



67th Annual Meeting Banff, AB

"A Voice for Everyone"

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SUNDAY, JUNE 2, 2013

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SPECIAL PLENARY PAPER

Sunday, June 2, 2013 - Alhambra Ballroom

09:25 – 09:35 **Reducing the Pre-operative Ecological Footprint in Otolaryngology** – J. Lui, L. Rudmik, D. Randall, Calgary, AB

LEARNING OBJECTIVES

Upon attending the presentation, learners will be able to: 1. Identify the need to reduce hospital waste, particularly from the operating room. 2. Demonstrate an appreciation for a viable method of cutting down perioperative waste in a safe, easy and financially viable way through pre-operative recycling. 3. Recognize the barriers to recycling in the operating room.

ABSTRACT

Objectives: Operating rooms generate approximately 21% of all hospital waste. Our objectives included determining the quantity and proportion of pre-operative recyclable waste produced during otolaryngology – head & neck surgery procedures and to project the cost of diverting such waste from landfills. Methods: During otolaryngology surgical procedures at tertiary level hospitals, all pre-operative waste was sorted into recyclable and non-recyclable bags, which were weighed and counted. Pre- and post-investigation questionnaires were anonymously completed by operative staff to identify barriers to recycling. A cost analysis was conducted to explore annual savings with pre-operative recycling. Results: Approximately 96% of pre-operative waste is recyclable, which translates to an 18% reduction in total waste. Using a tertiary pediatric hospital as a conservative model, with nearly 2600 otolaryngology procedures completed annually, landfill-directed waste could be reduced by 472kg and 331.2 cubic metres. Operative staff agree that OR waste needs to be addressed, but suggest time, staff attitudes and lack of recycling facilities are recycling barriers. Conclusions: 96% of pre operative waste is recyclable, free from biohazards, and is a financially viable option to divert from landfills. Despite identifiable barriers to implementation, measures to recycle pre-operative waste would greatly reduce hospitals' ecologic footprints.

HEAD AND NECK SURGERY #1 PAPERS

Sunday, June 2, 2013 - Alhambra Ballroom

13:30-13:37 **Molecular Prognostication of Survival in Oropharyngeal Squamous Cell Carcinoma** – V. Biron, H. Seikaly, D. O'Connell, A. Klimowich, L. Puttagunta, J. Harris, Edmonton, AB

LEARNING OBJECTIVES

By the end of this presentation the audience will be familiar with: 1. The prognostic value of p16, EGFR, Ki-67, p53 and Bcl-xL in oropharyngeal squamous cell carcinoma. 2. The impact of primary surgery versus non-surgical treatment modalities on the survival of advanced stage oropharyngeal squamous cell carcinoma. 3. The prognostic implications of stratifying patients with oropharyngeal cancer according to treatment modality and molecular profile.

ABSTRACT

Background: Oropharyngeal squamous cell carcinoma (OPSCC) is caused by tobacco, alcohol and oncogenic Human Papillomavirus (HPV) infection. These various etiological factors are linked with different pathways of carcinogenesis. Objective: To determine differences in survival outcomes in OPSCC patients according to molecular profiles and various treatment modalities. Methods: Demographic, pathologic and staging data from patients diagnosed with OPSCC was obtained from a prospectively collected dataset. From this dataset, a tissue microarray (TMA) was constructed with 226 patient tumors. TMAs were stained with p16 (oncogenic HPV surrogate marker), Epidermal growth factor receptor (EGFR), Ki-67, p53 and B-Cell lymphoma (Bcl)-xL. Quantitative immunohistochemistry was used to determine relative biomarker levels between tumors. Overall and disease-specific survival was determined for various molecular profiles. Results: Overall and disease-specific survival was improved for all p16 positive patients. When comparing treatment modalities, patients treated with surgery followed by chemoradiation had the highest 5-year survival (p16+, 85%; p16-, 61 %). A subset of patients with low levels of EGFR, treated by surgery and chemoradiation had 100 % 5-year disease-specific survival. Conclusions: Patients with p16 positivity and low levels of EGFR have improved treatment responses. In addition, advanced stage OPSCC patients have optimal survival outcomes when receiving triple modality treatment.

13:37-13:44 **p16 Expression Measured by AQUA is an Independent Prognostic Factor in Oral Squamous Cell Carcinoma** – P. Bose, J. Dort, S. Chandarana, K. Guggisberg, N. Brockton, A. Klimowicz, T. W. Matthews, S. Petrillo, Calgary, AB

LEARNING OBJECTIVES

At the end of the presentation attendees will: 1) Understand the differences between DAB and AQUA analysis in measuring p16 expression. 2) Appreciate the potential importance of p16 as a candidate prognostic biomarker in oral squamous cell carcinoma.

ABSTRACT

Objectives: Most studies using p16 immunohistochemistry (IHC) for prognostication in oral squamous cell carcinoma (OSCC) have relied on 3,3'-dichlorobenzidine (DAB) staining and manual scoring of p16 expression. Only 10-15% of OSCC patients demonstrate p16 positivity and p16 status is rarely associated with outcome. Here, we investigate the association between p16 expression and OSCC prognosis using manual and automated IHC approaches. Methods: Tumour tissue from 56 surgically resected OSCC patients were assembled on tissue microarrays. Fluorescence IHC followed by automated quantitative analysis (AQUA) of p16 expression and DAB staining followed by manual evaluation of p16 expression were performed. p16 expression measured by AQUA and DAB were compared for their association with prognosis. Results: The biphasic distribution of continuous p16 AQUA expression scores was used to distinguish low versus high expressers. p16 expression assessed by DAB was not associated with 5-year disease-specific survival (DSS) ($p=0.17$); whereas using AQUA, p16low patients were associated with significantly worse DSS ($p=0.02$). In multivariate analysis, p16 expression measured by AQUA was an independent prognostic factor [HR 0.074(0.0099-0.605), $p=0.015$], adjusting for nodal status [HR 3.424(1.603-7.315), $p=0.001$] and pathological T-stage [HR 1.999(1.108-3.604), $p=0.021$]. Conclusion: The increased sensitivity achieved by AQUA enhances the prognostic value of p16 in OSCC.

13:51-13:58 **High Frequency of Activating PIK3CA Mutations in HPV Positive Oropharyngeal Cancer** – W. Chow, A. Nichols, J. Yoo, K. Fung, J. Mymryk, J. Barrett, N. Mundi, S. Um, London

LEARNING OBJECTIVES

1. To understand the spectrum of common mutations in head and neck cancer. 2. To develop an understanding of the frequency of activating PIK3CA mutations in HPV-positive and HPV-negative head and neck cancer. 3. To understand strategies to target the PIK3CA pathway in HPV-positive head and neck cancer to improve treatment outcomes and decrease treatment toxicity.

ABSTRACT

Objectives: Large scale whole exome sequencing studies of head and neck squamous cell carcinoma (HNSCC) have suggested that activating mutations in PIK3CA are more common in patients with human papillomavirus (HPV)-positive tumors. We aim to determine the frequency of activating mutations in HPV-positive and negative oropharyngeal cancers. Methods: We identified 89 oropharyngeal cancer samples with adequate tumor for analysis. DNA from pre-treatment primary site biopsy samples were tested for high-risk HPV types 16 and 18 by real time PCR. Forty-eight HPV-positive and 41 HPV-negative samples were tested for activating mutations at codons 542, 545 and 1047 by PCR followed by Sanger sequencing. Results: Two of the 41 (5%) HPV-negative tumors demonstrated PIK3CA mutations, including an E542K and a E545K mutations. Eighteen of 48 (37%) HPV-positive tumors demonstrated activating PIK3CA mutations. Of these, 8 (44%) were at codon 542, 6 (33%) at codon 545 and 4 (22%) at codon 1047. Conclusions: Although there has been a suggestion that activating PIK3CA mutations are common in HPV-positive HNSCC, this is the first study to clearly identify this phenomenon. Targeting PIK3CA with molecular agents in HPV-positive patients may be a mechanism to improve cure rates and decrease treatment toxicity in this rapidly growing cohort of patients.

13:58-14:05 **Circulating MicroRNAs in the Serum of Patients with Oral Cancer and Pre-Cancer** – C. Garnis, S. MacLellan, J. Lawson, C. Poh, Vancouver, BC

LEARNING OBJECTIVES

By the end of the presentation the audience will understand the potential utility of circulating tumor specific microRNAs as biomarkers for oral cancer.

ABSTRACT

Objective: Those diagnosed with oral cancer (OC) suffer from poor survival rates and high rates of disease recurrence. Novel approaches for earlier disease detection and more effective patient management are needed to improve outcomes.

Emerging data show microRNAs (a group of small, non-coding RNAs) that are expressed in serum may have utility as non-invasive biomarkers for managing multiple cancer types. Our goal was to explore the utility of circulating miRNAs as biomarkers for early detection and/or disease recurrence in oral cancers and precancers. Methods: Serum samples were collected from patients with oral cancer or precancer (N=47) and from a demographically-matched non-cancer control group (N=46). RNA was extracted from serum using a modified miRNeasy (Qiagen) protocol. A quantitative real-time PCR assay profiling 742 microRNAs (plus controls) was used to evaluate microRNA expression. Permutation tests were used to compare results from patient vs. control groups. Results: Dysregulated expression of several serum microRNAs was observed specifically in OC patients (relative to controls). Expression of these microRNA candidates are now being evaluated in serum samples from an independent cohort. Conclusion: Our data suggest utility for serum-expressed microRNAs – easily evaluated by a simple blood test – as biomarkers for management of oral cancer and pre-cancer.

14:12-14:19 **What Do Patients Think About Routine Follow-up After Curative Cancer Treatment? –**
S. Hall, D. Feldman-Stewart, Kingston, ON

LEARNING OBJECTIVES

1. At the end of this session the attendees will understand that the current practice of routine follow-up is not evidence-based. 2. At the end of the session the attendees will have learned that there are groups of more and less needy patients for follow-up.

ABSTRACT

Objective: The purposes of routine follow-up for patients include cancer surveillance and the many aspects of survivorship. Routine cancer surveillance is based on an assumption by physicians and patients that identifying a recurrence early will improve survival, but unfortunately for most cancer sites, including head and neck, there is no evidence that this is true. Follow-up appointments are expensive for patients and the health care system and we have previously demonstrated huge differences in practice across Canada. To make routine follow-up more relevant and efficient, we ought to know the patients perspective. Method: The Patient Needs and Preferences Questionnaire (PN&PQ), based on existing validated scales, was created to assess head and neck cancer patient needs, attitudes, fears and preferences at the time of routine appointments. The PN&PQ has been combined with established scales measuring anxiety/depression, optimism/pessimism and quality of life into a 78 electronic question set and has been offered to 100 consecutive patients at the Kingston regional cancer center on their 1st, 2nd and 3rd treatment anniversary. Results: The distributions of the PN&PQ variables will be presented for all patients with comparisons by groups (site, stage, age, gender, treatment, depression) to identify subgroups of more and less needy patients.

14:19-14:26 **Oropharynx Cancer in Ontario 2003/2004: Treatments and Results –** S. Hall, J. Irish, B. O'Sullivan, P. Groome, R. Gregg, Kingston, ON

LEARNING OBJECTIVES

1. At the end of the session the attendees will understand the role of selection bias in the interpretation of observational studies. 2. At the end of the session, the attendees will be able to consider which treatment might be more appropriate for a patient with oropharynx cancer.

ABSTRACT

Objective: to describe and compare the patients with, the treatments of and the results of the treatments of squamous cell cancer of the oropharynx across Ontario during 2003/2004. Methods: 570 patients across 8 cancer treatment centers are included in this retrospective cohort study based on the Ontario Cancer Registry. Data are presented with frequency distributions, Kaplan-Meier curves and Cox Regression analysis. Results: There was considerable between-center variation in treatments (radiotherapy, surgery, surgery with radiotherapy, chemoradiotherapy), chemotherapy regimens and radiotherapy techniques. There was no difference in survival between centers ($p=0.65$), between chemotherapy protocols ($p=0.78$) and between the treatments of radiotherapy and chemoradiotherapy (HR 1.34, $p=0.15$). Differences in outcomes will be highlighted including an exploration of the impact of select bias.

14:26-14:33 **Functional Outcomes And Quality Of Life (QOL) After Surgical Treatment Of Oropharyngeal Carcinoma In Relation To The Human Papilloma Virus (HPV) Status –**
H. Marzouki, H. Seikaly, V. Biron, Edmonton

LEARNING OBJECTIVES

1) Understand the utility functional quality of life outcomes in head and neck surgery. 2) Understand the association between and functional and quality of life outcomes and HPV status in surgically oropharyngeal cancer patients.

ABSTRACT

Objective: 1) To determine the impact of the HPV status on speech, swallowing, and quality of life outcomes after surgical treatment of oropharyngeal cancer. Methods: A retrospective review of a prospectively collected data of all the patients with squamous cell carcinoma of the oropharynx diagnosed and treated from 1998 to 2009. Speech, swallowing, and quality of life data were gathered at 2 different evaluation times. A multivariate standard statistical analysis will be performed to identify whether the HPV status is a significant predictor of functional outcome and QOL. Results: 169 patients with oropharyngeal cancer were treated surgically between 1998 and 2009, with mean age of 61 years. Out of those patients 87 (51.5%) were HPV positive. There was no relationship between the HPV status and functional outcomes. Conclusions: HPV status is not a useful marker for functional outcome in surgically treated oropharyngeal cancers.

14:40-14:47 **The Epidemic of Human Papillomavirus and Oropharyngeal Cancer in a Canadian Population** – S. Tan, A. Nicols, S. Dhaliwal, W. Chow, C. Rajakumar, S. Um, N. Mundi, S. Berk, R. Zhu, J. Basmaji, G. Rizzo, J. Franklin, K. Fung, J. Yoo, J. Barrett, London, ON

LEARNING OBJECTIVES

1) To understand the relationship between oral HPV infection and oropharyngeal cancer. 2) To develop an understanding of how changes in social behaviours are related to the changing epidemiology of head and neck cancer. 3) To understand the public health and healthcare resource allocation issues related to the oropharyngeal cancer epidemic.

ABSTRACT

Objectives: Studies in the United States and Europe have demonstrated an alarming increase in the frequency of human papillomavirus (HPV)-related oropharyngeal cancer, however the same direct evidence does not exist in Canada. We aim to study this phenomenon in Southwestern Ontario. Methods: Tonsillar cancers diagnosed between 1993 and 2011 were tested for high-risk HPV types 16 and 18 by real-time polymerase chain reaction. Patients were divided into three six-year time periods: 1993-1999 (period A), 2000-2005 (period B), and 2006-2011 (period C) to study differences in incidence and survival. Results: 160 specimens were identified, of which 91 (57%) were positive for HPV 16. There was as significant increase in the total number of tonsillar cancers between period A and C (32 versus 68), and a substantial increase in the proportion of cases that were HPV-positive (25% vs. 62%, $p < 0.0001$). When all factors were included in a multivariable model, only HPV status predicted treatment outcome. These changes were associated with a marked improvement in five-year overall survival ($p < 0.001$). Interpretation: This study is the first to provide direct evidence that HPV related oropharyngeal cancer is increasing in incidence in a Canadian population. This has tremendous implications on public health and healthcare resource allocation.

RHINOLOGY PAPERS**Sunday, June 2, 2013 – Cascade Ballroom**

15:30-15:37 **Canadian Otolaryngology Practice Patterns for the Management of Chronic Rhinosinusitis** – R. J. Lin, C. Diamond, J. Janjua, Vancouver, BC

LEARNING OBJECTIVES

1. To review the components of "maximal medical therapy" for CRS treatment among Canadian Otolaryngologists; 2. To review the surgical practice pattern for CRS among Canadian Otolaryngologists; 3. To compare the identified Canadian practice pattern for patients with CRS with current clinical practice guidelines.

ABSTRACT

OBJECTIVES: To identify current medical and surgical patterns of clinical practice in the management of chronic rhinosinusitis (CRS) among Canadian Otolaryngologists. METHODS: A web-based survey was distributed to members of the Canadian Society of Otolaryngology (CSO). Patterns of medical treatments used to define "maximal medical therapy" in CRS with and without polyps and techniques with endoscopic sinus surgery (ESS) were analyzed. RESULTS: Preliminary results from 141 respondents show 18% have subspecialty rhinology training. Regarding "maximal medical therapy", antibiotics are commonly prescribed to patients with CRS without nasal polyposis. Conversely, antibiotics are infrequently used in CRS

patients with nasal polyps. Intranasal steroid sprays and saline nasal irrigation are commonly prescribed to patients with CRS, regardless of polyp status. Variation exist in the prescribing pattern of oral corticosteroids. Regarding ESS, 95% of respondents perform routine maxillary antrostomies, 91% ethmoidectomies, 55% sphenoidotomies, and 40% frontal sinusotomies. 66% of surgeons differ in the extent of surgery performed on patients having CRS with polyps compared to CRS without polyps. CONCLUSION: There are common trends and variations in practice patterns for the medical and surgical treatments of CRS among Canadian Otolaryngologists, and compared to established clinical practice guidelines.

15:37-15:44 **The HVSI STUDY: High Volume Saline Irrigation in the Early Post-operative Management of Chronic Rhinosinusitis. A Multicenter Randomized Single-Blind Controlled Trial** – K. Macdonald, I. Witterick, Toronto, ON; B. Rotenberg, London, ON; L. Rudmik, Calgary, AB

LEARNING OBJECTIVES

By the end of this sessions the Otolaryngologist will be able to:1) Appreciate potential clinical differences between high volume saline versus low volume saline irrigation in the post-operative management of patients with chronic rhinosinusitis. 2) Make an informed evidence-based decision the best saline delivery system for patients undergoing endoscopic sinus surgery for chronic rhinosinusitis.

ABSTRACT

OBJECTIVES: Primary: Pilot study to determine the feasibility of future collaborative trials among Canadian Rhinologists. Secondary: To compare high volume saline irrigation (HVSI, NeilMed Sinus rinse) to low volume saline irrigation (LVSI, Salinex) in the early post-operative period in patients with chronic rhinosinusitis (CRS).METHODS: Multicenter, randomized, single blinded trial. Participating sites enrolled ten patients each. Patients were randomized to either HVSI or LVSI after endoscopic sinus surgery. Surgeons were blinded to treatment. One-month post-operative scores for the subjective sinonasal outcomes (SNOT-22) scale and objective perioperative sinus endoscopy (POSE) scales were compared to pre-operative scores. RESULTS: Data on initial 37 patients from four centres showed similar baseline characteristics between the two groups. There was significant postoperative improvement in both groups for both SNOT-22 and POSE scales compared to baseline: preoperative HVSI SNOT-22 48.2 (95% CI 35.8-60.5) vs postoperative 15.7 (9.7-21.6); preoperative LVSI SNOT-22 49.1 (40.4-57.8) vs postoperative 16.5 (9.6-23.4); preoperative HVSI POSE 16.7 (13.2-20.1) vs postoperative 5.6 (2.9-8.3); preoperative LVSI POSE 16.0 (13.4-18.5) vs postoperative 7.1 (4.5-9.7). There was no difference between HVSI and LVSI for either scale preoperatively or postoperatively. CONCLUSION: Preliminary data from 37 patients from four centres show significant subjective and objective improvement at one month postoperatively, with no difference between HVSI and LVSI. Data on more than 100 patients in the next few months will add to the presentation of our results at the CSOHS meeting.

15:51-15:58 **Early Postoperative Topical Corticosteroids in Chronic Rhinosinusitis with Nasal Polyps (CRSWNP): A Systematic Review and Meta-analysis** – M. Fandino, I. Witterick, K. Macdonald, J. Lee, A. Vescan, Toronto, ON

LEARNING OBJECTIVES

By the end of this session the medical student, resident or general otolaryngologist (audience) will be able to evaluate the efficacy of INCS when presented with evidence from the literature. By the end of this session the audience will obtain an update review of the evidence from the literature behind the use of INCS in the postoperative care after endoscopic sinus surgery (FESS). By the end of this session the audience will be able to evaluate potential gaps in the literature with regards to the use of INCS in the postoperative care of FESS and use this information to develop future research projects.

ABSTRACT

OBJECTIVES: To assess the efficacy of intranasal corticosteroids (INCS) in comparison to placebo, other type of topical steroid or no treatment in the healing process of adult patients with CRSwNP after functional endoscopic sinus surgery. METHODS: We searched the Cochrane Central Register of Controlled Trials (1995 to May 2012), MEDLINE (January 1948 to May 2012), EMBASE (January 1980 to May 2012) and the reference lists of articles. Randomized controlled trials (RCT) and cohort studies comparing INCS with placebo, or comparing different types of INCS were included. Studies failing to report at least one outcome measure were excluded. Two authors (MF, KM) independently assessed trial quality and extracted data. RESULTS: Thirteen studies involving 1041 patients were included. Eleven studies (n= 945) were RCT and two were prospective cohort studies of moderate quality (n= 96). During the first year of follow-up INCS had a beneficial effect on

symptoms scores measured by Visual Analogue Scales (SMD, -1.35; 95% CI [-2.05 to -0.64], p=0.0002). The Standardized Mean Difference (SMD) of the various polyp scales also showed significant improvement with INCS: SDM, -0.53; 95% CI [-0.91 to -0.14], p=0.007; 5 trials, 223 patients. Compared to placebo, the use of INCS for one year postoperatively decreased the odds of polyp recurrence 3-fold (OR, 0.31; 95% CI [0.1 to 0.99], p=0.05). CONCLUSIONS: INCS shows a significant improvement in polyp score, patients' symptoms, and a significant decrease in polyp recurrence up to one year postoperatively. Implementation of scales that includes key features to assess healing is needed.

15:58-16:05 **Association of CPAP Bacterial Colonization with Chronic Rhinosinusitis** – C. Chin, B. Rotenberg, C. George, London, ON

LEARNING OBJECTIVES

By the end of the presentation, the audience will understand the role of CPAP in treating sleep apnea, and the lack of association between CPAP bacterial cultures and presentation of sinusitis.

ABSTRACT

Objective: The purpose of our study was to investigate whether bacterial colonization of the continuous positive airway pressure (CPAP) machine reservoirs occurred, and if so was it related to the development of chronic rhinosinusitis (CRS). Methods: Prospective cohort study of regular CPAP users treating Obstructive Sleep Apnea (OSA). Patient demographics were recorded and they were asked to fill out the Chronic Sinusitis Survey (CSS) form. Patients then had their CPAP machines swabbed. An ANOVA was used to determine if the presence of micro bacterial colonization was related to CSS scores. In total, 72 patients were included in the study. There was no significant difference in any of the scores between the group with positive cultures and the group without positive cultures. Conclusions: Having a positive culture in the CPAP reservoir does not seem to lead to an increased symptomatology of CRS; although the reservoirs often become colonized, there seems to be no clinical impact.

16:12-16:19 **Maxillary Sinusitis and the Role of Odontogenic Disease** – R. Murphy, E. Wright, J. Khetani, Edmonton, AB

LEARNING OBJECTIVES

By the end of the presentation, the learner will: 1. Recognize that sinus disease relating to poor dentition is under reported. It is therefore advisable to review CT scans to identify any possible odontogenic etiology. 2. Analyze preoperative imaging to recognize risk factors for odontogenic contributions to sinus disease. 3. Recognize the contribution of maxillary dental disease in the development of adjacent paranasal sinus disease i.e. anterior ethmoid, frontal sinusitis.

ABSTRACT

Objectives: Odontogenic etiology can contribute to the pathophysiology of acute or chronic maxillary sinusitis. This is often manifesting as a periapical lucency of the maxillary molar dentition that can often be seen on coronal views of Computed Tomography scans. Although variably described in the literature, we view Odontogenic Maxillary Sinusitis as being an under-reported entity and now attempt to characterize the incidence in a Canadian population. Methods: Retrospective chart review of patients seen at a tertiary Rhinology practice between 2010-2012. Coronal CT scans were independently reviewed to identify possible odontogenic etiology on the ipsilateral side of affected sinuses. Adjacent paranasal sinus disease was also characterized. This radiologic finding was compared to the radiology report. Results: 120 patients underwent Endoscopic Sinus Surgery from 2010-2012. 30% of these cases were for unilateral disease and of these cases, 20% of cases demonstrated odontogenic pathology on CT scan. Conclusions: Odontogenic Maxillary Sinusitis is an under-reported entity and does play a role in settings of acute or chronic sinusitis. Further awareness within the fields of Otolaryngology, Dentistry and Radiology can improve the diagnostic accuracy in OMS. We believe this can then lead to more directed care toward the underlying pathophysiology.

16:19-16:26 **The Role of Season, Temperature and Humidity on the Incidence of Epistaxis in Alberta** – J. Deserres, E. Wright, Edmonton, AB; L. Sowerby, London, ON; L. Rudmik, Calgary

LEARNING OBJECTIVES

At the end of the presentation, the attendee will understand: 1. the correlation between temperature and epistaxis events; 2. the correlation between season and epistaxis events; 3. the correlation between humidity and epistaxis events.

ABSTRACT

Objective: Classical dogma holds that epistaxis is more common in winter months but there is significant heterogeneity reported. No study has yet examined the effect of season, humidity and temperature on epistaxis in a place with as severe weather extremes as seen in Alberta. Method: Retrospective review of consecutive adult patients presenting to the Emergency Department in Edmonton and Calgary over a three year period. Daily temperature and humidity data was recorded from the respective airports. Statistical analysis with Pearson's correlation coefficient was performed. Results: 4315 patients presented during the study period. Mean daily temperature s ranged from a low of -40oC to a high of +23oC. A significant negative correlation was found for mean monthly temperature with epistaxis (Pearson's $r=-0.835$, $p=0.001$). No correlation was identified for mean monthly humidity. A significant correlation was present for daily temperature and epistaxis presentation (Pearson's $r=-0.55$, $p=0.018$, range 1.8 to 2.2 events/day). A significant seasonal difference was not present. Conclusions: A negative correlation was found to exist for both daily and mean monthly temperature with rates of epistaxis. Daily temperature also was found to statistically correlate, but the difference is likely not clinically significant. No correlation was found for humidity or for season in presentation rates.

16:33-16:40 **"Spring Spacers" - Inexpensive, Non-obstructive Middle Meatal Spacers for Use Following Endoscopic Sinus Surgery** - T. Hartl, A. Janjua, Vancouver, BC

LEARNING OBJECTIVES

After listening to this presentation, residents and otolaryngologists performing endoscopic sinus surgery will be able to:1. Appreciate the myriad approaches available to minimize the incidence of a well-known complication of endoscopic sinus surgery: middle turbinate lateralization and synechiae formation in the middle meatus. 2. Apply a new technique for minimizing the incidence of this complication, which is clearly detailed in a step-by-step fashion, using endoscopic images and video. 3. Consider the potential advantages of this technique, while appreciating the need for further evidence to help quantify these benefits.

ABSTRACT

OBJECTIVES: Middle turbinate lateralization and synechiae formation in the middle meatus are well-known complications following endoscopic sinus surgery. Various techniques have been described in the literature to minimize their incidence. The objective of this presentation is to display a simple, low-cost, non-obstructive technique of middle meatal stenting. METHODS: We describe in step-by-step detail (using endoscopic images and video) a novel technique for creation and placement of silastic middle meatal stents to prevent sub-optimal post-operative lateralization and scarring of the middle turbinate. RESULTS: The following potential benefits are discussed in comparison to current alternative techniques:1. Low cost (2 silastic sheets, 1 prolene suture). 2. Non-obstructive ("open-tube" design allows immediate irrigation, ventilation & drainage of sinuses). 3. Simplicity & efficiency (stent creation takes 5 intra-operative minutes). 4. Non-traumatic (no debriding, no cutting, no suturing). 5. Minimal infectious risk (inert silastic). 6. Customizable (to any altered nasal anatomy). CONCLUSIONS: This simple technique for minimizing post-operative middle turbinate lateralization and synechiae formation may be considered by all otolaryngologists performing endoscopic sinus surgery as an efficient, non-obstructive and low-cost alternative to current techniques.

16:40-16:47 **Sphenoid Sinus Meningoencephaloceles in Adult Patients: a Case Series** – C. Valdes, M. Tewfik, Montreal, QC; T. Ha, P.-J. Wormald, Adelaide, SA; S.Floreani, D. Sirhan

LEARNING OBJECTIVES

By the end of this session otolaryngologists will be able to diagnose and know the management of Sphenoid Meningoencephalocele when they are exposed to this pathology.

ABSTRACT

Introduction-Meningoencephaloceles are malformations with protrusion of meninges and cerebral tissue through a defect in the skull base; usually diagnosed in early infancy. Meningoencephaloceles of the sphenoid are uncommon but may present with the appearance of a mucocele or polyp in adult patients. The objective of this work is to describe the clinical presentation and management of this rare pathology. Methods-We review a bi-institutional experience of management of lateral sphenoid meningoencephalocele. Medical charts and surgical videos were retrospectively reviewed; the clinical presentation, surgical technique and outcomes are reported. Results-Six patients were included. Four were female and the average age at presentation was 66 years. The clinical manifestations included headaches, CSF rhinorrhea, nasal obstruction and postnasal drip. All patients had CT with dehiscence in the lateral sphenoid sinus with herniation of tissue from the brain, which was confirmed by MRI. Five patients had endoscopic approaches; one patient had a craniotomy as the initial approach and was revised endoscopically. No complications were reported. Conclusions-Evaluation of this malformation is challenging and increased awareness is necessary in order to aid clinicians in making a timely diagnosis. A suggestive clinical

history with a CT showing dehiscence of the skull base in the sphenoid should be a good starting point to suspect the presence of this malformation. Its resection by the transnasal endoscopic approach is feasible.

16:47-16:54 **Endoscopic Approach to Neoplasms of the Infratemporal Fossa - Feasibility and Indications** – R. Varshney, M. Tewfik, F. Zawawi, Montreal, QC

LEARNING OBJECTIVES

At the end of this presentation, the audience will be able to: 1) Appreciate the feasibility of approaching the infratemporal fossa via an endoscopic approach; 2) Identify the key technical points of this type of intervention; 3) Understand the potential applications of this approach to various pathologies of the infratemporal fossa.

ABSTRACT

Introduction: The approach to tumors of the infratemporal fossa has evolved over time, with reports of peri-auricular, transtemporal, transmaxillary and now endoscopic nasal access. We present a case series of infratemporal fossa tumors approached via an endoscopic 2 surgeon trans-septal technique. Methods: All cases of infratemporal fossa tumors operated by the senior author between August 2010 and September 2012 were reviewed. Information was gathered from medical charts as well as intraoperative video recordings. Results: Four cases, including chordoma, meningioma, multifocal teratoma and juvenile nasopharyngeal angiofibroma, were resected via an endoscopic transseptal approach. The degree of resection varied from complete to subtotal depending on the pathology and the anatomical structures involved. There were no immediate complications. Conclusion: This case series lends support to the use of a transseptal endoscopic approach in the management of tumors of the infratemporal fossa. Indications for this approach, the feasibility and technical points will be presented.

GENERAL OTOLARYNGOLOGY PAPERS

Sunday, June 2, 2013 – Alhambra Ballroom

15:30-15:37 **Surgisis vs Temporalis Fascia Repair of Septal Perforations** – A. R. Esmail, M. Mina, B. Hassouneh, Winnipeg, MB

LEARNING OBJECTIVES

The learner will become more aware of surgical options for septal perforation repair and the outcomes for these interventions. The learner will learn about the etiology of septal perforations that present to an ENT practice.

ABSTRACT

Objectives: Review outcomes of Surgisis repair vs Temporalis repair. Review common symptoms and etiologies of septal perforations. Methods: Eight year retrospective chart review of all patients from one surgical practice that received either temporalis (n=23) or surgisis (n=43) repair. Results: Surgisis complete closure in 60% compared to 65% in Temporalis group. Early complete failure in 4 grafts within two months. 2, due to documented nose picking/trauma from patient. Of the 8 failures 4 were due to some type of patient induced trauma of the 9 partial closures 5 were due to documented patient trauma. Of the 9 partial closures only 2 requested revisions. Conclusions: Comparable results from Surgisis vs Temporalis. When removing early failure from patient trauma results improve significantly (76%). Average size of Surgisis perf 3.5cm vs 1.44cm temporalis. Surgisis allows attempting larger closures. Benefits of Surgisis: Reduce OR time; eliminate donor site morbidity; ability to close larger perforations.

15:37-15:44 **Nasal Packing after Septoplasty: Respiratory Effects** – M. Gill, S. Banglawala, N. Dhillon, D. Sommer, M. Gupta, Hamilton, ON

LEARNING OBJECTIVES

By the end of this session residents and medical students will obtain a better understanding of the respiratory effects of nasal packing after septoplasty, be able to understand different means of recording respiratory function and will be able to review the literature on nasal packing after septoplasty.

ABSTRACT

Objective: Nasal packing is routinely used after septoplasty as it is believed to decrease risk of post-operative bleeding, hematomas and adhesions. Multiple studies have shown however that there are numerous complications associated with

nasal packing. The purpose of this paper was to perform a meta-analysis or systematic review on the existing literature to evaluate the respiratory effects of nasal packing after septoplasty. Method: Two independent reviewers conducted a literature search using EMBASE, OVID, Medline, PubMed, Google scholar, Cochrane Library and reference list review from 1966 to August 2012 to identify studies assessing nasal packing after septoplasty. All papers were reviewed for study design, results and assigned an Oxford level of evidence grade, Detsky and MINORs score. Results: Fourteen studies were identified that met the inclusion criteria. Twelve papers were prospective trials and 2 were randomized control trials. The RCTs showed no significant differences in the means in the preoperative and postoperative pH, pCO₂, and pO₂. Two out of seven studies showed a decrease in mean O₂, however, clinically it was not significant. Furthermore there was no significant effect of packing on the ODI. Conclusion: There is a lack of evidence regarding deterioration of respiratory function with nasal packing after septoplasty.

15:44-15:51 **Polydioxanone Sheeting as an Adjunct for Autologous Cartilage Grafting in Major Nasal and Septal Reconstruction** – M. Langille, J.D. Keohane, P. Singh, Edmonton

LEARNING OBJECTIVES

1. By the end of the session an Otolaryngologist – Head & Neck Surgeon will have a greater appreciation of the challenges associated with complex nasal and septal reconstruction. 2. By the end of the session an Otolaryngologist - Head & Neck Surgeon will be able to describe techniques and outcomes for nasal and septal reconstruction using Polydioxanone (PDS) sheeting used in combination with autologous cartilage grafts.

ABSTRACT

Objectives: To describe the surgical technique and outcomes for major nasal and septal reconstruction using polydioxanone (PDS) sheeting with autologous cartilage grafts. Methods: Patients presenting with significant nasal and septal abnormalities were considered for this study. All patients underwent nasal and septal reconstruction using PDS sheeting with autologous cartilage grafting. Surgeries were performed in a tertiary care center by a single otolaryngologist / facial plastic surgeon. Patients were assessed post – operatively for repair status and complication rate. : Data was collected for 46 patients (34 males, 12 females, mean age 40) who underwent repair with PDS sheeting. All patients underwent an open septorhinoplasty. Follow up ranged from 6 weeks – 19 months. All patients were evaluated endoscopically pre and post - operatively. Forty four patients (96%) had successfully attained septal medialization and repair of the nasal septal perforation. Two patients (4%) with nasal septal perforation repair had delayed failure of the graft at twelve weeks. There were no post – operative infections or complications. Conclusions: PDS sheeting used with autologous cartilage is a safe and reliable technique to perform complex nasal and septal reconstruction.

15:58-16:05 **2013 Updated Systematic Review and Meta-Analysis of 36 Randomized Controlled Trials; No Apparent Effects on Non Steroid Anti-inflammatory Agents on the Risk of Bleeding after Tonsillectomy** – J. Ramakrishna, L. Riggan, G. Koren, D. Sommer, Hamilton, ON

LEARNING OBJECTIVES

1) To compare bleeding rates between NSAIDs, opioids and placebo for tonsillectomy. 2) To conduct an up to date and inclusive systematic review of current literature surrounding adult and pediatric NSAID use with tonsillectomy and risk for increased bleeding. 3) To help guide safe clinical practices for tonsillectomy analgesia. 4) To answer the question “Do NSAIDs increase the risk of bleeding with tonsillectomy?”

ABSTRACT

Abstract: Although the literature suggests that non-steroidal anti-inflammatory drugs (NSAIDs) are effective in controlling post-operative pain in the pediatric population, physicians have been reluctant to utilize these medications after tonsillectomy due to concerns of increased bleeding rates. While many surgeons prescribe opioid analgesics post-operatively, these are associated with a number of potential adverse side effects including nausea, vomiting, constipation, excessive sedation and respiratory compromise. Objective: To compare bleeding rates and severity between recipients of NSAIDs vs. placebo or opioid analgesics for tonsillectomy. Methods: A systematic review and meta-analysis of all randomized control trials comparing bleeding rates and severity between recipients of NSAIDs vs. placebo or opioids post tonsillectomy. Results: A total of 36 studies met our inclusion criteria including 1747 children and 1446 adults. Use of NSAIDs in general [1.30 (0.90-1.88)] , or in children [1.06 (0.65-1.74)] was not associated with increased risk of most severe bleeding , bleeding in general, secondary hemorrhage, readmission, or need for reoperation due to bleeding. Similarly,

there was no increased bleeding risk for specific NSAIDs in either adults or children. Conclusion: These results suggest that NSAIDs should be considered as a safe method of analgesia among children undergoing tonsillectomy.

16:05-16:12 Tonsillectomy and Tonsillotomy Alone in Adult OSA Management: A Comprehensive Evidence Based Review – J. KM Chau, Winnipeg, MB

LEARNING OBJECTIVES

The learning objectives for this presentation are: 1. Review the surgical procedure of tonsillectomy. 2. Review the various novel tonsillotomy techniques. 3. Present the current evidence base for the role of tonsillectomy alone in managing adult OSA. 4. Present the current evidence base for the role of tonsillotomy alone in managing adult OSA. 5. Briefly review the Oxford grading scale of levels of evidence of published literature.

ABSTRACT

Objectives: Tonsillectomy is an age-old surgical procedure that dates back to antiquity, originally described in the context of managing infective disorders of the oropharyngeal tonsils. In the 21st century, tonsillectomy remains a common surgical procedure whose indications have shifted towards managing obstructive airway disorders. The role of tonsillectomy and tonsillotomy alone in managing adult obstructive sleep apnea is uncertain. The objective of this study was to comprehensively review the current evidence base for tonsillectomy as a single modality in the treatment of adult OSA. Methods: A comprehensive literature search of electronic databases was performed. Reference lists of included studies were also reviewed. No language or study type restrictions were employed. Sample size, surgical technique, sleep study data and outcomes data were recorded in addition to evidence-based-medicine (EBM) grade. Results: Nine studies on tonsillectomy alone were identified. Success rates varied from 40-100%. EBM grade varied from 4 - 2b. Three studies on tonsillotomy alone were identified. No sleep study data was reported. EBM grade varied from 4 - 2b. Conclusion: The published evidence regarding tonsillectomy and tonsillotomy alone in OSA is lacking at present. Tonsillotomy may have an important role in optimizing medical therapies.

16:12-16:19 Pharyngitis in the Emergency Room: A Retrospective Review – D. Wong, J. KM Chau, Winnipeg, MB

LEARNING OBJECTIVES

1. By the end of this session, participants will be able to evaluate Locacorten Vioform's ototoxicity when applied directly to the middle ear of a Guinea Pig model. 2. By the end of this session, the participants will be able to compare hearing outcomes of Locacorten Vioform's to Gentamycin when applied directly to the middle ear of a Guinea Pig model. 3. By the end of this session, the participants will be able to describe the histological state of the cochlea using scanning electron microscopy for both Locacorten Vioform's and Gentamycin treated ears.

ABSTRACT

Objective: To evaluate Locacorten Vioform's potential ototoxicity when applied directly to the middle ear. Methods: Experimental study with Guinea Pigs divided into 2 groups. The experimental group was treated with Locacorten in one ear and with a physiologic saline solution in the other. The control group was treated with concentrated Gentamycin in one ear and physiologic saline in the other. Auditory brainstem response measurements were obtained before and after transtympanic injections. The histological state of cochlear outer hair cells was compared between the two groups using scanning electron microscopy. Results: Average hearing loss in ears treated with Locacorten was 32.1 dB, compared with a 2.5 dB in the saline-treated ears. Ears treated with Gentamycin lost an average of 33.0 dB. There were clinically and statistically significant differences between the two ears of the Guinea Pigs in both groups ($p < 0.001$). Scanning electron microscopy revealed severe pericochlear inflammation and ossification in the Locacorten-treated ears. Gentamycin caused significant destruction of outer hair cell architecture. Conclusion: Locacorten Vioform induces a hearing loss similar to that caused by Gentamycin when applied directly to the middle ear of a Guinea Pig model. Electron microscopy indicates that this is due to a pericochlear inflammatory reaction with ossification.

16:26-16:33 Locacorten Vioform Ototoxicity Upon Middle Ear Application – O. Wood, I. Saliba, Montreal

LEARNING OBJECTIVES

1. By the end of this session, participants will be able to evaluate Locacorten Vioform's ototoxicity when applied directly to the middle ear of a Guinea Pig model. 2. By the end of this session, the participants will be able to compare hearing

outcomes of Locacorten Vioform's to Gentamycin when applied directly to the middle ear of a Guinea Pig model. 3. By the end of this session, the participants will be able to describe the histological state of the cochlea using scanning electron microscopy for both Locacorten Vioform's and Gentamycin treated ears.

ABSTRACT

Objective: To evaluate Locacorten Vioform's potential ototoxicity when applied directly to the middle ear. Methods: Experimental study with Guinea Pigs divided into 2 groups. The experimental group was treated with Locacorten in one ear and with a physiologic saline solution in the other. The control group was treated with concentrated Gentamycin in one ear and physiologic saline in the other. Auditory brainstem response measurements were obtained before and after transtympanic injections. The histological state of cochlear outer hair cells was compared between the two groups using scanning electron microscopy. Results: Average hearing loss in ears treated with Locacorten was 32.1 dB, compared with a 2.5 dB in the saline-treated ears. Ears treated with Gentamycin lost an average of 33.0 dB. There were clinically and statistically significant differences between the two ears of the Guinea Pigs in both groups ($p < 0.001$). Scanning electron microscopy revealed severe pericochlear inflammation and ossification in the Locacorten-treated ears. Gentamycin caused significant destruction of outer hair cell architecture. Conclusion: Locacorten Vioform induces a hearing loss similar to that caused by Gentamycin when applied directly to the middle ear of a Guinea Pig model. Electron microscopy indicates that this is due to a pericochlear inflammatory reaction with ossification.

16:33-16:40 **A Low Risk Tracheostomy Clinical Pathway Changes Practice and Improves Outcomes**
– K. Smith, T. W. Matthews, M. Dube, J. Spence, J. C. Dort, Calgary, AB

LEARNING OBJECTIVES N/A

ABSTRACT

Objective: Tracheostomy is common and over 500 are performed in our centre annually. Postoperative tracheostomy care is usually managed by non-experts and there is no protocol that guides the timing of decannulation. This study measures the impact of a 'Low Risk Tracheostomy Clinical Pathway' on time to decannulation (TTD) and assesses the incidence of adverse events. Methods: A prospective nonrandomized study comparing a control group of tracheostomy patients to a group managed with the 'Low Risk Tracheostomy Clinical Pathway'. The primary outcome (TTD) were compared (Wilcoxon) and a follow-up study was performed to assess the long-term impact of the pathway on TTD. Results: In 26 control patients, TTD was 14.7 days. In 21 pathway patients, TTD was 5.9 days ($p < 0.02$). In the 38 subsequent pathway patients, TTD was 7.9 days. The incidence of adverse events was not different between groups. Conclusions: A Low Risk Tracheostomy Clinical Pathway significantly reduces TTD.

16:40-16:47 **Nasal Surgery to Improve Nasal CPAP Compliance** – J. Poirier, B. Rotenberg, C. George, London, ON

LEARNING OBJECTIVES

By the end of the presentation, the audience will understand the role of nasal surgery in treating sleep apnea, and improving nasal CPAP compliance.

ABSTRACT

Introduction: Obstructive sleep apnea (OSA) is a common condition affecting 3-9% of middle-aged adults. Continuous positive airway pressure (CPAP) is the standard therapy however compliance rates are historically poor. Reasons frequently cited include nasal obstruction, discomfort and claustrophobia. Design: Prospective cohort pilot study. Methods: Nasal CPAP intolerant OSA patients, with documented nasal obstruction, underwent septoplasty plus inferior turbinoplasty. Pre-operative and post-operative data was collected on CPAP usage per night and subjective nasal obstruction with the nasal obstruction symptom evaluation (NOSE) questionnaire. Results: Eight patients met inclusion criteria and underwent septoplasty. CPAP usage increased significantly from 0.5 hours per night pre-operatively to 5 hours per night post-operatively ($p < 0.05$). Subjective nasal obstruction decreased from 16.1 pre-operatively to 5.38 following surgical intervention ($p < 0.05$). Conclusion: This study demonstrates improved CPAP compliance rates following septoplasty in OSA patients with nasal obstruction. Correction of nasal deformities should be offered in CPAP intolerant individuals to improve CPAP compliance rates.

16:54-17:01 **Transoral Robotic Thyroglossal Duct Cyst Excision: The Reverse Sistrunk Procedure** – M. Belzile, A. Nichols, K. Fung, J. Yoo, London, ON

LEARNING OBJECTIVES

1) To understand the embryologic etiology of thyroglossal duct cysts 2) To understand the mechanisms of thyroglossal duct cyst recurrence. 3) To learn the technical aspects of transoral robotic excision of base of tongue lesions.

ABSTRACT

Objectives: To describe the technique of transoral robotic surgical excision of a thyroglossal duct cyst remnant. Methods: The case of a 66 year old male with a base of tongue thyroglossal duct cyst remnant was reviewed. Results: The patient is a 66 year old male patient with a remote history of a transcervical excision of a thyroglossal duct cyst removed 28 years earlier. He presented to an outside hospital in airway distress secondary to a base of tongue mass and underwent intubation. Biopsy of the mass was negative for malignancy and yielded cystic fluid, which partially decompressed the mass. CT scan revealed a cystic mass abutting the hyoid bone consistent with a thyroglossal duct cyst remnant. Of note the hyoid bone was intact. The patient underwent a transoral robotic excision of the cyst including excision of a midline segment of the hyoid bone. The procedure lasted 135 mins and no complications were encountered. The patient was discharged home on post-operative day 1 tolerating a soft diet. The technique, radiographic and pathologic findings, and potential benefits will be reviewed. Conclusions: Transoral robotic excision of a thyroglossal duct cyst remnant including hyoid bone excision is feasible in select patients. Further prospective study is necessary to quantify the benefits of this procedure.

PEDIATRIC OTOLARYNGOLOGY PAPERS

Sunday, June 2, 2013 – IVOR PETRAK ROOM

15:30-15:37 **Controversies in the Management of Pediatric Thrombotic Complications in the Head and Neck: A case series and literature review** – J. Rebelo, D. Sommer, S. Nayan, A. Dalvi, K. Choong, M. Fulford, Hamilton, ON

LEARNING OBJECTIVES

Following this presentation, attendees will be able to: 1. Gain knowledge regarding the diagnostic criteria for Lemierre's syndrome. 2. Describe the changing nature of head and neck infections with thrombotic complications in terms of the non-classical pathogenic organisms that are frequently involved and the change in antibiotic stewardship. 3. Consider the various factors that may impact the choice of whether to use anticoagulation as part of the treatment for thrombotic complications in the head and neck.

ABSTRACT

Objective: To review the thrombotic complications of common head and neck infections, including Lemierre's syndrome, and their management. Methods: A retrospective review of patients presenting to our tertiary-care centre and literature review were undertaken. Pediatric patients (<18 y.o.) with thrombotic complications from an infection in the head and neck were included. REB approval was obtained. Published literature was reviewed for management practices. Results: Eight cases (4 males, 4 females) were identified from 2008 to 2012. The average age was 12.7 (range 2.5-17). Infectious sources included a peritonsillar abscess (n=1), odontogenic infection (n=2), sinusitis (n=1), and mastoiditis (n=4). All had thrombi identified on CT or MRI. These involved the transverse (n=2), sagittal (n=1), sigmoid (n=3), and cavernous (n=2) sinuses, and facial (n=1), internal jugular (n= 5), and external jugular (n=2) veins. All patients were anti-coagulated (average duration 108.5 days). Among patients with positive cultures (n=5), only one grew *Fusobacterium necrophorum*. On follow-up, 2 patients had lasting neurologic deficits and 2 had a persistent thrombus. Review of the literature showed anticoagulant use in 58% of pediatric cases reported since 2010. Conclusion: Our experience supports anticoagulation for imaging-confirmed thrombotic complications of head and neck infections. Controversy remains in the literature surrounding their management.

15:37-15:44 **Cochleovestibular Anomalies in Children with Cochlear Nerve Canal Stenosis** – L. Vilchez, K. Gordon, S. Blaser, E. Propst, S. Cushing, B. Papsin, Toronto, ON

LEARNING OBJECTIVES

By the end to the lecture the participants will be able to observe in a CT scan of the temporal bone the normal features of the cochleovestibular anatomy. By the end of the lecture the participants will be able to describe the abnormalities seen in the CT scan of the patients with cochlear nerve canal stenosis. By the end of the lecture the participants will be able to

consider which structures are more frequently affected in the temporal bone of the patients with cochlear nerve canal stenosis.

ABSTRACT

Purpose: To investigate cochleovestibular anomalies in children with unilateral cochlear nerve canal stenosis. **Methods:** Children with unilateral cochlear nerve canal stenosis (<1.5 mm) and critical canal stenosis (<1.0 mm) on CT imaging (N=39 patients; 39 stenotic ears, 39 contralateral ears) were compared with controls imaged due to trauma without temporal bone injury (N=32 patients, 64 ears). Sixteen measurements were obtained from the internal auditory canal, cochlea and vestibular end-organ, and were analyzed using one way ANOVA with Tamhane's post hoc testing for multiple comparisons. **Results:** Patients with critical cochlear nerve canal stenosis had a smaller internal auditory canal (mid distance width $P<.001$), cochlea (cochlear nerve canal $P<.001$; modiolus $P<.05$; apical turn $P<.05$; basal turn $P<.001$) and vestibular end-organ (lateral semicircular canal (SCC) bony island width $P<.05$; posterior SCC width $P<.01$) on the stenotic side as compared with controls. The contralateral ear also had a smaller cochlea (cochlear nerve canal $P<.001$; apical turn $P<.001$; basal turn $P<.001$) and vestibular end-organ (lateral SCC bony island width $P<.05$; posterior SCC $P<.05$) as compared with controls. **Conclusions:** Children with cochlear nerve canal stenosis have anomalies in both the cochlea and the vestibular end-organ in the affected and "normal" contralateral ear as compared with controls.

15:44-15:51 **Radiologic Prevalence of Superior Semicircular Canal Dehiscence in a Pediatric Population** – A. Saxby, J. Lea, M. Fandino, M. Sargent, F. Kozak, N. Chadha, Vancouver, BC

LEARNING OBJECTIVES

Attending surgeons should learn: 1. the prevalence of superior semicircular canal dehiscence (SSCD) as seen in this particular pediatric population and appreciate how this may relate to the wider pediatric population. 2. See examples of CT scans demonstrating SSCD, plus dehiscence of the other canals and congenital malformations of the bony labyrinth to aid in making the diagnosis. 3. Appreciate that thin bone overlying the SSC in early childhood may lead to possible dehiscence in later life. 4. In addition, results will be discussed in relation to patient age and co-existing radiological features as well as clinical correlation to the radiological findings.

ABSTRACT

Objectives: Assessment of the radiologic prevalence of superior semicircular canal dehiscence in a pediatric population. **Methods:** A retrospective analysis was undertaken of all fine cut (p.65mm slice thickness) in a pediatric tertiary referral hospital. CTs were initially assessed in standard axial and coronal planes. In suspected cases, images were reconstructed in the parallel (Poschl) and perpendicular (Stenver) planes of the superior semicircular canal. Dehiscence was defined as absence of bone in a minimum of 2 contiguous slices in the perpendicular plane plus at least one slice in the parallel plane as judged by two independent reviewers. **Results:** A total of 496 ears were reviewed, of which 17 (3.4%) were found to have superior semicircular canal dehiscence and 37 (7.5%) had thin bone overlying the canal. Bilateral dehiscence was present in 4 (1.6%) patients. Of those with unilateral dehiscence, half had a normal contralateral side and half had thin bone over the contralateral canal. **Conclusion:** Radiological evidence of bony dehiscence of the superior semicircular canal was present in 3.4% of this pediatric population. Correlation to clinical features and dehiscence of other canals will be discussed.

15:58-16:05 **The Effect of Tongue-tie Division on Breastfeeding and Speech Articulation: A Systematic Review** – A. Webb, P. Hong, W. Hao, Halifax, NS

LEARNING OBJECTIVES

1. Attendees will be able to identify objective and subjective breastfeeding outcomes as a result of tongue-tie division for ankyloglossia. 2. Attendees will be familiar with evidence based recommendations for tongue-tie division candidacy. 3. Attendees will be aware of the knowledge gaps around ankyloglossia and evidence regarding tongue-tie division for functional problems, such as speech articulation problems.

ABSTRACT

Objectives: To systematically review the outcomes of tongue-tie division in patients with ankyloglossia with the goal of (1) deriving clinically-oriented insights into the effect of tongue-tie division and (2) identifying knowledge gaps to stimulate further research. **Methods:** Medline, EMBASE and Cochrane databases were searched for studies published between 1966 and June 2012. Outcome measures of interest were subjective or objective measures of breastfeeding and speech, or reports of adverse events. **Results:** In all, 378 abstracts were generated from the literature searches; 20 met criteria for

data extraction and analysis. Tongue-tie division provided objective improvements in the following: LATCH scores; SF-MPQ index; IBFAT; milk production and feeding characteristics; and infant weight gain. Subjective improvements were noted in maternal perception of breastfeeding and pain. No definitive improvements in speech function were reported. The only significant adverse events were recurrent tongue-ties that required repeat procedures. Conclusions: Frenotomy is a well-tolerated procedure that provides objective and subjective benefits in breastfeeding; however, there are limited studies with quality evidence. There are no significant data to suggest a causative association between ankyloglossia and speech articulation problems. Aspects of ankyloglossia that would benefit from further research are described, and recommendations for tongue-tie release candidacy criteria are provided.

16:05-16:12 **Does the Morphologic Type of Laryngomalacia have any Diagnostic Value?** – B. Erickson, H. El-Hakim, Edmonton, AB

LEARNING OBJECTIVES N/A

ABSTRACT

Objective: test if the morphologic types of laryngomalacia (T-LM) correlate or predict the parameters of children treated surgically, or the management results. Method: we retrospectively studied all LM patients treated with supraglottoplasty. We included patients with confirmed diagnosis, ≥ 3 months follow-up, and complete data. Demographics T-LM, secondary airway lesions (SAL), secondary diagnosis affecting respiration, primary presentation (stridor, sleep disordered breathing [SDB], swallowing dysfunction [SD]), and outcome [OC] were collected. Correlation and multiple regression analysis were performed. Results: 52 patients were eligible (6 excluded). We included 46 patients (mean age 1.25 \pm 1.5 [0.04-8 years] 26 males). The primary presentation was stridor (34), 8 with SDB, and 4 with SD. T-LM correlated significantly with age (-0.9), and presentation (0.49). Presentation and SAL ($P=0.03$ & 0.006) predicted OC. Presentation predicted T-LM ($p=0.02$). Conclusion: T-LM vary by age and presentation. OC of management is different for SD or SDB and in the presence of SAL.

16:12-16:19 **A Retrospective Review of Post-Tonsillectomy Hemorrhage and Other Associated Complications in Children** – J. Belyea, P. Hong, M. Rigby, G. Corsten, L. Johnson, Halifax, NS

LEARNING OBJECTIVES

1. To compare the odds ratios of post-op tonsillectomy bleeds and complications using monopolar, bipolar, and steel to PITA, controlling for age, gender and presence of a resident during surgery for patients with OSA. 2. To compare the odds ratios of post-op tonsillectomy bleeds and complications using monopolar and bipolar to steel, controlling for age, gender and presence of a resident during surgery for patients with OSA + recurrent tonsillitis. 3. To demonstrate a cost analysis comparing monopolar, bipolar, steel and PITA.

ABSTRACT

Introduction: Tonsillectomy +/- Adenoidectomy is one of the most commonly performed surgical procedures at the Health Center X. At our institution, the most common tonsillectomy techniques are extracapsular dissection with steel instruments, monopolar cautery, bipolar cautery and intracapsular dissection with power shaver (PITA). Objective: Does PITA significantly decrease the rate of post-op bleeds and complications compared to monopolar cautery, bipolar cautery, and steel for patients with OSA? Study Design: 1057 charts were reviewed from patients who had a tonsillectomy at the X Centre from July 2004 – July 2010. The following information was collected: diagnosis, age at time of procedure, gender, length of procedure, tonsillectomy technique and power setting, hemostasis technique and power setting, surgeon, presence of resident, intra-op blood loss, post-op bleed and severity, post-op complications including readmission. Data was analyzed by a logistic regression model using STATA version 11. Results: For Patients with OSA, controlling for gender, age and presence of a resident, there was no significant difference in risk of post-op bleed or complications between techniques. For Patients with OSA and OSA + Recurrent Tonsillitis, controlling for gender, age and presence of a resident, there was no significant difference in risk of post-op bleeding or complications between techniques. Conclusion: There was no significant difference in post-op bleeding or complications between techniques for patients with OSA and OSA + Recurrent Tonsillitis.

16:19-16:26 **RCAT: Respiratory Complications following Adenotonsillectomy - A National Survey of Otolaryngologists and Anesthesiologists** – M. Gousseau, D. Leitao, B. Hassouneh, M. Bhandari, G. Guyatt, H. Wong, Hamilton, ON

LEARNING OBJECTIVES

1. Review of current attitudes and practices regarding post-tonsillectomy care across Canada. 2. Discussion of current literature base guiding current practice and guidelines. 3. Presentation of planned multi-centre randomized trial to augment the evidence base.

ABSTRACT

Background: A central dilemma in pediatric adenotonsillectomy is post-operative care. The objective of this study is to conduct a Canada-wide examination of current practices among otolaryngologists and anesthesiologists regarding post-tonsillectomy care, specifically young age, AHI criteria for admission, monitoring parameters and analgesia. Methods: We developed a self-administered survey based on our previous pilot semi-structured interviews. The survey used both direct items and clinical scenarios. Otolaryngologists and anesthesiologists were included if practicing at a Canadian children's hospital and routinely involved in post-tonsillectomy monitored care. Results: 102 participants completed the survey. The majority of the indications for monitored admission included young age (2 -3 years), sleep-study proven OSA and respiratory sensitivity peri-operatively. The use of apnea-hypopnea-index (AHI) showed marked variability, most frequent criteria being AHI > 5 (moderate OSA) and AHI >1 (mild OSA). Nursing observation and cardiopulmonary monitoring were used to a variable degree amongst participants. The perceived risk for experiencing serious respiratory events was 1% (IQR 0.1% - 5%). Conclusions: There is no clear agreement on when and how monitoring should be used post-tonsillectomy in children. There is a critical need for a comprehensive risk stratification study to adequately inform safe and efficient post-tonsillectomy care.

16:33-16:38 **Complementary and Alternative Medicine Use Among Patients Presenting to a Canadian Pediatric Otolaryngology Clinic** – M.E. Graham, P. Hong, M. Brake, S. M. Taylor, G. Flowerdew, Halifax, NS

LEARNING OBJECTIVES

By the end of this session, attendees will be able to: 1. identify some complementary and alternative medicines most commonly utilized by pediatric otolaryngology patients; 2. identify patients within their own practices who are more likely to utilize CAM; 3. describe potential complications associated with the use of CAM agents, including alterations in hemostasis and interactions with other medications; 4. understand the importance of assessing CAM use in their own patient populations to improve patient care.

ABSTRACT

Objectives: This study sought to characterize complementary and alternative medicine (CAM) use in Canadian pediatric otolaryngology patients with the aim of increasing CAM use awareness for the practicing otolaryngologist. Methods: Four hundred thirty-four caregivers of patients presenting to a pediatric otolaryngology clinic were surveyed regarding their child's use of CAM. Demographic information, perceived benefits and source of information regarding CAM was collected. Spearman correlation coefficient was used to assess strength of associations. Results: Three-hundred and sixty-four caregivers completed the survey (83.9% response rate). The children of 69% of respondents had utilized CAM, with 46% using CAM at the time of the survey. Higher income and chronic illness in the child were significant predictors of CAM use. The children of older and married parents were more likely to have utilized CAM (non-significant). The most common agents were multivitamins (43%) and vitamin D (32%). Parents whose children used more CAMs were more likely to perceive a benefit. Conclusions: A significant proportion of pediatric otolaryngology patients utilized CAM in our study population. It is crucial that otolaryngologists are aware of possible CAM use, as some agents may potentially interact with prescription medications and some may adversely affect surgeries.

16:40-16:47 **Health-related Quality of Life Outcomes of Otoplasty in Pediatric Patients Who Have Prominent Ears** – W. Hao, P. Hong, J. Chorney, M. Bezuhly, London, ON

LEARNING OBJECTIVES

By the end of this session, attendees will be able to: 1. Describe the indications and patient motivations for otoplasty procedure. 2. Understand the importance of using validated measures to assess health-related quality of life outcomes after surgical interventions. 3. Understand the importance of careful preoperative assessments in children and caregivers who are requesting otoplasty.

ABSTRACT

Objectives: 1) To evaluate the effect of otoplasty on health-related quality of life (HRQOL) in children with prominent ears. 2) To identify predictive factors that leads to positive outcomes after otoplasty. Methods: Seventy-nine patients who underwent otoplasty between January 2008 and December 2011 were asked to complete a postal survey containing the Glasgow Children's Benefit Inventory (GCBI) and the Pediatric Quality of Life Inventory (PedsQL), which measure changes in HRQOL and present HRQOL, respectively. Results: Forty-eight patients responded and overall, 88% were satisfied with the aesthetic results. The mean GCBI score was 24.3 (with 85% reporting a positive score), indicating an improved HRQOL after otoplasty. The mean PedsQL Parent Proxy-Report score and Child Self-Report score were 93.4 and 95.9 respectively, indicating a restored HRQOL comparable to the population norms. Interestingly, patients who cited low self-confidence as a reason for surgery reported significantly lower PedsQL scores than those who did not. Conclusions: Otoplasty improved HRQOL in most children with prominent ears in our study population. Children who suffer from low self-confidence, however, may need additional psychosocial support prior to and/or after surgery to restore their HRQOL.

16:47-16:54 **Down Syndrome: An Electrophysiological and Radiological Profile** - S. Moubayed, I. Saliba, S. Sbeity, E. El-Zir, F. Yammine, C. Tohmé Noun, A. Haddad, Montreal, QC

LEARNING OBJECTIVES

At the conclusion of this presentation, the participants will be able: 1) To Assess the micro-malformation of the inner ear. 2) to identify the correlation between hearing and radiological findings.

ABSTRACT

Objectives: to analyze in Down syndrome(DS) patients, electrophysiological and radiological findings to check for any correlation between hearing impairment and inner ear malformations. Methods: otoacoustic emissions (OAEs), ABR and Temporal bone CT Scans were carried in two groups; 34 ears from patients with DS were compared to those observed in 20 normal hearing individuals. Inner ear structures measurements were applied attempting to disclose subtle bony labyrinthine anomalies. The findings from both groups were statistically analyzed employing t-test. Results: In DS group, major inner ear abnormalities were disclosed in 5.8%; The application of various inner ear structures measurements increased the overall detection rate of common inner ear malformations to 47%. The average hearing threshold was estimated at 45.88 ± 17.25 dB nHL (range, 20 to 80 dB nHL). The dimensions of the bony labyrinth are significantly diminished compared to normal individuals. A relatively large vestibular aqueduct is also found to be associated with these otic abnormalities. Rate of sensorineural hearing loss (SNHL) is 41%. A statistically significant correlation was found between hearing level and vestibule length ($r=-0.442$; $p=0.009$) and between hearing level and internal auditory canal length ($r=0.378$; $p=0.028$). Conclusion: A correlation was observed between the vestibular length, IAC length and hearing level.

16:54-17:01 **A Simple Management Option for Impacted Aspirated Non-vegetable Foreign Bodies in Children Distal Airway** - R. Murphy, H. El-Hakim, Edmonton, AB

LEARNING OBJECTIVES

At the conclusion of this presentation participants will be able to: 1. Recognize that foreign bodies aspirated to the distal airways require a high level of suspicion and careful examination of imaging to diagnose. 2. Consider potential medical treatments that reduce some of the common pitfalls in the endoscopic retrieval of these bodies. 3. Recognize the potential of downhill deterioration of these situations to severe morbidity or loss of life.

ABSTRACT

Objectives: to propose a simple solution that may aid in successful extraction of impacted aspirated non-vegetable foreign bodies (FB). Methods: Two pediatric cases of chronically impacted FB encountered within the distal airway are reviewed along with the English literature on the subject. Results: distally impacted FB in children are a management challenge that presents very subtly and variably. The use of image guided techniques, imaginative instruments; tracheotomy, thoracotomy and even extracorporeal membrane oxygenation have been reported. Endoscopy is made difficult by the distal location, inflammatory reaction, granulations, and bleeding obscuring the foreign body. In two children, the management was staggered by the use of maximal medical therapy which minimized the granulation tissue to make endoscopic removal possible. Conclusions: A major source of mortality in the course of FB extraction of the airway occurs during the management of a previously stable patient. To avoid this and the use of complicated management strategies, a consideration of medical treatment directed at reducing the soft tissue reaction and drying the field is well warranted.

A CPD PLENARY SESSION

Tuesday, June 4, 2013 – CASCADE BALLROOM

09:00-10:30 **The mHealth Revolution: An Interactive Discussion of Mobile Technology in Otolaryngology** – S. Kohler, L. McLean, M. Bromwich, Ottawa, ON

LEARNING OBJECTIVES

By the end of this session, attendees will: 1. Describe the qualities of a good mHealth app. 2. Discover new and exciting advances in mHealth. 3. Enumerate several resources that aim to help physicians discover quality mHealth apps. 4. Improve their personal and professional efficiency through the use of tablets and smartphones. 5. Become more proficient at using mobile devices and mHealth apps.

ABSTRACT

Mobile Health (mHealth) has become extremely popular in recent years. 85% of U.S. physicians use a smartphone for work, and 62% own a tablet device. mHealth is also becoming increasingly widespread among patients: 87% of Americans over the age of 18 own a smartphone, and 61% have downloaded at least one mHealth app. That said, with nearly 12,000 mHealth apps available for iPhone alone, discovering the best can be a daunting task. Through the hands-on use of mobile devices, didactic presentations, break-out groups and interactive small-group activities, this 90-minute workshop will introduce attendees to new and exciting mHealth apps for all mobile platforms (including iOS, Android, Blackberry and Windows Phone). Discussion topics will include: "Key Qualities of an Excellent mHealth App", "Recent innovations in mHealth", "Attendees' Favourite Apps", "Including a Tablet in your Professional Workflow", and more. In order to promote engagement and active learning, participants will be prompted throughout the workshop to download specific mHealth applications. To maximize their learning opportunities, it is recommended that workshop participants bring their mobile device(s) to the workshop. Note: to maximize interactivity and discussion, there will be a limited number of seats for this workshop (pre-registration required).

ENDOCRINE SURGERY PAPERS

Tuesday, June 4, 2013 – CASCADE BALLROOM

13:00-13:07 **Thyroidectomy and Informed Consent: Do Information Pamphlets Improve Post-operative Risk Recall?** – D. Kamdar, K. Higgins, L. Wilson, N. Mohan, D. Enepekides, J. Davidson, Toronto, ON

LEARNING OBJECTIVES

By the end of the presentation the participants will: 1. Be able to understand and describe the limitations associated with traditional (verbal only) informed consent process. 2. Be able to describe the benefits of including information pamphlets in the informed consent process to help patients gain a better understanding of the perioperative risks associated with total thyroidectomy.

ABSTRACT

Objectives: To determine whether providing patients with pamphlets on the risks of thyroidectomy is an effective way to enhance postoperative risk recall. We set out to (1) investigate whether the type of information is related to poor postoperative recall, (2) determine whether anxiety/depression at the time of consent negatively influences postoperative recall, and (3) determine whether socio-demographic variables are a significant predictor of poor postoperative recall. **Methods:** A prospective randomized trial of patients undergoing total thyroidectomy that were divided into two groups. The experimental group underwent informed consent process which also included receiving an information pamphlet which reinforced the verbal information. The control group received the same verbal information but did not receive an information pamphlet. Postoperatively all patients filled out a questionnaire which tested their ability to recall information received during the informed consent process. The patients' anxiety/depression was also evaluated using a validated questionnaire. **Results:** The experimental group performed significantly better on post-operative recall questionnaires compared to the control group. High levels of anxiety negatively influenced post-operative recall. **Conclusions:** Giving patients information pamphlets that reinforce the informed consent discussion helps them better understand the risks and possible postoperative complications associated with thyroidectomy.

13:07-13:14 **Molecular Testing for Indeterminate Thyroid Lesions – A Cost Analysis** – M. Gill, M. Gupta, Burlington, ON

LEARNING OBJECTIVES

By the end of this session residents and medical students will obtain a better understanding of a cost-utility analysis of a novel molecular test for indeterminate thyroid lesions.

ABSTRACT

Introduction: Fine Needle aspiration biopsy (FNAB) of thyroid lesions is common practice but the occurrence of indeterminate results creates a dilemma. A novel molecular test has recently become available to help accurately identify some indeterminate lesions as benign. The objective of this study was to perform a cost comparison and determine the price at which molecular testing would be cost neutral. A secondary cost-utility analysis was then added. Methods: Cost data was retrieved from the Ontario Case Costing Initiative and a decision tree model was created. Standard treatment was compared to the use of molecular testing. Model inputs were gathered from large retrospective and prospective trials. Utility scores were derived from a feeling thermometer scale. Results: Molecular testing is neutral as long as the test is less than C\$553.61 per patient. Currently the utility score results are pending and a cost utility analysis will be performed once they are available. Conclusion: Using molecular testing represents a possible cost savings mechanism in the treatment of indeterminate thyroids lesions after FNAB.

13:21-13:28 **Pre-operative Predictors of Hypothyroidism Following Hemi-thyroidectomy** – J. Franklin, T. Fear, Kingston, ON

LEARNING OBJECTIVES

1. To understand the decision process between hemi and total thyroidectomy. 2. To understand the risk of hypo-thyroidism following hemi-thyroidectomy. 3. To identify a low risk group for developing hypothyroidism. 4. To understand that evidence of thyroiditis pre-operatively does not predict hypo-thyroidism.

ABSTRACT

Background: The patient preference for hemi-thyroidectomy over total thyroidectomy is most often to avoid thyroid supplementation. Post-operative thyroid function should remain under the feedback control of the pituitary. It is estimated that nearly one third of hemi-thyroidectomies result in thyroid supplementation. With more accurate prediction of hypothyroidism, some patients may opt for up front total thyroidectomy. Objectives: 1. To determine the incidence of hypothyroidism following hemi-thyroidectomy in an uniform patient population. 2. To identify features pre-operatively predictive of post-hemithyroidectomy hypothyroidism. Methods: Consecutive hemithyroids performed by a single surgeon. Only patients with FNA and blood work at 6 weeks and 3 months post-operatively with all investigations performed at the same institution were included. Results: 153 Consecutive thyroidectomies were performed, 62 patient met the strict criteria. 20 (32%) patients had abnormal TSH (>5.0) at 3 months. Older patients were more likely to become hypothyroid. Interestingly, complex nodules on ultrasound and inflammatory cells on aspirate were found in higher percentage of patients who maintained normal thyroid function. Conclusions: With strict inclusion criteria we were able to identify a low risk group for hypothyroidism, specifically patients <35 years of age. FNA and ultrasound features of thyroiditis and multinodular disease did not predict hypothyroidism.

13:28-13:35 **What Do We Do with an Unsatisfactory Thyroid FNA?** – R. Campbell, R. Hart, B. Williams, J. Trites, S. M. Taylor, Halifax, NS

LEARNING OBJECTIVES

To illustrate the proportion of thyroid FNAs reported as unsatisfactory at our institution. To demonstrate how often repeating the FNA leads to a more specific diagnosis. To determine which factors affect the likelihood of achieving a more diagnostic repeat FNA.

ABSTRACT

Objectives: To illustrate the proportion of unsatisfactory FNAs that yield more specific result on repeat FNA. To identify factors affecting the likelihood of having a more diagnostic repeat FNA. Methods: All thyroid FNAs from the QEII Health Science Centre from 2005-2010 that were initially interpreted as unsatisfactory were analyzed. Data regarding the method of FNA and the ultrasound characteristics of the nodule were also collected. Results: A total of 218 patients had an initial FNA result of unsatisfactory. Of these, 152 had repeat FNAs. The repeat FNAs led to a more specific result in 53% of cases.

Nodules with a cystic appearance on ultrasound were more likely to remain unsatisfactory, while FNAs performed by palpation guidance and nodules that were less than 2cm were more likely to have a more specific diagnosis when FNA was repeated. Conclusions: Routinely repeating unsatisfactory thyroid FNAs is a resource intensive strategy. We have shown that patients with cystic nodules are unlikely to have a more specific result on repeat FNA, while small nodules and those originally sampled by palpation guidance are more likely to benefit from a repeat procedure. These results will help guide physicians in marshaling resources appropriately in the care of their patients.

13:42-13:49 **Completion Thyroidectomy: Predicting Bilateral Disease** – B. Ibrahim, R. Payne, V.-I. Forest, M. Hier, A. Mlynarek, D. Caglar, Montreal, QC

LEARNING OBJECTIVES

At the end of this presentation, the audience will be able to: 1) List the indications for completion thyroidectomy and the official American Thyroid Association guidelines regarding completion thyroidectomy. 2) Describe the rate of bilateral malignancy in well-differentiated thyroid cancer both in a Canadian center and in the literature. 3) Evaluate the need for completion thyroidectomy by putting relative emphasis on the features that predict bilateral disease vs those that don't as supported by the evidence that will be presented. 4) List the features reported in the literature as being associated with bilateral disease and those that have not been shown to correlate with contralateral malignancy. 5) Appreciate the need to perform completion thyroidectomy in all cases of aggressive histotype of papillary thyroid cancer, including small isolated unifocal lesions.

ABSTRACT

Objectives: 1. Determine the incidence of well differentiated thyroid cancer (WDTC) in the contralateral thyroid lobe in patients undergoing completion thyroidectomy. 2. Identify features of the malignant tumor in the initial resection that increase the likelihood of malignancy in the contralateral lobe. Methods: Retrospective chart review of 98 consecutive patients who underwent hemithyroidectomy and completion thyroidectomy at our centre between 2006 and 2012. Pathology reports from both surgeries as well as patient and thyroid nodules characteristics were reviewed. Results: Of the 98 patients, 48 (49%) had a malignancy in the contralateral lobe. In the contralateral lobe, 89% (43/48) of malignancies were papillary microcarcinomas (PAMC) and 35% (15/43) of the PAMC were multifocal. Multifocal malignancies had a 61% rate of contralateral malignancy and were found to be a predictor of bilateral disease (RR: 1.572 ; p=0.0561). There was no statistical significant correlation established for the following variables: presence of positive cervical nodes, extrathyroidal extension, positive resection margins, size and angio-lymphatic invasion. Moreover, there was no statistical correlation between any of the variants of papillary thyroid cancer and bilateral disease but all aggressive subtypes were found to be bilateral. Conclusion: In this study, the rate of malignancy in the contralateral lobe was 49%. Multifocality and presence of an aggressive subtype of papillary thyroid cancer were found to be more important variables to consider in decision-making regarding completion thyroidectomy than size of the initial tumor.

13:49-13:56 **Practice Patterns among Thyroid Cancer Surgeons in Alberta: Extent of Central Lymph Node Dissection** – M. Deutschmann, L. Chin-Lenn, J. Au, J. Dort, J. Pasiaka, S. Chandarana, Calgary, AB

LEARNING OBJECTIVES N/A

ABSTRACT

Objective: To evaluate lymph node yield in central neck dissection (CND) for thyroid cancer and determine how CND influences the use of radioactive iodine ablation (RAI). Methods: Using a prospectively collected provincial database, demographic, peri-operative, pathologic and post-operative treatment factors were analyzed in 593 patients who underwent thyroidectomy between 2009 and 2012. Results: Unilateral and bilateral CND's yielded a mean of 7.4 +/- 6.3 nodes and 11.9 +/- 7.5 nodes respectively. Demographics and stage were comparable between patients who did and did not undergo CND. There was a wide variation of indications for CND. There was a significant difference in lymph node yield across surgeons (p<.01). For patients with a pre-operative NO neck, those undergoing CND were more likely to receive RAI [OR=2.2 (1.4-3.6)]. Conclusions: The role of CND remains controversial. There appears to be large variability in practice patterns provincially. Further, performing CND increases the likelihood of receiving RAI.

14:03-14:10 **Is Age Associated with Risk of Malignancy in Thyroid Cancer?** – M. Bastianelli, R. Payne, A. Mlynarek, M. Tamilya, M. Hier, V.-I. Forest, B.A. Do, Montreal, QC

LEARNING OBJECTIVES

By the end of the session, the learner should be able to: 1) Understand the relationship of age and thyroid cancer; 2) Understand the complexity of prognosis factors in thyroid cancer;

ABSTRACT

Background: Many scoring systems for thyroid cancer prognosis have been established such as AMES, AGES, or MAICS. Age is taken in consideration in all of them. Objectives: To establish whether patients' age influences the rate of malignancy, size and aggressiveness of the tumor, and stage of thyroid cancer. Method: This is a retrospective analysis of 1022 patients undergoing thyroidectomy. The patients were divided based on age at the time of surgery (<45 years old and ≥45 years old). Radiological and pathological data were gathered for the size of thyroid nodules, the presence of lymph node metastasis, extrathyroidal extension, and for the final thyroid pathology. Results: There were 396 patients < 45 years old and 626 patients ≥ 45 years old. The rates of malignancy were 67.1 % in the first group without any case of anaplastic thyroid cancer and 68.7% in the second group (p=0.137). The presence of lymph node metastasis was approaching statistical significance (19.4% vs. 14.9%; p=0.067). There was no significant difference between the two groups with the size of thyroid nodules (p=0.265) and the rate of extrathyroidal extension (16.2% vs. 16.5%; p=0.971). Conclusion: In this study, tumor behaviour and rate of malignancy was independent of the age of the patient.

14:10-14:17 **McGill Thyroid Nodule Score and Lymph Node Metastasis and Extrathyroidal Extension of the Tumor** – M. Campagna-Vaillancourt, R. Payne, Montreal, QC

LEARNING OBJECTIVES

By the end of the presentation, audience members will be able to: 1. Appreciate the relation between the McGill Thyroid Nodule Score and lymph node metastasis. 2. Appreciate the relation between the McGill Thyroid Nodule Score and extrathyroidal extension of the tumor. 3. Appreciate the value of the MTNS and its role in clinical practice.

ABSTRACT

Introduction: A high McGill Thyroid Nodule Score (MTNS) represents an increased risk that a thyroid nodule is malignant, particularly if the score is 9 or higher. Poor prognostic factors associated with thyroid cancer are lymph node metastasis (LNM) and extrathyroidal extension (ETE) of the tumor. Objectives: Determine if high MTNS predicts a greater likelihood of a) LNM and b) ETE. Methods: Chart review of patients who underwent total or subtotal thyroidectomy between January 1, 2009 and August 1, 2012, with pathology being micropapillary, papillary or follicular carcinoma. Chi-square tests were used with a p-value < 0.05. Results: 392 charts reviewed. 82 (21%) patients had LNM and 76 (19%) had ETE for all pathologies confounded. 79% who had LNM or ETE had a MTNS of 9 or more. The likelihood ratio for the presence of LNM and a MTNS higher than 9 was 6.50 (p=0.011). The likelihood ratio for the presence of ETE and a MTNS higher than 9 was 7.54 (p=0.006). Conclusion: The majority of patients with thyroid cancer do not have LNM or ETE. If a patient has LNM or ETE however, the MTNS is more likely to be above 9. This could have implications on extensiveness of treatment.

14:24-14:31 **Frozen Section Analysis and Sentinel Lymph Node Biopsy in Well Differentiated Thyroid Cancer** – Y. Jozaghi, R. Payne, V.-I. Forest, K. Richardson, A. Mlynarek, M. Hier, M. Tamilia, D. Caglar, Montreal, QC

LEARNING OBJECTIVES

By the end of this presentation, the medical professional will be able to accurately evaluate the relevance of sentinel lymph node biopsy in the setting of well differentiated thyroid carcinoma.

ABSTRACT

Background: The aim of this study is to prospectively review the role of sentinel lymph node (SLN) biopsy in the management of well differentiated thyroid carcinoma (WDTC), and to determine the efficacy of intraoperative frozen section analysis at detecting SLN metastasis and central compartment involvement. Methods: The SLN biopsy protocol using 1% methylene blue was performed in 300 patients undergoing thyroidectomy for WDTC. A central compartment neck dissection (CCND) was performed on all patients. Both frozen and permanent section analyses were performed. Results: SLN's with metastasis were found in 14.3 % of cases; 11% were positive on intraoperative frozen section analysis. Frozen section results failed in predicting central compartment involvement in 15 cases (5%) . On frozen section analysis, the sensitivity, specificity, positive predictive value and negative predictive value (95% CI) of our SLN biopsy technique was 68.8%(53.6; 80.9), 100%(98.1; 100), 100%(87.0; 100) and 94.4%(90.7; 96.7) respectively with P<0.0001. On permanent section analysis, the values were 89.6%(76.6; 96.1), 100%(98.1; 100), 100%(89.8; 100), and 98.1%(95.3;99.3) with P<0.0001.

Conclusion: This data series demonstrates that patients with WDTC have positive SLN's in 14.3% of cases. Moreover, when the SLN's are negative for metastasis on frozen section, the central compartment was disease-free in 94.4% of cases. Finally, this study shows that 23.3% of positive SLN's were false negatives on intraoperative frozen section. According to this data, SLN involvement is an accurate predictor of central compartment metastasis, however surgeons should use caution when relying on intraoperative frozen section to determine whether to perform a CCND.

14:31-14:38 Surveillance of Secondary Malignancy in a Pediatric Aftercare Clinic: An Analysis of the Utility of Routine Thyroid Ultrasound – J. Franklin, J. Li, T. Sexton, S. Zelcer, Kingston

LEARNING OBJECTIVES

1. To understand the POGO recommendations for screening high risk patients. 2. To identify the late toxicities of treatments for pediatric malignancy. 3. To know the risk of secondary thyroid malignancy. 4. To understand the potential risks and benefits of ultrasound in screening in aftercare clinics.

ABSTRACT

Background: There are significant late effects of the treatment of pediatric malignancies. For this reason the Pediatric Oncology Group of Ontario has created guidelines for aftercare clinics to monitor late toxicities. The thyroid is highly susceptible to secondary malignancy. The POGO guidelines recommend palpation for screening however the American Thyroid Association recommends biopsy of nodules >5mm in these high risk patients. Most nodules are not palpable until at least 1cm. For this reason ultrasound has been routinely used for surveillance at our institution. Objectives: 1.To determine the incidence of secondary thyroid malignancy. 2. To analyze the efficacy of routine thyroid ultrasound as a screening tool in this population. Methods: Retrospective review of patients in the pediatric aftercare clinic between 2007-2012. All at risk patients, >10yrs from treatment had routine thyroid ultrasound. Results: 270 patients were assessed, 74 were high risk with no palpable nodules and underwent thyroid ultrasound. 14 patients underwent FNAB. Seven patients underwent surgery of which 5 confirmed papillary thyroid carcinoma. Conclusions: The incidence of secondary thyroid cancer was in keeping with the literature. Ultrasound was an effective tool for screening high risk patients. Interestingly, there were very few unnecessary surgeries performed.

OTOLOGY PAPERS

Tuesday, June 4, 2013 – ALHAMBRA BALLROOM

13:00-13:07 10-year Health-related Quality of Life Outcome in Adult Cochlear Implant Patients – C. Arnoldner, J. Chen, H. Amoodi, D. Shipp, J. Nedzelski, V. Lin, J. Kuthubutheen, Toronto, ON

LEARNING OBJECTIVES

At the end of this presentation, the participants should be able to understand the outcomes in quality of life over time and its impact on cost utility analysis in cochlear implant patients. In addition, the audience should have a better understanding of the influence of different preference instruments on quality of life outcome.

ABSTRACT

Objectives: Evaluate the long-term health related quality of life outcome (HRQL) in cochlear implant patients with short-form-36 (SF36) measures. Method: Between 1984 and 2011, 136 recipients had 10-year clinical-audiological data, in whom 58 (43%) completed a HRQL assessment using the SF36 administered preoperatively, 1-year, and 10-year postoperatively. The results were converted to short form-6D (SF6D) to establish an indirect measure of 'utility' and quality adjusted life year (QALY). Clinical data were included. Results: Patients with 10-year post-implant SF36 results scored significantly higher than their pre-implantation scores in five of the eight domains: role limitations-physical problems (RP), vitality (VT), social functioning(SF), role limitations-emotional problems(RE) and mental health(MH). There was no significant difference in mean scores comparing 1-year with 10-year outcomes ($p > 0.05$). When the SF6D conversion was made, indirect utility values in quality-adjusted life-years (QALY) were calculated. The average preoperative/1-year/10-year utility outcomes were 0.609/0.634/0.640. Outcomes were also compared with clinical data. Conclusion: The benefit in the HRQL following cochlear implantation is significant after the first year, and appears sustained after 10 years. Results translate well into indirect utility values by conversion. The sustained outcomes and the associated external gains are important determinants in utility estimates in the context of cost-utility analysis.

13:07-13:14 **The Addition of a CROS Microphone to a Unilateral CI System – A Longitudinal Follow-up Outcome Study** – A. Grewal, L. Friesen, J. Kuthubutheen, K. Smilsky, V. Lin, Toronto, ON

LEARNING OBJECTIVES

By the end of this session the audience will have learned of a novel application of a CROS microphone in unilateral cochlear implant users, will be shown the benefits of this application, and will briefly review of the cost/benefit compared to that of bilateral cochlear implantation in adults.

ABSTRACT

Objective: To investigate whether incorporating a Contralateral Routing of Signal (CROS) microphone in unilateral cochlear implant (CI) users after a 2-week prolonged trial period results in improved speech understanding in quiet and in noise. Methods: Based on a positive pilot study, this prospective study was completed with 15 post-lingually deafened adults having the same unilateral CI and CROS microphone. Speech understanding with a unilateral CI was measured, then compared to performance after 2 weeks of combining a unilateral CI and CROS microphone worn on the opposite ear (CI-CROS). Testing included the presentation of AzBio sentences in quiet at 0° and 270° azimuth, as well as presentation in noise with speech at 0° and noise at 0°, 90° and 270°. The APHAB, SSQ, and an institutional questionnaire were administered at both test sessions. A daily log sheet was recorded by subjects. Results: A prolonged trial of CI-CROS use significantly improved speech scores in a variety of listening situations, improved subjective scores, and was positively received by study participants. Conclusion: Based on these results, the use of a unilateral CI-CROS could provide a greater cost/benefit ratio than bilateral CIs, and may provide potential improvement for those who are not candidates for bilateral CIs.

13:21-13:28 **Cochlear Implant Outcomes in Adults and Children with Inner Ear Malformations** – J. Szudek, R. Briggs, S. Dettman, L. Zraika, Edmonton, AB

LEARNING OBJECTIVES

By the end of this session the otolaryngologist or trainee will be able to describe: 1) audiologic outcomes used to evaluate the performance of cochlear implants, 2) the association of cochlear implant performance with pre-operative and intra-operative factors.

ABSTRACT

Objectives-Bony cochlear or vestibular malformations occur in ~20% of patients with congenital hearing loss, but their impact on audiologic outcomes is not entirely clear. Our objective was to assess the impact of inner ear malformations on surgical and audiologic outcomes in cochlear implantation (CI). Methods-A review of a single CI clinic identified 57 children and 31 adults with inner ear malformations who had undergone CI. Patients were classified into: common cavity, incomplete partition -I (IP-I); IP-II with or without enlarged vestibular aqueduct (EVA); IP-III, or EVA alone. We compared speech perception language development and surgical outcomes between the groups. Results-The type of malformation was not associated with CI performance in either adults or children. In children, the duration of profound hearing loss was correlated with scores for: open-set phoneme ($r = -0.43$, $p = 0.004$); open-set word (OSW) ($r = -0.32$, $p = 0.03$); Bench Kowal Bamford sentence (BKB) ($r = -0.35$, $p = 0.02$), and Peabody Picture Vocabulary Test delay ($r = 0.49$, $p = 0.001$). In adults, the duration of profound hearing loss was correlated with OSW ($r = -0.36$, $p = 0.04$) and BKB ($r = -0.41$, $p = 0.02$). Conclusions-The extent of inner ear malformation alone cannot predict CI performance. However, the presence of a gusher, incomplete insertion and a longer duration of pre-implant hearing loss were associated with worse speech perception and language outcomes in children and adults.

13:28-13:35 **Cochlea Corrosion Casting - A Method for Vascular Supply of the Cochlear in Its Entirety** – L. Kus, V. Lin, J. Kuthubutheen, J. Negandhi, V. Forte, R. Harrison, E. Propst, Toronto, ON

LEARNING OBJECTIVES

1. At the end of this talk, the audience will be able to appreciate the degree of detail visible using the technique of corrosion casting. 2. The audience will also be able to discuss the various applications of this technique in studying the effects on cochlear blood supply

ABSTRACT

Objective: To demonstrate the technique of cochlea corrosion casting as a method for studying the vascular supply of the cochlear in its entirety. Methods: The common pig is corrosion casted using resin and preserved in formalin. The resultant

infused cochlea is dissected free from the temporal bone. The bone of the cochlea is then dissolved in a combination of strong acid and basic solutions to reveal its vascular “skeleton”. Results: High-powered light microscopy and scanning electron microscopy is performed on the corrosion casts to reveal the vasculature of the cochlea in stunning detail. The corrosion casting method preserves the 3-dimensional orientation of the vasculature as it spirals around the modiolus. Conclusions: This technique may prove to be a valuable tool in researching the macroscopic effects on cochlear vasculature as it preserves the 3-dimensional architecture of the cochlear blood vessels. The potential applications of this technique in otological research are discussed.

13:42-13:49 **The Association Between Caffeine Exposure and Incident Tinnitus** – J. Glicksman, G. Curhan, S. Curhan, London, ON

LEARNING OBJECTIVES

1) To describe known risk factors for tinnitus. 2) To describe the limited evidence for the role of caffeine in tinnitus incidence. 3) To convey the results of our study with respect to the possible association between caffeine and tinnitus.

ABSTRACT

Objective: Tinnitus is a highly prevalent condition estimated to affect 50 million Americans and is severely disabling among up to 3 million. Caffeine is a commonly consumed substance that has long been thought to play a role in the development of tinnitus, but prospective data are lacking. This study aims to investigate the association between caffeine and incident tinnitus. Methods: We prospectively evaluated the association between caffeine intake and self-reported tinnitus. Participants were 71,734 women in the Nurse’s Health Study II, aged 30-44 years and without tinnitus at baseline in 1991. Study participants completed questionnaires about lifestyle and medical history every two years and food frequency questionnaires every four years. Information on self-reported tinnitus and date of onset was obtained from the 2009 questionnaire, with cases defined as symptoms “a few days/ week” or “daily.” Multivariable-adjusted hazard ratios (HRs) were calculated using Cox proportional hazards regression models. Results: Over the 18-year period, 5,105 incident cases of tinnitus were identified. There was a significant inverse association between caffeine consumption and the incidence of tinnitus at higher levels of caffeine consumption HR 0.85, 95% CI 0.74-0.96 for 450-599 mg/day and HR 0.86, 0.74-0.99 for 600 or more mg/day, p for trend = 0.004). When adjusting for confounders, a greater inverse association existed between caffeine consumption and the incidence of tinnitus at higher levels of caffeine consumption (HR 0.79, 0.69-0.90 for 450-599 mg/day and HR 0.78, 0.67-0.90 for 600 or more mg/day, p for trend <0.001). Conclusions: In this prospective study, higher caffeine consumption was associated with a lower risk of tinnitus.

13:49-13:56 **Perilymphatic Fistulas: Can We Predict the Diagnosis?** – R. Fadous, I. Saliba, Québec, QC

LEARNING OBJECTIVES

By the end of this session, the attendee will be able: 1) to identify the signs and symptoms that best describe the PLF. 2) to predict the audiologic gain after a PLF surgery. 3) to list the symptoms that are predicted to improve after the surgery in a patient with a proved PLF.

ABSTRACT

Objectives: This study intends to identify factors that could better predict the diagnosis since explorative surgery remains the only confirmation method for perilymphatic fistula (PLF). Methods: This retrospective study is based on all 71 available patient files operated for a PLF suspicion between 1983 - 2012. Signs, symptoms and investigations (audiogram, ENG, CT Scan) were documented pre and post-operatively. Patients were then divided: Group 1 no fistula could be identified pre-operatively, Group 2 the fistula was found. Fisher’s exact test was used in history, signs and symptoms. The evolution of symptoms in Group 2 was evaluated with McNemar’s test. Odds-ratio was estimated using Mantel-Haenszel for history, signs, symptoms and investigations, controlled for stapedectomy. Results: Both groups were demographically similar. No statistical difference could be identified in history, signs and symptoms. The evolution of symptoms showed that nausea were reduced post-operatively (p<0.05). Audiograms showed both conduction to have improvement except in higher frequencies (p<0.05). The air-bone gap was improved, but didn’t reach statistical significance. The PTA was ameliorated by a mean of 14.36 dB ± 23.33(p=0.009).Conclusions: This study could not identify any association in history, sign, symptom and investigation that could predict with accuracy the presence of PLF. Hearing was improved post-operatively in Group 2.

14:03-14:10 **Clinical and Audiometric Factors to Predict Superior Canal Dehiscence** – Z. Benamira, I. Saliba, M. Alzahrani, Montreal, QC

LEARNING OBJECTIVES

1. By the end of this presentation, the audience will be able to recognize the major clinical features in a patient presenting with superior canal dehiscence (SCD) syndrome. 2. By the end of this presentation the audience will be able to perform a structured work-up when SCD is suspected. 3. By the end of this presentation, the audience will be able to predict a positive CT scan for superior canal dehiscence in a population of patients suffering from SCD symptoms by analyzing VEMPs thresholds, air-bone gaps as well as number and nature of their signs and symptoms. 4. By the end of the presentation, the audience will be able to judge the usefulness of undergoing CT scan for a patient presenting with SCD symptoms, thus avoiding unnecessary imaging minimizing radiation and costs.

ABSTRACT

OBJECTIVES: To identify symptoms and signs as well as VEMP thresholds and air-bone gap (ABG) values to predict a positive CT scan for superior canal dehiscence (SCD). **METHODS:** A retrospective study was conducted to compare clinical, audiometric and radiological features of positive and negative CT scan of patients suffering from SCD symptoms. **RESULTS:** 106 patients were included: 44 had a negative and 62 had a positive CT scan. The latter showed more cochlear symptoms (4.3 vs. 2.6)($p<0.001$) but no statistically significant difference for vestibular symptoms(2.16 vs. 1.8) was identified. VEMPs thresholds of the positive and negative scan groups were respectively 66 and 81 dB for cVEMPs ($p<0.001$) and 64 and 90dB for oVEMPs ($p=0.011$). Positive CT scan group showed higher ABGs only at 250Hz (15dB), 500Hz (13dB) and 2kHz (5dB) ($p<0.001$, $p<0.001$ and $p=0.007$ respectively). No statistical significance was found when comparing both groups for PTA, air and bone conduction. 23% and 27% of the positive CT scan group showed a Valsalva induced vertigo and positive Siegle test respectively, against 2.3% and 0% of the negative scan group($p =0.003$, $p<0,001$). **CONCLUSIONS:** Number of cochlear symptoms, ABG, VEMP and a positive Siegle test are good tools to predict a positive CT scan for SCD while vestibular symptoms are not.

14:10-14:17 **Growth Factors Expression in Hyaluronic Acid Fat Graft Myringoplasty – I. Saliba, Z. Benamira, A. Maniakas, M. Alzahrani, Montreal, QC**

LEARNING OBJECTIVES

At the conclusion of this presentation, the participants will be able: 1) To explain how hyaluronic acid fat graft myringoplasty (HAFGM) provides better results than fat graft myringoplasty alone. 2) To identify what kind of growth factors are increased and play a role in the success of this new myringoplasty technique.

ABSTRACT

Objectives: To evaluate the effect of hyaluronic acid (HA) epidisc and assess the growth factors expression by the association of HA to fat graft myringoplasty (FGM). **Methods:** Tympanic membranes (TM) of 30 Guinea pigs divided into three groups of 10 were totally perforated on day 0. FGM was performed in groups II and III but HA epidisc was added to the fat graft in the group III. No surgery was performed in group I. TM samples were taken on day 0 from group I and then on days 3, 8, and 21 from each group. A reverse transcription PCR was performed to detect IGF, EGF, TNFa and VEGF. **Results:** IGF, EGF, TNFa and VEGF were statistically significantly higher in group III on day 3 (IGF: III vs.I; $p=0.03$, EGF: III vs. I and II: $p=0.037$ and $p<0.01$ respectively, TNFa: III vs. I: $p=0.025$ and VEGF: III vs. I: $p<0.01$), day 8(IGF: III vs.I and II: $p<0.01$ for both, EGF: III vs. II: $p<0.01$ and TNFa: III vs. I: $p=0.04$), and day 21(TNFa: III vs. I and II: $p=0.036$ and $p=0.03$ respectively and VEGF: III vs.I: $p=0.02$). **Conclusion:** HAFGM shows a higher growth factor expression than FGM alone or spontaneous perforation healing.

14:24-14:31 **Simultaneous BAHA Insertion to CPA Tumor Excision – S. Bouhabel, J.-J. Dufour, I. Saliba, Montreal, QC**

LEARNING OBJECTIVES

At the end of this session, the audience will be able to: - Recognize the advantages of the simultaneous insertion of the BAHA implant to a CPA tumor excision. - Understand the cost-effectiveness of such an approach. - Apply the results to their practice considering the safety of the presented approach.

ABSTRACT

Objective: Bone-anchored hearing aid (BAHA) implantation surgery is usually done in a one or in a two-stage technique. This study aims to determine the safety and the success rate of a simultaneous BAHA implantation in patients undergoing translabyrinthine surgery for cerebellopontine angle (CPA) tumor excision. **Methods:** Retrospective chart review of 55 patients operated in our tertiary care institution was conducted. 27 patients underwent one-stage surgery while 28

patients, operated by translabyrinthine approach, had a two-stage BAHA insertion where the fixture connected to the abutment was implanted simultaneously to the tumor excision. Four months later the abutment was exposed. Complications and operating times were compared. Results: There was no difference in the incidence of minor ($p=0.110$), moderate ($p=0.405$) nor severe ($p=0.777$) complications between groups as for the moment the complications appeared. Furthermore, a one-stage BAHA implantation requires a significantly lower operating time (55 minutes (CI 95%:[30-120])) than a two-stage surgery (79 minutes (CI 95%:[60-145])) ($p=0.013$). Conclusion: This is the first study to compare the one-stage to the two-stage BAHA implantation performed simultaneously to a CPA tumor excision. Performing two-stage BAHA surgery for translabyrinthine approaches is safe and allows the patient to use the processor 4 months after the tumor excision.

14:31-14:38 **Does Facial Nerve Monitoring Change Outcomes of Facial Function Following Parotid Surgery** – P. Singh, H. Seikaly, D. O’Connell, K. Ansari, P. Dziegielewski, J. Harris, Edmonton, AB

LEARNING OBJECTIVES

Objectives: The purpose of this study is to assess the effect of facial nerve monitoring on facial nerve function following benign parotid surgery. Methods: Patients undergoing parotidectomy were randomized to receive intra-operative facial nerve monitoring (+NM) or no facial nerve monitoring (-NM). Patients were then assessed in a blinded fashion for facial nerve function based on the House-Brackman scale in the immediate and delayed post-operative period. Results: 18 patients (9 male, 8 female) were enrolled, 10 patients +NM group and 8 patients in the -NM group. In the immediate postoperative period, paresis was experienced in 5 patients in the +NM group and 3 patients in the -NM group ($p=0.664$). At 6 weeks post operatively, paresis was experienced in 4 patients in the +NM group and 3 patients in the -NM group ($p=0.914$). Conclusions: In this study rates of facial paresis did not differ between groups +NM or -NM. While many surgeons use facial nerve monitoring during parotid surgery, knowledge of surgical anatomy and surgical technique play a vital role in maintaining facial nerve integrity. Clinical Significance: This study is the first randomized trial directly comparing facial nerve outcomes for parotid surgery with or without nerve monitoring.

EDUCATION PAPERS

Tuesday, June 4, 2013 – IVOR PETRAK ROOM

13:00-13:07 **Clinical Application of a Head and Neck Cancer iBook Educational Tool for Patients** – H. Bahig, P. F. Nguyen-Tan, L. Lambert, J. Wu, E. Filion, L. Guertin, T. Ayad, Montréal, QC

LEARNING OBJECTIVES

By the end of this session, medical staff working with head and neck cancer patients will better understand their patients' information needs at the time of consultation to better meet their expectations. By the end of this session, medical staff working with head and neck cancer patients will know if the use of a patient oriented educational iBook tool contributes to improve patients' understanding of their disease and treatment options.

ABSTRACT

Facing the emotional burden of a recent head and neck cancer (HNC) diagnosis, patients are faced to an unknown world where they are expected to make informed treatment decisions. The multidisciplinary HNC team developed an elaborate informational iBook tool aiming at promoting patients education. The purpose of our study is to assess patients' opinion on the use of the iBook educational tool in the clinical setting and to evaluate the tool's impact on the patients understanding of their disease. A tabulated 68 pages long iBook developed using the iBook Author® application and made available on iPads to patients in the waiting room was created. The following sections are included: Cancer pathogenesis, head and neck anatomy, HNC treatments (radiotherapy, chemotherapy, surgery), side effects (acute and chronic), introduction to the different members of the multidisciplinary team, introduction to the research held in our center and useful available resources. We conducted a pilot study with 20 consecutive patients in the waiting room who filled a self-administered semi-structured survey. The survey consisted of 20 questions assessing patients' demographic information, patients' evaluation of the tool and patients' self-reported impact on the understanding of their medical condition. The results of these surveys are currently being analyzed. This project will provide more data on HNC patients' informational needs as well as on the applicability and patients' readiness to use high end technology devices as educational tools.

13:07-13:14 **A Novel Thermometer Cap-based Myringotomy and Ventilation Tube Insertion Simulator for Teaching and Research** – H. Osbourn, V. Lin, J. Kuthubutheen, Toronto, ON

LEARNING OBJECTIVES

1. By the end of this paper, the audience will be introduced to a novel simulator of myringotomy and ventilation tube insertion. 2. The audience will also be able to consider its validated use in assessing skill differences between novice and expert operators.

ABSTRACT

Objectives: To present a new validated simulator of ventilation tube insertion for teaching and research. Methods: A simulator comprising a workstation, otological microscope and video recording equipment is described. A manufactured, disposable thermometer cap is used as a model of the tympanic membrane and external auditory canal, which provides a high degree of realism and reproducibility. An instructional video is shown to novice operators prior to the task being performed as well as a survey of prior operative experience. An OSATS (Objective Structured Assessment of Technical Skill) based tool is used to assess performance. Results: A group of practicing otology surgeons and fellows are compared to medical students in the task of ventilation tube insertion. Video recordings of the task performed under the microscope are scored on the OSATS tool. The results of this validation study are being collected and will be presented. Initial participant feedback indicates this is a realistic model and many are keen to use this for practice prior to the operating theatre. Conclusion: This model presents a viable method for teaching and training of this commonly performed surgical skill. It is also a potential option for assessing factors that can influence innate or acquired surgical dexterity.

13:21-13:28 **Program Director Hospital Site Influences Medical Student Electives in Otolaryngology-Head & Neck Surgery** – M. Sklar, I. Witterick, Toronto, ON

LEARNING OBJECTIVES

1. By the end of the viewing, the student will understand the factors that influence medical student elective choices. 2. By the end of the viewing, the student will appreciate the importance of the complex thought processes that medical students make during their electives. 3. By the end of the viewing, the student will understand that the importance of reviewing trends in postgraduate education.

ABSTRACT

Objectives: To retrospectively and prospectively evaluate if the hospital affiliation of the Postgraduate Director (PD) of Education in Otolaryngology – Head & Neck Surgery (OTOHNS) influences the site choice for elective students. Methods: De-identified retrospective data that included the hospital site was collected from the Undergraduate Medical Student Electives Office at a Canadian medical school. Prospectively, we will collect survey data from the cohort of applicants invited to the 2013 CaRMS interview for residency training in OTOHNS at the same aforementioned institution. Results: At this institution, 113 visiting electives were completed in OTOHNS between September 2009 and August 2012. 69/113 electives were done at the PD's affiliated hospital. 5/113 were completed at the site of the current PD. A Chi square statistic of 167 with $p < 0.01$ was found. Undergraduate medical students from this institution, between 2008-2012 completed 50 OTOHNS electives with 15/50 at the previous PD's site and 4/50 at the current PD's site, Chi-square= 30, $p=0.000034$ demonstrates a significant difference between the groups. Conclusion: There is a predilection for electives to be completed at the PD's hospital site. With the change in the site of the PD as of July 1, 2012 we hypothesize that medical student electives will shift to the current PD's site.

13:28-13:35 **Surgeon Behaviour in a New Virtual Reality Temporal Bone Simulator Compared to Cadaveric Temporal Bone Dissection** – J. Szudek, S. O'Leary, A. Avery, I. Ioannau, Y. Zhou, G. Kennedy, Edmonton, AB

LEARNING OBJECTIVES

By the end of this session, the otolaryngologist or trainee will be able to: 1) appreciate a new virtual reality temporal bone simulator, 2) describe objective methods used to assess the fidelity of the simulator compared to cadaveric temporal bone dissection, 3) decide whether this simulator should be considered as an adjunct to tradition teaching of temporal bone dissection.

ABSTRACT

Objectives-The gold standard for teaching otologic surgery is cadaveric temporal bone (TB) dissection. However, learning may be enhanced by virtual reality (VR) simulation, which improves access and allows reproducibility. The main criticism of VR has been its lack of fidelity. We assessed the fidelity of a VR TB simulator by comparing surgeon behaviour to that in cadaveric TB dissection. Methods-A new 3D high-fidelity force-feedback VR simulator was developed for otologic procedures. Six surgeons each performed a mastoidectomy, facial recess dissection and a cochleostomy on a human cadaveric TB and in the VR simulator. Drill movements were then compared between cadaveric and VR trials. Results-Stroke number ($p=0.69$), speed ($p=0.08$) and rate ($p=0.74$) did not differ significantly between VR and cadaveric environments for all 3 stages. Compared to cadaveric dissection, subjects in the VR simulator spent less time completing each stage (236s vs. 698s; $p=0.01$); spent a greater percentage of time drilling (69.5% vs. 30.4%; $p=0.002$); and used a larger percentage of long strokes (39.8% vs. 6.9%; $p<0.001$). Conclusions-Drill stroke characteristics among surgeons in the VR simulator were similar to those in the cadaveric dissection. This suggests that real-life drilling behavior was replicated in VR and that it may be a useful adjunct to traditional TB dissection.

13:42-13:49 **Face and Content Validation of a Rapid-Prototyped Temporal Bone Model** – D. Wong, J. Hochman, B. Unger, J. Kraut, Winnipeg, MB

LEARNING OBJECTIVES

1. Appreciate the need to develop a high fidelity rapid prototyped temporal bone model; 2. Appreciate advances made in development of such a model; 3. Illustrate the preferred hardening agent for reproduction of cortical and trabecular bone models; 4. Appreciate differences in cortical and trabecular bone models related to manufacturing processes.

ABSTRACT

Objective: We have developed a rapid-prototyped model of temporal bone. The 3D-printed models are infused with a hardening agent. In this paper, we compare the cortical and trabecular properties of the four agents to cadaveric sheep femur. Methods: Sheep femur was imaged (CT scan, 0.675 mm slice), segmented and prototyped on a Z650 3D printer. The hardening agents [Epsom salts, Cyanoacrylate/hydroquinolone solution (Z90), Beta-Methoxyethyl Cyanoacrylate (Z101), Phenol/Glycidyl Ether (ZMax)] were studied. Model face validity was assessed subjectively by Otolaryngologists. Content validity was examined using vibration analysis. Results: Ten participants (4 residents, 6 surgeons) drilled cortical and trabecular samples comparing each to sheep femur, in 6 domains, using a 5 point Likert scale. Kruskal-Wallis testing revealed no effect of experience on ratings. Friedman ranking placed Z90 cortical bone samples highest when assessing bone rigidity/hardness (Mean 4.3/5, $p<0.01$), acoustic properties (4.2/5, $p=0.03$) and for overall appreciation/similarity (4.1/5 $p=0.02$). Trabecular assessment found Z90 samples best for overall appreciation/similarity (3.7/5, $p=0.04$). Accelerometer studies of vibrational properties compared power spectral density of each sample to sheep bone and found no large differences in spectral coherence. Conclusion: Cyanoacrylate/ hydroquinolone solution infused models provide the most authentic drill experience and achieved statistical significance across disparate groups of users.

13:49-13:56 **Soft Tissue Modeling in Temporal Bone Simulation** - D. Wong, J. Hochman, B. Unger, J. Kraut, Winnipeg, MB

LEARNING OBJECTIVES

1. Introduction to Rapid Prototyping. 2. Utility of Rapid Prototyping in Otologic Surgery. 3. Summary of Temporal Bone Simulation. 4. Benefits of Soft Tissue Modeling in Surgical Rehearsal. 5. Current research of soft tissue models.

ABSTRACT

Objectives: To compare a combined rapid prototyped (RP) osseous and soft tissue model to several cholesteatoma facsimiles. Methods: A middle ear model was developed from cadaveric images (CT scan, 0.15 mm slice, Z650 3D-printer, Cyanoacrylate/hydroquinolone). 3 soft tissue specimens were evaluated as cholesteatoma tissue simulations [1-Silicone 0010 with talcum, 2- Silicone 0100 with Metamucil, and 3-Silicone 0100 with talcum and metamucil]. Five Otologic Surgeons participated in the study. They evaluated the combined osseous and soft tissue model. Face validity assessment of the three synthetic cholesteatoma samples was undertaken after dissection within the RP middle ear. Results: Most important aspects in synthetic cholesteatoma were tactile similarity (4.4/5), ability to identify remnant ossicular mass (4.4/5), and facility to dissect material off of the ossicles (4.6/5). Model's overall similarity to the actual middle ear was rated 4.0/5. Least effective aspect was ossicular representation (3.4/5). The three replicated cholesteatoma models dissected from within the middle ear model were evaluated and no significant differences were found in the ratings (ANOVA). Conclusion: We identified important areas of focus in developing soft tissue middle ear pathology. The current model was well received, but had no comparator. Besides visual realism, the three soft tissue cholesteatoma substitutes were similar.

14:03-14:10 **Gesture-Controlled Interactive Three Dimensional Anatomy: A Novel Teaching Tool in Head and Neck Surgery** - D. Wong, J. Hochman, B. Unger, J. Kraut, Winnipeg, MB

LEARNING OBJECTIVES

1) Virtual Reality in Surgical Education. 2) 3D virtual reality in understanding temporal bone anatomy.

ABSTRACT

Objective: To create a novel three dimensional (3D) teaching tool of temporal bone anatomy using Microsoft Kinect™. Methods: CT Temporal bone data is imported into an image-processing program and segmented. This information is exported in a polygonal mesh format to a proprietary 3D graphics engine with an integrated Microsoft Kinect™. Motion in the virtual environment is undertaken by tracking hand position relative to the users left shoulder. Results: The construct successfully tracked scene depth and user joint locations. This permitted gesture based control over the entire 3D environment. Stereoscopy was deemed appropriate with significant object projection while still maintaining the operators ability to resolve the image as singular. Specific anatomical structures can be selected from within the larger virtual environment. These graphic representations can be extracted and rotated at the discretion of the user. Voice command employing the Kinect's™ intrinsic speech library works, yet is easily confused by environmental noise. Conclusion: There is a need for the development of virtual anatomy models to complement traditional education. Initial development is time intensive and the constructed images are a stylized abstraction. Nonetheless, our novel gesture-controlled interactive 3D model of the temporal bone represents a promising teaching tool.

14:10-14:17 **Portable Video-Endoscopy in an Otolaryngology-Head & Neck Surgery Academic Teaching Program - A Utility and Feasibility Study** – D.R. Pahwa, J.K.M. Chau, Winnipeg, MB

LEARNING OBJECTIVES N/A

ABSTRACT

Objective: To assess the utility of a portable, video endoscopic recording device for nasolaryngopharyngoscopy in an academic, tertiary level care, residency teaching program. Feasibility of portable video-endoscopy use was also examined. Method: A cohort of 11 residents and 10 full time academic faculty were surveyed before and after implementation of a portable video-endoscopic consultation program. Prospective data regarding patient care outcomes, resident to attending communication, educational value and technical ergonomics of the device was collected. Resident and attending staff satisfaction was also recorded. Results: Overall, patient care was judged to be improved with use of the video-endoscopic device. Resident to attending communication was significantly improved, as was resident point-of-care education. The main limitations noted were in the device ergonomics and appropriate review of recorded videos off-site. Conclusion: Portable video-endoscopy demonstrates excellent utility and feasibility in a tertiary care teaching program. It may improve patient care and point-of-care resident education.

LARYNGOLOGY PAPERS

Tuesday, June 4, 2013 – IVOR PETRAK ROOM

14:24-14:31 **Voice Outcome Measures in Adults with Stable Laryngeal Papillomatosis** – P. Sombuntham, J. Anderson, M. Deluca, G. Merrick, Toronto, ON

LEARNING OBJECTIVES

By the end of this session the healthcare professional in the field of otolaryngology should be able to: 1. Consider the voice outcome after surgical treatment of laryngeal papillomatosis. 2. Apply difference methods use for voice quality assessment.

ABSTRACT

OBJECTIVES: 1. To compare perceptual and acoustic measurements in patient with stable laryngeal papillomatosis to the normal population. 2. To determine if number of surgeries, site of disease, or age of onset correlates to perceptual or objective voice outcome measures. METHODS: Adults not requiring surgery for a minimum of 12 months were assessed using the perceptual, self-assessment and objective acoustic/aerodynamic measures. RESULTS: Thirteen patients (8 male, 5 female) were enrolled. 78% of patients were judged perceptually to have normal voice or mild dysphonia whereas 46 % judged their voice handicap index to be greater than 10 (moderate or severe impairment). Acoustic analysis showed no statistically significance difference for average fundamental frequency (F0) and fundamental frequency range. Perturbation

measures in the series were either normal (jitter) or mildly elevated (shimmer). Some impairment of intensity range was observed. Patients who had undergone a larger number of surgeries were more likely to have abnormal acoustic measures. Onset during childhood was found to have the most acoustic impairment. **CONCLUSION:** The results suggest a mild degree vocal impairment in patients with stable RRP compared to the general population. A greater degree of impairment of voice outcome measures was found in patients with higher number of surgical procedures and earlier onset of respiratory papillomatosis.

14:31-14:38 **In-Office Injection Medialization for Unilateral Vocal Cord Paralysis** – J. Cavanagh, T. Brown, C. Crawley, Halifax, NS

LEARNING OBJECTIVES

After the presentation, participants will be able to: 1. Better understand the role of temporary injection medialization thyroplasty in the management of unilateral vocal fold immobility. 2. Be more familiar with the technique of in-office injection medialization. 3. Be aware of the subjective voice results obtained by this technique as performed at Dalhousie. 4. Be aware of potential complications as well as the limitations of this technique.

ABSTRACT

Unilateral vocal cord immobility often leads to significant glottic insufficiency which typically gives symptoms of a a breathy, hoarse voice and can also result in , dysphagia and aspiration. Vocal cord medialization injections performed in-office, under local anesthesia, have become a simple alternative to type I thyroplasty which can usually be completed in an office based setting. We report on 95 patients who underwent office-based vocal cord medialization at our institution from June 2010 to August 2012 for unilateral vocal cord immobility. Patients were injected with either calcium hydroxyapatite (Radiessse) or hyaluronic acid (Perlane). We report on the etiology of the paralysis (i.e. iatrogenic, oncologic, idiopathic, etc), time between onset of injury and injection, and on any complications of the injections. Preoperative and postoperative Voice Handicap Index 10 (VHI 10) scores were used to assess patient satisfaction with the vocal cord augmentation. Time between injections for patients requiring multiple repeat injections was also analyzed.

HEAD & NECK SURGERY #2 PAPERS

Tuesday, June 4, 2013 – CASCADE BALLROOM

15:15-15:22 **Flap Reconstruction for Intra-thoracic Defect: An Institutional 10-Year Experience** – M. Belzile, J. Yoo, R. Inculet, R. Malthaner, London, ON

LEARNING OBJECTIVES

At the end of this session, the learner will be able to: 1 - Recognize the indications for intrathoracic pedicled or free flap reconstruction. 2 - Determine the best strategy of reconstruction for different complex situations involving intrathoracic defects. 3 - Evaluate the importance of a close collaboration between thoracic surgeon and head and neck reconstructive surgeon in some particular situations to achieve the same goal: favorable outcome.

ABSTRACT

Objectives: Head and Neck and Thoracic surgeons often provide combined expertise in the surgical management of aerodigestive tract disorders. Refractory tracheoesophageal fistula, bronchopleural fistula, and empyema are uncommon but formidable complications following thoracic surgery where the head and neck reconstructive surgeon may provide unique solutions through the use of pedicled or free flaps. We reviewed our institutional experience with intrathoracic flap reconstructions in order to determine the outcomes of these complex patients and to provide an algorithm for surgical decision-making. **Methods:** This is a retrospective study. We reviewed the past 10 years of patients who developed major intrathoracic fistulae complications that were refractory to conventional thoracic procedures. All patients who underwent a pedicle or a free flap reconstruction to treat their conditions were included in the study. **Results:** 14 patients have been included in the study. Specifics of the operations, demographic data, and success rates will be reported. Based on our experience, a decision tree will be formulated. **Conclusion:** Despite the small number of patients, this study demonstrates the value of collaborative programs where complex aerodigestive tract operations can be uniquely managed by the joint efforts of Head and Neck and Thoracic surgeons. The role of pedicled and free flaps in the management of challenging intrathoracic complications is outlined.

15:22-15:29 **Transoral Laser Surgery for Early-Stage Oral Squamous Cell Carcinoma: Oncologic and Functional Outcomes** – E. Fung, S.M. Taylor, M. Rigby, Halifax, NS

LEARNING OBJECTIVES

After this presentation, the clinician will be able to describe the current options available to treat squamous-cell carcinoma of the oral cavity, and describe the oncologic and functional outcomes of transoral laser surgery when discussing treatment options with patients.

ABSTRACT

OBJECTIVE: To determine the oncological and functional outcomes of patients following excision of early-stage oral cavity squamous-cell carcinoma with transoral laser surgery. **METHODS:** A prospective database was developed in 2002 to monitor outcomes and function. Kaplan-Meier survival analyses evaluated the following end points at 36 months: overall survival, disease-specific survival, and local control and disease-free survival with one procedure. **RESULTS:** Twenty-one cases of early-stage (carcinoma in-situ to T2) oral cavity cancer treated with transoral laser surgery were selected from the database for analysis. The Kaplan-Meier estimates of 36-month outcomes were 89% (SE 6.0%) overall survival and disease-specific survival, 84% (SE 7.1%) local control with one procedure, and 76% (SE 8.0%) disease-free survival with one procedure. There were no permanent tracheostomies and all patients returned to a normal diet. **CONCLUSIONS:** The observed 36-month outcomes support the use of transoral laser surgery as the primary treatment modality for early-stage oral cavity carcinoma.

15:29-15:36 **Functional Outcomes After Treatment of Advanced Oropharyngeal Cancer: Conformal Radiation vs IMRT** – P. Kerr, C. Myers, J. Butler, D. Sutherland, N. Viallet, P. Lambert, Winnipeg, MB

LEARNING OBJECTIVES N/A

ABSTRACT

Purpose: To compare longitudinal functional outcomes of conformal radiation vs IMRT in the treatment of advanced oropharyngeal cancer. **Design:** Retrospective analysis; standardized prospective functional outcomes data collection. **Methods and Materials:** A population-based cohort of patients with Stage III and IV oropharyngeal carcinoma was assessed with a standardized prospective clinical functional outcomes protocol pre-treatment and 3, 6, 12, 24 and 36 months post-treatment. The standard clinical functional outcomes protocol followed: performance status (KPS, ECOG); swallowing status/tube feed dependence (Performance Status Scale-Head and Neck (PSS-HN) and Royal Brisbane Hospital Swallowing Scale); and speech (PSS-HN and Voice Handicap Index). In our series of patients we have a pre-IMRT group (conformal radiation) and a subsequent IMRT group. These groups will be compared. **Results:** 89 patients were treated with conformal radiation, and 74 with IMRT. Preliminary analysis suggests reduced levels of dysphagia and xerostomia in the IMRT patients. **Conclusions:** While final long term analysis is pending, preliminary assessment indicates better functional outcome with IMRT.

15:36-15:43 **Functional Outcomes After Treatment of Advanced Laryngeal and Hypopharyngeal Cancer: Organ Preservation vs Laryngectomy** – P. Kerr, C. Myers, M. Gousseau, D. Sutherland, N. Viallet, P. Lambert, Winnipeg, MB

LEARNING OBJECTIVES N/A

ABSTRACT

Purpose: To compare longitudinal functional outcomes of radiation/chemoradiation vs laryngectomy in the treatment of advanced laryngeal and hypopharyngeal cancer. **Design:** Retrospective analysis; standardized prospective functional outcomes data collection. **Methods and Materials:** A population-based cohort of patients with Stage III and IV laryngeal and hypopharyngeal carcinoma was assessed with a standardized prospective clinical functional outcomes protocol pre-treatment and 3, 6, 12, 24 and 36 months post-treatment. The standard clinical functional outcomes protocol followed: performance status (KPS, ECOG); swallowing status/tube feed dependence (Performance Status Scale-Head and Neck (PSS-HN) and Royal Brisbane Hospital Swallowing Scale); and speech (PSS-HN and Voice Handicap Index). **Results:** 97 consecutive patients were followed after treatment with an organ preservation protocol (N=56) or total laryngectomy (N=41). While speech scores tend to favor organ preservation, swallowing scores favor Laryngectomy. The long term functional outcome and overall quality of life scores were high in both groups, and similar. **Conclusions:** While avoidance of a stoma is a worthy

goal, organ preservation therapy does not result in demonstrably improved long term overall quality of life and functional outcome relative to laryngectomy with voice restoration.

15:50-15:57 Transoral Laser Microsurgery vs Radiation Therapy for Treatment of Base of Tongue Cancer in Canada: a cost analysis – T. Phillips, S.M. Taylor, Halifax, NS

LEARNING OBJECTIVES

Medical Experts: 1. Readers should become familiar with the treatment options for squamous cell carcinoma of the base of tongue. 2. Surgical treatment for base of tongue cancer is evolving to include single modality treatment such as Transoral laser surgery and transoral robotic surgery. Manager: Physicians should be aware that costs for various treatments are rising and it should be a factor when choosing treatment modalities. Collaborator: Management of cancer is often a multidisciplinary approach. The medical and surgical teams must work together to provide the optimum management for the patient.

ABSTRACT

Objectives: To compare the cost of transoral laser microsurgery (TLM) to Radiation Therapy in the treatment of base of tongue cancer. Methods: The associated costs of each treatment modality were broken down into its individual components. The cost of each component was then added together and compared to the other treatment modality. The components of surgery included: OR time, nursing costs, anesthesia costs, pathology costs, surgeon's salary, and hospital stay. Components of Radiation Therapy included: costs of techs and nurses, cost of therapy and cost of Radiation Oncologist. Chemotherapy is often given in adjunct to the Radiation therapy. Details on the cost of chemo are still to be collected. Results: The cost of treating BOT cancer with radiation therapy was \$15050/patient. The cost of treating BOT cancer with TLM with/without neck dissection was \$5211/patient. If adjuvant Rad therapy was added to TLM then the cost rises to \$19386/patient. Conclusions: The cost of treating BOT cancers with TLM +/- neck dissection is significantly less than radiation therapy. However, if adjuvant radiation therapy is involved it becomes more expensive than radiation therapy alone.

15:57-16:04 Correlation of Differences in Elevation and Protrusion to Speech and Swallowing Function in Hemiglossectomy Defects Reconstructed with a Rectangle Tongue Template – M. Spector, D. Chepeha, S. Chinn, K. Casper, E. Chanowski, J. Moyer, R. Morrison, E. Carvill, T. Lyden, Ann Arbor, MI

LEARNING OBJECTIVES

By the end of this presentation, the audience will be able to understand that the reconstructive metrics of tongue elevation and protrusion correlate with speech and swallowing function in patients with hemiglossectomy defects reconstructed with a rectangle tongue template.

ABSTRACT

Objectives: There are few studies that have measured reconstructive metrics after tongue reconstruction and examined their relationship to speaking and swallowing. The purpose of this study is to correlate the reconstructive metrics of tongue elevation and protrusion with speech and swallowing function in patients with hemiglossectomy defects reconstructed with a rectangle tongue template. Methods: 32 patients (m:f;18:13 mean age) underwent resection and free-tissue reconstruction of hemiglossectomy defects using a rectangle tongue template between 2000-2009. The Head and Neck Speech and Swallowing Assessment (an administered functional outcomes instrument) and measurements of elevation and protrusion were recorded greater than 12 months postoperatively. Results: The mean tongue tip elevation was 2.4cm (range 0.5-5.0cm) and the mean protrusion was 1.4cm (0-3.6cm). Elevation of the tongue >1.5cm correlated with improved scores in nutritional mode (5.8vs4.8;p=0.011), range of liquids (5.9vs5.0;p=0.009), range of solids (5.2vs3.6;p=0.01), eating in public (4.5vs3.6;p=0.039), and understandability (4.6vs3.8;p=0.012). Protrusion of the tongue greater ≥0.8cm correlated with improved scores in nutritional mode (5.8vs5.0;p=0.01), range of solids (5.4vs3.6;p=0.0001), eating in public (4.7vs3.4;p=0.0001), understandability (4.6vs4.0;p=0.02) and speaking in public (5.0vs4.4;p=0.004). Conclusions: The rectangle tongue template for hemiglossectomy reconstruction provides effective restoration of speech and swallowing function. Tongue elevation and protrusion scores greater than 1.5 and 0.8cm, respectively, are ideal surgical goals for functional speech and swallowing results.

16:04-16:11 Survival Outcomes of Early Stage Oral Cavity Squamous Cell Carcinoma According to Treatment Modality – H. Zhang, V. Biron, P. Dziegielewski, D. O'Connell, J. Harris, H. Seikaly, Edmonton, AB

LEARNING OBJECTIVES

1) To review effects of geography on oral cavity squamous cell carcinoma. 2) To discuss possible causes of any geographic effects on oral cavity squamous cell carcinoma survival. 3) To discuss the epidemiological profile of oral cavity squamous cell carcinoma.

ABSTRACT

Background: Surgical resection is the standard of care early stage oral cavity squamous cell carcinoma (OCSCC). Recent literature has shown however, that adverse pathologic features are potential indications for adjuvant radiotherapy. Objectives: 1) To evaluate survival outcomes of early-stage OCSCC patients. 2) To determine whether a subgroup of patients may benefit from adjuvant radiotherapy. Design: Prospective population-based multi-institutional review. Method: Demographic, pathologic, treatment, and survival data was obtained from patients diagnosed with early stage OCSCC. Survival outcomes were calculated using Kaplan-Meier and Cox-Regression analysis. Results: A total of 343 patients were analyzed. Five-year survival according to treatment modality were Surgery, 83.3%; Surgery + Radiation, 94.7%; Radiation, 56.4%. Cox regression analysis did not show any significant differences between groups when considering age, gender, CCI/ECOG score. Conclusions: Patients with early stage OCSCC have excellent survival when treated by primary surgical resection. A subgroup of patients may benefit from post-operative radiotherapy.

16:18-16:23 **The Perforator-Based Rectus Abdominis Transplant: New Reconstructive Advantages from an Old Friend** – S. Kang, D. Chepeha, M. Spector, Ann Arbor, MI

LEARNING OBJECTIVES

By the end of the session, the surgeon will understand three reconstructive advantages of the perforator-based rectus abdominis transplant in the reconstruction of complex defects of the head and neck.

ABSTRACT

Objectives: To describe three advantages of the perforator-based rectus abdominis transplant: a long pedicle that reduces the need for vein grafts, moldable fat ideal for custom-designed flaps, and volume for constrained spaces. Methods: Eleven patients underwent reconstruction with the perforator-based rectus abdominis transplant from May 2011 to July 2012. Indications for reconstruction were tumor ablation in 9 patients and osteoradionecrosis in 2 patients. There were 7 oral cavity defects, 2 maxilla defects, 1 anterior cranial base defect, and 1 orbital defect. Six patients had prior neck dissection and one had prior chemoradiation. Results: The success rate of transplantation was 91%; one patient had a flap failure. Mean pedicle length was 14.5 cm. No vein grafts were utilized, and in 4 patients (36%) with defects distant from the neck and/or vessel-poor necks the pedicle length directly avoided the need for vein grafting. In all 11 patients, at least one reconstructive advantage was achieved. In 6 patients (55%), at least 2 advantages were achieved. In 3 patients (27%), all 3 advantages were accomplished. Conclusions: The perforator-based rectus abdominis transplant provides at least three major reconstructive advantages for patients who require complex head and neck reconstruction.

VESTIBULAR PAPERS

Tuesday, June 4, 2013 – ALHAMBRA BALLROOM

15:15-15:22 **Peripheral Bilateral Vestibular Loss: A Spectrum of Disease** - P. Charusripan, J. Rutka, D. Pothier, Toronto, on

LEARNING OBJECTIVES

By the end of these sessions the Otolaryngologist will be able to: 1. Describe the definition of bilateral vestibular loss as currently defined. 2. Describe the presenting features and likely clinical signs of BVL. 3. Apply appropriate investigations in order to evaluate patients with bilateral vestibular loss. 4. Describe the variability of effects that BVL has on the inner ear.

ABSTRACT

Objective: Peripheral bilateral vestibular loss (BVL) is an uncommon but devastating condition. Little is known about the extent to which clinical signs and investigations vary in patients with this condition. We analyzed the signs, symptoms and investigation results of patients diagnosed with peripheral BVL. Methods: 24 patients presenting sequentially to a tertiary balance clinic were assessed. The details of the neurological history and examination were compared along with the results of special vestibular testing. Results: There was an equal sex distribution. 46% of cases were caused by ototoxic

medications. All had symptoms of imbalance, but only 1/3 had hearing loss or tinnitus. 2/3 had oscillopsia. High velocity head thrust testing was abnormal bilaterally in 20/23, normal in 1 and unilateral in 2. Only 1 patient had post head shake nystagmus. c-VEMP testing revealed a unilateral loss in 2/3 of patients with the remainder equally split between bilateral losses and normal results. Magnetic Scleral Search Coil (MSSC) testing ranged from a gain of 0.024 to 1.01 with a mean of 0.292(IQR=0.36-0.51). Conclusions: Although bilateral vestibular loss produces consistent findings, there appears to be a spectrum of dysfunction of the vestibular system as evidenced by variable findings in c-VEMP and MSSC findings.

15:22-15:29 **Vestibular Rehabilitation Improves the Outcome of the Dizzy Patient** –S. Sulway, J. Rutka, D. Pothier, P. Ranalli, W. Dillon, Toronto, ON

LEARNING OBJECTIVES

1. Attendees will be aware of the types of conditions and patients that benefit from vestibular rehabilitation. 2. Attendees will be aware of the different vestibular therapy approaches for the various type of dizzy patients: i.e. unilateral vestibular loss, high velocity loss, bilateral vestibular loss and central vestibular impairments. 3. Attendees will learn about the efficacy of VRT and the patient outcomes after a pilot program was introduced at a tertiary academic neurotology centre.

ABSTRACT

Objectives: Vestibular Rehabilitation therapy (VRT) is an effective treatment modality and a key service required to develop a holistic care model that effectively manages the challenging dizzy and imbalanced patient. Methods: A retrospective review was undertaken of patients that were referred to VRT at a tertiary academic neurotology centre. Patients presenting to this centre are complex as they have failed treatment by their primary care doctors and specialists and symptoms are chronic. Patient assessments included a series of objective measures including quality of life questionnaires: the Dizziness Handicap Inventory (DHI) and the Activities Specific Balance Confidence Scale (ABC). The patients are reassessed after 6 sessions of VRT to validate treatment direction. Results: 58 patients were identified. The mean DHI at initial assessment was 51.07 (SD=25.8). Following 6 VRT sessions, it had improved to 39 (SD25.5). The mean ABC score at initial assessment was 54.41% (SD 24.98) and improved to 69.38% (SD24.04), suggesting better balance confidence and decreased falls risk. Conclusions: VRT treatment focuses on patient centered goals associated with function and activities of daily living. This analysis demonstrates that VRT improves confidence with patients' balance and the functional, emotional and physical problems associated with dizziness.

15:36-15:43 **Cerebellar Ataxia with Bilateral Vestibulopathy: Treatment Options** – S. Sulway, J. Rutka, D. Pothier, P. Ranalli, W. Dillon, Toronto, ON

LEARNING OBJECTIVES

1. Attendees will learn about the clinical characteristics of patients with Cerebellar Ataxia and Bilateral Vestibulopathy. 2. Attendees will have an understanding of the potential impact of vestibular rehabilitation as a treatment option for this condition.

ABSTRACT

Objectives: Cerebellar Ataxia with Bilateral Vestibulopathy (CABV) is a recently described condition. Patients experience falls, disequilibrium and become dizzy with rapid head movements. Previously, patients were given a poor prognosis, given the characteristically progressive symptoms. Methods: An analysis was undertaken of six sequential patients that had completed vestibular rehabilitation (VRT). All patients had typical central and peripheral symptoms. Multifactorial interventions were designed with VRT to address the central and peripheral dysfunction. Results: Mean Dizziness Handicap Inventory score at onset of VRT was 55.3(SD=25.6); after six sessions this reduced to 37.33(SD=29.4). Mean score on the Activities Specific Balance Confidence Scale at onset was 57.98% (SD=25.9) and improved to 66.92%(SD=28.6). All patients were able unable to perform condition 4 on the Modified Clinical test of Sensory Integration and Balance. Following therapy, all patients improved and half tested normal in condition 4. Falls decreased and significant gains were made to functional mobility and visual acuity in some patients. Conclusions: CABV is a progressive condition previously believed to be refractory to treatment. Vestibular Rehabilitation can be a valuable tool to improve patients' symptoms and improve balance function and confidence to not only minimize falls, but also prevent patients from restricting their activities of daily living.

15:43-15:50 **Bilateral High Velocity Vestibular Loss: Treatment** - S. Sulway, J. Rutka, D. Pothier, P. Ranalli, W. Dillon, Toronto, ON

LEARNING OBJECTIVES

1. Attendees will learn the clinical presentation of high velocity vestibular loss. 2. Attendees will learn validated treatment options that are proven to be effective in the limited sample size. 3. Attendees will learn the role of VRT and the impact of introducing this as a treatment option for the challenging patient.

ABSTRACT

Objectives: Dizziness with rapid head movement, oscillopsia, and imbalance are a challenging collection of symptoms leaving patients with significant disability. Testing can reveal normal ENG calorics, but examination is positive for high velocity vestibular loss (HVVL). A Treatment option for this patient is vestibular rehabilitation therapy (VRT). Methods: Seven patients presented with HVVL as confirmed with magnetic scleral search coil (MSSC); 4 had normal ENG calorics and 3 had absent calorics on one side. All seven patients underwent traditional VRT focused on adapting the gain of the VOR through introduction of covert saccades to decrease retinal slip. Results: All patients improved clinically and subjectively. Mean score on the dizziness handicap inventory (DHI) on assessment was 54.8 and decreased to a mean of 32 when reassessed. Mean scores on the Activities Specific Balance Confidence Scale (ABC) increased from 52.4% to 74%. All patients showed improvements in VOR gain and 3 completely normalized, as verified with MSSC. Conclusions: HVVL is often under diagnosed. Once identified it appears that focused VRT is a viable treatment option. In these cases it reduced oscillopsia and dizziness, improved DHI and ABC scores and the VOR gain. Functionally all patients improved and the impact of the condition was significantly reduced.

15:50-15:57 **Benign Paroxysmal Positional Vertigo in Patients with Central Dizziness – R.**
Golrokhian, J. Rutka, D. Pothier, Toronto, ON

LEARNING OBJECTIVES

Attendees will be aware of the clinical characteristics of central vestibular lesions. Attendees will be aware of the findings of Benign Paroxysmal Vertigo. Attendees gain an understanding of how BPV can coexist with central vestibular pathology. Attendees will have an understanding of the treatments available for BPV.

ABSTRACT

Objectives: Central vestibular lesions are an uncommon yet important cause of vertigo and imbalance. There is often no treatment that can be offered to patients presenting with central lesions, but other diagnoses whose symptoms are masked by the central lesion often co-exist and can be treated. We undertook a review of all patients who presented with central disorders and determined the incidence of benign positional vertigo (BPV) and the results of treatment. Methods: Analysis was undertaken of database into which data from patients attending a Neurotology MDT were prospectively recorded. Data from patients with a central diagnosis were assessed for concurrent BPV. Results of their assessment and treatment with particle repositioning maneuvers were determined. Results: 259 patients with a central diagnosis were assessed. Of these, 49(18.9%) had symptoms of positional vertigo and underwent the Dix-Hallpike (DH) test. Of the 49 with symptoms, 23 had characteristic nystagmus; 26 had negative or equivocal results. Patients positive on DH testing underwent particle repositioning. One month later, 21 had an improved symptom profile and two reported no improvement despite a negative DH test. Conclusions: Central vestibular disease is often accompanied by BPV; treating this peripheral problem will improve overall symptoms of the patients with central lesion.

16:04-16:11 **Balance Workshop: Combining Head Sway with Centre of Pressure -** W. Dillon, J. Rutka,
D. Pothier, C. Hughes, P. Ranalli, S. Sulway, Toronto, ON

LEARNING OBJECTIVES

Attendees will learn about the limitations and strengths of static posturography. Attendees will be introduced to the concept of the measurement of head sway. Attendees will be able to understand the value of combining forceplate and head sway measurements. Attendees will gain knowledge of the usefulness of mCTSIB data in vestibular rehabilitation.

ABSTRACT

Objectives: Currently only footplate measurements are used in posturography. Given that the vestibular end-organs are situated within the temporal bone of the skull, recording the movement of the head can provide additional information to body sway alone. We describe the utility of a device that measures head sway synchronously with posturography. Materials and Methods: A device was developed that ran custom software to capture data from head-mounted accelerometers/gyroscopes, allowing movements and position to be accurately measured in three dimensions of space. Ten normal participants, 10 patients with bilateral vestibular loss (BVL) and ten patients who were instructed to malingering were

tested using the modified clinical test of sensory interaction on balance (mCTSIB). Results: Normal controls showed a strong correlation between the head and foot measurements: path length mean r score =0.57($p<0.001$). This correlation became negative in BVL patients (mean r score =-0.48($p<0.001$)). The head/foot sway in malingerers showed distinctive patterns. Conclusions: Head sway data have seldom been used consistently to measure balance owing to the technical difficulties that have now been overcome by this device. This study suggests that head data are related to footplate data, but also provide distinct and valuable information from which diagnoses can be made (not completed).

16:11-16:18 **Balance Workshop: A Cost-effective Tool to Deliver Static Posturography in a Clinic Setting** – W. Dillon, J. Rutka, D. Pothier, C. Hughes, P. Ranalli, S. Sulway, Toronto, ON

LEARNING OBJECTIVES

Attendees will learn about the limitations and strengths of static posturography. Attendees will be introduced to a simple system of delivery of static posturography that can be used in a clinical setting. Attendees will be able to understand the value of serial posturographic measurements. Attendees will gain knowledge of the usefulness of mCTSIB data in vestibular rehabilitation.

ABSTRACT

Objectives: Posturography is a useful and longstanding measure of balance function, but limitations on its diagnostic yield and timing issues have led to it being used primarily as a research tool in many institutions. We present a low-cost, rapid-turnover, validated system to deliver reliable posturography. Materials and Methods: The Balance Workshop device was designed using ‘off the shelf’ hardware and custom software to produce a platform to measure centre of pressure data in custom and mCTSIB (modified Clinical Test of Sensory Interaction in Balance) configurations. All patients attending a Multidisciplinary Neurotology clinic had posturographic measurements taken. Details of the process were recorded. Results: A sequential series of 50 patients was recorded. The median time to undertake a full mCTSIB examination was 203 seconds (IQR=151-207). For each patient a report was automatically generated with metrics based on Path Length and Root Mean Square data. The device successfully generated raw data files to allow detailed analysis of sway and a summary sheet suitable for automatic export to a standard database. Conclusions: This study suggests that static posturography can be delivered in the setting of a busy clinic and can produce reliable data and reports cost-effectively. The value of the acquired data is discussed.

16:18-16:23 **Dizziness and Google Trends: Trendier Than Ever?** – A. Leong, D. Pothier, E. Aziza, J. Rutka, Toronto, ON

LEARNING OBJECTIVES

By the end of the session, the otolaryngologist will 1. be introduced to the usage of Google Trends as a powerful tool to evaluate both worldwide and local internet trends in health searches; 2. understand that worldwide and local internet search trends for dizziness per se are steadily increasing, compared to other ENT conditions.

ABSTRACT

Objectives: Google Trends is a novel tool which analyses Google web searches to compute relative search volumes for defined terms. It shows global and regional relative search trends over time. Rising trends reflect the term’s increasing popularity. Management of healthcare resources could be guided by studying increasing trends in search volumes of health search terms. Methods: Key Otology-related search terms such as dizziness, hearing loss, tinnitus, earache were entered; search volumes relative to combined health search volumes were analyzed. Results: The search term ‘dizziness’ showed a substantial increase in relative peak search volume from 52 in 2007 to 100 in 2012, compared to unchanged patterns for other common ORL search terms. This is consistent worldwide and countrywide, appearing to coincide with global events. Common dizziness disorders e.g. Meniere’s Disease, labyrinthitis, BPPV showed low search volumes in Canada, but searches for labyrinthitis doubled in the UK. ‘Sinusitis’ used as a control term, demonstrated a consistent pattern of annual wintertime increases. Other trends are described. Conclusion: Google Trends provides unbiased data on what information patients need. A dramatic increase in Canadian and worldwide search volumes for dizziness may provide useful guidance on future distribution of healthcare resources.