, Jackson, MS

Thomas L. Eby, MD FACS, Jackson, MS*

Wu Zhou, PhD, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to characterize the tuning curve properties of OVEMPs.

Objectives: The goal of this study was to investigate the origin of the sound evoked myogenic potentials in human extraocular muscles (OVEMP) by characterizing its frequency tuning properties. **Study Design:** Cross-sectional study design. **Methods:** In a sample of 10 subjects acoustic tone pips (100 db NHL, 10ms, 1ms rise/fall) with frequencies from 125 Hz to 4 kHz were delivered into one of the subjects' ears while they sat upright and maintained a straight gaze. Using surface electrodes the OVEMPs were recorded at four locations surrounding the eye that was contralateral to the stimulated ear (superior, inferior, nasal and temporal). Signals from the electrodes were amplified and sampled at 10 kHz and were averaged over 250 repetitions to measure the amplitudes of the OVEMP. **Results:** Consistent with previous studies we found that the tone pips evoked well defined responses in all the four locations. Furthermore similar to the well studied VEMP in the sternocleidomastoid muscles (SVEMP), the OVEMP exhibited a well defined frequency tuning. However, the most effective tone frequency for the OVEMP was much higher than that for the SVEMP (1000 Hz versus 350 Hz, $p < 0.01$). **Conclusions:** This finding indicates that the vestibular origin of the OVEMP is different from that of the SVEMP, which is believed to be the saccule. Since the frequency tuning of the OVEMP is similar to that of the sound evoked horizontal eye movements, the origin of which was recently shown to be the semicircular canals in monkeys, we propose that the OVEMP is generated by the acoustic activation of the semicircular canals.

S32. Squamous Cell Carcinoma Arising in a Patient Treated with Intralesional Cidofovir for Recurrent Respiratory Papillomatosis

David G. Lott, MD, Cleveland, OH

Paul R. Krakovitz, MD DDS, Cleveland, OH

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the risk for malignant transformation with the use of intralesional cidofovir, discuss the concern, and utilize this in clinical practice.

Objectives: To report a case of squamous cell carcinoma (SCCa) arising in a recurrent respiratory papillomatosis (RRP) patient treated with intralesional cidofovir. **Study Design:** Case report. **Methods:** Literature review. **Results:** Our patient was diagnosed with RRP at the age of 4. At the age of 11 intralesional cidofovir injections (5mg/cc) were initiated. She received a total of 13 treatments. Three years later a CT scan revealed a 2cm papilloma obstructing 90% of the trachea 2 cm above the carina. Permanent section demonstrated invasive, moderately differentiated SCCa arising with dysplastic squamous papilloma. She underwent sleeve resection of the distal trachea with primary end-to-end reconstruction and lymph node dissection. No further SCCa was found. Intralesional injection of cidofovir has shown efficacy as an adjuvant treatment for RRP. However there is concern for possible malignant transformation with its use. To date there has been no evidence of a causative relationship

between cidofovir and malignant degeneration nor has an associated case of malignancy been reported in the literature. We report a case of invasive, moderately differentiated SCCa in the trachea arising from squamous papilloma in a patient treated with multiple injections of intralesional cidofovir. Besides having aggressive papillomas she had no other risk factors for malignancy and she developed SCCA earlier than would be expected for degeneration alone. To our knowledge this is the first report documenting an association between cidofovir and malignant degeneration of RRP in humans. **Conclusions:** The clinician must maintain a high level of suspicion for malignant degeneration once cidofovir therapy is initiated.

S33. Presenting Signs and Demographics of Chronic Rhinosinusitis with Nasal Polyposis Subtypes

Patricia A. Maeso, MD, Augusta, GA

Subinoy Das, MD, Augusta, GA

John D. Prosser, BS, Augusta, GA

Andrew M. Becker, MD, Augusta, GA

Helen Perakis, MD, Augusta, GA

Stilianos E. Kountakis, MD PhD, Augusta, GA*

Educational Objective: At the conclusion of this presentation, the participants should be able to correlate objective and subjective clinical parameters with four subtypes of chronic rhinosinusitis with nasal polyposis.

Objectives: To correlate objective and subjective clinical parameters with four subtypes of chronic rhinosinusitis with nasal polyposis. **Study Design:** Analysis of prospectively collected data of 124 consecutive patients undergoing sinus surgery for chronic rhinosinusitis with nasal polyposis (CRSwNP) in a single institution. **Methods:** Patients were classified into four subtypes according to clinicopathological characteristics: noneosinophilic chronic hyperplastic rhinosinusitis (NECHRS), eosinophilic chronic hyperplastic rhinosinusitis (ECHR), allergic fungal rhinosinusitis (AFRS), and Samter's triad (ST). Patients were enrolled between 2003 and 2007. Demographic data, preoperative Sino-Nasal Outcome Test (SNOT)-20, Lund-MacKay and Kennedy-Lund endoscopy scores were obtained for all patients. Statistical analysis was performed for all subtypes. **Results:** Statistically significant differences were found in age, sex, race, smoking history, asthma, and laterality on presentation. AFRS patients were more likely to be younger (mean = 32 years), to be African American (62%), to have increased prevalence of asthma (31%), and to have unilateral disease on presentation (38%). Both NECHRS and ECHR patients had increased prevalence of asthma (31% and 44% respectively), and had a higher prevalence of smoking (31% and 44% respectively) than our population. ST patients were more likely female (2.8/1). Preoperative SNOT-20, Lund-MacKay and endoscopy scores were not significantly different for any of the four subtypes. **Conclusions:** Significant differences were found in the presenting signs and demographics of four types of CRSwNP. This analysis may lead to earlier preoperative identification of disease subtype and allow for more tailored medical/surgical management.

S34. Nasal Reconstruction with Use of Melolabial Grafts

Kavita Malhotra, MD, Shreveport, LA

Timothy S. Lian, MD, Shreveport, LA

Edward Milligan, MD, Shreveport, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the importance of preserving the integrity of the nasal aesthetic subunits and discuss the use of a melolabial graft to overcome the challenges posed by nasal defects.

Objectives: Defects involving the nasal subunits after resection of nasal cancers can pose a challenge to the reconstructive surgeon. The importance of preserving the integrity of the nasal aesthetic subunits has been well described in the literature. 1) To understand the importance of preserving the nasal subunits for optimal cosmetic results. 2) We employed melolabial tissue as a full thickness skin graft to reconstruct these nasal defects. **Study Design:** Case series. **Methods:** A series of 10 patients with skin cancers involving the nasal sidewall, nasal ala, or nasal dorsum underwent surgical excision of these lesions. The defects were reconstructed using a melolabial full thickness skin graft taken from the ipsilateral or the contralateral melolabial fold. The donor site is repaired along the melolabial fold. **Results:** The melolabial grafts offered an excellent color match as well as an ample source of tissue which was custom fit to the appropriate size, shape and depth of the nasal defect. All grafts survived. All patients were very satisfied with the appearance of the grafted area and nasal contouring. **Conclusions:** The use of the melolabial graft affords excellent tissue and color matches while maintaining the nasal subunits. This technique also results in minimal donor site morbidity. We believe the melolabial graft is a useful tool in the armamentarium of flaps available for reconstructing the nasal defects.

S35. Unsuspected Metastatic Thyroid Tissue in Lymph Nodes Found after Neck Dissection for a Separate Head and Neck Carcinoma

Peter Manes, MD, Washington, DC
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 demonstrate an understanding of the discovery of incidental thyroid cancer found during neck dissection for other head and neck carcinomas, a rarely reported clinical entity.

Objectives: 1) Recognize the incidence of metastatic thyroid cancer as an incidental finding during neck dissection in a major metropolitan city; 2) compare the experience with other reported in the literature; and 3) understand the treatment options for the aforementioned clinical entity. **Study Design:** Retrospective review. **Methods:** Case series, retrospective chart review and literature review. **Results:** We report six cases illustrating the association of carcinoma of the head and neck with thyroid carcinoma. In each case the thyroid carcinoma was found incidentally on histological examination after neck dissection for another head and neck carcinoma. In most cases adequate thyroid cancer surgery was performed within four weeks of the original surgery. Prognosis was often not dependent on the thyroid cancer. **Conclusions:** Metastatic thyroid cancer as an incidental finding during neck dissection is an uncommon yet clinically important entity. Prompt intervention often leads to minimal consequences related to the thyroid cancer.

S36. Outcome Comparison in Patients with Cancer Involving the Temporal Bone Undergoing Primary Surgery versus Surgery for Recurrent Disease

Theodore R. McRackan, BS, Charleston, SC
John C. Goddard, MD, Charleston, SC
Ted A. Meyer, MD PhD, Charleston, SC

Educational Objective: At the conclusion of this presentation, the participants should be able to 1) discuss likely outcomes in patients with cancer involving the temporal bone; and 2) compare the expected survival and functional outcomes in patients who underwent surgery for primary disease versus surgery for recurrent disease.

Objectives: Cancers involving the temporal bone are aggressive diseases with poor outcomes if not detected and treated early. The present study looks to examine our institution's experience with cancers involving the temporal bone and compare results for our patients with surgery for primary disease versus surgery for recurrent disease with regard to survival and functional outcomes. **Study Design:** Retrospective cohort study at a tertiary referral center. **Methods:** Electronic chart review of 39 patients treated for cancer involving the temporal bone over a 6 year period. Patient data including demographic factors, comorbidities, prior surgical and adjuvant treatment, and extensiveness of temporal bone resection were examined with regards to patient survival and functional outcomes. **Results:** Patients with de novo versus revision surgery for recurrent cancer involving the temporal bone both had good short term survival rates. However the patients who had undergone prior resection had a higher percentage of facial nerve sacrifice, a higher rate of total temporal bone resections, and a higher rate of recurrence when compared to the primary resection group. **Conclusions:** In our cohort short term mortality did not vary greatly between patients who underwent surgery for primary disease versus surgery for recurrent disease. As expected the surgeries for recurrent disease were more aggressive, and the patients had more morbidities. Cancers involving the temporal bone are aggressive and a more extensive primary resection may be appropriate; however, surgical planning needs to be tailored to the disease process specific to each patient.

S37. Medial Crura Suture Technique: Long Term Columellar Narrowing and Extrapolated Effect on Tip Projection and Rotation

William H. Moretz III, MD, Augusta, GA
Achih H. Chen, MD, Augusta, GA
Alexander Markarian, MD, Los Angeles, CA
Frank M. Kamer, MD, Los Angeles, CA

Educational Objective: At the conclusion of this presentation, the participants should be able to determine the long term effects of removal of the levator septi nasi muscle and suture approximation of the medial crura on columellar width as well as nasal tip projection and rotation.

Objectives: To determine the long term effects of removal of the levator septi nasi muscle and suture approximation of the medial crura on columellar width as well as nasal tip projection and rotation. **Study Design:** Retrospective review of rhinoplasty patients treated by partial removal of levator septi nasi muscle and transcutaneous suture approximation of the medial crura. **Methods:** A review of twelve consecutive rhinoplasty patients presenting with a widened columella on basal view due to widely separated medial crura treated between January 1, 2001, and December 31, 2001, who also were treated by partial removal of the intervening levator septi nasi muscle and transcutaneous suture approximation of the medial crura with absorbable suture

was completed. The maximal followup period was two years. **Results:** The ratio of columellar width to nasal base width on basal view photographs decreased from a mean of 0.24 ± 0.01 to 0.19 ± 0.008 following surgical narrowing of the columella representing a statistically significant reduction in columellar width ($p < 0.0001$). **Conclusions:** In select rhinoplasty patients suture approximation of the medial crura maintains lasting narrowing of the preoperatively widened columella. In the preoperatively widened columella the medial crura form a triangle on basal view with the apex near the nasal tip while the base is located near the nasal spine. The medial crura suture technique with partial removal of the levator septi nasi muscle results in permanent narrowing of the distance between the medial crura. Consequently there is lasting narrowing of the columella. Using the Pythagorean Theorem the conclusions made of a measurable variable, columella width can be extrapolated to make valid conclusions about nasal tip projection and rotation, which are immeasurable variables due to the confounding factors of multiple rhinoplastic techniques performed during the same surgical setting.

S38. Use of Otobeam® CO2 Laser Fiber in Otologic Surgery

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David M. Kaylie, MD, Nashville, TN
David S. Haynes, MD, Nashville, TN*
Marc L. Bennett, MD, Nashville, TN
Justin E. Wittkopf, MD, Nashville, TN
Robert F. Labadie, MD PhD, Nashville, TN

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the benefits of using a handheld CO2 laser for use in middle ear surgery and compare their results with those obtained using the CO2 laser.

Objectives: Difficulties in clearing the middle ear of disease are frequently encountered in otologic surgery. Management consists of repeated procedures and is a long term, difficult process for the surgeon and patient. The CO2 laser has been utilized for quite some time in many surgical fields. The clinical benefits of CO2 laser energy namely precision cutting and coagulation with minimal thermal spread previously had limited applications in otology due to the absence of a flexible delivery system. OmniGuide's flexible CO2 laser fiber product allows this beneficial energy source to be accurately controlled when operating in the middle and inner ear. We discuss our experience using the CO2 laser delivered through the Otobeam® handpiece in otologic surgery. **Study Design:** Case series of four patients using the Omnicuide Otobeam® CO2 laser fiber and Otobeam® handpiece for otologic surgery. **Methods:** Descriptive case series. **Results:** CO2 laser was used in otologic surgery for diagnosis of cholesteatoma (primary and recurrent) and glomus tympanicum. The glomus tympanicum was completely excised from the hypotympanum using the laser which was inaccessible with standard otologic instruments. With cholesteatomas the laser was used to disarticulate a fused incudostapedial joint and allowed complete cholesteatoma removal from an unstable footplate. In our series there were no cases of hearing loss, facial nerve injury or other complications. **Conclusions:** The Omnicuide Otobeam® handheld CO2 laser provided a safe and effective tool for removing middle ear disease without damaging underlying structures. It greatly facilitates speed and ease of dissection in primary and previously operated ears where granulation or cholesteatoma obscures vital structures.

S39. Spectral Fluorescence Imaging of Head and Neck Cancer Xenografts Targeting CD147

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John P. Gleysteen, BS, Birmingham, AL
Christopher F. Baranano, MD, Birmingham, AL
Jennifer R. Bremser, BA, Birmingham, AL
Wenyue Zhang, MS, Birmingham, AL
Eben L. Rosenthal, MD, Birmingham, AL*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand that head and neck squamous cell cancer (HNSCC) expresses high levels of CD147 and understand the potential for immunofluorescent imaging of CD147 to enhance tumor detection in the clinical setting.

Objectives: To show that systemically administered fluorescently labeled anti-CD147 antibody can detect primary and metastatic HNSCC xenografts in vivo. **Study Design:** In vivo immunodeficient murine model. **Methods:** Anti-CD147 or nonspecific IgG1k antibody were labeled with a near infrared fluorophore (Cy5.5) and administered to the mice by tail vein injection. Imaging was performed over a 72 hour period using brightfield and fluorescent stereomicroscopy (685-735 nm) and digital images were analyzed to determine relative intensity of tumor fluorescence in arbitrary units (au). To determine if fluorescently labeled anti-CD147 antibody was specific for tumors in vivo, SCID mice were xenografted with cell lines expressing variable amounts of CD147: FaDu (control vector transfected), FaDu/siE (siRNA CD147 knockdown), FaDu/E (CD147 overexpressed), or SCC-1 cell. As a model for regional metastatic disease, mice were injected with SCC-1 cell line via tongue injection and the

neck explored using fluorescence stereomicroscopy. **Results:** Peak tumor fluorescence was visualized by near infrared stereomicroscopy in SCC-1 tumors at 24 hours after systemic injection of fluorescently labeled anti-CD147 antibody. SCC-1 tumors demonstrated significantly higher fluorescent intensity (48.36 au) compared to IgG1k isotype control antibody (9.23 au). FaDu tumors overexpressing CD147 (FaDu/E) demonstrated higher fluorescence (53 au) compared to control vector transfected cells (FaDu, 33 au) which was higher than CD147 knockdown cells (FaDu/SiE, 5 au). Cervical lymph nodes measuring less than a millimeter in size were clearly visualized by fluorescent imaging and biopsy specimens confirmed the presence of tumor bearing lymph nodes. **Conclusions:** This data suggests fluorescently labeled anti-CD147 may have clinical utility in detecting primary and metastatic HNSCC.

S40. Balloon Sinuplasty for Treatment of Chronic Rhinosinusitis in Children. A Pilot Study

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

Educational Objective: At the conclusion of this presentation, the participants should be able to be familiar with balloon sinuplasty technique in children, its indications and initial experience with it.

Objectives: Balloon sinuplasty is a new technique that was recently introduced for the treatment of chronic rhinosinusitis (CRS). The initial experience in adults has been very rewarding. The technique allows for restoring ventilation to the sinuses with very minimal risk and without any trauma to the tissues. We present our initial experience for treatment of CRS in children.

Study Design: A prospective study of 27 children who failed medical therapy and were scheduled for surgery were treated with balloon sinuplasty instruments performed on one or more sinuses over the past year. Age ranged between 5-13 years. 6-12 months followup was available on 12 children. **Methods:** Data was collected which included age, duration of symptoms and CT score as well as comorbid conditions. 6-12 months followup was available on 12 children whereby outcome was evaluated.

Results: The procedure was successful on all 27 children except for 4 who had a hypoplastic maxillary sinus. No complications or side effects were noted in any of the patients. Of the 12 children who had 6-12 months followup only 2 (17%) children continue to have symptoms requiring antibiotics as prior to surgery. The remaining 10 (83%) had either resolution of their symptoms or required one antibiotic in a 6-12 months period compared to 3-6 prior to surgery. **Conclusions:** The initial experience with balloon sinuplasty in children seems to be very encouraging. The success rate has been much higher than an adenoidectomy alone. Since there is no bone or tissue removal the fear of facial growth retardation is minimal. A hypoplastic sinus may not be amenable to balloon sinuplasty.

S41. ARY Epiglottic Abscess Manifesting as Epiglottitis

Jeremy T. Reed, MD MPHTM, Washington, DC

Rahul K. Shah, MD, Washington, DC

Barbara A. Jantusch, MD, Washington, DC

Sukgi S. Choi, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss and appreciate an unusual presentation of a now rare disease, epiglottitis, in the post-HIB vaccine era where both presentation and causative organism may be unique.

Objectives: To describe an unusual presentation of epiglottitis and review this now rare disease process. **Study Design:** Case report and literature review. **Methods:** Case description. **Results:** A 17 year old male presented with seven days of hoarseness, dysphagia, and pharyngitis. Lateral neck x-ray was inconclusive. Computed tomography revealed a phlegmon in the right aryepiglottic (AE) fold. Fiberoptic upper airway evaluation showed a red, edematous epiglottitis consistent with epiglottitis and fullness of the right AE fold obstructing the airway. The airway was secured in the operating room. Exploration of the right AE fold revealed no true abscess. The patient remained intubated and received four days of antibiotics. On postoperative day number four, he underwent a direct laryngoscopy in the operating room—the epiglottis was normal in appearance but there was persistent fullness of the right AE fold. The right aryepiglottic fold abscess was drained by needle aspiration. Community acquired methicillin resistant staphylococcus aureus, Capnocytophaga ochraceae, bacteroides stercoratus and Prevotella melaninogenica were cultured from this aspirate. **Conclusions:** In the post-HIB vaccine era epiglottitis has become exceedingly rare. Clinicians must remain vigilant of myriad presentations and the presence of unusual causative organisms and etiologies for this disease process.

S42. Human Immunodeficiency Virus and Wound Complications in Elective Facial Plastic Surgery

Michael J. Reilly, MD, Washington, DC

Steven P. Davison, MD DDS, Washington, DC

Kevin M. Burke, BS, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to: 1) appreciate the physiological and social factors that contribute to the demand for elective facial plastic surgery in HIV positive patients; and 2) understand and stratify the risk for postoperative wound complications in HIV patients undergoing elective facial plastic surgery procedures.

Objectives: This study was designed to document the wound complication rates in HIV positive patients undergoing open facial plastic procedures (facelift, cosmetic parotidectomy, rhinoplasty, malar implantation, chin implantation, browlift) versus the rates in those patients undergoing minimally invasive techniques (liposuction, fat autograft implantation, injectable fillers). **Study Design:** Retrospective chart review and literature review. **Methods:** Charts were reviewed for all patients with an International Classification of Diseases, Ninth Edition (ICD-9) code of V08 (asymptomatic HIV infection) who underwent surgery by the senior author at this tertiary care hospital between January 1, 2000, and May 31, 2007. Indication for surgery, type of procedure performed, wound complication rates, length of followup, status of HIV infection, and HIV treatment status were all documented. Data was collected per Internal Review Board protocol. Complication rates were compared between study groups and with the existing surgical literature. **Results:** Preliminary data reveals a wound complication rate of 35% in patients undergoing open procedures and only 7% in patients undergoing minimally invasive procedures, yielding an Odds Ratio of 5.0 ($p < 0.05$). **Conclusions:** This retrospective review suggests that there is a significant difference in morbidity associated with open facial plastic surgery procedures when compared to minimally invasive procedures in HIV positive patients. These findings should be considered by the facial plastic surgeon when designing an aesthetic plan for a patient in this population.

S43. Intraoperative Computed Tomography: A Valuable Learning Tool for Sinus Surgery

G. Aaron Rogers, MD, Atlanta, GA
Sarah K. Wise, MD, Atlanta, GA
Brent A. Senior, MD, Chapel Hill, NC
John M. DelGaudio, MD, Atlanta, GA*

Educational Objective: At the conclusion of this presentation, the participants should be able to further understand how intraoperative imaging can assist in successful sinus surgery. This pilot study opens a discussion about the relevance and future of intraoperative computed tomography in rhinologic procedures.

Objectives: To assess the educational benefit of post-dissection CT on surgeon comfort level and thoroughness of subsequent dissection. **Study Design:** Attendees at a surgical dissection course performed two consecutive days of cadaveric endoscopic sinus surgery. Dissectors were surveyed prior to each dissection regarding comfort levels with various procedures. All dissections were examined and graded for completeness comparing pre- and post-dissection CT scans. **Methods:** This study is an uncontrolled prospective study of dissection performance and surgeon comfort levels with various rhinologic procedures. A simple grading system of dissection completeness is described. A single reviewer was used for all objective evaluations. **Results:** 22 participants' data were available for review. There were 9 residents and 13 practicing otolaryngologists. Comfort levels with ethmoidectomy, sphenoidotomy, and frontal sinusotomy showed significant increase after first dissection for residents ($p=.02$, $.008$, and $.004$ respectively) as well as practicing graduates ($p=.008$, $.002$, and $.001$). 86% of respondents felt more comfortable with sinus surgery after first dissection, and 100% felt the post-dissection CT imaging was a valuable learning tool for assessing sinus dissection. Improvement in the completeness of sinus dissections was not statistically significant. **Conclusions:** IOCT is a valuable aid for assessing the completeness of sinus dissection. This appears to result in greater surgeon comfort levels in subsequent dissection and may lead to improvement in the otolaryngologist's thoroughness in endoscopic sinus surgery.

S44. Paranasal Sinus Wound Healing in a Rodent Model

Wes G. Seipp, BS, Winston Salem, NC
John L. Willis, BS, Winston Salem, NC
Christopher A. Sullivan, MD, Winston Salem, NC

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the surgical anatomy of the rat paranasal sinus.

Objectives: Nearly 200,000 chronic sinus disease patients undergo sinus surgery annually, and a significant number of these fail due to unfavorable scar formation. There is no preventive or curative strategy for this condition and no animal model exists to study wound healing after sinus surgery. The objective of this investigation was to develop an animal model of sinus surgery that could be used to study wound healing. **Study Design:** Basic science. **Methods:** Cadaveric adult Sprague-Dawley rats underwent CT scanning of the paranasal sinuses to define the anatomy radiographically prior to performing anatomic dissection. Six cadaveric animals then underwent unilateral external ethmoidectomy. Animals were then rescanned and parameters for safe dissection relative to orbital and brain anatomy were established. Six additional animals then underwent external eth-

moidectomy under general anesthesia. Animals were allowed to awaken from anesthesia and were scanned and sacrificed. Paranasal sinus tissue was harvested and analyzed histologically. **Results:** CT scan data confirmed complete ethmoidectomy in cadaveric animals. Safe entry points and extent of dissection were defined radiographically and grossly according to external bony landmarks. All animals undergoing surgery survived and no intracranial or orbital injury occurred. Histologic data confirmed loss of respiratory epithelial lining on the operated side with formation of scar tissue at 2, 6 and 12 weeks. **Conclusions:** Complete ethmoidectomy can be performed safely in a rat model, and the histologic changes observed correspond with the human clinical picture of disease. This animal model of sinus surgery could provide a sinus wound healing model for translation research.

S45. A New Animal Model for Studying Laryngeal Transplantation: Mouse

Taha Z. Shipchandler, MD, Cleveland, OH (Resident Travel Award)
Robert R. Lorenz, MD, Cleveland, OH
Olivia Dan, BA, Cleveland, OH
Marshall Strome, MD, Cleveland, OH*

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the technique, success rate and rejection grading system for performing laryngeal transplantations in mice.

Objectives: The purpose of this study is to determine the feasibility of performing laryngeal transplantation in a cost effective and immunologically well studied animal—the mouse. **Study Design:** Pilot animal study. Approved by institution's IACUC. **Methods:** Laryngeal transplantations were attempted in syngeneic mice to first determine the feasibility of the surgical procedure given the small vessel caliber in mice. Once this was successful, allogeneic mouse transplants were performed and sacrificed at different time intervals to determine a preliminary rejection grading system. Histopathologic analysis was performed on all transplanted larynges. **Results:** Ten laryngeal transplants were attempted in the syngeneic model. Initially three showed ischemic transplants 24-48 hours after the procedure. The subsequent seven mice had healthy transplants 24-96 hours after the procedure. In the allogeneic model initially four mice had ischemic injury 24-96 hours after transplantation on histopathology. The subsequent ten recipients displayed various levels of rejection depending on the time since transplant but no evidence of ischemic injury. **Conclusions:** Several animal models have been used to study laryngeal transplantation. This pilot study demonstrates the surgical technique for performing laryngeal transplantation in a mouse. The mouse is an ideal animal model due to its low cost and more importantly, its well-studied immunologic behavior, making it ideal for future transplantation studies.

S46. WITHDRAWN The Incidence of Postoperative Vocal Cord Paresis or Paralysis after Thyroid Surgery

David C. Shonka Jr., MD, Charlottesville, VA
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Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the incidence of vocal cord paresis or paralysis after thyroid surgery.

Objectives: To demonstrate the incidence of vocal cord paresis or paralysis after thyroid surgery. **Study Design:** Retrospective chart review. **Methods:** Charts of patients undergoing surgery for benign or malignant thyroid disease between January of 2004 and July of 2007 were reviewed for demographic data, diagnosis, and extent of surgery. All patients underwent pre- and postoperative indirect laryngoscopy. Postoperative vocal cord function was evaluated by flexible fiberoptic laryngoscopy within the first three days after surgery. **Results:** Sixty-two consecutive patients were identified who had surgery for benign (47%) or malignant (53%) thyroid disease by a single senior surgeon with resident participation. Ten patients (16%) had paresis or paralysis postoperatively. Of these, 60% had surgery for malignancies. Nine patients (90%) had return of function between 2 days and 1.5 years postoperatively; four (40%) had return of function by the 1 week postoperative visit. One patient had unilateral paralysis without evidence of recovery at eight months followup, which was expected given the tumor extent despite the nerve being intact at the completion of the procedure. Age, extracapsular spread, and tumor stage did not statistically impact postoperative vocal cord function. **Conclusions:** Despite the plethora of studies on thyroidectomy aggressive early documentation of vocal cord function has not been performed. Fiberoptic laryngoscopy within three days of thyroid surgery identifies early paresis in patients who may be asymptomatic. Despite the modest cohort size this study may better define the true short term impact of thyroid surgery on vocal cord function.

S47. Perineural Invasion (PNI) in Cutaneous Squamous Cell Carcinoma (SCC) of the Head and Neck

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Michael Redmond, MD, Brisbane, QLD Australia

Educational Objective: At the conclusion of this presentation, the participants should be able to understand the mechanism of perineural spread.

Objectives: PNI in cutaneous SCC of the head and neck is associated with decreased survival. Once the tumor invades the perineural space it can extend proximally and/or distally in the nerve sheath and eventually reach the intracranial space. Anecdotally patients with large nerve PNI succumb to disease spread into the brainstem. Our goal was to review our clinical experience with PNI and validate our clinical observations. **Study Design:** Retrospective chart analysis. **Methods:** We identified patients with large nerve PNI from cutaneous SCC in the head and neck between January 1996 and 2006. We then performed a retrospective chart review and documented the original histology, cranial nerve(s) involved, initial treatment and outcome. **Results:** Fifty-three patients were identified of which 46 had adequate information. Three patients were excluded because of pathology other than SCC. The mean age was 66 years (range 36-92 years). The mean followup was 28.9 months (range 1-82 months). Thirty-seven patients had involvement of the trigeminal nerve (in 24 patients it was the only involved nerve), 19 patients had involvement of facial nerve branches (6 had involvement of the facial nerve alone). Fifteen patients were treated with an en-bloc resection of the tumor and involved nerve(s) followed by radiation therapy. In nine patients a formal skull base resection was required. The overall survival in this group was 92% and the disease free survival was 62% at 60 months. Ten patients had tumor resection with "nerve chasing". The disease free survival in this group was 40% at 60 months. Two patients received only radiation therapy and one of these had a central failure. The remainder patients were offered only palliative treatment. Importantly none of the patients treated with aggressive resections had central failure, while 4 of 10 patients treated with less aggressive resections failed centrally. All of the patients who received palliative treatment had central disease progression upon presentation. **Conclusions:** PNI poses significant challenges to the head and neck surgeon. Its management remains controversial. In selected cases aggressive resection of the involved nerves up to the brainstem may prevent central failure. Radiation therapy alone to control PNI spreading into the intracranial space appears to be less effective. Finally spread into the central nervous system is the pattern of failure in this disease.

S48. The Posterior Auricular Flip-Flop-Flap for Reconstruction of Conchal Bowl Defects

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Marc R. Dean, MD, Shreveport, LA
William E. Walsh, MD, Shreveport, LA

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate an understanding of the posterior auricular flip-flop-flap.

Objectives: Defects of the conchal bowl are frequently reconstructed with free skin grafts. However skin grafts are prone to failure and extremely precarious if the perichondrium is not intact. The senior author has used the vascularized, interpolated posterior auricular flip-flop-flap (PAFFF) for many years to reconstruct conchal bowl defects. A single patient initially inspired the author to use the PAFFF for reconstruction of conchal bowl defect from skin cancer resection and donor site closure from conchal bowl perichondrial cutaneous graft employed to resurface a nasal cancer resection defect. This case will be presented as well as a review of our experiences with this flap, which are routinely used for reconstructive closure of the donor site when employing the perichondrial cutaneous graft. **Study Design:** Case presentation and retrospective review. **Methods:** Design: Cases demonstrating donor site closure of the PCCG and resurfacing defects second to skin cancer resection of the anterior auricle and retrospective chart review. Setting: Tertiary care hospital and academic otolaryngology and facial plastic surgery practice. Patients: Patients requiring reconstruction of conchal bowl defects and other anterior auricular skin defects. **Results:** Case Presentation: A 72 year old white male presented with a basal cell carcinoma of the conchal bowl. A portion of the conchal cartilage was resected to ensure an adequate margin. The resulting defect could have been closed with a free skin graft; however, the senior author decided to remove additional cartilage and rotate a posterior auricular, centrally based interpolated flap through the cartilage fenestra to fill the anterior conchal bowl defect. The posterior auricular defect was closed in a liner fashion creating a new, less deep sulcus. The same patient presented several months later with a skin lesion on the lateral nasal dorsum. A perichondrial cutaneous graft from the other conchal bowl was used to reconstruct the defect. The conchal bowl cartilage was resected and the donor site was closed with a PAFFF. Subsequent to this case this flap has been employed in over 500 patients yielding consistently good results. **Conclusions:** This technique has a minimal learning curve and is more expeditious for closing conchal bowl defects than any other technique that we have employed.

S49. Staging Classification System for Minimally Invasive Thyroid Surgery

David J. Terris, MD, Augusta, GA*
Melanie W. Seybt, MD, Augusta, GA

Educational Objective: At the conclusion of this presentation, the participants should be able to explain the proposed sys-

tem for classifying patients according to eligibility for minimally invasive thyroid surgery.

Objectives: Minimally invasive thyroid surgery has been increasingly embraced in the United States and elsewhere. The surgical standards have yet to emerge, resulting in a sometimes confusing assortment of designations for the techniques. **Study Design:** Evidence based analysis of prospectively collected data from a consecutive, single surgeon experience with minimally invasive and conventional thyroid surgery. **Methods:** Demographic parameters were obtained on patients undergoing thyroid surgery at an academic medical center from January 2004 to June 2007. Particular attention was paid to patient and tumor characteristics thought to have relevance to eligibility for minimally invasive thyroid surgery. Normally distributed variables were subjected to parametric tests, nonnormally distributed variables to nonparametric tests. **Results:** A total of 359 patients underwent thyroidectomy during the study period; there were 57 males and 302 females with a mean (\pm standard deviation) age of 45.9 ± 15.1 years. Predictably there was a strongly positive correlation between incision length and both the size of the nodule ($p=0.0001$) and the patient body mass index (BMI) ($p=0.0001$). A classification system was designed which established distinct and discrete stages for minimally invasive thyroidectomy (MIT I, II and III). **Conclusions:** A patient and disease driven classification system for assigning eligibility for incremental stages of minimally invasive thyroid surgery is proposed. Like the TNM algorithm this staging system allows for both uniform reporting of outcome measures across patient populations and a logical basis for determining patient eligibility.

S50. Long Term Results and Patient Satisfaction with the BAHA Device in Patients with Single Sided Deafness

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Soha N. Ghossaini, MD, New York, NY
Jaclyn B. Spitzer, PhD, New York, NY
Matthew M. Farrugia, DO, Detroit, MI
Dayton L. Young, MD, Sarasota, FL

Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate the effectiveness, long term use and patient satisfaction using the BAHA device in single sided deafness.

Objectives: The purpose of this study is to evaluate the benefit, extent of utilization, and patient satisfaction with the BAHA device in cases of single sided deafness (SSD). **Study Design:** A retrospective chart review of clinical and audiological data was followed by an office or telephone interview with a patient satisfaction questionnaire. **Methods:** One hundred and fifty-three patients who underwent BAHA surgery for single sided deafness between January 2003 and July 2007 were identified. The data was tabulated and summarized. All the clinical and audiological data including pre- and postop speech reception thresholds, pure tone averages, speech recognition scores, and HINT test scores were tabulated. A BAHA SSD questionnaire was then used to collect patient satisfaction and usage data. Patients were either interviewed on site or on the phone. **Results:** The majority of the patients (80%) was utilizing the BAHA device regularly and reported improvement in their quality of life. They used the device an average of 5.3 days a week and for 8.8 hours a day. Despite the lack of a significant benefit in sound localization patients reported improvement in their communicative skills and listening to music, TV or radio. **Conclusions:** The BAHA device has been successfully used to restore auditory input from the deafened side of patients with single sided deafness. The majority of patients continue to use the device on a daily basis with a significant enhancement in their quality of life.

S51. Wegener's Granulomatosis of the Pediatric Airway: Caught in the Act

Jeremy B. White, MD, Washington, DC
Kevin J. Vogeley, MD, Washington, DC
Rahul K. Shah, MD, Washington, DC

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the clinical presentation and management of Wegener's granulomatosis involving the pediatric airway.

Objectives: To discuss the diagnosis and management of a case of active tracheal inflammation due to Wegener's granulomatosis. **Study Design:** Retrospective case review. **Methods:** Retrospective case review and examination of the pertinent literature. **Results:** This patient is a 13 year old male with a two year history of an audible expiratory wheeze, shortness of breath, and persistent purulent rhinorrhea despite medical therapy. Due to a difficult intubation during nasal surgery concern was raised for subglottic stenosis; subsequent direct laryngoscopy with bronchoscopy confirmed this suspicion. The stenotic subglottis was acutely inflamed with granulation tissue. Despite equivocal nasal mucosa biopsies, the unusual airway inflammation, rhinologic disease, and c-ANCA >100 lead to the diagnosis of Wegener's granulomatosis. The patient was managed with prednisone, azathioprine, and salmeterol/fluticasone propionate with symptomatic resolution and significant airway improvement on direct bronchoscopy. **Conclusions:** Treatment of an actively inflamed trachea with subglottic stenosis due to Wegener's granulomatosis.

sis should focus on medical therapy, including steroids, before making attempts at surgical intervention.

S52. Endoscopic Management of a Massive Nasal Osteoma Presenting as an Orbital Abscess

Byron P. Windham, MD, Jackson, MS (Resident Travel Award)
Jeffrey D. Carron, MD, Jackson, MS

Educational Objective: At the conclusion of this presentation, the participants should be able to discuss the presentation, differential diagnosis, endoscopic management, and potential sequela of nasal osteoma and secondary orbital abscess.

Objectives: To report a rare case of a sinonasal osteoma presenting as an orbital abscess in a 13 year old female. We also detail our open management of the orbital abscess as well as endoscopic management of her massive osteoma. **Study Design:** Case report. **Methods:** A 13 year old female presented to our ER with a 1 week history of sinusitis and a 3 day history of progressive right sided proptosis and eye pain. In addition she complained of a several year history of unilateral right sided complete nasal obstruction for which she had undergone 2 prior adenoidectomies at an outside facility. Computed tomography revealed a massive dense bony tumor involving the entire right nasal cavity as well as a right orbital abscess. **Results:** After admission to the hospital for IV antibiotics she was taken to the operating room within 24 hours for right orbitotomy and drainage of her orbital abscess as well as biopsy of the right nasal mass. Pathological analysis was consistent with osteoma. One month later she was brought back to the OR for endoscopic resection of the osteoma as well as medial orbital wall decompression. At 1 month followup she was noted to have residual minor proptosis but no diplopia and otherwise was doing well. **Conclusions:** Sinonasal osteomas are rare lesions that may present with proptosis and orbital abscess as the initial symptoms. Despite previous reports of open management we feel that even the largest of these lesions can be successfully managed endoscopically.

S53. Pulmicort in the Treatment of Chronic Hypereosinophilic Sinusitis

Maria L. Wittkopf, MD, Nashville, TN
James A. Duncavage, MD, Nashville, TN*

Educational Objective: At the conclusion of this presentation, the participants should be able to appreciate the difficulty of treating chronic hypereosinophilic sinusitis, know the various medical treatments available for chronic sinusitis, and understand the advantages that Pulmicort offers in the treatment of chronic hypereosinophilic sinusitis refractory to conventional medical therapy.

Objectives: To assess the clinical response to Pulmicort of patients with chronic hypereosinophilic sinusitis who have failed traditional medical therapy including nasal steroids and Biaxin. **Study Design:** This study is a retrospective review of patients who have undergone endoscopic sinus surgery at our institution between 1/05 and 1/06 and whose surgical pathology has revealed hypereosinophilic inflammation. According to our treatment paradigm only those patients who have failed routine postoperative medical management, including nasal steroids and Biaxin, are placed on Pulmicort. The clinical response of these patients is assessed. **Methods:** Pretreatment and post-treatment SNOT-20 surveys are used to assess patient response to Pulmicort therapy. Only patients treated with Pulmicort are assessed. Pretreatment SNOT-20 surveys are obtained on initial presentation and evaluation in our clinic. Post-treatment SNOT-20 surveys are obtained on followup evaluation after initiation of Pulmicort therapy. **Results:** Eleven patients, six males and five females, fit the study criteria described above. The pre- and post-treatment SNOT-20 survey scores for these patients are compared. The pretreatment SNOT-20 survey score average is 40.7 compared to the post-treatment SNOT-20 survey score average of 13.5. The Student's t-test for these data sets is 4.43 which is statistically significant in rejecting the null hypothesis. The duration of Pulmicort treatment at the time of followup SNOT-20 completion is one to two years. **Conclusions:** Pulmicort provides medical control of chronic hypereosinophilic rhinosinusitis refractory to traditional medical therapy, as defined by control of symptoms and quality of life improvement.
