without perichondrium is readily available and can be used to repair external auditory canal, scutum, and tegmen defects. Bone pate collected during the mastoidectomy can be used to repair bony defects. The advantages and disadvantages of these materials and techniques will be discussed. Photos and videos will be used to demonstrate these techniques.

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Mastoid reconstruction (R666)

ID: 666.2

Bone Cements for Mastoid/Posterior Canal Wall Reconstruction

Presenting Author: **Sujana Chandrasekhar**

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Learning Objectives: 1. Understand need for reconstruction of the posterior canal wall in canal wall down mastoidectomy 2. Describe the different types of bone cements that are available for mastoid/PCW reconstruction 3. Know the indications and contraindications for use of cement(s) in chronic ear cavities.

Long-term management of the canal wall down mastoidectomy cavity remains a concerning issue. Quality of life (QOL) measures are reduced in patients with large mastoidectomy bowls that necessitate life-long otologic care. Interestingly, QOL between patients with intact canal wall mastoidectomies and reconstructed canal wall down mastoidectomies is not different. This has spurred attention to various posterior canal wall reconstruction techniques. Since the early 1980s various cements have been tried for reduction of cavity/bowl size and reconstitution of the posterior canal wall. These have fallen into and out of favor as long-term results have become available. The bed should be as pristine and clean as possible before the cement foreign body is placed there. Cement can be used alone or in conjunction with a free island of bone – either from the posterior canal wall or from the cortex of the skull. Certain cements, such as glass ionomers, cannot be used if there is potential contact with cerebrospinal fluid because of possible aluminum encephalopathy. Care must be taken for early identification and treatment of local infection (6% to 35%) or delayed extrusion of the cement. In clean, selected cases, bone cement can be used as a tool for mastoid reconstruction when the canal wall must be removed due to extent of disease. Types of available cements, techniques for use, clinical 'pearls' and images of good and bad reconstructive outcomes will be presented.

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Mastoid reconstruction (R666)

ID: 666.3

The benefits and expectations using mastoid reconstruction and obliteration technique

Presenting Author: **Jona Kronenberg**

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University of Tel-Aviv

Learning Objectives: Mastoid obliteration with posterior wall reconstruction techniques gained much popularity among the mastoid surgeon in recent years. The results published in the literature are promissing ranging between 0–15% cholesteatoma recurrences. Because of its aggressivity and irreversibility, radical mastoidectomy for cholesteatoma was totally abandoned in some institutions. This presentation describes our attitude toward this surgical trend.

Methods: The experience of the author includes 114 patients operated since 2008. The follow-up ranged between 12 months and 8 years (mean of six year and 5 months). Sixty-nine primary procedures (i.e., no previous mastoidectomy) and 45 secondary procedures (more than one previous mastoidectomy) were performed. Autologous bone was used for posterior wall reconstruction and bone patè was used for mastoid obliteration. The results of cholesteatoma recurrences and the rate of dry ear were evaluated and compared in the two groups of patients.

Results: There were 18 cases of recurrent cholesteatoma in the total group (15.8%). Seven of them in the primary group (10.1%) and 11 in the secondary group (24.4%). Nine patients had a stubborn cholesteatoma, 4 patients of those were operated more than 3 times. Two patients finally underwent radical mastoidectomy. All cholesteatoma were located in the middle ear and no one in the obliterated mastoid. Dry ear with no need for taking precautions against water was achived in 53 of the primary group of patients (76.8%) compared to 29 in the secondary group of patients (64.4%).

Conclusions: Reconstruction techniques of the posterior wall and obliteration of the mastoid had first appeared to be the "promised land" of a solution for mastoid cholesteatoma, and raised the hopes that radical mastoidectomy surgery could be abandoned. With more experience, however it emerged that this held true solely for primary surgery. The surgical outcomes for cases of secondary cholesteatoma were worse than those achived in radical mastoidectomy. Thus, radical mastoidectomy is still indicated for stubborn cholesteatoma.

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Mastoid reconstruction (R666)

ID: 666.4

Mastoidectomy reconstruction: titanium sheeting and middle temporal flap technique

Presenting Author: **Bruce Black**

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University of Queensland/Lady Cilento Children's Hospital

The chronically infected open mastoidectomy cavity is a common problem in otologc surgery. Corrective surgical options include revision surgery, obliteration with flaps or

fillers, ablation (canal closure) or external canal wall (EAC) reconstruction. The latter is preferred, to facilitate reinspection for residual disease, if necessary.

Canal wall repairs require reconstruction of a stable and durable, precisely shaped and fitted support layer, healthy overlying skin and a vascular intermediate layer to nourish the skin and protect the support layer.

This presentation demonstrates the use of titanium sheeting in this role, in conjuction with the middle temporal flap, whiach has been the basis for optimal long term success.

The surgery employs six phases;

1. Transcanal flap creation and clearance of disease from the stapes and its surrounds.
2. Postaural incision and creation of the middle temporal flap.
3. Clearance of cavity disease, retaining skin flaps for the EAC repairs. Creation of zygomatic root and facial ridge retention grooves. Shaping and sizing the titanium sheeting, using an aluminium foil template.
5. Reconstruction of the hearing and canal wall components.
6. EAC packing and wound closure.

Titanium sheeting has proven a highly effective canal wall repair method with no complications in a series of 35 cases, but mesh was less effective and is not recommended. Second stage surgery is recommended when the cavity lining is fragile, and residual disease possible.

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Mastoid reconstruction (R666)

ID: 666.5

Principles of mastoidectomy reconstruction

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Introduction: Cholesteatoma surgery aims to eliminate disease, restore function, and avoid complications. Open cavity surgery is commonly complicated by ongoing problems that may result from failure to achieve one or several of these aims, e.g. poor disease clearance, failed epithelial migration, or ischemia-related infection.

The aim of wall reconstruction is to reverse these problems as far as is practicable. The essentials to achieve this are a well-fitted, durable, biocompatible wall support layer, healthy skin and a restored vascular supply.

Method: Recreating the support layer requires a suitably tensile and biocompatible material that can be readialy shaped and curved, remaining durable in the long term. Where possible, full skin coverage is desirable to facilitate EAC healing. Long term stability requires a well-designed vascular supply to nourish the skin; the middle temporal flap has the best theoretical and demonstrable vasculature for this role.

Wall assembly by conventional tympanoplasty methods druing reconstruction is difficult, due to space constraints. An alternative "front-to-back" skin-flap-support layer sequence is optimal, preceded by the appropriate drum/chain repair.

Outcomes: The results of previous techniques exhibted difficulties related to the design of each. The use of titanium sheeting appears to have overcome the problems of biocompatibility, shaping and stability. The middle temporal flap has succeeded in restoring vascular supply and canal skin health.Recreation of the EAC lumen dimensions to a more normal diameter without obstructing protrusions largely restores epithelial migration. Restoration of hearing depends on the middle ear pathology and Eustachian function, as in routine tympanoplasty. This pathology is severe in many of these cases.

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Tympanoplasty: How I do it (1) (V667)

ID: 667.1

Simple underlay myringoplasty

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Learning objectives: Understand the detail of the procedure of SUM and its advantages, including simplicity of technique, a high rate of closure of the perforation and very low incidence of complications.

Introduction: Simple underlay myringoplasty (SUM) has been widely performed over the last 26 years in Japan as a less invasive procedure of myringoplasty than conventional methods. SUM has been gradually recognized in the world since the detail of the procedure had been introduced into instruction courses in AAO-HNS for the last 9 years.

Methods: A transcanal approach is applied. No skin incision is necessary except to harvest subcutaneous connective tissue for the graft from the retro-auricular region. After the topical anesthesia of the tympanic membrane, the perforation edge is removed for both the debridement and the vascularization to the graft. The pressed graft is inserted into the tympanic cavity through the perforation, and then the graft is elevated to touch the perforation edge. The graft is fixed to the tympanic membrane with a little fibrin glue. Packing is not necessary either in the tympanic cavity or in the external auditory canal. The surgery is performed under local anesthesia except in cases with children because thirty minutes is sufficient to accomplish the surgery for one ear by this method. For the persistent perforation after this method, re-closure is attempted in the outpatient clinic by the same procedure using frozen autologous tissue which has been harvested in the initial surgery.

Results: The rate of initial closure was 478/621 (77.0%). Overall success rate after the re-closure was 595/621 (95.8%). There was no significant difference of the success