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Learning Objectives: To highlight potential approaches to open the semicircular canals while preserving hearing.

Introduction: In case of incapacitating symptoms, surgical treatment can be offered to patients with confirmed superior semicircular canal dehiscence syndrome. Plugging and capping of the superior semicircular canal are most effective in terms of symptom relief. Both the middle fossa and the transmastoid approach have been reported to reach the superior semicircular canal. However, the middle fossa approach has potential complications including epidural hematoma, seizures, cerebrospinal fluid leakage, facial palsy, etc. Moreover, plugging through the middle fossa approach has been reported to produce up to 25% of sensorineural hearing loss.

Aim: Our aim was to gain insight in the effect of opening and plugging the semicircular canal on postoperative hearing thresholds when using the presented surgical technique.

Methods: We performed a retrospective review on hearing outcomes of 16 cases that underwent transmastoid semicircular canal plugging by two surgeons in a tertiary referral center between October 2008 and January 2016. All patients received systemic corticosteroids during and after surgery. The relevant refinements in surgical technique will be presented. We evaluated air conduction (AC) pure-tone averages (PTA) of 0.5 kHz, 1 kHz and 2 kHz and bone conduction (BC) PTA of 1, 2 and 4 kHz before and after surgery.

Results: In our case series of 16 patients that underwent transmastoid plugging, none of the patients experienced postoperative sensorineural hearing loss. None of the patients experienced epidural hematoma, seizures, cerebrospinal fluid leakage or facial palsy. Mean BC PTA was 16 dB preoperatively and 18 dB postoperatively. No BC PTA over 15 dB was observed in the individual patients. Mean AC PTA was 28 dB preoperatively and 24 dB postoperatively. All of the patients had resolution of their autophony or hyperacusis of bone-conducted sounds.

We can confirm the high rate of symptom relief reported in earlier studies on superior semicircular canal plugging, which presents a reliable treatment option to the patient that suffers from incapacitating autophony and hyperacusis of bodily sounds.

Conclusion: The presented technique for opening (and plugging) of the semicircular canal through a transmastoid approach proves to be safe and effective in preserving hearing. We can confirm the high rate of symptom relief reported in earlier studies. No sensorineural hearing loss was observed in our series.

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Facial Palsy in CSOM (R841)

ID: 841.1

Facial Nerve Monitoring in Cholesteatoma Surgery - Past and Present Trends

Presenting Author: **David Kaylie**

David Kaylie
Duke University Medical Center

Learning Objectives: At the completion of this talk the attendee will understand the history of facial nerve monitoring, proper use of the facial nerve monitor and requirements for resident training.

Facial nerve integrity monitoring (NIM) using subcutaneous EMG needles has been established as standard of care for neurotologic and skull base surgery for decades. Several studies have shown that facial NIM is cost effective and best practice for otologic surgery. Despite this level of evidence, there are still several points about routine use of facial NIM that remain controversial.

There is no standard to say in which otologic cases it should be used. Controversy exists over who should be doing the monitoring – otologists, neurologists, audiologists or neurophysiologists. This leads to questions about which specialty has the appropriate training to make them most qualified to do facial NIM. The American Clinical Neurophysiology Society has published guidelines on proper training and method for facial NIM. The American Board of Otolaryngology has mandated training in facial NIM as a core requirement for otolaryngology residency, although there is no core curriculum to teach facial NIM in a uniform manner. Yet another controversy exists over billing for facial NIM. Although CPT codes exist for facial nerve monitoring, these codes cannot be billed concurrently with surgery codes.

The American Academy of Otolaryngology has set up a task force to look at these controversies and come up with an educational plan to ensure that all otolaryngology residents are trained appropriately. The task force will also survey residency directors to assess how facial NIM is being taught.

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Facial Palsy in CSOM (R841)

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Facial Palsy in Cholesteatoma

Presenting Author: **Richard Irving**

Richard Irving
Queen Elizabeth Hospital

Learning Objectives:

Facial palsy is a presenting feature of approximately 1% of middle ear cholesteatomas but can be present in up to 50% of cases where the disease involves the petrous apex. The risks of apical disease are thus much higher than for disease confined to the middle ear. Despite greater awareness the diagnosis is often delayed and although prompt treatment usually results in a good outcome the prognosis in established facial paralysis can be difficult to predict.

Middle ear cholesteatomas typically cause paralysis by involvement of the horizontal segment of the nerve whereas the labyrinthine segment is the site most frequently involved in apical disease.

All cases presenting to the author have undergone surgical treatment and patients with middle ear disease and treated surgically within 2 months of presentation all showed some recovery in facial nerve function. In those with apical disease the palsy was often present for many years and facial nerve function did not improve but nor did it deteriorate post-operatively in these more long-standing cases.

Facial nerve palsy associated with cholesteatoma should be treated surgically as early as possible but recovery can still be anticipated, even if treatment is delayed for up to 2 months.

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Free Papers (F842)

ID: 842.2

Initial clinical experience with the Nucleus CI532 Cochlear Implant Electrode

Presenting Author: **Robert Briggs**

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Learning Objectives:

Objective: To evaluate the efficacy of the Slim Modiolar (CI532) array in delivering consistent scala tympani and perimodiolar placement of the electrode contacts in cochlear implant recipients.

Methods: The Nucleus CI532 device incorporates a new pre-curved, perimodiolar electrode array (EA32) with 22 contacts and a cross-sectional area of approximately 40% of that of the Contour Advance "CA" array with the same electrode length. The EA32 does not have a lumen and stylet like the current CA; instead it has a thin electrode which is introduced into the cochlea through a 0.7 mm diameter straightening sheath.

As part of a multicentre international clinical trial, 10 patients have received the CI532 implant at the Melbourne Cochlear Implant Clinic. Outcome measures have included intra-operative fluoroscopy and Neural Response Telemetry, Post operative Cone Beam CT and speech perception testing.

Results: Electrode placement was successful in all 10 recipients with confirmed Scala Tympani position and low wrapping factor indicating good perimodiolar proximity. Hearing performance at 6 months appears promising.

Conclusion: Initial clinical experience with the CI532 electrode has demonstrated successful placement in 10 patients without complication and excellent perimodiolar position.

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Free Papers (F842)

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Otitis Media in children with cochlear implants - a long term prospective study

Presenting Author: **Noam Yehudai**

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Learning objectives: to determine the incidence of chronic otitis media in pediatric implantees and to define influencing factors.

Introduction: COM is considered a late sequela of both recurrent AOM and also of ventilating tubes. In children with a cochlear implant, the risks of middle ear infection and its potential spread along the electrode array into the cochlea and central nervous system are relatively high, mandating an aggressive management including insertion of ventilating tubes. Although the rate of AOM episodes diminishes after cochlear implantation, it remains high in otitis media (OM) prone children, thus might lead to repeated ventilating tube (VT) insertions. Information regarding the incidence of COM in children after cochlear implantation is scarce. The aim of the study is to determine the incidence of COM in pediatric implantees and to define influencing factors.

Methods: A retrospective study including 200 pediatric implantees. Mean age at CI was 32.58 ± 17.83 months and mean post-operative follow-up was 72.41 ± 35.27 months. Management was based on a structured AOM control protocol.

Results: 126 children (63%) were classified as OM prone and 74 (27%) as non-OM prone. 38 children (19%) underwent ≥ 2 VT insertions. Chronic OM developed in 15 children (7.5%). Seven children had a tympanic membrane perforation, 7 had adhesive middle ear disease and one more had cholesteatoma. Myringosclerosis appeared in 22 children (11%).

Discussion: Children after cochlear implantation continue to suffer from sequela of recurrent episodes of AOM. Significantly more myringosclerosis is found in OM-prone children who underwent repeated VT insertions. These children are also at increased risk for development of COM. OM-prone implantees should be followed carefully and continuously for early diagnosis and surgical intervention in cases of COM.

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Free Papers (F842)

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Predictive factor for residual hearing preservation after conventional cochlear implantation