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Learning Objectives:

Overlay tympanoplasty is one of the well-known techniques of middle ear surgery applied for all types of perforated tympanic membrane. However, classic overlay tympanoplasty has several disadvantages of technical difficulty, lateralization, and anterior wall blunting and long healing time. Modified overlay tympanoplasty was developed to overcome these disadvantages and has been performed for more than 15 years at our university. Overall success rate of this technique was 98%. Precise technique and surgical tips of modified overlay tympanoplasty to achieve a promising surgical result as well as early hearing restoration will be introduced.

Another novel surgical technique of ossiculoplasty, named autologous bone-cartilage composite graft (BCCG) ossiculoplasty will be mentioned. Analytic data of ossiculoplasty of BCCG showed satisfactory hearing outcome and the lowest complication rate among different materials of ossiculoplasty including Polycel[®] and titanium. Especially extrusion rate of BCCG ossiculoplasty appeared 0%. Therefore, we propose our BCCG ossiculoplasty be considered as a useful alternative method especially in patients with Eustachian tube dysfunction. Designing procedure and its application to different cases will be demonstrated.

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Surgery on windows of inner ear (V837)

ID: 837.1

Cholesteatoma surgery with labyrinthine fistula

Presenting Author: **Tommaso Sorrentino**
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Learning Objectives: To give suggestions on the treatment of labyrinthine fistula in cholesteatoma surgery and the risk of hearing loss.

Introduction: Labyrinthine fistula is one of the most common complications of chronic otitis media with cholesteatoma. The aim of this study is to identify factors that may foresee evolution of hearing in case of cholesteatoma surgery with labyrinthine fistula.

Methods: We did a retrospective study on patients undergone tympanoplasty for cholesteatoma with labyrinth fistula. For each case were noted localization/s and the features of the fistula, treatment of the cholesteatoma and the fistula, and air and bone conduction thresholds before and after surgery.

Results: 75 ears has been evaluated. Only for 26.7% of the patients complained about hearing loss at diagnosis, while

all but 3 patients presented hearing loss at audiometric testing. The fistula interested the lateral semicircular canal in 81.3%, while interest multiple canals in 18.7% of the cases. The fistula was membranous in 22.7 % cases, while bony in 77.3 % of cases. The size of the fistula was inferior to 2 mm in 60% of the patients, and superior to 2 mm in 40%. Only 21.3% patients underwent canal wall up , while 78.7% underwent canal wall down tympanoplasty. In 33.3% of the cases the matrix of the cholesteatoma was left in place on the fistula. In the other cases it was removed and the fistula was covered. In 17.3% of cases we don't have details. The mean preoperative bone conduction thresholds was 30.8 dB. The mean postoperative bone conduction thresholds was 35.3 dB. Hearing loss was more significant at 1 and 2 Khz. The risk of hearing loss was statistically correlated to the presence of multiple, membranous fistulae and if the size of the fistula was superior to 2 mm.

Conclusions: In case of labyrinthine fistula the risk of hearing loss is not correlated to the surgical procedure, but mainly on the feature of the fistula. Probably in case of large, multiple fistulae the membranous labyrinth may be damaged not only by surgery but also by inflammatory and infective process.

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Surgery on windows of inner ear (V837)

ID: 837.2

Removal of cholesteatoma matrix from inner ear fistula

Presenting Author: **Harukazu Hiraumi**

Harukazu Hiraumi, Hiroaki Sato
Iwate Medical University

Learning Objectives:

The inner ear fistula is a frequently encountered complication of a cholesteatoma. During the removal of cholesteatoma matrix covering the inner ear fistula, meticulous care should be taken not to insult the inner ear. To minimize the inner ear damage, we preserve the periosteum around the inner ear fistula during the removal of cholesteatoma matrix. With this technique, the damage to the endosteum is minimized. This is very important, especially in case with cochlear fistula. In this video workshop, we present our technique in the removal of cholesteatoma matrix from inner ear fistula.

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Surgery on windows of inner ear (V837)

ID: 837.3

Hearing preservation techniques in semicircular canal surgery

Presenting Author: **Vincent Van Rompaey**

Vincent Van Rompaey, Paul Van de Heyning
Antwerp University Hospital

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)

ID: 841.2

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.