

## ABSTRACTS

Friday 9<sup>th</sup> October 2009

2.00 - 3.30 - PAEDIATRICS / RHINOLOGY (parallel session)

2.00 Use of Nijmegen questionnaire in assessing nasal obstruction  
Woodman,P., Hanna, B.

Objectives: Chronic Hyperventilation Syndrome (HVS), in which minute volume exceeds metabolic demands, can present with a myriad of symptoms, including nasal obstruction, and is estimated to affect 6% of the adult population. We audited the introduction of a clinical HVS screening questionnaire, to establish whether HVS is common enough in ENT practice, and important enough in terms of diagnosis and treatment, to merit its routine use.

Setting: ENT outpatient clinics at one teaching and one district general hospital.

Participants: Patients presenting at routine ENT clinics with nasal obstruction.

Design: Patients completed a Nijmegen questionnaire consisting of 16 HVS-related symptoms used for clinical diagnosis, either while waiting to be seen, or for nasal preparation for endoscopy to take effect. Once the usual history and examination were complete, the Nijmegen score was checked to determine whether this altered diagnosis or treatment.

Main outcome measures: Nijmegen Score (>23 suggestive of HVS). Effect of Nijmegen score on management.

Results: 64 patients were assessed (33 male, 31 female; age range 11-80). 10 males and 11 females (33% in total) had Nijmegen scores >23, suggestive of HVS. HVS prevalence was particularly high in patients presenting with non-specific rhinitic symptoms, with no other pathology identified in the nose (9/15 patients with non-specific rhinitis).

Conclusions: Nijmegen score is useful for helping reach a diagnosis in patients with non-specific rhinitic symptoms. It is less useful in those with significant septal deviation, nasal polyposis or allergic rhinitis.

2.10 The correlation between auditory brain-stemmed evoked responses and behavioural tests in paediatric audiological testing

Barghouti, T.T., Casserly P., Colreavy M.

Auditory Brain-Stem Evoked Response testing is a well established practice for objectively predicting hearing thresholds in infants and children who are unable to perform or respond to Behavioural tests. Objectives: In this study we aim to evaluate the correlation between BSER and Behavioural testing in the paediatric age group. Design: We retrospectively looked at 70 BSER tests carried out between the years 2004 and 2009 at the Children's University Hospital- Dublin. We compared the results with the outcomes generated from different Behavioural tests carried out on the same subjects. Participants: Departments of Otolaryngology and audiology at the Children's University Hospital- Temple St. Results: Of the 140 ears tested, BSER results were found to agree within 20dB with Behavioural tests in 90 % of subjects. The correlation seems stronger with higher levels of hearing loss. Of the 16 ears that showed no response at 97 dB in the BSER, free-field testing showed losses higher than 80 dB. The advantages and limitations of BSER and Behavioural testing are also discussed. Analysis and possible causes for non

correlation in certain subjects are also highlighted. Conclusion: We have found that BSER correlates well with results achieved by Behavioural testing especially at higher levels of hearing loss. While BSER is still a valuable testing procedure in the paediatric group, the degree of non-correlation in certain subjects is an area that should extensively be investigated.

## 2.20 Does the Boyle-Davis gag influence endotracheal tube displacement in adenotonsillectomy?

Fennessy B.G., Hughes J.P.

### Objective

To evaluate the influence of the Boyle-Davis mouth gag on displacement of the endotracheal tube using flexible fiberoptic tracheoscopy.

### Design

Ethically approved, prospective study

### Setting

General ENT Unit

### Participants

Consented adults and children undergoing adenotonsillectomy

### Main outcome measures

Displacement of endotracheal tube upon opening / closing the gag

### Results

Of 20 patients assessed, preliminary results suggest that the act of opening / closing the Boyle-Davis gag influences tube position

### Conclusions

The Boyle-Davis gag may influence the position of the endotracheal tube during adenotonsillectomy

## 2.30 Profound sensorineural deafness in Tanzanian children - is ototoxicity a significant cause?

Freeland A., Jones J.(Oxford), Kassim N. (Zanzibar)

### Objectives

9 years experience working in Tanzania revealed a large population of profoundly deaf children. The object was to identify the cause.

### Design

A carefully designed parental questionnaire administered by health workers from the Zanzibar Outreach Programme was used to interview parents of a matched group of deaf and normal hearing children. The results were analysed from Excel spreadsheets.

### Setting and Participants

200 children between the ages of 5-12 with significant sensori-neural hearing loss were identified in Stonetown, Zanzibar. These were aged and neighbourhood matched with 218 normal hearing children.

### Outcome Measures

Outcome measures included the genetic history especially first cousin marriage (common in Zanzibar), rubella, head injury, fever admission, diagnosis, and drug treatment of fever. The age at which speech stopped or changed was noted in relation to the date of fever admission. The limitations were lack of hospital records and it was retrospective.

## Results

35% of the deaf group had an infant fever admission history compared with 4% of the normal hearing group. Nearly all had i.m. quinine and/or gentamicin. The genetic history was equal in both groups, and rubella was rare. Most fevers were assumed to be malaria or pneumonia which are not likely causes of deafness.

## Conclusions

Ototoxic drugs given to infants with "fever" without a recorded weight or gentamicin level monitoring was the probable cause of a third of all profoundly deaf Tanzanian children.

### 2.40 Newborn hearing screening programme results - Southern Health and Social Care Trust, Northern Ireland Mehta R., Leydon P.

**Objectives:** To gather an overview of the Universal Newborn Hearing Screening Programme's efficacy in Northern Ireland. To analyse data from April 2007 to March 2008 in the Southern Health and Social Care Trust, Northern Ireland. To compare the data of Southern Health and Social Care Trust before and after introduction of newborn hearing screening programme. Finally comparison of performance with Universal Newborn Screening Programme of England.

**Design:** Retrospective study.

**Setting:** The region covered by Southern Health and Social Care Trust in Northern Ireland.

**Participants:** All live births from April 2007 to March 2008 in the study region.

**Main outcome measures:** Age at which children with permanent childhood hearing impairment were rehabilitated.

**Results and Conclusion:** In the study period the Universal newborn hearing screening programme decreased average age of rehabilitation to 4 months in children with permanent childhood hearing impairment. These Southern Health and Social Care Trust results are comparable to England's data. Universal screening helped in early identification and hence early rehabilitation of children with permanent childhood hearing impairment.

### 2.50 Lymphatic malformations: A proposed management algorithm Oosthuizen J.C., Burns P., Russell J.D.

**Objective:** The aim of this study was to develop a management algorithm for cervicofacial lymphatic malformations, based on the authors' experience in managing these lesions as well as current literature on the subject.

**Study design and methods:** A retrospective medical record review of all patients treated for cystic hygroma at our institution during a ten year period (1998-2008) was performed.

**Setting:** Our Lady's hospital for sick children, Crumlin, Dublin, D12, Republic of Ireland.

**Main Outcome measures:** Age at diagnosis, location and type of lesion, radiologic investigation performed, presenting symptoms, treatment modality used, complications and results achieved.

**Results:** 14 patients were identified. Eight (57,14%) male and six (42,85%) female. There was an equal distribution between the left and right sides. The majority (71,4%) of cases were diagnosed within the first year of life. All but one of these lesions was located in the suprahyoid region. The predominant reason for referral was an asymptomatic mass in 7 cases (50%) followed by airway compromise (35,7%) and dysphagia (14,2%). Management options employed included: observation, OK-432 injection, surgical excision and laser therapy. In 5 cases (35,7%) a combination of these were used.

Conclusion: Historically surgical excision has been the management option of choice for lymphatic malformations. However due to the morbidity and high complication rate associated this is increasingly being questioned. Recent advances in sclerotherapy e.g. OK-432 injection have also shown significant promise. Based on experience in managing these lesions as well as current literature the authors of this paper have developed an algorithm for the management of cervicofacial lymphatic malformations.

### 3.00 Reconstructed 3D CT imaging in nasal reconstructive surgery

Moran T., Shandilya M. Smyth D.

#### Objectives

The objective to this study was to describe a novel method of three dimensional imaging and image manipulation in the field of nasal reconstructive surgery. It is cost effective and uses technologies readily available to the practicing surgeon.

#### Design

This is a case series of rhinoplasty patients used to highlight the advantages of this new technique.

#### Participants

The series consists of patients who underwent nasal reconstructive surgery by one surgeon operating in Waterford ENT department.

#### Main outcome measures

The advantages to both the patient and the surgeon are discussed. This technique can be used preoperatively for preparing a patient for surgery, intraoperatively as an aid to the surgeon and post operatively for documentation.

#### Results and Conclusions

We describe how this is a practical alternative to dedicated 3D imaging systems used for reconstructive surgery. We describe how this is an effective aid for both the patient and the surgeon.

### 3.10 Objective assessment of supraglottoplasty outcomes using polysomnography

O'Connor T., Bumbak P., Vijayasekaran

Objectives: The use of polysomnography is well documented in assessing the severity of laryngeal abnormalities. The aim of the current study was to objectively assess the efficacy of supraglottoplasty for laryngomalacia by comparing data from pre and post-operative polysomnography.

Design: Retrospective study.

Setting: A tertiary referral paediatric hospital.

Participants: Patients undergoing supraglottoplasty with a clinical diagnosis of moderate to severe laryngomalacia over a 35 month period.

Main outcome measures: Data from pre and post-operative polysomnography.

Results: From a total of 46 patients undergoing supraglottoplasty for laryngomalacia during the study period, 10 were suitable for inclusion into our study. The surgical procedure performed was bilateral division of aryepiglottic folds alone in one patient (1/10), bilateral division of aryepiglottic folds and bilateral trimming of arytenoid mucosa in five patients (5/10) and bilateral aryepiglottic fold division, bilateral arytenoid mucosal trimming and epiglottic trimming or epiglottopexy in four patients (4/10). Statistically significant improvements occurred in mean values for Total Sleep Time (TST) (P=0.049), Lowest Oxygen Saturation Levels (SpO<sub>2</sub> nadir) (P=0.006), Obstructive Apnoea Hypopnoea Index (OAH) (P=0.009) and Respiratory Disturbance Index (RDI) (P=0.002),

following supraglottoplasty. An improvement in mean Transcutaneous Carbon Dioxide (TcCO<sub>2</sub>) value occurred, but did not achieve statistical significance (57.1 vs. 52.8) (P=0.259).

Conclusions: Polysomnography is an effective method for objectively assessing the efficacy of supraglottoplasty for laryngomalacia. Supraglottoplasty effectively reverses the abnormal respiratory parameters occurring in moderate to severe laryngomalacia.

### 3.20 Nasal endoscopy and paranasal sinus CT findings in cystic fibrosis: correlation with genotype and symptom severity in an Irish population

Casserly P., Harrison M., Plant B., O'Sullivan P.

#### Introduction

Cystic Fibrosis (CF) is the most common inherited disease in Caucasians and the incidence of CF is higher in Ireland than anywhere worldwide. Despite a high prevalence of sino-nasal disease in the cystic fibrosis population, self-reported symptoms are low. CF patients homozygous for the delta F508 mutation are reported to have a greater incidence of hypoplastic sinuses. The incidence of sino-nasal pathology and association of genotype with sinus development has not been studied in the Irish CF population to date.

#### Materials and Methods

A prospective study was performed. All patients >18 years old, attending the Cork Adult CF Centre were included. Patients were invited to complete a symptom-based questionnaire and undergo rhinological assessment with fiberoptic nasoendoscopy. This was scored according to the Lund-Kennedy scoring system for chronic rhinosinusitis (CRS). A CT of their paranasal sinuses was booked. Changes on the CT scan were recorded using the Lund-Makay scoring system and sinus hypoplasia was documented using published criteria. Data recorded included patient demographics, genetic mutation, and prior medical and surgical treatment for CRS.

#### Results

63 patients were included in the study. To date, CT data is recorded for 27 patients. 48% of patients had symptoms of CRS whereas 79% had signs of CRS during nasoendoscopy. The Lund-Kennedy score was higher in patients with 2 or more symptoms compared to the group with no symptoms (5.3 v 3.0, p<0.05). There was no significant association between Lund-Kennedy score and class mutation, age, frequency of infective pulmonary exacerbation rate or lung function. 100% of patients had evidence of sinus pathology on CT scan. 89% of patients demonstrated evidence of hypoplasia or aplasia of the sinuses. Delta f508 homozygous patients did not have an increased incidence of sinus hypoplasia.

#### Conclusions

CRS is under diagnosed in adult CF patients. The presence of clinical or radiological evidence of CRS did not correlate with CF genotype or severity of disease.

## 2.00 - 3.30 - HEAD & NECK (parallel session)

### 2.00 Benefits of level II neck dissection in parotidectomy

Phelan E., O'Dwyer T. P., Walshe P.

#### Introduction:

Level 2 neck dissection is a useful procedure during parotid surgery. Its main benefit is to improve access to the parotid gland during surgical dissection

#### Methods:

Retrospective review of all patients in our department who underwent parotidectomy with level 2 dissection. Patients were contacted by post and asked to complete a questionnaire. Shoulder function was assessed using the Dash questionnaire

Results:

Level 2 neck dissection is a relatively safe and helpful procedure during parotid surgery

2.10 A retrospective review of barium swallow radiographs performed at Mid-Western Regional Hospital, Limerick  
Ahmed T.S., Jaber S., Fenton J.E.

Objectives: To evaluate local practice regarding the use of barium swallow radiographs and define robust indications for requesting this investigation.

Design: A retrospective case note review.

Setting: District general hospital and regional centre of excellence.

Participants: All patients (248) who underwent barium swallow imaging at the hospital between 2005 and 2007.

Main outcome measures: Data including indications, patient demographics, referring specialty, pre-barium swallow examination findings, radiological findings and post-barium swallow investigations and patient outcomes were gathered.

Results: Patients ranged in age from 3 – 93 (mean 60) with a female preponderance (M:F ratio 109:139). Most requests were from the otolaryngology department, followed by general medicine and the gastroenterologists. The largest group of patients gave a history of dysphagia or previous food bolus obstruction. The majority of studies were negative. Barium swallows were sensitive for identifying underlying dysmotility disorders and pharyngeal pouches.

Conclusions: Barium swallows are useful in elderly patients unfit for general anaesthesia or prolonged sedation as required by endoscopic studies. It was felt that they should be a first-line investigation for suspected oesophageal or pharyngeal dysmotility disorders. An absolute indication was felt to be for the diagnosis of pharyngeal pouches, particularly where surgical intervention is contemplated. Barium swallows are useful in patients with previous food bolus obstruction as they help focus attention to specific areas in cases where subsequent endoscopic assessment is necessary. Endoscopic rather than radiological evaluation is preferable in patients with strong risk factors for head and neck malignancy as this allows simultaneous tissue biopsies to be taken for histological confirmation of diagnosis whilst avoiding radiation exposure.

2.20 In vivo degradation and macrophage response to collagen based scaffolds with and without mesenchymal stem cells

Kieran S.M., Duffy G., Lyons F., Al- Munajjed A., Walsh M., O'Brien F.J.

OBJECTIVES

To determine the in-vivo degradation and macrophage response (including macrophage phenotype) to the implantation of Collagen-GAG (CG) or Collagen-Calcium Phosphate (CP) scaffolds (cell free or MSC seeded) in a critical size rat calvarial defect.

DESIGN

Wistar rat critical size calvarial defect study which was both ethical board approved and government licensed.

PARTICIPANTS

48 young adult male Wistar rats had a 7mm trans-osseous critically sized defect created in their calvarium. The defect was either left unfilled (empty control) or filled with one of two collagen-based scaffolds (CG or CP), half of which had undergone pre-differentiation in osteogenic media for 28 days after mesenchymal stem cell seeding. Animals were sacrificed at 4 and 8 weeks post scaffold implantation.

#### MAIN OUTCOME MEASURES

Following decalcification and routine staining, harvested specimens underwent histological examination with quantitative histomorphometry of the area of new bone growth and scaffold degradation. Immunohistochemical staining was performed to confirm the presence of macrophages (CD68) and to phenotype the macrophage response (CD163/CCR7).

#### RESULTS

Quantitative histomorphometry demonstrated greater new bone formation in non stem cell seeded scaffolds, with superior results for the mineralised CP scaffold at 8 weeks (37.24%V13.15%, $p<0.05$ ).

Whilst all scaffold types demonstrated an M2 (immunomodulatory and tissue remodelling) response the location of this response was confined to the scaffold periphery in the cell seeded groups as opposed to areas of new bone formation in the non seeded groups.

#### CONCLUSIONS

An appropriate macrophage response is necessary for successful bone deposition in degradable collagen scaffolds and appears hindered by the pre-differentiation of MSC seeding collagen scaffolds.

### 2.30 Predicting calcium status post-thyroidectomy with early calcium levels

Sadacharam M., Al-Omari B., Glynn F., Sheahan P.

**Objectives:** Transient hypocalcaemia is a well-recognised complication of total thyroidectomy. In most patients, calcium levels return to normal within a few weeks. Nevertheless, symptomatic hypocalcaemia may be the main reason for stay in the hospital beyond one night. Within this context, the aim of our study was to investigate whether a normal calcium level ( $> 2.10$  mmol/L) at 6 am on the first post-operative day was predictive of stable calcium levels.

**Design:** Prospective study of 20 patients undergoing total or completion thyroidectomy over a 6 month period. Blood to measure postoperative calcium levels was drawn twice daily on Day 1 and Day 2 respectively.

**Setting:** A tertiary ENT referral centre in Cork City

**Participants:** 20 patients of whom 15 underwent total thyroidectomy and 5 underwent completion thyroidectomy

**Main Outcome Measures:** Postoperative serum calcium levels

**Results:** The mean number of parathyroids identified intraoperatively was 2 (total thyroidectomies). 20% of patients had below normal calcium levels on the first postoperative day. All patients with normal calcium levels at 6 am on the first post-operative day maintained these normal calcium levels through the second post-operative day. No correlation was noted between the number of parathyroids identified and postoperative calcium levels

**Conclusions:** Patients with normal calcium levels at 6 am on the first postoperative day after thyroidectomy are likely to maintain normal calcium homeostasis.

**Discussion:** Normal calcium on the first post-operative day after total thyroidectomy predicts maintenance of normal calcium levels. Patients with normal calcium levels at 6



am on the first post-operative day may be safely discharged home provided there are no wound complications.

- 2.40 PET CT scanning in the unknown primary:  
Results of a prospective trial  
McCaul D., Fahy C., Primrose W., Hughes S., Ullah R.M.

#### OBJECTIVE

PET/CT has emerged as the most important new imaging technique in head and neck cancer in the first decade of 21st century. Originally found to be helpful in recurrence detection, we are now increasingly using this modality during the staging process and looking for the primary site in the unknown primary. In 2005 we presented our experience of the role of PET/CT in a retrospective study of unknown primaries in 17 patients and began work on a prospective study.

#### METHOD

Patients with FNA or biopsy positive neck disease with no known primary on routine head and neck examination, including endoscopy and CT scanning, were recruited from our regional MDT. All patients then underwent PET/CT scanning (results blinded) followed by panendoscopy and biopsies from the usual occult sites e.g. Nasopharynx, tonsil, and base of tongue. All patients were then represented at the MDT meeting with the clinic blind to the PET/CT results and management plan recorded. The PET/CT results were then presented and the case re-discussed and changes of management recorded

#### RESULTS

24 patients were recruited (age range 42-78, average 54) of which 15 were males and 9 females. 21 patients underwent neck dissections, 20 of whom proceeded to radiotherapy, one patient did not as his pathology was a branchial cyst. 3 patients were inoperable. PET/CT correctly identified the primary site in 28% of patients and changed management in 20%

#### CONCLUSION

PET/CT continues to emerge as an important imaging modality in head and neck cancer. In this preliminary prospective study of the unknown primary it has provided useful information regarding contralateral disease and distant metastases, changing management in one fifth of patients

- 2.50 Levels of oxidative damage in thyroid neoplasia  
Young O., Crotty T., O'Connell R., O'Sullivan J., Curran A.J.

Objectives: To assess levels of DNA adduct (8 oxo dG) and lipid peroxidation (4HNE) in follicular carcinomas (FTC), papillary carcinomas (PTC) and follicular adenomas (FTA) and their corresponding matched normal tissue.

Setting: Tertiary referral centre.

Participants: This study included thyroid tissue from 133 patients with well-differentiated thyroid neoplasia who underwent thyroidectomy (partial or complete) in St Vincent's University Hospital during the period 1996 to 2006.

Main Outcome Measures: Using tissue microarrays and immunohistochemistry, we assessed levels of DNA damage (8-oxo-dG) and lipid peroxidation (4 HNE) in 71 follicular adenoma (FTA), 45 papillary carcinoma (PTC) and 17 follicular carcinoma(FTC) and matched normal thyroid tissue.

Results: Cytoplasmic 8-oxo-dG and 4HNE expression was significantly higher in FTA, FTC and PTC tissue compared to matched normal tissue. (all p values <0.001).



Similarly, elevated nuclear levels of 8-oxo-dG were seen in all in FTA, FTC and PTC tissue compared to matched normal. (p values <0.07, <0.001, <0.001 respectively) In contrast, higher levels of 4HNE expression was detected in normal thyroid tissue compared to matched tumour tissue. (p< 0.001 for all groups) Comparing all three groups, 4HNE levels were higher than 8-oxo-dG levels (p<0.001 for all groups) except for cytoplasmic levels of 8-oxo-dG were higher than 4 HNE in all (p<0.001). These results were independent of proliferation status.

Conclusions: High levels of DNA damage and lipid peroxidation in benign and malignant thyroid neoplasia indicates this damage is an early event which may influence disease progression.

### 3.00 Taurolidine, a novel anti-neoplastic agent, is a potential chemotherapeutic agent for anaplastic thyroid disease

Wormald R.N., Wang J.H., Redmond H.P.

Aims: Anaplastic thyroid cancer is a rare but extremely aggressive form of thyroid cancer characterised by having no effective treatment options and an extremely poor prognosis.

Taurolidine, a derivative of the amino acid taurine, has demonstrated novel anti neoplastic properties against several tumour types including malignant melanoma, prostrate carcinoma and glioblastoma. The aim of this project was to explore the potential of taurolidine as a potential chemotherapeutic agent in anaplastic thyroid cancer.

Methods: Human anaplastic thyroid cancer cell lines (Cal62, BHT101) were treated with taurolidine (0-400  $\mu$ M) alone and in combination with radiotherapy. Apoptosis, necrosis and the effects on the cell cycle were measured with flow cytometry. Cellular viability and cellular proliferation were assessed with the MTT and BrdU assays.

Results: Taurolidine induces apoptosis and halts the cell cycle leading to a reduction in cellular viability and proliferation. When given in combination with radiotherapy these effects are enhanced.

Conclusion: Taurolidine has significant anti-tumour activity against anaplastic thyroid cancer cell lines and therefore is a potential chemotherapeutic agent for this aggressive disease.

### 3.10 A prospective blinded trial of whole body MRI versus CT PET in staging primary and recurrent cancer of the head and neck

O'Neill J. P., Moynagh M., Kavanagh E., O'Dwyer T.

OBJECTIVES: To compare Computer Tomography Positron Emission Tomography (PET-CT) and Whole Body Magnetic Resonance Imaging (WBMRI) in the pre-therapeutic staging of head and neck cancer.

DESIGN: A prospective blinded study over a six month period.

SETTING: University teaching hospital and tertiary referral center for cancer care.

PARTICIPANTS: This study included 15 consecutive patients, 11 males, 4 females; mean age 59 years; range 19 to 81 years.

MAIN OUTCOME MEASURE: All the patients underwent PET-CT and WBMRI scans for pre-therapeutic evaluation. Diagnoses were confirmed by histopathologic examination of endoscopic biopsy +/- whole surgical specimens.

RESULTS: The sites of the primary tumors were the larynx (n=6, 40%), pharynx (n=5, 33.3%), major salivary gland (n=2, 13.3%), unknown primary (n=2, 13.3%). Surgery was the treatment of choice in 6 patients (40%), including 5 neck dissections. Nine patients (60%) were treated with radiochemotherapy.

**CONCLUSION:** Although PET-CT seems to be superior to WBMRI in detecting nodal disease and distant metastases, it is still early to recommend it as a primary tool for pretherapeutic evaluation of head and neck cancers due to its limited availability and higher cost. WBMRI has the advantage of providing extensive information without ionizing radiation exposure.

3.20 Parathormone measurement in the immediate postoperative period:  
An accurate predictor of post-operative hypocalcaemia?  
Fitzgerald D., Timon C.

#### Objective

To assess postoperative Parathormone (PTH) level as a predictor of post-operative hypocalcaemia, and thus prolonged hospitalisation, in patients who have undergone total thyroidectomy.

#### Design

Prospective study over a six month period.

#### Setting

University Teaching Hospital, and Tertiary Referral Center for Cancer Care.

#### Participants

We studied thirty patients, over a six month period, who underwent total thyroidectomy.

#### Main Outcome Measures

Complete data was obtained for thirty patients. Post-operative PTH and Calcium measurements were obtained.

#### Results

One hundred per cent of patients with a post-operative PTH level greater than 20 pg/ml remained normocalcaemic in the days following surgery. No morbidity linked to calcium homeostasis occurred in any of these patients.

#### Conclusions

Hypocalcaemia is one of the main morbidities associated with total thyroidectomy which leads to prolonged inpatient stay. As PTH level greater than 20 pg/ml is an accurate indicator of post-operative normocalcaemia, patient discharge may be achieved earlier. PTH measurement may potentiate more cost effective management following total thyroidectomy.

### **Saturday 10<sup>th</sup> October 2009**

9.00 - 10.30 - RHINOLOGY / OTOLOGY / GENERAL (parallel session)
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9.00 Assessment of quality of life in single sided deafness BAHA patients  
Toner F.M., Brannigan I., Toner J.G.

Design – Retrospective questionnaire study

Setting – Tertiary referral centre

Participants – 18 patients who received a BAHA for SSD

Outcome Measures – Patients completed the Glasgow Benefit Inventory and a modified version of the manufacturer's questionnaire to assess how the intervention had altered quality of life. The GBI was used as it is a subjective patient orientated questionnaire especially developed to evaluate change in health status produced by surgical interventions, in this case the provision of a BAHA

Results – There were no significant peri/post-operative complications and all patients reported significant hearing benefit in both questionnaires. During the study period (2004-2009) there were 25 referrals, 18 went ahead with surgery, 5 declined due to cosmetic concerns.

Conclusions – This study confirmed as shown in previous studies that a BAHA is a safe, reliable and effective treatment for single sided deafness and makes a significant impact on the patient's quality of life. Using epidemiological data from the US it is estimated that there are approximately ~260 new cases of SSD per year in NI and ~600/yr in the RoI. Once referred 87 % of female and 45 % of male patients opt to go ahead with treatment. The combination of the effectiveness of this treatment and the low number of patients being referred compared to projected incidence would suggest that there is a need to increase awareness amongst Otologists and audiologists of the BAHA treatment option.

## 9.10 The Institute of ENT and Audiology – Lusaka, Zambia O'Driscoll K.

### Objective

There is no modern adequate ENT facility in most of sub Saharan African nations of which Zambia with a twelve million population is typical. Evidence has previously been presented demonstrating the great suffering, economic and social hardship brought about by the absence of this vital health service (BACO 2006, IOS 2007). The objective of this long term project is to create a structure and organisational design which can facilitate the development of a setting where modern ENT surgery can take place and where education of the specialty can take place.

### Design

The project has hinged on twice yearly visits by a team of voluntary ENT surgeons, anesethists, audiologists and medical engineers over a 5 year time frame. Donation of basic and specialist equipment was crucial. Identification of relevant government, hospital administrative and local NGOs was established to assure sustainability.

An audit of patient's seen, operative record and outcome measures was established.

Involvement of Irish Government agencies and NGOs was established at strategic times.

The development of a mobile ENT clinic the first of its kind was undertaken.

### Setting

Biet Cure Hospital Lusaka, Zambia

### Participants

Patients from clinics at University Teaching Hospital and Christian Blind administered ear clinics.

ENT Zambian Trust Fund Ltd. (est. 2004)

Christian Blind Mission – Hearing Rehabilitation Project

Beit Cure International

Ireland Aid

GORTA

Zambian Health Department

### Main Outcome Measures

- 1) Patient audit with respect to auditory rehabilitation and surgical outcome.
- 2) Development of an Institute of ENT and Audiology at the Biet Cure Hospital Facility
- 3) The development of the First Mobile ENT assessment facility.

### Results

Operative results

Major Procedures

Minor Procedures

Tympanoplasties 41      Grommets 116  
Mastoidectomies 29  
ESS 8  
Miscellaneous 14

Hearing Aid fitting (2004 - 2009) - 140

Mobile ENT clinic completion

Funding for an “Institute of ENT and Audiology”

Conclusion

The elements of a project for the development of a sustainable ENT facility are presented. This facility will create an environment for the safe practice of ENT surgery and teaching of our specialty in a part of the world devoid of adequate modern ENT services. It raises possibilities for the rest of sub-Saharan African Nations for similar projects.

9.20 Encapsulating brain derived neurotrophic factor into nanoparticles for rescuing spiral ganglion neurons in the cochlea

Glynn F., Tan J., Caruso F., Shepherd R.

OBJECTIVES

It is known that brain-derived neurotrophic factor (BDNF) is essential for auditory neurons to develop and maintain normal innervation of the inner ear. Our objective was to synthesize nanoparticles and sequester the neurotrophin within these particles. Then under physiological conditions demonstrate that the incorporated BDNF can be released from these particles over days and weeks. We will demonstrate that the released BDNF preserves its chemical integrity and biological activity.

DESIGN

Laboratory based scientific research

METHODS

Polymer chemistry was used to develop bio-degradable and bio-compatible nanoparticles which incorporate BDNF. The amount of BDNF released was quantified using an enzyme-linked immuno-adsorbant assay. Its biological activity was determined by its ability to differentiate SH-SY5Y neuroblastoma cell lines into neurons. Deafened adult wistar rats were then used as the animal model to assess the survival of the spiral ganglion neurons (SGN's) in the deafened cochlea.

RESULTS

Nanoporous polyglutamic acid particles were created using mesoporous silica and cross linker cystamine. A cumulative release of 5000 ng/ml of BDNF over a period of 70 days was achieved. The released BDNF successfully differentiated SH-SY5Y cell lines into neurons.

The nanoparticles were inserted into the scala tympani of four deafened adult rats. At two months post insertion of particles the animals were sacrificed. Histological analysis of the cochlea revealed significant increase survival of SGN's in 50% of the animals.

CONCLUSION

BDNF can be successfully sequestered into slow release bio-compatible bio-degradable nanoparticles. The released BDNF can be shown to increase the survival of SGN's at two months post deafening in the rat cochlea.

9.30 Chorda tympani sparing tympanic neurectomy for the treatment of sialorrhoea  
Pilkington D., Rao T., Nadig S., Toner J.G.

## Objectives

To determine whether a chorda tympani sparing tympanic neurectomy has a successful outcome in reducing sialorrhoea.

## Design

A retrospective study looking at all the cases of chorda tympani sparing tympanic neurectomy performed over the last 5 years.

## Setting

Ulster Hospital and Belfast City Hospital in Northern Ireland.

## Participants

18 cases (14 at the Ulster Hospital and 4 at the Belfast City Hospital).

## Main Outcome Measures

Examining patient case notes to determine improvement in post-operative drooling severity and frequency scale (DSFS) indicating reduction in sialorrhoea.

Within the first 6 months post operatively 100% of patients were symptom free. 80% of patients had a mild recurrence of symptoms. No adverse events were reported.

## Results

In all cases the drooling severity and frequency scale (DSFS) improved.

## Conclusions

Sialorrhoea can be treated surgically with tympanic neurectomy. Most tympanic neurectomies involve sectioning the tympanic nerve which supplies parasympathetic secretory fibres to the parotid gland, and the chorda tympani which provides parasympathetic secretory fibres to the submandibular and sublingual salivary glands. However, the chorda tympani also supplies taste to the anterior two-thirds of the tongue and as such transecting it will cause a loss of taste. The results from this retrospective audit show that symptoms of sialorrhoea can be improved without transecting the chorda tympani, and hence preserving taste sensation.

## 9.40 Incidental findings of semicircular canal dehiscence in CT scans of the temporal bone

Ullah S., Patil N., Choo M., Considine N., McNamara A.

### Introduction

Semicircular canal dehiscence is a syndrome characterised by dizziness and nystgmus associated with loud noise applied to the affected ear (Tullio phenomenon); or a sudden increase in pressure in the external ear canal (Hennebert's sign), or by the use of the Valsalva manoeuvre. The diagnosis of SSCD syndrome depends on the demonstration of a very small defect in the bony wall of the superior semicircular canal, and on clinical suspicion. Intact bone excludes the diagnosis. Superior semicircular canal dehiscence syndrome is identified based on characteristic symptoms, signs, and CT findings. No specific data regarding the incidence of such cases exists in Europe and North America.

### Aim

The condition is relatively newly described. The study will give an approximation of incidence of semicircular canal dehiscence in non-vertigo scans. It aims to explore the sensitivity and specificity of this finding.

### Method and Materials

A retrospective review of fifty CT scans of the temporal bone performed at this Hospital from 2003 to 2008 was undertaken. Patients were identified through a radiology database, and films were interpreted in a double blind manner by two senior consultant radiologists.

Findings were correlated with clinical profiles. It is noted that SSCD may be seen in asymptomatic scans, and hence this finding must be correlated with caution.

#### 9.50 Endoscopic cerebral spinal fluid leak repair using the 'Batten Technique' in large anterior skull base defects

O'Connor Ann, Lacy P.

**Objective:** The standard approach for repair of cerebrospinal fluid (CSF) leaks from anterior skull base defects is endoscopic transnasal. The 'Batten technique' is used to describe the approach in the repair of large challenging defects (>8mm) currently used in Beaumont Hospital.

**Design:** Chart review.

**Setting and participants:** The aetiology, surgical technique and outcomes for 11 patients between June 2006 and August 2009 were retrospectively evaluated.

**Main outcome measures:** Aetiology, defect size, location and CSF leak were all described. The procedure specific success rate and overall success rate of CSF leak repair were used as outcome measures in this study.

**Results:** The aetiology of the CSF leaks included: spontaneous in 2 (18%), traumatic in 2 (18%) and iatrogenic in 7 (63%). A number of different techniques were used, appropriate to the skull base defect. The batten technique for larger defects is described. The overall procedure-specific success rate for all techniques in this series to date is 73% and the overall success rate is 9/11 (91%).

**Conclusion:** The initial results for this small cohort of patients with skull base defect repairs are encouraging. Use of the 'batten' technique has improved the success rate in managing larger defects.

#### 10.00 Nasal inverted papilloma: outcomes of open versus endoscopic surgical resection Moran M., Leydon P.J.

##### Objectives

This study aims to examine the outcomes of different surgical approaches for resection of inverted nasal papilloma.

##### Design

This is a retrospective review of 13 cases of inverted nasal papilloma.

##### Setting

The patients included in the study were treated at Craigavon Area Hospital (or related outlying hospitals) between 1990 and 2007.

##### Participants

Case note review of patients diagnosed with inverted nasal papilloma was conducted.

##### Main Outcome Measures

The outcome measures of the study were length of stay in hospital for the surgical procedure and recurrence of inverted nasal papilloma, as detected by clinical examination and further biopsy.

##### Results

The study group consisted of eleven males and two females who had a mean age of 56.4 years. The follow-up period ranged from one to nine years, and of the thirteen patients reviewed, eight had endoscopic resection of nasal inverted papilloma with the remaining five undergoing an open approach procedure. Mean length of hospital stay was 3.8 days for the cohort who underwent endoscopic surgery and 5.2 days for the open procedure

group. There was no tumour recurrence in the endoscopic resection group and only one case of recurrence in the open surgery group, which occurred nine years after the original diagnosis.

#### Conclusions

Although inverted nasal papilloma represents a small proportion of head and neck tumours, it has been valuable to review the benefits and drawbacks of different surgical approaches. Endoscopic surgery can be seen to have recurrence rates similar to that of open surgical resection techniques, and in addition represents a more cost effective option with reduced length of hospital stay.

### 10.10 The effects of sinonasal morphology on transport mechanism in the maxillary sinus

Blenke E., Rennie C.E., Hood C.M., Schroter R.C., Doorly D.J., Tolley N.S.

#### Objectives

To improve our understanding of the morphology of paranasal sinus ostia and hence enhance our understanding of pathophysiological processes mediating sinonasal disease, in which nitric oxide (NO) is believed to play a role. Precise measurements of the relatively inaccessible sinuses and their ostia are necessary to determine transport mechanisms between the sinus and nasal cavity.

#### Design

Imaging-based 3-D modelling of sinonasal airways.

#### Setting

Research laboratory.

#### Participants

Based on 4 CT scans of patients with no sinus pathology airway geometries were computationally reconstructed, and detailed measurements made with the aid of image segmentation tools (Amira 3.1), and a CAD package (Rhinceros).

#### Main outcome measures

The dimensions are compared with the literature. NO exchange times are estimated.

#### Results

The main ostium has a mean ostial arc length of 8.4 mm and a mean cross-sectional area (CSA) of 10 mm<sup>2</sup>, respectively 5.5 and 11 mm<sup>2</sup> for the accessory ostium. The mean separation of main and accessory ostia is 9 mm. Estimated diffusion exchange times were 20 minutes or less and estimated flow exchange times were 3-90 seconds, depending on the specific morphological details of the geometry.

#### Conclusions

The presence of accessory ostia appears to have a major influence on maxillary sinus transport mechanisms. Gas exchange between a single ostium sinus and the nasal cavity is limited by diffusion, whereas the presence of an accessory ostium will cause a net flow through the sinus and reduce the exchange time by orders of magnitude to tens of seconds.

### 10.20 Olfactory airflow patterns and human olfactory capability

Hanna B.C., Bailie N., Gallagher G., Cole J.

Objective: To characterize airflow patterns in the olfactory region of the nose and relate them to the subjective experience of olfaction

Design: Prospective cohort study

Setting: Antrim Area Hospital, Northern Ireland

Participants: 8 patients with predominant symptoms of nasal blockage



Main Outcome Measures: Computational Fluid dynamics was used to derive the airflow patterns in the olfactory area from CT scans of the nose and paranasal sinuses. The sniffin' sticks® extended olfactory test was used to measure olfactory capability in each nasal cavity before and after surgery

Results: Recirculating airflows were observed in the majority of nasal cavities and varied in their position and in their dominance of the airflow. Olfactory capability was not observed to be dependent on the development of a recirculating airflow. A decrease in the intensity of airflow streamlines in the olfactory region related to improved olfactory capability in most cases.

Conclusions: The development of recirculating airflow in the olfactory region does not appear to be as advantageous for olfaction as previously proposed. Decreased intensity of airflow streamlines in the olfactory region of previously blocked noses appears to be related to improved olfactory capability, but this relationship is not sufficiently robust to make individual predictions concerning airflow and olfaction after nasal surgery.

9.00 - 10.30 - HEAD & NECK (parallel session)
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9.00            Bilateral axillary nodal metastasis in head and neck cancers

Ryan S., O'Dwyer T.P.

#### OBJECTIVE

Head and neck cancers in general follow a predictable pattern of metastasis with spread to cervical lymph nodes most common. Axillary node metastasis, however, is an extremely rare occurrence. We present 3 rare cases of axillary node metastasis in patients with different primary neoplasm of the head and neck.

#### DESIGN & PARTICIPANTS

A retrospective review of 3 patients diagnosed with axillary lymph node metastasis from primary head & neck tumours was performed.

#### RESULTS

A 62 year old male, with left pyriform fossa T1N2c poorly differentiated SCC was found to have metastasis to both the right and left axilla 3 and 9 months respectively following surgery and chemoradiotherapy. The patient underwent axillary clearance and is currently being followed up. The second case involved a 49y old lady with invasive poorly differentiated follicular thyroid carcinoma (Insular type). Following total thyroidectomy, clinical follow-up revealed unilateral left axillary metastasis for which axillary clearance was performed. Finally, the third patient, a 57 year old male, who was initially diagnosed with T4N0 SCC of the larynx, received primary radiotherapy but developed local recurrence 6 months later. Total laryngectomy was carried out. Six months post surgery the patient developed bilateral axillary metastasis and despite repeat radiotherapy passed away one year later

#### CONCLUSION

Axillary lymph nodes metastasis from primary head and neck cancers is extremely uncommon. This is the first report of axillary lymph node metastasis from either follicular cell thyroid carcinoma or pyriform fossa SCC and is only the second study to demonstrate bilateral axillary metastasis from head and neck cancers. Distant metastasis is associated with poor prognosis and is an important source of long-term morbidity and mortality. Recognition of this phenomenon is crucial in the evaluation of such patients for appropriate therapeutic decision and treatment planning.

### 9.10 10 year retrospective study of mucosal malignant melanoma in the Royal Victoria Hospital (RVH) Head and Neck Department 1999-2009

Carr C., Farnan T., Primrose W.

**Objectives:** Head and neck mucosal melanoma represents 1% of head and neck melanoma. Currently overall survival is poor (5-20% at 10 years) due to late presentation and early haematogenous spread. Frequency and outcome have not been previously studied in the Northern Irish population.

**Design:** Retrospective case series.

**Setting:** RVH ENT service

**Participants:** All cases of head and neck mucosal melanoma in RVH 1999-2009

**Main outcome measures:** Cohort demographics; symptoms at, time to, site of and stage at presentation; treatment and survival were analysed

**Results:** 11 patients (5 male and 6 female), mean age of onset 65.6 (S.D.:6.3) years were included. Epistaxis was the most common presenting symptom (54.5%) followed by nasal obstruction (27.3%) and swelling (18.2%). Median time to presentation was 8.1 years. 90.9% presented with sinonasal tumours of which 54.5% were stage I, 9.1% stage II and 36.4% Stage III. With median follow up 3.6 years (0.3-9.0 years) we observed a 63.6% overall survival. Females did better than males ( $p=0.03$ ) but no difference in survival was observed in those treated surgically ( $p=0.12$ ) or in those presenting with distant metastases ( $p=0.69$ ).

**Conclusions:** The delay in presentation probably contributes to the high proportion of patients presenting with stage III disease that undoubtedly is deleterious to overall survival. Highlighting the importance of accurate diagnosis and prompt optimal treatment from time of presentation.

### 9.20 Endoscopic pouch stapling: An audit of symptom control and patient satisfaction in the immediate and late post operative period

Davies K.

**Objective:** To evaluate the success of the procedure in terms of presenting symptoms, symptom relief in the early and late post operative period, patient satisfaction, recurrence rate and follow up.

**Study Design:** Retrospective study involving 14 patients who underwent stapled diverticulotomy over a 10 year period. Clinical notes were reviewed for operative details, complications and length of stay. A telephone questionnaire was used to determine patient symptoms pre operative. Patient satisfaction was measured using a numerical analog scale.

**Setting:** Two university teaching hospitals and tertiary referral centres

**Participants:** 14 patients who underwent stapled diverticulotomy, 8 males and 6 females, mean age of 68 years ranging from 52 to 87 years.

**Main outcome/ measures:** Of the 14 patients surveyed 79% were symptom free at 2 year follow up. The remaining 21% needed repeat endoscopic surgery and then went on to be symptom free. The mean inpatient length of stay was 3 days.

**Results and Conclusions:** Endoscopic stapling offers rapid recovery time. Patients have the advantage of early oral intake; shorter hospital stay and excellent symptom control. Recurrences have been documented but repeat endoscopic procedures may be undertaken without difficulty.

### 9.30 The use of optical coherence tomography in the evaluation of benign, pre-malignant and malignant lesions of the upper aero-digestive tract

O'Connor T., Keogh I.J.

**Objectives:** Optical Coherence Tomography (OCT) is an emerging, safe, non-invasive, non-contact imaging technology capable of high resolution imaging of mucosal epithelium. OCT is analogous to ultrasonography but uses near infrared light, to produce images with a resolution approaching that of optical microscopy. OCT is currently being used in both Ophthalmology and Dermatology but its use in the upper aero-digestive tract has been limited to date.

**Design:** In vitro study.

**Setting:** A regional Head & Neck Cancer Centre.

**Participants:** Patients with benign, pre-malignant and malignant lesions of the upper aero-digestive tract.

**Main outcome measures:** Comparison of Optical Coherence Tomography findings prior to biopsy with subsequent histological findings.

**Results:** A 1300 nm swept source laser adapted for endoscopic use has been integrated into a hand held probe, which relays images to an OCT system contained in a mobile endoscope tower. It is anticipated that this system will have a superior image pixel resolution of less than 10  $\mu\text{m}$ . Its use as an endoscopic screening device would enable non-invasive, high resolution imaging of the upper aero-digestive tract. We plan to use the endoscopic OCT system to evaluate normal mucosa, benign, pre-malignant and malignant lesions of the upper aero-digestive tract. This will be performed with photo documentation and assessment of lesions with OCT prior to biopsy. The micro anatomical information provided by OCT will be compared to the subsequent histopathological findings and diagnosis.

**Conclusions:** Optical Coherence Tomography is an exciting, safe, non-invasive technology with significant future potential for diagnostic imaging of the mucosa of the upper aero-digestive tract.

#### 9.40 The effects of intraoperative hypothermia on free and pedicled flaps in head and neck cancer patients

Mehanna R., Timon C.

**Objectives:** To establish if intraoperative hypothermia correlates with increased postoperative morbidity in patients undergoing reconstruction with free and pedicled flaps following resection of head and neck cancers.

**Design:** Retrospective chart review for patients undergoing flap reconstruction in our institution over the last 5 years.

**Setting:** Academic tertiary care hospital

**Participants:** 80 patients who underwent resection of head and neck cancers and required reconstruction with either a free or pedicled regional flap.

**Main outcome measures:** To establish the type and rate of postoperative complications, as well as their correlation with hypothermia as measured by the anaesthetists intraoperatively.

**Results:** Of the 80 patients, 6 experienced greater than 50% flap loss/dehiscence. 7 experienced myocutaneous fistulas, and 12 had anastomosis compromise. 25 patients had to return to theatre within the first two postoperative weeks as a result, and of these 15 patients required revision flaps to close the defect. 12 patients experienced postoperative atelectasis, 15 patients developed pneumonia, 9 postoperative aspiration, and 7 had an altered diet postoperatively including a pureed or liquid diet.

Conclusions: Hypothermia is a known cause of increased intraoperative blood loss and postoperative coagulopathy. The presence of hypothermia at any point during the surgery correlated with an increased risk of postoperative complications. Thus, hypothermia is an independent risk factor for the development of postoperative morbidity in patients undergoing flap reconstruction for head and neck cancers.

#### 9.50 PET/CT and the N0 neck Lennon P., O'Dwyer T.P.

Objectives: To assess the use of PET/CT in patients with an initial diagnosis of T1-4 N0 head and neck cancers.

Design: A retrospective study of the Mater N0 head and neck database, cross referenced with patients having PET/CT scans.

Setting: An adult tertiary otolaryngology centre.

Participants: 125 patients between January 2005 and September 2009 diagnosed with head and neck cancer.

Main outcome measures: Of the 125 patients diagnosed with N0 disease, 61 patients had PET/CT scans. 31 of these scans were for staging.

Results: PET/CT were highly accurate in diagnosing nodal metastases in N0 head and neck cancer, however there was a small number of both false positive and negative results.

Conclusions: Although a superior imaging modality, the surgical management of the N0 neck should therefore not be based on PET/CT findings alone.

#### 10.00 Results of transoral laser microsurgery for the treatment of early glottic cancer Mehanna R., Kinsella J.

Introduction: Radiation remains the most commonly used treatment modality for early glottic cancers. However, the advent of CO2 laser marked a new era in organ sparing surgery with preservation of function.

Objectives: To determine if transoral laser microsurgery (TLM) is the best treatment modality for early glottic tumors.

Design: Retrospective chart review

Setting: Academic tertiary care hospital

Participants: A sample of 18 patients who underwent TLM for the treatment of early histologically proven squamous cell carcinoma of the larynx. Surgery was performed by a single surgeon.

Main outcome measures: Cure rate of using TLM for early glottic tumors. The need for further resection and/or different treatment modalities including radiotherapy and/or open surgery.

Results: Of the 18 patients that underwent TLM, 5 patients were staged as T2 tumors, 9 were T1 tumors, 2 had carcinoma in situ, and 2 were found to have moderate dysplasia in the resection specimen. Of the 18 patients, 5 required subsequent radiotherapy. Of these 5 patients, 4 were staged as having T2 tumors. Again of the 5 patients requiring radiotherapy, 3 underwent total laryngectomies as well.

Conclusions: TLM offers a time and cost effective treatment option for early glottic cancers with minimal postoperative morbidity. In the case of carcinoma in situ and T1 tumors, TLM was found to be curative; however this was not the case with T2 tumors. Surgeons offering this new treatment need to be constantly auditing their figures and giving patients appropriate advice.

## 10.10 Endoscopic gene and drug delivery for intraluminal tissues and tumours –

A new development

Sadacharam M., de Kruijf M., Forde P., Cogan L., Soden D., O'Sullivan G.C.

**Objectives:** Electropermeabilisation of solid tumours renders the cells permeable to impermeant molecules. This is effective for the treatment of experimental murine tumours and human cutaneous malignancies, and for delivery of non-viral oligonucleotides in gene therapy. In murine, porcine and canine models, we have validated the efficacy of intraluminal electrochemo- and gene therapies using a novel electrode (MITAMED device), quantified gene expression in intraluminal tissues, and evaluated the utility of electrochemotherapy in canine rectal cancers.

**Design:** We evaluated electrochemotherapy and beta galactosidase reporter gene expression in murine tumours, endoscopic electrogenetherapy of gastrointestinal mucosal tissues in pigs, and the efficacy of endoscopic electrochemotherapy on spontaneously obstructing rectal cancers of dogs.

**Setting:** Full licensing and ethics approval were obtained for these studies.

**Participants:** Electrochemotherapy was performed on Balb/C and Nu/Nu mice (n=120), while intraluminal gene delivery studies were conducted on Land Race pigs (n=35). The efficacy of electroporation-assisted drug delivery was assessed on 2 dogs with spontaneously occurring obstructing rectal tumours.

**Main outcome measures:** Endoscopic gene delivery was confirmed by staining for the reporter gene, beta galactosidase. The efficacy of drug delivery in the murine tumours was validated by comparison of controls and treated tumour. Canine tumours were assessed by means of tumour regression monitored through colonoscopy.

**Results:** In all murine tumours (n = 120), there were complete responses. Gene expression was clearly evident in all treated tissues. Sporadic obstructing rectal cancers in dogs responded well to endoscopic electrochemotherapy.

**Conclusion:** The first case of endoscopic mediated gene and drug delivery via electroporation was successfully demonstrated in intraluminal tissue and tumour types, representing a novel mechanism for surgical minimally invasive intervention.

**Discussion:** This is a new, safe endoscopy-based treatment system that could be applied to humans for tumour treatment or gene therapy.

## 10.20 Induction of epidermal growth factor receptors family and mucin expression by eosinophil granule proteins in epithelial cells

Amin M., Walsh M.T., Connell K., Costello R., Walsh M.

**Objectives**

To determine the effect of the eosinophil cationic granule proteins major basic protein (MBP) and eosinophil peroxidase (EPO) on expression of the epidermal growth factor receptors (EGFR) HER1 and HER2 and consequently mucin gene expression in neuroblastoma and epithelial cells.

Eosinophil accumulation and degranulation at local inflammatory sites is a feature of allergic rhinitis and nasal polyposis. Eosinophils and their granule proteins have been implicated in cell and tissue remodelling and have been shown to communicate with other cell types at inflammatory sites, including epithelial cells and nerve cells. The HER family of receptors, including HER1 and HER2 are activated by EGF ligands. They are up-regulated in rhinosinusitis and nasal polyposis and in several human cancers. Activation of HER receptors leads to the production of mucin. We hypothesise that eosinophil cationic

granule proteins including MBP and EPO will change levels of expression and activation of the HER family and consequently of mucin genes.

#### Material and Method

IMR32 neuroblastoma cells and 16HBE14o bronchial epithelial cells are cultured for synthesis of mRNA and hence cDNA for real-time PCR for HER1, HER2 and mucin genes (MUC1, MUC4 and MUC5AC). Membrane protein will be prepared for Western blotting for EGF receptors, HER1 and HER2.

#### Results

EPO and MBP induce changes in HER1 and HER2 gene and protein expression as well as in the MUC1 and MUC4 mucin genes.

#### Conclusions

Eosinophil granule proteins induce EGFR expression with potential consequences for mucus over production in asthma and nasal polyposis.

## **POSTERS**

Objectives:

Systematically review the current literature with regards to the otological manifestations of Autistic Spectrum of Disorders. There is no current review in the literature of the otological manifestations in ASD.

Methods:

The following databases were searched for articles pertaining to the otological manifestations of Autistic Spectrum Disorders: MEDLINE, EMBASE, CURRENT CONTENTS, PSYCHLIT, CINAHL and HEALTHSTAR.

Results:

Autistic Spectrum of Disorders (ASD) is a group of neurodevelopmental disorders characterised by impairments in socialisation, communication and behaviour. Patients with this disorder have an increased incidence of peripheral and central otological pathology, which plays a key role in the behavioural, communication, and social aspects of this disease. ASD individuals appear to have a higher incidence of middle ear infections, abnormalities of the cochlear nerve and profound sensorineural hearing loss. Recent research has shown neurodevelopmental abnormalities affecting the auditory brainstem and cortical areas. In the brainstem there are abnormalities of both the classical and non-classical auditory pathways. In the Cortex, there appears to be developmental re-organisation of right-left hemispheric functions with the right hemisphere adopting functions usually assigned to the left. The primary and association auditory cortices and voice selective areas of the brain have also been found to be abnormal. These specific anomalies of the peripheral and central auditory pathways have a direct impact on speech, language function and behaviour in ASD.

Conclusion:

The Otolaryngologist plays a key role in the diagnosis and management of individuals with ASD. A detailed understanding of the auditory pathology, which can affect individuals with these disorders, can maximise developmental outcomes and improve patient outcome.

The role of the ENT Clinical Nurse Specialist with regards to tracheostomy care at Alder Hey Childrens NHS Foundation Trust.

Alison Flynn, RGN, RSCN, BA (Hons)  
Paediatric Clinical Nurse Specialist ENT  
R.W. Clarke  
BSc, DCH, FRCS, FRCS (ORL)  
Consultant Paediatric Otolaryngologist.

Objective

The Clinical Nurse Specialist in ENT role is to train health professionals and parents in the acute and community based setting, with regards to skills in all aspects of tracheostomy care and also to develop liaison service and care packages to facilitate this.

Design

Parent's days were established to discuss aspects of starting the process of decannulation in the home.



Evidence based competencies in tracheostomy care, training packages for professionals and for parents were developed.

Multi disciplinary training days and mentored practice were established.

Setting

Acute tertiary care paediatric hospital, community and home environment.

Participants

Children, parents, medical, nursing and allied health professionals from the North West, North Wales and Isle of Man.

Main outcome measures

To improve service with regards to the decannulation process and the training needs and standards of care that health professionals and parents receive in the acute trust and community settings.

Results

Children and their families are far more relaxed with the tracheostomy care and decannulation in the home setting based on the feedback received.

Results show from the training aspect that the number of wards achieving competence in tracheostomy care increased from 2 to 7.

In the community it was evident that the impact of competency based training was having a beneficial effect in the continuity and standard of care received.

Conclusion

The project resulted in improved care and satisfaction for children, their parents and the organisation.

To investigate if the effects on pharyngeal diameter of tonsillectomy have any impact on formant values.

Heffernan C.

Design:

Prior to tonsillectomy operation formant values were estimated from sustained vowel /a/ samples. At surgery measurements were taken before and after dissection to establish the resultant changes on pharyngeal dimension. On the first post operative day with pain masked by analgesia the same acoustical measurements were repeated and again at 6 weeks post operatively

Setting:

The Royal Victoria Eye and Ear Hospital, Dublin, Ireland.

Participants:

All adult undergoing tonsillectomy were enrolled in this study.

Main Outcome Measures:

The intertonsillar distance was measured as the narrowest vertical dimension of the pharynx. The distance between the tonsillar beds was measured to quantify the change in pharyngeal dimension post-operatively. Tonsils weight and volume were also recorded. Formant values were estimated using linear predictive coding programme. A 100ms segment of the mid portion of the vowel was selected to obtain average values for all recordable formants.

Results:

Fifteen patients were enrolled in the study with complete post operative follow up. There appeared to be small and transient effects on F3 values only. There were no significant or lasting effects on F1 or F2 values.

Conclusions:

Tonsillar size and in particular the medial exophytic pharyngeal portion of the tonsil seems to have no impact on the dynamics of vowel formation. This work suggest that this surgery has little impact on the higher order resonances and hence has no impact on the professional voice user.

#### Climatic change and epistaxis

Dr Monica Istovan, Fionnuala Cuffe, Prof Aongus Curran

St Vincent's University Hospital / Royal Victoria Eye and Ear Hospital /

UCD , Dublin, Ireland

**Introduction:** Epistaxis is a common problem facing otolaryngologists, with a whole variety of aetiological factors. With a peak incidence in the winter months, it is postulated to be secondary to the increased exposure to viral pathogens, with climatic change considered a possible aetiological factor.

**Objective:** To determine if the frequency of epistaxis in the South Dublin area is correlated with variations in standard meteorological measurements such as barometric pressure, humidity, air temperature, dew point and wind speed.

**Method:** Patients presenting to the A@E unit in RVEEH and SVUH in 2008 were studied. The frequency of presentation of epistaxis was correlated with these common meteorological measurements.

**The results:** will be presented and discussed.

#### The Natural history of Globus Pharyngeus

Xenophon Kochilas, Tony O'Connor, Ivan J.Keogh.

Academic Department of Otorhinolaryngology & Department of Otolaryngology, Head & Neck Surgery, Galway University Hospital, Galway.

**Objectives:** The aim of the current study was to evaluate the natural history of globus pharyngeus.

**Design:** Firstly, a retrospective review was performed of the clinical details of patients diagnosed with globus pharyngeus in our department from January to December 2004. Secondly, in August and September 2009, 5 years later, telephone contact was made with these patients to review the status of their globus pharyngeus during the 5 years since diagnosis.

**Setting:** A regional Otolaryngology Department.

**Participants:** 50 patients.

**Main outcome measures:** Symptoms of globus pharyngeus during the intervening 5 year period.

**Results:** Mean age at diagnosis in 2004 was 55.5 years (range 14-89 years), comprising 21 males and 29 females. Symptoms at presentation included dysphonia (42%), throat discomfort (26%), heartburn (20%), foreign body sensation (18%), lump in the throat (12%) and irritating cough (10%). 32% of patients had an abnormal fiberoptic nasopharyngoscopy which detected signs of laryngopharyngeal reflux most commonly. 26% of patients were commenced on anti-reflux medications at the time of diagnosis while 20% of patients were referred to other specialities for further assessment (gastroenterology 16%, speech therapy 2% and neurology 2%). The results of the telephone questionnaire performed to assess these patient's symptoms 5 years later, are currently being obtained

but aim to identify whether symptoms continued, improved or deteriorated during the intervening period.

Conclusions: This study outlines the natural history of symptoms in patients with globus pharyngeus.

Preauricular sinus – rationale of cartilage excision

Kulasegarah, J. & Fenton, JE.

Department of Otolaryngology, Head & Neck Surgery

Midwestern Regional Hospital, Limerick

Objective: Incomplete excision of preauricular sinus (PAS) results in high recurrence rate. Our aim was to determine the rationale of cartilage excision to prevent recurrence of PAS.

Design: A retrospective review between January 2004 and December 2008

Setting: Midwestern Regional Hospital

Participants: 5 preauricular sinuses were reviewed

Main outcome measures: Histological specimens were examined to determine the association of PAS to the portion of cartilage excised.

Results: All patients had the supra-auricular approach to incorporate the punctum on the skin, the sinus tract and a portion of the overlying cartilage. Histological evaluation revealed sinus lined by stratified squamous epithelium adherent or close to the portion of cartilage excised. Mean length of tract excised was 1.64cm. There was no evidence of recurrence in all patients with a mean follow-up period of 17.6 months.

Conclusion: Complete excision of the pit, sinus tract and cartilage provides the only definitive way to prevent recurrence of PAS.

A retrospective review of paediatric tonsillectomy, surgical techniques, intra-operative blood loss and postoperative complications

Khaled Mukassabi, Mr. L O'Keeffe, Prof. I Keogh

Objectives

The objectives of this study were to review our practise of tonsillectomy amongst paediatric patients (age < 15 years), to compare the surgical techniques used, and to record intra-operative blood loss and postoperative complications.

Design

This study is a retrospective review of the charts of all children who had a tonsillectomy in the ENT department of Tullamore Regional Hospital over the twelve-month period (Jan - Dec 2006).

Inclusion and exclusion criteria

Healthy children aged 15 years old and under were included in the study. Children who had a concomitant surgery (e.g., adenoidectomy, nasal surgery) were excluded from the study. Children with coagulation disorder and sickle cell anaemia were also excluded.

Results

Ninety-seven healthy children who underwent tonsillectomies were included in this audit. Fifty-five (56.7%) were male, and 42 (43.3%) were female. The age range was between 3 and 15 years (mean 8.8 years  $\pm$  3.3 SD); we reported the rate of secondary post-tonsillectomy bleeding at 3.1%. The amount of blood loss ranged between 3 and 130 ml. The mean blood loss, was 27.4 ml, 8.5 ml, and 6.5 ml in cold, hot, and coblation

dissection, respectively. a Kruskal-Wallis test was used, which showed that the differences between the means are statistically significant ( $p = 0.001$ )

#### Conclusion

The three methods of tonsillectomy used in our institute are safe; there is no difference in the rate of complications among them; however, cold steel dissection showed more blood loss than hot dissection and coblation. With the advances in anaesthetic techniques, medications and post-operative care, paediatric tonsillectomy should be considered a day-case procedure in our practice.

#### Investigation of the impact of thyroid surgery on vocal cord steadiness

D Lucey, C Timon, M Rafferty

Alterations in a patient's voice can occur as a consequence of thyroid and parathyroid gland surgery. This rare but well recognized complication is usually due to some form of iatrogenic trauma to either the recurrent or superior laryngeal nerves. Approximately 15% of these patients report persistent deleterious alteration to their vocal performance after surgery in the absence of any clinical signs of a laryngeal nerve injury. Some authors have reported that some of these patients also report swallow and other sensory disturbances simultaneously. These observations have given rise to the hypothesis that thyroid surgery may, in some individuals, interrupt a complex nerve plexus that contributes not just to voicing but also the muscle innervations of the superior constrictor and cricopharyngeus muscle. In order to investigate this we recorded sustained vowel productions from patient before and two days speech studio and/after thyroid and parathyroid surgery. Laryngograph - the technique of Linear Predictive Coding (LPC) were employed to estimate the formant values for each person. The value of F2 was taken to represent the dimensions of the supraglottic vocal tract. The degree of millisecond change in F2 was used to estimate the geometric stability of the vocal tract. Twelve patients were compared with a control population whom underwent surgery that would have no negative effect on voice. A significant difference was found between those who underwent thyroid surgery and those who underwent other forms of surgery.

#### Cartilage Tympanoplasty : Indications, outcomes and techniques

D Lucey, R McConn-Walsh

The purpose of this study is to evaluate cartilage tympanoplasty as a means of management for difficult ears (cholesteatoma, recurrent perforation and atelectasis). This is a retrospective study of patients undergoing cartilage tympanoplasty by a single surgeon. The results of over thirty patients are presented. The parameters include changes in pre and post-tympanoplasty audiograms, recurrence rate, perforation rate and other complications. In addition, we illustrate the operative technique utilised in our department. We conclude that the outcomes for cartilage tympanoplasty are excellent for a variety of conditions and compare favourably with traditional techniques.

#### Paediatric tracheostomy-a 5 year experience at Alder Hey Children's Hospital

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Objective: To assess the indications, complications and outcomes of paediatric tracheostomy and compare with previous published data from the same hospital.

Design: Retrospective review of hospital records between 2004 and 2009.

Setting: ENT department in tertiary referral university paediatric hospital.

Participants: All children requiring airway support with a tracheostomy.

Main outcome measures: Indications, morbidity and mortality and outcomes.

Results: 108 children underwent 109 tracheostomies (1 child had 2). The median age at cannulation was 1 yo, (range 1d-18yo). 57(52.3%) tracheostomies were done in children less than 1 yo.

The main indications were congenital birth defects (58, 53.2%), neuromuscular (29, 26.6%), long term ventilation (12, 11%) and acquired airway lesions, (10, 9.2%).

The main morbidities were wound problems (granulations, infection) (8.3%) and tracheocutaneous fistula (3.6%). There was 1 accidental decannulation. that required reoperation.

There were 20 deaths, due to the underlying medical problems and not related to the tracheostomy.

Successful decannulation was achieved in 18 patients until now.

Conclusions: Pediatric tracheostomies performed at Alder Hey Children's Hospital between 2004 and 2009 were associated with a low incidence of procedure-related mortality and morbidity. The majority of procedures were performed to treat upper airway obstruction, most commonly caused by congenital birth defects. Our current data continues to show the trend of the previously published results in our hospital with an improvement in morbidities and no tracheostomy related deaths.

Tracheocutaneous fistula following paediatric tracheostomy-a 14 year experience at Alder Hey Children's Hospital.

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Objective: To assess the rate of tracheocutaneous fistula requiring surgical repair.

Design: Retrospective review of medical records between 1995 and 2009.

Setting: ENT department in tertiary referral university paediatric hospital.

Participants: All children requiring airway support with a tracheostomy between 1995 and 2009 and subsequently requiring closure of tracheocutaneous fistula.

Main outcome measures: Rate of tracheocutaneous fistula, complications and outcomes following surgical repair.

Results: 193 children underwent 198 tracheostomies (2 in 1 children and 3 in 1 child). 73 children were successfully decannulated until now and 23 children (11.6%) required subsequent surgical closure of their tracheocutaneous fistula. The median age at tracheostomy was less than 1 year old, and the median age at decannulation was 4 years old, (range 2-9yo). Surgical repair, consisting of a fistulotomy and three layer closure of the tracheocutaneous fistula, was undertaken 6-12 months after decannulation. There were 4 minor complications in the postoperative period (wound infection, haemorrhage and early recurrence) and no major complications. None of the patients have experienced any degree of significant airway stenosis and there was no need for a repeat tracheostomy in any of the tracheocutaneous fistula closure patients. The cosmetic results were deemed to be good.

Conclusions: Our rate of tracheocutaneous fistula compares well with the reported rates in the literature (13-43%). There appears to be a significant relation to age at tracheostomy and duration of tracheostomy.

Clinical update on 3 children treated with intralesional cidofovir for severe recurrent respiratory papillomatosis at Alder Hey Children's Hospital

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Objective: To assess the efficacy of cidofovir intralesional therapy in treating severe recurrent respiratory papillomatosis in children.

Design: Prospective observational study. Three injections were performed at 2 weekly intervals (one cycle) and the patients subsequently reassessed at 2 monthly intervals or as symptomatically required.

Setting: ENT department in tertiary referral university paediatric hospital.

Participants: Three children with recurrent respiratory papillomatosis who at the start of the study were requiring surgical debridement at least every 4 weeks.

Main outcome measures: The success of therapy was measured by the trend in the severity score and frequency of required surgical interventions after the end of the cidofovir treatment.

Results: The patients were followed up between 12- 49 months after the last Cidofovir cycle.

In one patient there was impressive response and has now been discharged, free of disease.

In the second patient there was transient response after each Cidofovir cycle (6 to date), but no significant decrease in the frequency of surgical interventions.

The third patient had a compromised treatment regimen (one incomplete cycle). There was a decrease in the severity score and the frequency of surgical interventions.

None of the patients had any local or systemic side effects.

Conclusions: The small numbers in this study don't allow us to draw any conclusions regarding the efficacy and safety of intralesional cidofovir in children with severe recurrent respiratory papillomatosis.