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

Presenting Author: **Bruce Black**

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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

Presenting Author: **Yu Yuasa**

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Sendai Ear Surgicenter

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

rate among any size of the perforation or any frequency of otorrhea. There was no serious complication such as sensorineural hearing loss.

Conclusions: SUM is indicated for the case of chronic otitis media with central perforation as a minimally invasive surgery without serious complications.

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Extended Indication of CI (R671)

ID: 671.1

SSD – indication and results of cochlear implantation in children

Presenting Author: **Susan Arndt**

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Medical Center – University of Freiburg

Learning Objectives: CI: favorable treatment option for acquired SSD children, as it is the only opportunity to restore binaural hearing abilities. Outcomes of auditory habilitation in congenital SSD children with CI vary significantly.

SSD in children can have a negative impact on the normal development of the auditory cortex in the young child. Furthermore, the ability to develop and use binaural hearing and its subsequent hearing abilities in daily life can be affected. Especially when entering full-time education, children with SSD display behavioural problems and academic weaknesses. The impairment of the auditory function may result in fatigue due to increased listening effort. It can also impinge on psychosocial factors. Particularly when the language reaches the deaf ear in additional background noise problems become evident. Furthermore, the localization capacity is significantly limited, since bilateral hearing is mandatory for spatial hearing. Patients with SSD can derive benefit from conventional CROS or Bi-CROS systems (contralateral routing of signal), bone anchored hearing systems or from a cochlear implant (CI). The indications and results of the treatment are presented.

Considering our experience, a thorough evaluation and extensive counselling regarding the treatment options is necessary. Irrespective of age, MRI of the cranium at pre-examination for CI surgery is essential to exclude aplasia or hypoplasia of the hearing nerve. CI as a treatment option for adult patients with acquired SSD is now widely accepted since it can achieve binaural hearing rehabilitation. In contrast, children suffering from SSD have been provided with a CI only in rare cases. While the decision for CI surgery in children with acquired SSD is quite simple due to the good results in adults, CI in children with congenital SSD has been discussed controversially.

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Extended Indication of CI (R671)

ID: 671.2

Extended indications of cochlear implantation

Presenting Author: **Paul van de Heyning**

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Learning Objectives: The primary goal of the panel is to focus on extending indications for cochlear implantation in electric acoustic stimulation in children and postlingual adults, single sided and asymmetric hearing loss adults and children and to discuss cognitive capabilities in older cochlear implant candidates.

The last decade cochlear implantation was not only indicated for bilateral profoundly deaf patients, but the indications expanded to other groups op patients with an auditory handicap. Advances in surgical technique, insights into physiopathology, viewpoints on outcome measures and technological innovations allowed clinical trials to demonstrate benefits for patients with substantial residual hearing. The primary goal of the panel is to focus on these groups of patients. An introductory lecture will be followed by a panel discussion specifically on the following topics:

Electric acoustic stimulation and structure preserving cochlear implant surgery in children introduced by Gunesh Rajan.

Partial Deafness Treatment in adults and what are the limits of residual hearing introduced by Piotr Skarzynski.

Cochlear Implantation in Single sided deafness and asymmetric hearing loss introduced by Susan Arndt.

A last topic which gained attention concerns Cochlear Implantation in elderly and the relation with cognitive functioning introduced by Paul Van de Heyning.

An emerging issue is the viewpoint of the care providers and insurers asking for evidence at the level of participation. Therefor outcome measures have to include also quality of life measures.

The panel discussion will lead towards a consenus on the different outcome aspects consisting of:

- Auditory test e.g. speech in noise.
- Hearing impairment quality of life e.g. SSQ.
- Directional hearing to ascertain central auditory integration.
- Hours of use per day as a measure of experienced benefit.
- Influence on participation (WHO handicap approach).
- Clinical test for cognitive assessment of older in cochlear implant candidates.