cochlear from the ten most differently bi-regulated candidate genes were chosen for further q-PCR validation. As a result, *Fcer1g, Nnmt, Lars2* (up-regulated) and *Cuedc1* (down-regulated) genes were proved to be differentially expressed between KI and WT group.

Conlusion: *GJB2* p.V37I KI mice presented progressive late-onset hearing loss with depletion in numbers of hair cell. *Fcer1g, Nnmt, Lars2* and *Cuedc1* genes were proved to be differentially expressed between KI and WT group.

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ID: IP025

An ear microsurgery trainer for low-resource settings

Presenting Author: **Matthew Clark**

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Learning Objectives

Introduction: The World Health organisation has identified chronic suppurative otitis media as a neglected condition affecting up to 330 million people worldwide, the burden of the disease located in impoverished countries. There are huge socioeconomic implications that support any progress towards the correct management of otorrhoea. The recent Lancet Commission on Global Surgery highlighted the need for NGOs to hardwire training into their programmes and that low cost simulation would be one avenue by which this might be achieved. With this in mind, we aimed to develop an ear surgery simulator appropriate for training in resource poor settings and to demonstrate its effectiveness in facilitating acquisition of headlight and microsurgical skills necessary to perform procedures via the ear canal, safely.

Methods: A low-fidelity ear trainer was designed to emulate the ear canal and middle ear space. Face validity was assessed via questionnaires. Six tasks were developed, from headlight foreign body removal through to microscope-orientated tasks of foreign body removal, ventilation tube insertion, tympanomeatal flap raising, myringoplasty, and middle ear manipulation skills.

Novices (medical students), those with limited otology experience (junior ENT doctors) and experts (consultant otologists) were video-recorded performing each task. Videos were scored by a blinded observer, using a validated measurement tool and specially adapted task-specific checklist, in order to assess construct validity.

Results: Face validity results confirmed that ET was a realistic representation of the ear. Construct validity results showed a statistically significant trend with experts performing better than those with limited experience performing better than novices.

Conclusion: This study validates ET as a useful training tool to assess headlight and microsurgical skills required to perform otologic procedures. Further testing is now planned in the developing world setting.

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Bioactive glass for obliteration after subtotal petrosectomy

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Learning Objectives: Bioactive glass granules can be used as an alternative filler material for obliteration after subtotal petrosectomy.

Introduction: Subtotal petrosectomy for chronic suppurative otitis media requires obliteration of the mastoid cavity and middle ear space. Generally, abdominal fat is used for this purpose. A considerable risk of using fat is infection, which might require revision surgery. The use of bioactive glass granules seems an attractive alternative since the granules have antibacterial properties.

Methods: A 59 year old male patient with a history of chronic suppurative otitis media of the right ear, complicated by a sudden profound perceptive hearing loss was already treated with a mastoidectomy 6 years ago and thereafter extensively treated conservatively. Because of recurrent chronic otorrhoea and pain we decided to perform a subtotal petrosectomy with blind sac closure of the external ear canal , closure of the Eustachian tube, and obliteration of the cavity with S53P4 bioactive glass granules (BonAlive Biomaterials Ltd., Turku, Finland). A wound drain was kept in place for 7 days.

Results: No complications occured peri-operatively and a dry ear was obtained with complete relief of pain. Duration of follow-up is now 6 months and no late adverse events were observed.

Conclusions: S53P4 bioactive glass granules are feasible to use for obliteration after subtotal petrosectomy. Elimination of chronic suppurative otitis media can be achieved with this technique. Bioactive granules might be an alternative for abdominal fat, which has a risk of infection.

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ID: IP027

Long-Term Hearing and Functional Outcomes and Complications after Ossiculoplasty

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Learning Objectives: To review hearing results, long-term outcomes, and complications after ossiculoplasty.

Patients: 464 patients (3-88 years of age) undergoing ossiculoplasty with tympanoplasty or tympanomastoidectomy using cartilage tympanic membrane grafts, retrograde mastoidectomy with canal wall reconstruction or mastoid obliteration techniques between 1998 and 2012. All patients had at least 1 year of clinical follow-up.

Outcome Measures: Early and late audiometric outcomes, rate of successful air-bone gap closure and tympanic graft healing, and incidence of long-term complications.

Results: Hearing results were assessed in all patients with 1 year of longer of audiometric follow-up. There was no significant difference between adults and children for early hearing results (average post-op PTA-ABG [pure tone average air-bone gap] was 18.2 dB vs. 19.6 dB, respectively; $p = 0.306$), late hearing results (average final PTA-ABG was 18.6 dB vs. 19.4 dB, respectively; $p = 0.439$), or rate of air-bone gap closure to less than 20 dB (63.1% vs. 58.0%, $p = 0.282$). Complications were assessed in patients with 5+ years of clinical follow-up. Smoking was not found to have a significant impact on hearing results, but smokers had a significantly increased incidence of complications, as compared to non-smokers (34.7% vs. 14.0%, respectively; $p = 0.0003$). Revision surgeries were required in 10.3% of patients, and half of these revisions occurred more than 5 years after the initial surgery.

Conclusions: In uncomplicated cases, hearing results remain stable in the long term following ossiculoplasty. Failures of ossiculoplasty, complications and recurrence of conductive hearing loss may occur at any time, with half of revisions occurring more than 5 years after the initial surgery.

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ID: IP028

Mastoid Obliteration – A case series review of our practice and a financial case to do more?

Presenting Author: **Paula Coyle**
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Learning Objectives: To collate a review of our experience with mastoid obliteration over the last ten years. Evaluate the cost effectiveness of mastoid obliteration in the chronically discharging ear.

Introduction: The chronically discharging ear after open mastoid surgery for cholesteatoma can be problematic to manage for the Otolaryngologis requiring numerous appointments. In the current climate of cost saving within the NHS, we must balance clinical evidence and cost. We review our practice of Mastoid obliterations in our district general hospital in the UK over the last ten years to look at both success and cost.

Methods: All the notes of patient who had mastoid obliteration over the last ten years were reviewed. The cases were found by going through the theatres scheduling records. We reviewed the preoperative, intraoperative and postoperative course of each patient. We report on our technique, the success rate of improving symptoms, audiogram changes and complications. We compare the monitory costs of the patient's preoperative versus operative and postoperative costs.

Results: There were 14 patients, six male and eight female with an mean age of 46.7years. They had been listed for mastoid obliteration due to chronically discharging ear. All mastoid cavities were obliterated with bone dust, fat and fascia lata graft. Postoperatively patients reported their symptoms had improved and some also reported quality of life improvement including confidence and embarrassment in social situations. Subjectively some patients even reported their hearing had improved and leaving a small dip in the obliterated cavity of the external auditory canal for a conventional ear-level hearing aid was a bonus for patients. Patients preoperative costs and therefore presumed continued costs, justified the operation and postoperative costs.

Conclusions: We conclude that in the correct patient group mastoid obliterations are beneficial to both the patient and the NHS.

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Cholesteatoma Decoded – Indian Scenario

Presenting Author: **Jyoti Dabholkar**

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Learning Objectives: 1. Complete eradication of disease by adequate exposure, proper saucerisation of mastoid cavity, adequate lowering of the facial ridge and wide meatoplasty are four main principles for a dry cavity. 2. Obliteration in select cases is required to create an optimum sized cavity. 3. Hearing improvement, though secondary, is vital and should be attempted if eustachian tube function allows.

Introduction: Cholesteatoma continues to pose a significant challenge to otologic surgeons, especially in developing countries. Challenges include: advanced stage with extensive spread, complications at presentation and different degrees of expertise of treating physicians. Being a tertiary care centre, we are faced with above problems and revision surgeries. This study was conducted to understand the behavior of cholesteatoma, intraoperative findings and to assess results in terms of cavity status and hearing outcome.

Materials and methods: This prospective study was conducted at KEM Hospital, India in 216 patients operated