



Department of Otolaryngology - Head and Neck Surgery

THIRTY-EIGHTH ANNUAL
RESIDENTS' RESEARCH DAY

Friday, May 11, 2012
Conron Hall, University College
Western University · Canada

PLANNING COMMITTEE MEMBERS

Disclosure Form

I have/have not had in the past 2 years, a financial interest, arrangement or affiliation with one or more organizations that could be perceived as a direct/indirect conflict of interest in the content of the subject of this or any other program.

1. Sumit Agrawal: None
2. Jason Franklin: None
3. Murad Husein: None
4. Brian Rotenberg: Medtronic Canada and ReVENT Medical

RESIDENTS' RESEARCH DAY PROGRAM 2012

8:30 – 9:00 *COFFEE IN THE EXHIBITORS' AREA*

9:00 – 9:10 **WELCOME**

Dr. John Yoo

CHAIRMAN – DR. DUNCAN MACRAE

9:10 – 9:15 **INTRODUCTION OF DR. DALE H. BROWN**

Dr. John Yoo

9:15 – 9:45 **Dr. Dale H. Brown** The State of the Union of Canadian Otolaryngology

9:45 – 10:00 **Dr. Brandon Wickens** Intraoperative Ice Pack Application for Post Tonsillectomy Pain Reduction: A Randomized Controlled Trial

10:00 – 10:15 **Dr. Susan Tan** Functional Outcomes after Lateral Crural “J-Flap” Repair of External Nasal Valve Collapse

10:15 – 11:00 *COFFEE IN THE EXHIBITORS' AREA*

11:00 – 11:15 **Dr. Sammy Khalili** An Experimental Investigation of Voice Quality in Tracheoesophageal Puncture and Voice Restoration

11:15 – 11:30 **Dr. Justin Poirier** The Effect of Nasal Septoplasty on CPAP Compliance

11:30 – 11:35 **INTRODUCTION OF DR. ANIL K. LALWANI**

Dr. Sumit Agrawal

11:35 – 12:05 **Dr. Anil K. Lalwani** Cochlear Implantation Update: 2012

12:05 – 1:15 *LUNCH IN THE GREAT HALL, SOMERVILLE HOUSE*

CHAIRMAN – DR. LORNE PARNES

1:15 – 1:35 **PRESENTATION OF AWARDS**

- 1:35 – 1:50 **Dr. Josée Paradis** Cutaneous Scars following Simultaneous Bilateral Cochlear Implants: A Comparison of Scalpel versus Electrocautery Incisions
- 1:50 – 2:05 **Dr. Jason Beyea** Laser Doppler Vibrometry Measurements of Human Cadaveric Tympanic Membrane Vibration
- 2:05 – 2:20 **Dr. Doug Angel** The Use of Platelet Rich Plasma and its Effect on Wound Healing in Radial Forearm Free Flap Reconstruction
- 2:20 – 2:35 **Dr. Shahin Nabi** Normative Nasometry Data of Cleft Palate with or without Velopharyngeal Insufficiency
- 2:35 – 2:50 **Dr. Goran Jeremic** Evaluating Trismus in Head and Neck Patients Treated with Radiotherapy: A Prospective Study
- 2:50 – 3:05 **Dr. Hussain Alsaffar** Postoperative Debridement after Endoscopic Sinus Surgery: A Randomized Controlled Trial
- 3:05 – 3:50 **Interactive Discussion – All Topics**
- 3:50 – 4:00 **Evaluation Form Completion**

INTRAOPERATIVE ICE PACK APPLICATION FOR POST TONSILLECTOMY PAIN REDUCTION: A RANDOMIZED CONTROLLED TRIAL

Dr. Brandon Wickens

OBJECTIVES:

Post tonsillectomy pain continues to cause patients significant morbidity. The literature describes multiple techniques to reduce post tonsillectomy pain, none being definitive. The purpose of this study was to evaluate the effect of intraoperative ice pack application on post tonsillectomy pain.

METHODS:

A two-arm single-blinded randomized controlled trial was conducted to compare room temperature pack and ice pack application during tonsillectomy on post-operative pain. After inclusion and exclusion criteria were met, patients were enrolled and randomized, and subsequently underwent standard electrocautery tonsillectomy. Packs were placed into the tonsillar fossae immediately following tonsil removal. Patients then completed a questionnaire that evaluated their experience for ten days following surgery. The primary outcome was pain rated on a visual analog scale. Return to work and return to normal diet were also assessed. T-test and Mann Whitney statistical analyses, as well as routine descriptive statistics, were conducted.

RESULTS:

Eighteen subjects were recruited. Patients that received intraoperative cold packs experienced a statistically significant change in VAS average pain (3.4 +/-1.2 cm (p = 0.0007)) when compared with patients receiving room temperature packs. No difference in return to work (p = 0.21) and return to normal diet (p = 0.32) was identified.

CONCLUSIONS:

Intraoperative ice pack administration results in significantly reduced pain following electrocautery tonsillectomy.

Supervisor: Dr. Brian Rotenberg

FUNCTIONAL OUTCOMES AFTER LATERAL CRURAL “J-FLAP” REPAIR OF EXTERNAL NASAL VALVE COLLAPSE

Dr. Susan Tan

OBJECTIVES:

To evaluate the efficacy of the lateral crural “J-flap” technique in the surgical repair of external nasal valve collapse using validated objective outcome measurements.

METHODS:

Prospective data were gathered on 15 consecutive cases involving adult patients who underwent lateral crural approach to repair of external nasal valve collapse between 2007-2010, performed by a single surgeon. Data were collected on diagnosis, surgical outcomes, and complications. Outcome measures included the Nasal Obstructive Symptom Evaluation (NOSE) and Rhinoplasty Outcome Evaluation (ROE).

RESULTS:

All patients underwent the lateral crural “J-flap” repair with inferior turbinectomy. Follow-up ranged from 9-13 months. 100% of patients had improvement in NOSE score that is statistically significant. There was no significant change in perceived nasal appearance after surgery as measured by ROE. There were no surgical complications.

CONCLUSIONS:

Lateral crural “J-flap” approach to repair of external nasal valve collapse is a technically straightforward and safe procedure. The efficacy is excellent at one-year follow-up.

Supervisor: Dr. Brian Rotenberg

AN EXPERIMENTAL INVESTIGATION OF VOICE QUALITY IN TRACHEOESOPHAGEAL PUNCTURE AND VOICE RESTORATION

Dr. Sammy Khalili

OBJECTIVE:

To identify variables affecting acoustic and self-reported voice outcomes in patients that have undergone tracheoesophageal puncture voice restoration.

METHODS:

Twenty patients who had undergone total laryngectomy or laryngopharyngectomy and tracheoesophageal (TEP) were assessed postoperatively. The main primary outcome measured was a comprehensive acoustic analysis of voice quality. A secondary outcome measure assessed voice-related quality of life (V-RQoL). Each of these variables were measured factoring for multiple covariates including timing of TEP, age, pharyngectomy defect, presence of pharyngocutaneous fistula, prior history of esophageal stricture requiring dilatation, major post-operative complications, and adjuvant treatment. Individual performance data were assessed by two blinded observers (one experienced and one expert) to determine if any variable affected voice outcome.

RESULTS:

Data from this investigation indicate that no single or combined variable emerged as a common feature for either good or poor speakers specific to signal quality. However, as part of the comprehensive acoustic evaluation these 20 TEP vocal signals, three distinct groups of TE speakers were identified based on signal characteristics. We have identified these voicing subgroups as: (1) TE quasi-periodic [TE_{QP}] – n = 8 speakers, (2) TEP quasi-periodic with multiple source generation [TE_{QP2}] – n = 9 speakers, and (3) TE turbulent [TE_{turb}] n = 3 speakers. Acoustic data also indicate that data generated from the assessment of phase relationships may serve as a valuable index of speaker performance for future investigation.

CONCLUSION:

This is the first investigation of a systematic quantify subgroups of the voicing source of TEP voice restoration speakers. While there is a common misperception that all postlaryngectomy speakers who undergo TEP voice restoration will produce voices that are within a narrow range of performance across frequency, amplitude, and temporal domains, the present data suggest that considerable variability exists. Additionally, this project has been able to sort voicing subgroups that can be objectively identified via quantification of acoustic characteristics and phase relationships. Collectively the present data suggest that more refined indices of surgical variables may allow for enhanced understanding of this unique TEP voice generation system. These data may also be used to inform patients regarding the potential for voice variability post-TEP.

Supervisors: Dr. Kevin Fung and Dr. Phil Doyle

THE EFFECT OF NASAL SEPTOPLASTY ON CPAP COMPLIANCE

Dr. Justin P Poirier

BACKGROUND:

Obstructive sleep apnea (OSA) is a common condition affecting 2-4 % of middle-aged adults. Continuous positive airway pressure (CPAP) is considered standard therapy for OSA however compliance rates are historically low. Common complaints for poor compliance in CPAP users include nasal obstruction and nasal congestion.

OBJECTIVE:

To determine whether nasal septoplasty for nasal obstruction improves post-operative CPAP compliance rate in OSA patients.

METHODS:

A prospective cohort pilot study of 9 patients with OSA and nasal obstruction underwent nasal septoplasty. Pre and post-operative CPAP compliance rates were measured.

RESULTS:

7/9 patients were found to have a significant increase in CPAP usage and compliance following nasal septoplasty. 3/9 patients were able to tolerate CPAP for the entire duration of the night while 4/9 tolerated significantly longer intervals of nightly CPAP usage. 2 patients had no further apneic episodes following surgery and ceased CPAP usage. Subjectively 100% of patients reported a marked improvement in nasal breathing.

CONCLUSIONS:

Nasal septoplasty for nasal obstruction in OSA patients improves CPAP compliance rates. Correction of nasal obstruction should be offered in the proposed treatment algorithm for CPAP non-compliance in OSA patients with documented nasal obstruction.

Supervisor: Dr. Brian Rotenberg

CUTANEOUS SCARS FOLLOWING SIMULTANEOUS BILATERAL COCHLEAR IMPLANTS: A COMPARISON OF SCALPEL VERSUS ELECTROCAUTERY INCISIONS

Dr. Josée Paradis

BACKGROUND:

Previous studies have found differences between the use of electrocautery and scalpel and the cosmetic appearance of their respective scars.

OBJECTIVES:

To evaluate and compare incisions made with scalpel versus electrocautery among patients having undergone single-stage bilateral cochlear implants by using the validated Scar Camouflage Scale.

METHODOLOGY:

Patients who received bilateral cochlear implants in a single-stage between October 2007 and January 2012, at London Health Science Centre were recruited. A photograph was taken of each the right and left sided scars following a standardized protocol. All implants were performed by one of the two otologists who both followed the same surgical protocol – first incision was made with electrocautery and the contralateral incision was made with scalpel. The side of the first incision was confirmed using operative records. All photos were edited using a standardized protocol and the right ear images were flipped in order to have all same-sided ears. Test-retest reliability was evaluated. Two groups of evaluators were recruited: Surgical residents and non-medical students at Western. All evaluators assessed each image by using the Scar Camouflage Scale, which employs a visual analogue measurement procedure (100mm). Five main scar dimensions were evaluated independently for each image: height, width, coloration, evidence of surgery, and scar camouflage. All dimensions included descriptive anchors to aid observers in their ratings. Data were then collated and analyzed.

DATA ANALYSIS:

Once all data were gathered, all scales were measured with a corresponding score generated for each dimension with values ranging from 1 to 100. These data were then used to generate a score for each dimension for each of the 22 photographs that were used in further assessment of the data.

RESULTS:

Thirteen cochlear implant patients were recruited. Photos of two patients were excluded due to poor image quality. Patients' mean age was 54 months. Post-operative scar assessment was done at a mean of 14 months. Based on data obtained, photographs that depicted ear scars associated with a scalpel exhibited mean scaled ratings that were less than those for electrocautery. While no feature served to unanimously identify blade vs. electrocautery ears on an individual rater basis, the feature of scar discoloration distinguished groups more consistently for naïve raters, and scar height served as the most consistent distinguishing feature for raters who were surgical residents. Again, both of these features favored blade scars. The feature of scar camouflage was found to demonstrate the most consistent scores across rater groups. Finally, in regard to rater reliability, remarkable intra- and inter-rater consistency was observed for both rater groups.

CONCLUSIONS:

The present data suggest that blade incisions result in better visual scar outcomes specific to the features assessed in this study.

Supervisor: Dr. Lorne Panes

LASER DOPPLER VIBROMETRY MEASUREMENTS OF HUMAN CADAVERIC TYMPANIC MEMBRANE VIBRATION

Dr. Jason A. Beyea

OBJECTIVE:

To determine the feasibility of measuring vibrations of the tympanic membrane (TM) at multiple locations on the TM to differentiate normal eardrums from those with associated ossicular pathologies.

DESIGN:

Cadaveric human temporal bone study.

SETTING:

Basic science laboratory.

METHODS:

A mastoidectomy and facial recess approach was performed on four cadaveric temporal bones to obtain access to the ossicles without disrupting the TM. Ossicles were palpated to ensure normal mobility and an intact ossicular chain. Laser Doppler Vibrometry (LDV) measurements were then taken on all four TMs, and this was considered the normal condition. LDV measurements were then repeated on the four TMs following stapes footplate fixation, incudo-stapedial joint dislocation, and malleus head fixation.

MAIN OUTCOME MEASURES:

LDV measurements of TM vibration at the umbo, the lateral process of the malleus, the anterior superior TM quadrant, the anterior inferior TM quadrant, the posterior superior TM quadrant, and the posterior inferior TM quadrant.

RESULTS:

Overall, the best signal-to-noise ratios were found between 2 and 4kHz, at the umbo, the anterior superior quadrant, the anterior inferior quadrant, and the posterior inferior quadrant. Since our goal was to assess the ossicular chain, we selected the TM locations closest to the ossicular chain (the umbo and lateral process of the malleus) for further analysis. Although differences could be seen between normals and the simulated ossicular pathologies at these locations, most values did not reach statistical significance.

CONCLUSIONS:

Obtaining LDV measurements is technically challenging and requires considerable time for optimization of lighting and tympanic membrane positioning to obtain consistent measurements. This study demonstrates the potential of LDV to differentiate ossicular pathologies behind an intact tympanic membrane. Further studies will further characterize the clinical role of this diagnostic modality.

Supervisor: Dr. Sumit K. Agrawal and Dr. Hanif Ladak

THE USE OF PLATELET RICH PLASMA AND ITS EFFECT ON WOUND HEALING IN RADIAL FOREARM FREE FLAP RECONSTRUCTION

Dr. Doug Angel

OBJECTIVE:

To evaluate the effect of Platelet Rich Plasma (PRP) on forearm wound healing in patients undergoing radial forearm free flap (RFFF) reconstruction for head and neck cancers defects.

DESIGN:

Prospective, blinded, randomized control trial.

METHODS:

Patients undergoing RFFF were randomly assigned to one of two groups, determined by a sealed envelope opened intraoperatively. Group A received PRP on the surgical bed of the RFFF donor site, while Group B received saline. High resolution photographs were taken at 3, 6, and 12 months postoperatively using a standardized method. Blinded observers then evaluated each photograph, and rated each scar using the Western Scar Camouflage scale (Brandt, Moore, Doyle). This scale has been previously validated with linear scars and has shown excellent validity and reliability. All photographs were presented in random order to observers who then rated each photo independently. The scaled score data were then used to determine trends in any given dimension assessed.

RESULTS:

Eleven patients received PRP to their forearm and fifteen patients received saline to their forearm. Based on data obtained, no differences between PRP and saline groups were identified at 3 or 6 months; however, scaled scores were reduced by approximately 30% in the PRP group at 12 months, which is indicative of a less obvious or more camouflaged scar.

CONCLUSION:

PRP may have a positive effect on wound healing in this subset of patients.

Supervisor: Dr. Kevin Fung

NORMATIVE NASOMETRY DATA OF CLEFT PALATE WITH OR WITHOUT VELOPHARYNGEAL INSUFFICIENCY

Dr. Shahin Nabi

BACKGROUND:

Cleft palate is one of the most common congenital malformations, causing speech delays and errors, and velopharyngeal insufficiency (VPI). Nasalance is an important objective VPI assessment tool. However, normative nasalance data does not exist for this population, and thus we rely on normative nasalance data of normal speakers, although the architecture of the velopharyngeal port differs between these populations.

OBJECTIVE:

To determine the normative nasalance data of cleft patients with VPI (pre- and post-correction), compared to non-VPI cleft patients and normal speakers in the literature.

DESIGN:

Retrospective chart review of prospectively gathered data.

SETTING:

Tertiary-care centre, Children's hospital, London, Ontario.

METHODS:

Charts of all cleft patients with or without VPI seen by our multidisciplinary cleft team between 2004 – 2011 were reviewed. Perceptual speech scores, nasalance, and video-nasendoscopy data were collected prospectively. Mean scores and standard deviations were calculated for subgroups, and comparisons were made to successfully treated and unsuccessfully treated VPI patients, non-VPI cleft patients, and published normative nasalance data of normal speakers.

RESULTS:

Normative nasalance data was constructed for our subpopulations. The results showed a significant difference between the nasalance scores of successfully treated VPI patients versus unsuccessfully treated patients. Normative nasalance data for successfully treated VPI patients differed from that of normal speakers, despite normalized perceptual speech scores and video-nasendoscopy.

CONCLUSIONS:

The architecture of a surgically corrected velopharyngeal port differs from that of non-VPI normal speakers. Normative nasalance data from successfully treated VPI patients may be a better alternative than the presently used normative nasalance data of normal speakers when gauging management results objectively.

Name of Supervisor: Dr. Murad Husein

EVALUATING TRISMUS IN HEAD AND NECK PATIENTS TREATED WITH RADIOTHERAPY: A PROSPECTIVE STUDY

Dr. Goran Jeremic

BACKGROUND:

The aim of this study was to determine the prevalence of trismus in head-and-neck cancer patients treated primarily with radiotherapy with concomitant chemotherapy.

METHODS AND MATERIALS:

A preliminary prospective study of 15 patients diagnosed with head-and-neck cancer treated by radiotherapy with concurrent chemotherapy were evaluated for trismus using a patient-completed questionnaire, the Mandibular Function Impairment Questionnaire (MFIQ) and measurements of mandibular mobility across four dimensions reflected by the Helkimo Masticatory Dysfunction Index (HMDI). Measurements were collected at baseline prior to initiating treatment, and then at three and six months following completion of their treatment.

RESULTS:

Patients were predominantly male (12/15) diagnosed with advanced-stage oropharyngeal cancer (10/15). Radiation treatment dosages affecting the structures involved in mouth opening ranged from 15 to 65 Gy; Maximum doses were observed for the mandible (79.8 Gy) and medial pterygoid muscle (79.2 Gy). Mouth opening scores based on the HMDI showed an association to MFIQ scores ($p = 0.057$). Patients graded with HMDI scores of 2 or greater received significantly greater maximum doses to the medial and lateral pterygoid muscles, as well as to the mandible ($p < 0.05$). Patients that rated themselves a higher severity level (II/III) on the MFIQ received higher doses to the masseter muscle ($p = 0.002$). Over time, all three female patients showed an increase in HMDI from baseline to six months compared to only one male showing no increase; 6 showed no change, and 2 showed a decrease ($p = 0.036$).

CONCLUSIONS:

Patients reported mouth-opening difficulties that are objectively measurable as a consequence of both disease and subsequent treatment. There appears to be a trend linking worse severity of trismus and radiation treatment volumes involving important structures in mouth opening. Overall, most symptomatic patients pre-treatment remained stable following treatment, however; in those patients with worsening trismus, severity was most apparent at three months following treatment. More women were inclined to have increased difficulties with mouth opening over time than men, however further study is required.

Supervisor: Dr. Kevin Fung

POSTOPERATIVE DEBRIDEMENT AFTER ENDOSCOPIC SINUS SURGERY: A RANDOMIZED CONTROLLED TRIAL

Dr. Hussain Alsaffar

OBJECTIVES/HYPOTHESIS:

Post-operative care to optimize outcomes after endoscopic sinus surgery varies significantly from surgeon to surgeon. A particularly controversial subject is that of debridement. The objective of this study was to determine the effect of weekly versus no debridement on outcome and patient inconvenience.

METHODS:

A prospective randomized controlled trial was conducted. Patients with chronic rhinosinusitis with polyposis undergoing endoscopic sinus surgery were randomized to weekly or no debridements and assessed at 4 weeks with the Lund-Kennedy Endoscopic Scoring System (LKES), the Sino-Nasal Outcome Test-21 (SNOT-21), a VAS scale for pain and a novel scoring system for post-operative inconvenience (Post-Operative Inconvenience Scale – POIS). All patients were given instructions to use saline rinses twice daily and a 3 week tapered course of prednisone.

RESULTS:

28 patients fulfilled criteria and completed the study. At 4 weeks, both groups had LKES of 0, with no synechiae noted in either group. Both also groups demonstrated a significant improvement in SNOT score but no difference was present between groups (debridement pre-op 77.1, post-op 7.9; control pre-op 80.3, post-op 6.1). Differences were however noted in both post-operative pain (intervention VAS = 32mm vs. control VAS = 21mm, $p=0.014$) and inconvenience (POIS) score (17.1 for intervention group vs. 7.9 for control group, $p = 0.002$).

CONCLUSIONS:

Debridement remains an option available to clinicians. However, the absence of debridement does not result in worse clinical outcomes. Patients undergoing debridement have worsened post-operative pain and clinical inconvenience.

Supervisor: Dr. Brian Rotenberg

DISTINGUISHED VISITING PROFESSOR

**Department of Otolaryngology -
Head and Neck Surgery**

DR. ANIL K. LALWANI

Professor

***Department of Otolaryngology –
Head and Neck Surgery
New York University***

and

***Division of Otology & Neurotology
Columbia University***

DISTINGUISHED ALUMNUS

**Department of Otolaryngology-
Head and Neck Surgery**

DR. DALE H. BROWN

Professor

University of Toronto

SPONSORS

This program has been made possible through an educational grant from:

Western University, Canada, Department of Otolaryngology-Head and Neck Surgery

London Health Sciences Centre

The Late Dr. Charles A. Thompson

Alcon Canada Inc.

AstraZeneca Canada Inc.

Ethicon Inc., Johnson & Johnson Medical Products

Genzyme Canada Limited

Helix Hearing Care Centre

Karl Storz Endoscopy

KLS Martin L.P.

Med-El of Canada

Medtronic of Canada Limited

ReVENT Medical Inc.

Southmedic Inc.

Synthes Canada

*Department of Otolaryngology -
Head and Neck Surgery
Western University of Canada
Wishes to thank the above
Persons and Companies*

AWARDS & PRIZES

SCIENTIFIC ACHIEVEMENT AWARD:

Presented for the most outstanding scientific achievement.

Charles A. Thompson Plaque

PETER CHESKI INNOVATIVE RESEARCH AWARD

Presented for the most innovative research.

THOMAS MARTIN GOLDEN THROAT AWARD

Presented for the most eloquent presentation including evaluation of audio-visual aids.

RESIDENT BOOK AWARDS

Presented to residents who did not receive one of the above awards.

SIMON KIRBY MOST CARING RESIDENT AWARD

Presented to the resident who demonstrates excellence in compassionate care.

UNDERGRADUATE TEACHING AWARD

Presented to the resident with the highest teaching evaluation.