doi:10.1017/S0022215116006046

ID: IP108

Vibrant Soundbridge – Lessons Learnt Over Two Decades

Presenting Author: **Jeyanthi Kulasegarah**

Jeyanthi Kulasegarah, Nina Mistry, Huw Cooper, Stuart Burrell, Christopher Coulson, Konstance Tzifa, Richard Irving

Queen Elizabeth Hospital Birmingham

Learning Objectives: Appropriate patient selection for middle ear implant is important.

Introduction: The Vibrant Soundbridge (VSB) is an active middle ear implant that is currently used in patients with conductive, sensorineural, and mixed hearing loss. Initially it was intended for adults with moderate to severe sensorineural hearing loss with previous experience with conventional hearing aids. Since 2006, it was also used for conductive hearing loss and from 2009 onwards, the indication was extended to children. The first implantation in UK was performed in 1997 in our department.

Objective: Our experience of VSB over a period of almost two decades will be presented.

Method: A retrospective survey of two groups of patients: Group I (VSB inserted 1997–2002) and Group II (VSB inserted 2011–2015) were conducted. We looked at indications, surgical and audiological data between the two groups. Long-term follow-up data presented for Group I.

Results: In total 28 VSB were implanted between 1997 and 2015: 14 patients in Group I and 12 patients in Group II (2 patients with bilateral VSB implants). In Group I, all 14 patients had the VSB coupled to the incus for moderate to severe sensorineural hearing loss. Among them, 6 patients are still VSB users. One patient went on to have a cochlear implant 9 years after VSB surgery due to progressive hearing loss. In Group II, all apart from one patient is a VSB user 12 months post implantation. Two patients had round window placement and one patient had a stapes placement, the remaining 11 VSB were the conventional incus coupler. The indications included conductive and mixed hearing loss for chronic middle ear disease (4 patients) and obliterative otitis externa (2 patients).

Conclusion: The VSB implantable hearing technology has been proven to be safe, effective and highly desirable option for patients with conductive, mixed and sensorineural hearing loss. With improvements in patient selection and technology, patient outcomes have improved over time.

doi:10.1017/S0022215116006058

ID: IP109

Three-dimensional displacement of an endoscope - preliminary result

Presenting Author: **Yasuomi Kunimoto**

Yasuomi Kunimoto, Taihei Fujii, Hiroaki Yazama, Junko Kuya, Hiromi Takeuchi

Tottori University

Learning Objectives:

Introduction: Recently, an endoscopic ear surgery is widely spreading. During the endoscopic surgery, the operator holds an endoscope with one hand and manipulates the instruments with another hand. The fixation of the endoscope could be unstable especially for operators who do not have enough experience of the endoscopic surgery. Unstableness of the endoscope can cause the surgical difficulty, furthermore, increases the complication by contacting to the surrounding important structures. Because the intraoperative monitor is 2-dimension, we could not measure how far the endoscope is displaced parallel to the visual axis. In this study, we objectively measured the 3-dimensional displacement of the endoscope in several situations and assessed the appropriate fixation.

Methods: The displacement of the endoscope tip was measured using the 3-dimensional motion capture software. The measurements were performed in several situations such as just holding the endoscope without any manipulation, during the manipulation, and while receiving the instrument from the scrub nurse. In each situation, the endoscope was fixed with or without operator's elbow.

Results: The displacement of the endoscope with elbow fixation tended to be smaller than that of without elbow fixation in each situation.

Conclusions: From our preliminary result, it seemed the most appropriate to fix the endoscope with elbow.

doi:10.1017/S002221511600606X

ID: IP110

The incidence of facial nerve dehiscence at surgery: a report of 224 tympanoplasty for cholesteatoma

Presenting Author: **Charles Edouard Rouf**

Emmanuel Lescanne, Charles Edouard Rouf, David Bakhos, Sylvain Moriniere, Soizick Pondaven, Emmanuel Lescanne

CHU de Tours

Learning Objectives: Facial paralysis can occur after surgery for cholesteatoma. Rate of FND was reported 13% in our serie, suggesting that otologist should be highly vigilant when dissecting near the FN.

Objective: The objective of this retrospective study was to identify the incidence of facial nerve dehiscence (FND) in patients undergoing tympanoplasty for cholesteatoma.

Patients and method: We retrospectively reviewed 224 patients, who underwent tympanoplasty performed by a

single surgeon between 2012 to 2014. We collected following data: kind of surgery (canal wall up (CWU) or canal wall down with mastoid obliteration (CWD), FND and its location after exenteration of disease, labyrinthine fistula, dural exposure and preoperative and postoperative facial function.

Results: The incidence of FND was 13% (29/224 ears) for total surgical procedures, 0.1% for CWU tympanoplasty (23/208), 38% for CWD tympanoplasty (6/16). The most common site of dehiscence (90%, 26/29) was the tympanic segment, posterior to the cochleariform process in 18 cases. We find 11 patients with labyrinthine fistula (5%) and 3 with dural exposure (1%). All but one have normal preoperative FN function, all retained normal function postoperatively.

Conclusion: In our series, incidence of facial nerve dehiscence and labyrinthine fistula was similar to the data reported in the literature. All patient retained normal function postoperatively.

doi:10.1017/S0022215116006071

ID: IP111

Eustachian tube opening measurement by sonotubometry using perfect sequences for patients with chronic secretory otitis

Presenting Author: **Eugenijus Lesinskas**

Eugenijus Lesinskas[1], Vilma Beleskiene[2]

[1]Vilnius University Hospital santariskiu Clinics, [2]Vilnius University Hospital Santariskiu Clinisc

Learning Objectives: Most testing methods for evaluation of the Eustachian tube function are subjective and non-specific, likewise objective methods are insufficiently standardised and they poorly correlate with the clinical picture or are non physiological, therefore employed only under certain pathological conditions. Among the many studies, there is no 'golden standard' which could be widely used and serve as a benchmark to all.

The aim of the study: To examine the relationship between ET function and chronic middle ear diseases by applying sonotubometry with perfect sequences (PSEQ).

Methods: In order to objectively assess ET function, PSEQ-based sonotubometry results were assessed in healthy persons and in patients with ET dysfucntion. All subjects were performed comprehensive examination which included collection of anamnestic data, otoscopy, rhinoscopy, tympanometry, Valsava test and sonotubometry using PSEQ stimuli, nasal and nasopharyngeal videoendoscopy.

Results: The testing was conducted on 43 OME aptients (28 females (65,1%) and 15 males (34,9%)) and 39 healthy individuals (21 females (53,8%) and 18 males (46,2%)). The openings were not detected for 43,9 % of the OME patients and for 6,4 % of healthy individuals ($p < 0{,}001$). The mean ET opening duration in OME patients was 261 ± 147 ms, the mean sound wave amplitude $7{,}41 \pm 4{,}77$ dB , for healthy- 274 ± 153 ms and $12{,}26 \pm 5{,}40$ dB.

Conclusions: Average of the wave sound amplitude was shorter comparing to healthy individuals($p < 0{,}001$). Factors, statistically significantly related with not detected openings using sonotubometry were severe hypertrophy of inferior turbinate's, B type tympanogram and the character of the tympanic membrane retraction. More frequent ET dysfunction was found for the patients with retraction of pars tensa of tympanic membrane (0,038).

doi:10.1017/S0022215116006083

ID: IP112

Extensive supporting cell proliferation and mitotic hair cell generation through genetic reprogramming process

Presenting Author: **Wenyan Li**

Wenyan Li, Wenli Ni, Huawei Li

Affiliated Eye and ENT Hospital of Fudan University

Learning Objectives:

The activation of cochlea progenitor cells is a promising approach for hair cell (HC) regeneration and hearing recovery. The mechanisms underlying the initiation of proliferation of postnatal cochlear progenitor cells and their transdifferentiation to HCs remain to be determined. We show that Notch inhibition initiates proliferation of Wnt-responsive Lgr5 + progenitor cells and mitotic regeneration of HCs in neonatal mouse cochlea *in vivo* and *in vitro*. We demonstrate that Notch inhibition removes the brakes on the canonical Wnt signaling and promotes Lgr5 + progenitor cells to mitotically generate new HCs. While, by down-regulating Notch signaling, the proliferated supporting cells (SCs) and mitotic generated HCs mainly located at the apex region of cochlea, which usually lose less hair cells compared to the base region of cochlea. For pursuing the extensive proliferation and hair cell generation needed for hearing recovery, we genetically reprogramed the SCs by activating the β-catenin to up-regulate Wnt signaling, deleting the Notch1 to down-regulate Notch signaling and overexpressing the Atoh1 in $Sox2^+$ SCs in neonatal mouse cochleae, as we show here that the extensive proliferation of SCs followed by mitotic HC generation is achieved. Our study reveals a new function of Notch signaling in limiting proliferation and regeneration potential of postnatal cochlear progenitor cells, and provides a new strategy to regenerate HCs from progenitor cells by genetically reprograming SCs with defined genes involved in HCs formation.

doi:10.1017/S0022215116006095

ID: IP113

Middle Ear Adenoma: rare entity, life-long surveillance