

facial nerve monitoring in helping to avoid complications is discussed.

The careful auditing of the surgeon's own results and their utilisation in obtaining informed consent, intellectual honesty and the ability to know when not operate are then presented. The reasons for failure to obtain a dry ear, the unsatisfactory mastoid cavity and sites where bone removal may be inadequate are considered. The preoperative discussion with the patient and the risk of specific complications and how to avoid them are outlined. Finally newer techniques such as the use of the laser and endoscopy are discussed in relation to reducing risk.

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## Mastoidectomy: How I do it (2) (V747)

**ID: 747.1**

### Long term comparison of hearing results of LASER facilitated ossicular preservation versus ossiculoplasty in cholesteatoma surgery using a patient oriented outcome measure

Presenting Author: **John Hamilton**

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*Learning Objectives:* To establish how ossicular preservation with the 'gold standard' for hearing treatment in cholesteatoma surgery. To compare the resilience of these techniques over a five year period.

*Intro:* This study compares the long term usefulness to patients of two different techniques of hearing reconstruction after cholesteatoma surgery: reconstruction using ossicular prosthesis on top of an intact, mobile stapes versus LASER facilitated ossicular chain preservation.

*Method:* At the end of surgery, ears with an intact ossicular chain were allocated to one group. Ears with a disrupted chain and an intact stapes superstructure onto which an ossiculoplasty had been performed were placed in the second group. All ears had primary cholesteatoma surgery using an intact canal wall technique with the use of a fibre-guided LASER.

Hearing after surgery was assessed with the Belfast rules of thumb. Audiograms were performed annually after surgery until the patient was discharged from regular follow-up or defaulted from follow-up.

The two sets of Belfast scores were assessed using survival analysis. The two groups were compared with the log-rank test.

Cox's model was used to investigate confounding influences.

*Results:* 80 ears with intact chains and 69 with an intact stapes and ossiculoplasty were included.

By five years, 76 per cent of patients with intact chains retained normal hearing, whilst 56 per cent in reconstructed ears.

Log-rank analysis gives  $\chi^2 = 10.6$ ,  $n = 1$ ,  $p = 0.001$ .

The intact ossicular chain (odds ratio: 2.78, CI 1.51–5.07,  $p = 0.001$ ) and lower bone conduction hearing threshold (odds ratio: 1.1 per decibel, CI 1.07–1.13,  $p < 0.001$ ) predicted the likelihood of maintaining socially useful hearing. A weaker effect of younger age (odds ratio 1.02, CI 1.00–1.04,  $p = 0.04$ ) increasing the likelihood of loss of useful hearing was also detected.

*Conclusions:* Whenever the presentation permits, LASER facilitated preservation of the intact ossicular chain provides more durable useful hearing for our patients than 'gold standard' ossiculoplasty.

There is a gradual deterioration in outcomes in both groups which is more marked in the ossiculoplasty group.

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## Mastoidectomy: How I do it (2) (V747)

**ID: 747.2**

### Bone Obliteration technique in recidivistic cholesteatoma

Presenting Author: **Manoj M P**

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Mesiarc

*Learning Objectives:* Video presentation on the technique of using bone pate and Cortical bone chips for reconstructing the cavity in recidivistic cholesteatoma.

*Introduction:* Recidivistic cholesteatoma presents a serious surgical challenge. The demands to the surgical team is high- we are supposed to remove disease, improve hearing and give a dry, self cleansing ear. At our institute where we deal with a large amount of recidivistic cholesteatomas, the bone obliteration technique with scar tissue graft has helped us to give a fair result to most of our patients. The video demonstration is designed to give a step by step demonstration of the technique used in over a hundred cases over the past four years.

*Methods:* The case series is from a tertiary care otologic center in South India, all operated by a single surgeon, under general anesthesia. Standard post auricular method is adopted, with harvesting of the scar tissue graft initially, bone chips from the cortical bone and collection of bone pate by an indigenously developed apparatus. After a complete canal wall down mastoidectomy and removal of disease, the cavity is obliterated with bone pate mixed with antibiotic solution, and covered with the cortical bone chip carefully harvested. The middle ear is reconstructed with cartilage and grafted over with the dried and thinned out scar tissue. Ossiculoplasty is either performed at the same sitting or staged according to the disease.

*Results:* We have achieved the objectives of a dry, self cleansing mastoid cavity in a large majority of cases with acceptable hearing. Hearing results have been poor where the stapes superstructure was absent where staged ossiculoplasty was often performed. The number of post operative visits also were minimal with this technique.

*Conclusions:* The bone obliteration technique combined with scar tissue and cartilage grafting saves time and effort in giving a dry and clean ear after recidivism. Most of the problems in a wet mastoid cavity are solved with this technique.

*Learning Objectives:* the video presentation gives a clear demonstration of the technique to be adopted by surgeons handling recidivism.

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### Update on bacteriology and the role of biofilms in chronic otitis media (K753)

**ID: 753.1**

#### Bacterial Biofilms & Chronic Otitis Media: Stuck in the middle

Presenting Author: **Luanne Hall-Stoodley**

Luanne Hall-Stoodley  
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Otitis media is a multifactorial disease, a result of complex host-microbial interactions. Understanding the pathogenesis of chronic otitis media (COM) is crucial for improving therapies. Direct detection of aggregated adherent otopathogenic bacteria on middle ear mucosal biopsies from children with COM demonstrated that biofilms were consistent with an infectious etiology in spite of culture-negative clinical data. This seminar will provide an overview of how biofilms contribute to chronic infections like COM, including problems in diagnosing the infectious agent in the polymicrobial context of the upper airway, the challenges of treatment and new therapeutic approaches on the horizon.

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### Biomaterials in middle ear reconstruction (R761)

**ID: 761.1**

#### Use of bone substitutes in mastoid obliteration

Presenting Author: **Daniele Bernardeschi**

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The purpose of this communication is to describe the indications, surgical technique and anatomical and function results of the mastoid and epitympanic obliteration using bone substitutes. This technique employed in our department since 2006, encompasses the use of synthetic biomaterials for the obliteration of mastoid and epitympanic spaces. Granules of biphasic ceramic have been used up to 2012 (n = 130) and, since 2013 (n = 74) we are using bioactive glass S53P4. Differences in composition and mechanism of action will be detailed, with particular attention to the antibacterial activity of the bioactive glass S53P4.

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### Biomaterials in middle ear reconstruction (R761)

**ID: 761.2**

#### SerenoCem™ - glass ionomeric granules in mastoid obliteration, a hidden problem!

Presenting Author: **Ian Bottrill**

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*John Radcliffe Hospital, Oxford*

*Introduction:* A common problem with canal-wall down mastoidectomy procedures is a discharging cavity. Many techniques for mastoid obliteration to reduce the cavity size have been described. Different biomaterials have been tried on the basis that they should be non-resorbable, non-reactive and integrate. This study aimed to assess the effectiveness of SerenoCem granules, a glass ionomeric cement, as a suitable biomaterial for mastoid obliteration and to review its longterm effects.

*Methods:* 16 patients with chronically discharging mastoid cavities were selected for mastoid obliteration. The subsequent procedures were performed between 2001 and 2003. The two main outcome measures were the number of attendances for aural care and the Glasgow Benefit Inventory (GBI). A secondary measure was the comparison of pre- and post-operative hearing thresholds. These patients were assessed in 2006 providing a minimum of 3 years follow up. As a result of recent chance finding following late revision surgery, a further review of implanted patients was undertaken in 2015/16.

*Results:* The need for aural care reduced in all but one patient. There was a significant difference in the number of aural visits pre and post operation. Benefit in quality of life was assessed using the GBI. In only one patient was there a negative score. The mean values indicate that there has been a positive benefit in quality of life. Complete pure tone average results were available for 13/16 patients. In 8/13 patients the hearing was improved, as intended by additional ossiculoplasty procedures. Of importance a reduction of hearing was noted in only 5 patients, the worst of which was 7.5 dB for the 4-tone average.

*Conclusions:* The initial results of this technique were promising, however, the recent chance review of one of these patients showed the granules may be inducing bone lysis in. All patients have been reviewed and the results will be presented.

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### Biomaterials in middle ear reconstruction (R761)

**ID: 761.3**

#### Titanium in mastoid reconstruction

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