

Abstract book

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P001 Cochlear implantation in children with congenital inner ear malformations - Our experience

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Objective:

To share our experience of the surgical challenges faced in cochlear implanted patients with inner ear malformation and to assess the auditory and speech perception outcomes.

Material and methods:

Clinical records of 502 cochlear implant procedures were reviewed and data of 122 patients who had inner ear malformations were enrolled in the study. Their auditory and speech performances were evaluated post implantation for 3 years.

Result

Cerebrospinal fluid gusher was encountered during opening of cochlea in 42 patients (34.4%) and one patient was re-explored within 24 h. In 30.3% of cases facial anomaly was found. Significant improvement in average performance was seen in all malformation types except in cochlear hypoplasia at 12 months postoperatively.

Conclusion:

Surgical challenges can be overcome with expertise and giving special attention to preoperative imaging. Our experience suggests that outcomes are favourable in patients with inner ear malformations too.

P002 Auditory effects of tympanoplastic surgery with titanium prostheses (PORP or TORP) in patients with congenital middle ear defects

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The aim of the study was to analyze the surgical treatment outcomes in patients with normal auditory canal, mobile stapes footplate and congenital middle ear defects, and employing PORP or TORP prostheses for reconstructing the sound-conducting apparatus.

A retrospective analysis was conducted on the group of patients operated during the years 2018-2021. In all cases, unilateral congenital conductive hearing loss was observed (n=19), with 36.8% of patients being female and 63.2% male, aged 9-64 years (mean 29.5 +/- 20.8; median 19). The most commonly identified defect was in the malleus (10/19). Favorable results (cochlear reserve equal to or below 20 dB) were achieved in 12 patients, while in 5 patients, the reserve ranged between 20 and 30 dB. One patient maintained a reserve greater than 30 dB, another one was excluded due to lack of postoperative audiometry.

It was concluded that tympanoplasty using TORP and PORP prostheses yields satisfactory auditory outcomes in congenital middle ear defects.

P004 cochlear implantation in inner ear malformations; surgical & audiological outcome at King Fahad University Hospital, SA.

Professor Layla Telmesani¹, professor audiology nethreen abdulsalam

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Objective:

We look into pediatric 266 cochlear implant cases which were followed for 8 years and focused into the following data:

incidence and type of inner ear malformations

incidence of aberrant mastoid segment of the facial nerve

incidence of gusher

the hearing level at time of surgery

the prevalence intra-operative ECAPS

the post operative performance

All factors were analysed and compared in the the 2 groups; the children with normal inner ear and the one with inner ear malformation.

Method:

The study included 235 prelingual deaf children who were implanted in cochlear implant unit in King Fahad

University hospital—Imam Abdulrahman Bin Faisal University. Subjects were using either Cochlear Nucleus or Medel

cochlear implant devices. We had 171 (64.5%) subjects with normal inner ear anatomy and 94 (35.5%) subjects with inner

ear malformations (IEMs) and they were classified into 6 groups according to inner ear anatomy.

Aberrant facial nerve was diagnosed in the HRCT-TB (using Telmesani classification), gusher was reported in E.files and intra-operative vedios, Intraoperative electrically evoked compound action potential (ECAP) responses were analyzed and compared in all subjects.

Results:

type IIIB aberrant facial nerve which force the surgeon to

Perform another approach was significantly higher in inner ear malformation, difference between both group [TYPE III B 0.58% IN NL & 1% IN IEMs]. Gusher was significantly higher in IEMs cases [0.58% in NL IE & 9.8% in IEMs] correlating the gusher to the size of the cochlear aperture in the HRCT-TB was analysed and significant findings were noted.

Measurable ECAP responses can be elicited in patients with IEMs in most of the channels. Severe malformations can affect the prevalence of measuring ECAP and getting identifiable waveform morphology. The aided threshold responses in IEMs cases were similar to NL IEs

Except for (mean of all IP I) was lower aided threshold.

Conclusion:

Aberrant facial nerve more common in IEMs.

Gusher incidence significantly higher in IEMs and has direct relation to the size of cochlear aperture.

Intra-operative audiological assessment is more challenging in IEMs.

Children with IEMs has relatively similar audiological outcome compared to NL IEs.

P005 Cochlear implantation in inner ear malformations. Local experience and auditory outcomes.

Mr Gonzalo Ortega Flores¹, Ms Priya Achar¹

¹Queens Medical Center

Objectives:

1 of every 4 patients born with congenital sensorineural hearing loss present an inner ear anomaly. The latest widely used classification of IEM made by Sennaroglu has set up a common language for cochlear implant surgeons. However, despite being able to overcome the surgical difficulties of cochlear implantation in these patients, audiological results are hard to predict, mostly due to anomalous and reduced neural tissue in the inner ear. Most of the studies worldwide have focused on the surgical aspect; therefore, the aim of this study is to discuss our audiological results of cochlear implantation in IEM.

Methods:

Retrospective clinical analysis and description of 8 patients treated in our center. We also performed a literature search up to 1980 using PubMed and a nonsystematic review of pertinent articles was undertaken.

Results:

8 IEM patients underwent CI in a period from 2002 until 2021. The age range was from 2 years and 3 months up to 11 years and 10 months, with a median age of 3 years and 9 months. 2/8 had Cochlear hypoplasia type IV, 2/8 had incomplete partition type 1, 3/8 had incomplete partition type 2 and 1/8 had incomplete partition type 3. 4/8 underwent unilateral CI implantation, 1/8 had a simultaneous bilateral CI implantation and 3/8 had bilateral sequential implantation. 5/8 (63%) experienced CSF gusher (1 went back to theatre). 5/8 (63%) experienced facial nerve stimulation postoperatively and needed electrodes to be turned off. 7/8 patients went from a profound hearing loss preoperatively to a mild-moderate at the latest follow up (12 months or more post op). 1 (13%) patient attended a school for the deaf, 6 (75%) attended mainstream school with a deaf unit, 1 (13%) attended mainstream school.

Conclusion:

Our local experience aligns with the international experience published. Cochlear implants can provide good auditory results in IEM patients. A proper preoperative assessment is crucial for surgical and audiological success.

P006 Endolymphatic sac tumor in patient with von Hippel–Lindau disease: surgical resection with hearing preservation via retrolabyrinthine approach - case report.

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Objectives:

An endolymphatic sac tumor (ELST) is a rare, low-grade, locally aggressive lesion of the inner ear. It affects 4-16% of patients with von Hippel-Lindau (VHL) syndrome, though it can also occur independently. The majority of patients present with hearing loss, tinnitus, vertigo, or disequilibrium upon diagnosis. Unified screening recommendations for VHL patients have not yet been established; however, it is strongly advised to perform an audiogram and an MRI of the CNS with contrast every second year.

Case presentation:

A 24-year-old male patient with VHL disease (verified by genetic testing) underwent surveillance imaging after surgery for CNS hemangioblastoma and hemangioma of the medulla oblongata. Magnetic resonance imaging (MRI) revealed a 1.8 x 9 mm lesion of increased signal on T1-weighted sequences heterogeneously enhancing adjacent to the left endolymphatic sac. The patient reported no symptoms, pure-tone audiometry showed no hearing impairment on the left side. Surgical treatment has been proposed.

Results:

Surgical resection via a presigmoid, retrolabyrinthine approach was performed. The Fallopian canal, bony labyrinth, sigmoid sinus, and jugular bulb were skeletonized. The meninges of the posterior cranial fossa were subsequently exposed. The sigmoid sinus was gently pressed. Using bipolar forceps, the hypervascular tumor was dissected from the posterior cranial fossa meninges and the jugular bulb. The endolymphatic duct was sectioned. The antrum was obliterated with temporalis muscle, and the cavity was obliterated with belly fat. The material was sent for histopathological examination, which confirmed an endolymphatic sac tumor. The patient did not report any symptoms of vertigo and underwent a hearing evaluation within the next two months. Postoperative PTA results were: BC 2 dB, AC 12.5 dB HL, with a 25 dB ABG at 1 kHz. The patient complained of a minimal feeling of ear pressure, reporting no impact on speech perception.

Conclusion:

Regular imaging and audiologic testing of patients with VHL syndrome allow early diagnosis of ELST, enabling timely treatment. Hearing and balance preservation should be prioritized, as ELSTs may appear bilaterally.

P010 Total endoscopic ossiculoplasty, what are the pons /cons ?

Miss Hend Zakzouk¹, Mr Abdelslam Daif¹, Mr Abdelrahman Ezzat Ibrahim¹

¹United Lincolnshire Hospitals Trust

Objectives:

The purpose of this study is to present our experience with endoscopic ossicular chain reconstruction (OCR) and evaluate the postoperative audiometric and functional outcomes.

Methods: Retrospective review of a single surgeon experience with total endoscopic OCR over a one-year period. Audiometric results were evaluated before and after ossiculoplasty including bone and air pure-tone averages (PTA) and air-bone gap (ABG).

Results:

Total endoscopic OCR was performed in 43 patients. Patients were subdivided based on prosthesis type [total ossicular replacement prosthesis (TORP) and partial ossicular replacement prosthesis (PORP)], and whether primary or staged ossiculoplasties. The mean preoperative air-bone gap was 44.25 ± 8.3 dB (range between 25–60 dB) TEES was successfully performed in all patients without resorting to a retroauricular incision. Patients were evaluated for postoperative hearing levels which were found to fall within an acceptable range and for postoperative ABG by pure tone audiometry with a Patients were evaluated for postoperative hearing levels which were found to fall within an acceptable range and for postoperative air-bone gap (ABG) by pure tone audiometry. The mean postoperative air-bone gap was 17.06 ± 5.5 dB (range between 5–25 dB)

Postoperative pain threshold using VAS: Lowest VAS = 1, Highest VAS = 6 Mean VAS for all patients = 3. All cases performed as day surgery.

Complications:

No major complications Minor complications: Are Mild Balance symptoms/dizziness = 4 cases small remnant perforation =1 case Deep seated pain/discomfort = 1 case .

Conclusions: Endoscopic ossiculoplasty appears to provide superior visualization and satisfactory early audiological outcome with smooth postoperative recovery. Satisfactory early audiological outcome with smooth postoperative recovery. A growing trend towards Total endoscopic ear surgery. Total endoscopic ossiculoplasty being a less invasive surgery. It provides superior visualization and teaching experience

P011 DIFFERENT ENDOSCOPIC APPROACH FOR CONSERVATIVE SURGICAL MANAGEMENT OF ADULT CHOLESTEATOMA

Mr Shadi Suliman¹, Miss Ayca Aydin¹, Mr Abdelsalam Daif¹, Mr Abdelrahman Ezzat Ibrahim¹

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Objective:

To assess outcomes of different conservative surgical techniques based on the proposed staging system for management of paediatric cholesteatoma.

Methods:

Retrospective case series of 39 registered patients with cholesteatoma who underwent primary conservative surgery, namely TEES (transcanal endoscopic ear surgery) and CAES (combined transcanal/ transmastoid approach ear surgery), between the dates of June 2020 and December 2023. Demographic data, intraoperative findings, surgical approach, and follow-up records were evaluated.

Results:

Of the total 39 registered patients included in the analysis, 17 (41.38%) were female and 22 (58.62%) were male. The median age was 38 years (IQR: 29 – 55). 36 (89.66%) of patients had acquired cholesteatoma while 3 (10.34%) had congenital cholesteatoma. Our proposed staging system based on the intraoperative findings of cholesteatoma extension and the surgical accessibility with an endoscopic approach was used. According to this new staging system, 4 cases (10.20%) had Grade II (anterior epitympanum + mesotympanum), 8 cases (20.5%) had Grade III (Grade II + posterior epitympanum), 13 cases (33.3%) had grade V (extensive; an extension beyond the dome of LSSC); whereas 14 cases (35.89 %) had Grade IV (Grade III + mastoid antrum; reaching the dome of LSSC) cholesteatoma. TEES was used in 18 cases (46.51%) including grade II, III, and IV cholesteatomas, whereas CAES was conducted in 21 cases (53.84%) including grade IV and V disease.

Ossicular erosion was detected in 10 cases (25.6%) , facial nerve exposure in 6 cases (15.3%), and a Dural defect before surgery in 2 cases (5.1%).

The median follow-up period was 18 months (IQR: 12 – 18), and an MRI scan in the following nine months after surgery was conducted in 33 (84.61%) of all cases.

Complications, including transient facial nerve palsy and ear discharge, were reported in 2 cases. a second look was commenced in 5 cases where recurrence was reported in 3 cases (7.69).

Conclusion:

Conservative surgical techniques are effective and reliable for removal of cholesteatoma if appropriate surgical approach is used. The proposed staging system is potentially useful for surgical approach selection.

P012 Clinical efficacy of endoscopic surgery versus microscopic surgery for tympanosclerosis

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Objectives:

This study aims to compare the efficacy of endoscopic versus microscopic surgery for tympanosclerosis. In addition, we observed the sclerotic foci involvement site by endoscopy and summarized the pattern, aiming to provide some hints to improve the surgical strategy.

Methods: Sixty two patients with tympanosclerosis (type II, III and IV) who underwent surgery in Eye, Ear, Nose and Throat Hospital Affiliated to Fudan University from January 2019 to May 2023 were included in this study. All the enrolled patients underwent surgical treatment, either endoscopic or microscopic tympanoplasty. Routine follow-up was performed at the 3rd week, 3 months, and 1 year after surgery respectively. Pure tone test and oto-endoscopy were applied to evaluate the efficacy of the surgery.

Results:

(1) Among the 62 patients, 36 underwent endoscopic tympanoplasty and 26 underwent microscopic tympanoplasty. (2) Both the endoscope and the microscope groups showed statistically significant improvement in postoperative hearing (mean values of air conduction at frequencies 0.5, 1, and 2 KHz). However, the improvement of postoperative air-bone gap in the endoscopic surgery group was significantly better than that in the microsurgery group at 4KHz. (3) Bone conduction hearing in the endoscopic groups was improved after surgery, and the difference was statistically significant. (4) In patients with type II and type IV tympanosclerosis, the postoperative air conduction, bone conduction hearing and air-bone conduction gap were improved significantly compared with those before surgery. In patients with type III tympanosclerosis, postoperative air conductance (54.40 ± 25.05) and bone conductance (29.60 ± 19.09) were not improved. (5) The success rates of tympanic membrane repair were 92% in the microscope group and 96% in the endoscope group. Compared with the microscope group, the endoscope group had a shorter hospital stay, a faster recovery period, and no mastoidectomy was required.

Conclusion:

For tympanosclerosis, compared to microsurgery, endoscopic tympanoplasty has many advantages, such as less trauma, clearer field of view for observing calcifications, shorter hospital stay, faster recovery, and even surpasses microsurgery in terms of hearing improvement. For type 3 tympanosclerosis, if there is no significant improvement in hearing after the first stage surgery, a second stage artificial stapes surgery may be considered.

P016 Aspects of hereditary Cholesteatoma

Md, PhD Åsa Bonnard^{1,2}, Cecilia Engmér Berglin², Josephine Wincent^{1,2}, Eva Westman³, PO Eriksson⁴, Maria Feychting², Hanna Mogensen²

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Objectives:

Describe differences and similarities of clinical aspects in individuals surgically treated for cholesteatoma with and without a first-degree relative treated for the disease.

Methods: A national cohort study based on all individuals surgically treated for Cholesteatoma in Sweden during a 30-year period, 1987-2018, retrieved from Swedish National Patient register (n=10133). 227 individuals had a first degree relative treated for the disease. Odds ratio, Chi2 and t-tests are used to calculate differences between groups.

Results:

Mean age at first surgery is younger in the group with family history (30,0 years vs 34,9 years, $p < .001$) but there is no gender preference. The risk of surgery affecting the attic and/or mastoid is higher in cases with family history (OR, 4.8; 95% CI, 3.4-6.2) as is having the first surgery under the age of 20 years (OR, 5.2; 95% CI, 3.6-7.6) with a peak at the age category 10-19 years. The cases with family history is quite equally distributed in Sweden with the exception of a higher incidence in the most southern region, Skåne, and a slightly lower incidence in the region of Gothenburg.

Conclusion:

Individuals with a family history of Cholesteatoma has a higher risk for surgery during childhood and for having a more extensive disease. There is a slight difference in the distribution family history between the regions in Sweden. Further data regarding Cholesteatoma surgery load and additional ear surgery will be added.

P017 GWAS reveals association of TUB1AC and DIP2B to sudden deafness and vestibular neuritis in Finland

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Introduction:

Idiopathic sudden hearing loss is an acute onset of sensorineural hearing loss which may occur instantaneously or progressively over several days. Vestibular neuronitis in idiopathic inflammation of the vestibular nerve, characterized clinically by the acute or subacute onset of vertigo; nausea; and imbalance. A missense variant close to TUBA1C has been linked to sudden deafness in Finland. Aim of this study is studying further the genetics of sudden deafness and vestibular neuritis.

Methods:

Finngen data was used to run a genome wide association study was for 3861 cases with sudden deafness and 3342 cases with vestibular neuritis. The overlap between sudden deafness and vestibular patients was minimal.

Results:

GWAS revealed statistically significant associated variants in chromosome 12. In addition to the previously reported missense variant close to TUBA1C, another variant close to DIP2B gene was reported. DIP2B gene encodes a member of the disco-interacting protein homolog 2 protein family. Interestingly, DIP2B function during axonal outgrowth requires tubulin acetylation. TUB1AC gene encodes for tubulin alpha-1C chain. Although there are only a few examples to illustrate it, tubulin acetylation may also play an important role in viral or bacterial infection. Some viruses were shown to require high levels of tubulin acetylation to infect cells

Conclusions:

GWAS for sudden deafness and vestibular neuritis revealed significant genetic associations with neuron -related genes that need to be studied further. For the first time, a GWAS indicates shared genetic predisposition for those two conditions that represents different groups of patients.

P017 Analysis of Trio-based Whole Exome Sequencing in 23 South Chinese families with hereditary hearing impairment

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Objectives:

Hereditary hearing impairment is a prevalent sensory disorder affecting millions worldwide, with significant genetic heterogeneity. Whole Exome Sequencing (WES) has emerged as a pivotal tool in uncovering the genetic basis of hearing impairment, enabling the identification of both known and novel genetic mutations. Our study aimed to explore the genetic variation of whole exome sequencing (WES) in the Trio family, proband, and their parents, in a special school of hearing impairment in Guangzhou and its application value as the first choice for screening.

Methods:

23 families who had not undergone any hearing-related genetic test before and who voluntarily participated in this study were selected for audiology test and Trio-based WES. The medical history registration form of the proband and his parents with normal hearing phenotype was filled in in detail, and a family diagram was drawn.

Results:

Only single gene or locus mutations were detected in 4 families (GJB2 109G>A homozygous, GJB2 109G>A heterozygous, MYO15A 964+3G>A homozygous, WFS1740_741delTT heterozygous); Copy number variations (CNVs) of the STRC gene were identified in one cohort of families, and their presence was confirmed using multiplex ligation-dependent probe amplification (MLPA) and the remaining 18 families were compound. Heterozygous variants; the common primary pathogenic gene GJB2 was detected in 8 families, mainly at the 109G>A locus. The remaining genes defined as pathogenic or suspected to be pathogenic according to the American College of Medical Genetics and Genomics (ACMG) guidelines include MPZL2, USH2A, POU3F4, TNFRSF11A, CPLANE1, CDH23, OTOF, KCNQ4, TMC1, etc. At the same time, patients with G6PD, Adams-Oliver syndrome type 2, congenital glycosylation disorder Icc type, neurodevelopmental disorders, and other diseases were detected, and the family members were guided to corresponding specialist diagnosis and treatment. Conclusion The Trio-based WES can reveal the genetic variation of hereditary hearing impairment and detect potential lesions. In relatively developed areas in economy and finance, WES can be clinically used as the preferred screening technology and guidance before hearing aid intervention.

P020 Surgical Management of Tympanomastoid Paraganglioma:10 Years Experience

Asso. Prof Kanu Saha¹, Sampath Rao², Mohammad Joarder¹, Pran Datta¹, Harun-Ar Talukder¹

¹Bangabandhu Sheikh Mujib Medical University, ²Manipal Hospital

Objective:

To characterize the clinical presentation, surgical management, and outcomes of consecutive cases of patients with tympanomastoid paraganglioma (TMP) tumors.

Methods: Nineteen consecutive cases of tympanomastoid paraganglioma were retrospectively reviewed from November 2014 to March 2024. The tumor was staged using the Sanna-modified Fisch and Mattox's classification system. All cases were surgically excised with various procedures depending on the stages.

Results:

Distribution of tumors according to modified Fisch and Mattox classification was as follows: Type A1 1 case (5.26%), type A2 2 cases (10.53%); B1 5 cases (26.31%), B2 10 cases (52.63%) and B3 1 case (5.26%). Two cases of class A2 tumors and two cases of class B1 tumors were safely removed via postauricular-transcanal approach. Two patients with class B1 and one case of B2 tumors were operated on by canal wall-up mastoidectomy approach. Ten (52.63%) patients, including nine class B2 and one class B3 tumors, were managed by canal wall down mastoidectomy approach. One class B2 underwent a subtotal petrosectomy with blind sac closure of the external auditory canal and middle ear obliteration, and one A1 tumor was managed by endaural approach. Gross total tumor removal was achieved in 18 cases (94.73%). One patient developed facial weakness (HB grade III) after one week of the postoperative period, which recovered entirely through conservative treatment. No recurrence was noted in the follow-up period.

Conclusion:

Early diagnosis of tympanomastoid paragangliomas is rare because of its benign and slow-growing nature. A high-resolution CT scan of the temporal bone is the investigation of choice for preoperative evaluation, staging, and selecting a definitive surgical approach. MRI is reserved for selective cases of suspicion of jugular bulb and carotid artery involvement. Surgery is the recommended primary modality of treatment for tympanomastoid paragangliomas with minimum morbidity and recurrence rate.

P021 Bilateral Tympanic Paraganglioma-Report of A Rare Case

Asso. Prof Kanu Saha¹, Nasima Akhtar¹, Abu Siddique¹, Titon Gosh¹, Mohammad Mitul¹

¹Bangabandhu Sheikh Mujib Medical University

Objective:

Synchronous presentation of paraganglioma in both temporal bones is sporadic. Simultaneous occurrence of glomus jugulare in one ear and glomus tympanicum in the other ear or familial bilateral glomus jugulare cases have been reported in the literature. The first case of bilateral glomus tympanicum was reported after death with a histopathological examination of the temporal bone. This study aims to report a case of bilateral tympanic paraganglioma (glomus tympanicum) in a living case.

Methods:

A 36-year-old woman presented with progressive hearing impairment in her right ear for two years. She also complained of tinnitus in both ears, more in the right. Otoendoscopic examination showed a reddish pulsatile mass with an intact tympanic membrane bulging towards the right ear's external auditory canal. Another reddish pulsatile mass behind the intact tympanic membrane was noticed in the left ear. A pure tone audiogram revealed an air conduction average of 68.75 dB and a bone conduction average of 36.25 dB with 32.50 dB ABG (air-bone gap) in 500,1000,2000 and 4000 Hz. CT scan and MRI of the temporal bone showed enhanced soft tissue involving the middle ear and mastoid in the right ear and a small nodular lesion in the left ear. She had undergone complete excision of the right tympanomastoid paraganglioma by subtotal petrosectomy and blind sac closure. The histopathology report confirmed it as a paraganglioma. She passed an uneventful postoperative course except for a temporary period of vertigo. She is on regular follow-up.

Conclusion:

Bilateral presentation of paraganglioma in the temporal bone may be prevalent with a positive family history. The current case has no positive family history.

P025 Vestibular Implant Electrode Stability over time

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Objectives:

The vestibulocochlear implant (VCI) is a new prosthesis, developed to artificially restore balance. The electrode position is thought to be important for optimal neural activation and efficient vestibular stimulation. In cochlear implants, migration of the electrode leads after surgery is not uncommon, ranging between 0-29%. This range can be due to many factors, with the fixation method being one of them. As VCIs are relatively new, the migration of vestibular electrodes has not been studied before. The objective of this study was to evaluate the stability of the VCI electrode position over time and report on different fixation strategies.

Methods:

Six patients implanted with a VCI at the Maastricht University Medical Center were prospectively followed over time. Different fixation strategies were used. When possible, the fenestrations of the semicircular canals were kept very small in order to stabilize the electrode lead. As an additional safety measure, the electrodes were fixed with hydroxyapatite bone cement or glass ionomer luting cement.

A CT of the temporal bone was performed intraoperatively, after approximately one week and after one year. All scans were analyzed for electrode migration using 3D slicer software.

Results:

In four out of 18 electrodes (22%), a slight migration of more than 0.5mm occurred between the intraoperative scan and the first postoperative scan. The mean migration distance of those electrodes was 0.54mm. The migrated electrodes were all in the first two patients. In the first patient, hydroxyapatite bone cement was used for fixation, in the second glass ionomer luting cement was used. None of the electrodes migrated out of the ampulla of the semicircular canals. Additionally, none of the electrodes migrated between the first postoperative scan and the one-year follow-up scan.

Conclusion:

The newest fixation technique using small fenestrations when possible and glass ionomer luting cement to fix the electrode leads seems to safely fixate VCI electrodes, providing a stable vestibular stimulation.

P026 Investigation of the Skull Bone Sound Waves under Bone Conduction In-vivo

Prof. Dr. Christof Roosli¹, Aikaterini Dimitrakopoulou¹, Dr Ivo Dobrev¹

¹Department of ENT, Head and Neck Surgery, University Hospital Zurich

Objectives:

The aim is to quantify the surface waves speeds across the skin-covered skull in live humans with previous data in cadaver heads.

Methods:

Preliminary tests have been conducted on 10 volunteers (awake, no sedation), where the skull was excited transcutaneously via an actuator from a bone conduction hearing aid (BCHA), held by a 5N-steel-band at a location posterior to the forehead. The resultant motion was monitored at ~100 points via a single-sensitivity-axis scanning laser Doppler vibrometer (SWIR Scan-Sense, Optomet, Germany) in the area of the forehead, where the skin was covered with a flexible retroreflective tape. Stimulation was provided at 4 kHz, in order to evoke wave motion with at least half a wavelength within the measurement area (~10-12cm wide), while having sufficiently high output from the BCHA. Signal processing methods have been implemented in order to reduce the effect of motion artifacts from random body movements. In-vivo data is compared with equivalent surface wave measurements of cadaver heads with and without skin.

Results:

Measurements on the cadaver heads indicated no major change due to the presence of skin in the spatial distribution (wavelengths) of the wave patterns across the superior skull. In-vivo skull vibration data indicated wave speeds comparable to cadaver head data.

Conclusion: The skull wave motion in patients was similar to previous experimental data in cadaver heads.

P027 A hybrid FEM and experimental study on the relation between temporal bone 3D motion and intracochlear pressure under bone conduction

Prof. Dr. Christof Roosli¹, Jongwoo Lim, Prof. Namkeun Kim, Dr Ivo Dobrev¹

¹Department of ENT, Head and Neck Surgery, University Hospital Zurich

Objectives:

Numerical and experimental investigation of the 3D motion across the temporal bone, particularly the otic capsule, during bone conduction (BC) stimulation at different frequencies, and its correlation with the intracochlear pressure difference across the cochlear partition are being investigated experimentally and numerically.

Methods:

Experimental data has been collected from six samples from three fresh frozen cadaver heads, including: 3D velocity at 130-200 points across the lateral and medial surfaces of the ipsilateral temporal bone and skull base; 3D motion of a single point at the promontory and stapes; differential intracochlear pressure. Excitation was provided sequentially to the ipsilateral mastoid and classical BAHA location via a percutaneous coupling, in the 0.1-20 kHz frequency range. The experiment was digitally recreated by a custom finite element model (FEM), based on the LiUHead, with the addition of a middle ear and cochlea. The Young modulus of the bone domain within the FEM was varied between 4, 8, and 20 GPa.

Results:

Predicted differential intracochlear pressure, normalized by the promontory motion, was within the confidence intervals of the experimental data for most frequencies. The spatial variation of the amount of deformation across the skull base, and the otic capsule in particular, dependent on the material properties of the FEM and closely matched the experimental data. The model indicated that the relation between intracochlear pressure and the rigid body motion of the cochlear was affected by the Young modulus of the skull, and it followed the experimentally observed trends.

Conclusion: Both methods indicated that the otic capsule acted as a rigid accelerometer within the temporal bone, thus exerting primarily inertial load on the cochlear fluid even above 10 kHz.

P028 Performance with a new bone conduction implant audio processor in patients with single-sided deafness

Prof. Dr. Martin Kompis¹, Michael Zbinden, Tom Gawliczek, Alex Huber, Marco Caversaccio, Wilhelm Wimmer

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Objectives:

The SAMBA2 audio processor (Medel Inc, Austria) for the bonebridge bone conduction implant features a new automatic listening environment detection to focus on target speech and to reduce interfering speech and background noises. The aim of this study was to evaluate the benefit of the SAMBA2 and to compare it with its predecessor SAMBA in terms of speech understanding and subjective benefit.

Methods:

Prospective within-subject comparison study. Aided sound field hearing thresholds, speech understanding in quiet (German monosyllabic words), and speech understanding in noise (Oldenburg sentence test) were measured with the SAMBA and SAMBA2 audio processors. Each audio processor was worn for 2 weeks before assessment. Seven adult users with single sided sensorineural deafness (SSD) participated in the study. For speech understanding in noise, two complex noise scenarios with multiple noise sources including single talker interfering speech were used. The first scenario included speech presented from the front (SONMIX), while in the second scenario speech was presented from the side of the implanted (SIPSINMIX). In addition, a subjective evaluation using the SSQ12, APSQ, and the BBSS questionnaires was performed.

Results:

We found improved speech understanding in quiet with the SAMBA2 audio processor compared to the SAMBA aided condition (on average +17%, $p=0.007$). In the noise scenarios, the SAMBA2 led to improved speech reception thresholds when compared to the SAMBA, by +1.2 dB (SONMIX, $p=0.032$) and by +2.1 dB (SIPSINMIX, $p=0.048$). The questionnaires revealed no statistically significant differences, except an improved APSQ usability score with the SAMBA2.

Conclusion:

It can be expected that patients with SSD will benefit from the SAMBA2 processor in terms of improved speech understanding in quiet and in complex noise scenarios, when compared to the use of the older SAMBA processor.

P029 Evaluation of a super powerful Bone-Anchored Hearing System and its users: A Retrospective Study

Drs. Emma Teunissen¹, Herman Kok¹, dr. ir. Arno Janssen¹, prof. dr. Myrthe Hol^{1,2}, dr. ir. Arjan Bosman¹

¹Radboudumc, ²UMCG

Objectives:

Evaluation of the efficacy of a superpower sound processor in patients with severe-to-profound mixed hearing loss.

Design:

A retrospective study of patient characteristics and audiological measurements.

Setting: Tertiary referral center.

Participants:

A series of 82 adult patients with severe-to-profound mixed hearing loss implanted with a percutaneous bone-anchored hearing system and fitted with a superpower sound processor in our center between 2016 and 2019. Patients with incomplete or unreliable audiological data (n=24) were excluded, resulting in 58 datasets for analysis.

Main outcome measures: Unaided and aided pure-tone thresholds and aided free-field speech perception in quiet.

Results:

The median unaided air conduction (AC) threshold averaged across 0.5, 1, and 2 kHz (PTA0.5-2kHz) of all patients was 75 dB HL; the median unaided AC averaged across 1, 2, and 4 kHz (PTA1-4kHz) was 84 dB HL. For bone conduction and direct bone conduction (dBC), the median PTA0.5-2kHz was 52 and 47 dB HL, respectively. With the superpower device, the median free-field speech reception threshold (SRT) was 54 dB SPL, and the median speech perception score at 65 dB SPL was 80%.

Conclusion:

At least 75% of the patients reached a maximum phoneme score of 70%. For patients with lower scores, the superpower device still provides a substantial hearing benefit. This makes the superpower device particularly suitable for patients with severe-to-profound mixed hearing loss with a contraindication for conventional hearing aids and/or cochlear implants.

P030 Insight into implant-associated biological processes and the microbiome of hearing implants

PhD [Martin L Johansson](#)^{1,2}, [Marsel Ganeyev](#)^{1,2,3}, [Liliana Morales-Laverde](#)^{2,3}, [Maria Hoffman](#)², Professor [Anders Palmquist](#)², Professor [Peter Thomsen](#)², PhD, Associated Professor [Margarita Trobos](#)^{2,3}

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Objective:

Despite successful bone integration of bone-anchored hearing systems (BAHSs), complications persist in the soft tissues surrounding the implant. This study aimed (i) to characterise the microbiological profile around the implants; (ii) to characterise, phenotypically and genotypically, staphylococcal isolates; and (iii) to link their virulence properties to clinical outcomes.

Methods:

Sampling (at baseline, 3 and 12 months) for the identification and quantification of colonising bacteria was performed at three sites (abutments, peri-abutment exudate, and peri-abutment soft tissue). The biofilm-forming ability of the obtained staphylococcal strains in vitro was assessed through crystal violet (biofilm biomass) and Congo red staining (slime production). Antibiotic susceptibility was determined by the minimum inhibitory concentration (MIC) and minimum biofilm eradication concentration (MBEC). The results were linked to clinical patient outcomes, specifically Holger's score and hygiene.

Results and Conclusion:

At baseline, anaerobic bacteria were detected, whereas both anaerobes and *Staphylococcus* spp. were detected in all three compartments. Following implant installation, *S. epidermidis* was identified in most patients, whereas *S. aureus* was isolated in approximately half of the patients. Fifty-eight staphylococcal isolates were collected from 16 patients. Eighteen *S. aureus* strains were isolated from 5 patients, while 40 were coagulase-negative staphylococci (CoNS) identified in 13 patients. The majority of strains (60%) were biofilm producers. Several relationships between clinical and microbiological parameters were discovered. Patients with skin complications were mostly colonised by biofilm-producing staphylococci (80%). The biofilm-producing strains exhibited high resistance to most antibiotics. In conclusion, this study lays the groundwork for improved treatment and clinical practices for infections associated with hearing implants.

P040 Using a Bone Conduction Hearing Device as a Tactile Aid

Prof. Dr. Martin Kompis¹, Manfred Langmair¹, Georgios Mantokoudis¹, Stefan Weder¹, Tom Gawliczek¹, Marco Domenico Caversaccio¹

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Objectives:

With the advent of cochlear implants, tactile aids for the profoundly deaf became obsolete decades ago. Nevertheless, they might still be useful in rare cases. We report the case of a 25-year-old woman with Bosley–Salih–Alorainy Syndrome and bilateral cochlear aplasia.

Methods:

After it was determined that cochlear or brainstem implants were not an option and tactile aids were not available anymore, a bone conduction device (BCD) on a softband was tried as a tactile aid. The usual retroauricular position and a second position close to the wrist, preferred by the patient, were compared. Sound detection thresholds were measured with and without the aid. Additionally, three bilaterally deaf adult cochlear implant users were tested under the same conditions.

Results:

At 250–1000 Hz, sounds were perceived as vibrations above approximately 45–60 dB with the device at the wrist. Thresholds were approximately 10 dB poorer when placed retroauricularly. Differentiation between different sounds seemed difficult. Nevertheless, the patient uses the device and can perceive loud sounds.

Conclusions:

Cases where the use of tactile aids may make sense are probably very rare. The use of BCD, placed, e.g., at the wrist, may be useful, but sound perception is limited to low frequencies and relatively loud levels.

P041 COCHLEAR FRACTURE: AN UNUSUAL COMPLICATION IN COCHLEAR IMPLANTATION

Tajaddin Muradov¹, COCHLEAR FRACTURE: AN UNUSUAL COMPLICATION IN COCHLEAR IMPLANTATION ABSTRACT Hayyam Masiyev

¹Lor Hospital, Baku, Azerbaijan

Objective:

There have been no reported cases in the literature of cochlear fracture with concurrent electrode misplacement after cochlear implantation. This case report aims to present this rare complication, discuss appropriate management and potential mechanisms, and propose preventive measures to avoid such a devastating outcome.

Case Report:

A 55-year-old man presented with a misplaced electrode in the internal auditory canal and a subsequent cochlear fracture, which resulted in a cerebrospinal fluid (CSF) gusher after implantation. Results: The fractured part of the promontory was reconstructed using glass ionomer cement, and the electrode was then cautiously re-inserted through a linear axis toward the centerline of the scala tympani.

Conclusion:

This rare case describes the management of a cochlear fracture and misplaced electrode array following cochlear implantation. The decision was made to remove the old electrode to avoid additional injury to the structures within the IAC. Intraoperative imaging played a vital role in confirming the correct placement of the new electrode.

Keywords: Cochlear implants, inner ear, sensorineural hearing, otology, imaging

P042 Modification of skin incision for Baha® Attract System Implantations

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Aim:

In an era of wide accessibility to various systems for hearing impairment prosthetics, there exists a broad spectrum of surgical techniques facilitating system implantation. The aim of the study is to present the technique of vertical incision in the implantation of the Baha Attract magnetic system as an alternative incision, maintaining a compromise between optimizing the surgical procedure and preserving the functionality and quality of life of the patient.

Materials and methods:

Analysis was conducted on patients treated using the Baha® Attract system, where access to the surgical field was achieved using a vertical incision. The study group comprised five patients treated between December 2022 and March 2023. Unilateral implants were placed in all patients. Audiological indications included mixed hearing loss (n = 4) following otosurgical treatment for chronic middle ear inflammation and conductive hearing loss (n = 1) resulting from a congenital defect in the outer ear that was not amenable to reconstructive procedures. The analysis included the surgical technique, long-term skin healing outcomes, and sensory disturbances. The observation period ranged from 9 to 12 months.

Results:

There were no adverse consequences or complications resulting from the performed surgical incision. All patients experienced uncomplicated healing. Patients are using sound processor magnets ranging from 4–5 in strength and Baha® 6 Max sound processors weighing 11.5 g.

Conclusions: The vertical incision technique serves as an alternative to the C-shaped perimeter incision, allowing for the optimization and standardization of the surgical procedure, resulting in a smooth scar formation and maintaining good audiological and aesthetic outcomes and is an alternative approach focused on patient safety, surgical procedure efficiency, while maintaining audiological benefits and satisfactory aesthetic outcomes.

P043 3-year clinical outcomes of minimally invasive ponto surgery for inserting bone-anchored hearing implants

Drs. Emma Teunissen^{1,2}, Dr Coosje Caspers¹, Dr Ivo Kruyt¹, Prof dr Emmanuel Mylanus¹, Prof dr Myrthe Hol^{1,2}

¹Radboudumc, ²University Medical Center Groningen

Objectives:

To compare the 3-year outcomes of the modified minimally invasive Ponto surgery (m-MIPS) to both the original MIPS (o-MIPS) and linear incision technique with soft tissue preservation (LIT-TP) for inserting bone-anchored hearing implants (BAHIs).

Methods:

Study design: Prospective study with three patient groups: m-MIPS, o-MIPS, and LIT-TP; Setting: Tertiary referral center; Patients: In the m-MIPS group, 24 patients with 25 implants were enrolled. The o-MIPS and LIT-TP groups included 25 patients (25 implants) each; Interventions: Patients underwent BAHl surgery using m-MIPS, o-MIPS, or LIT-TP.; Main outcome measures: Implant survival and implant stability were compared between all groups. Soft tissue status, skin sensibility, subjective numbness, and hearing-related quality of life (HRQoL) were compared between m-MIPS and LIT-TP and o-MIPS and LIT-TP, respectively.

Results:

Implant survival was comparable between m-MIPS and LIT-TP (96 vs. 100%), with o-MIPS showing non-significant lower survival (88%). Both MIPS groups exhibited fewer (adverse) skin reactions, better skin sensibility, and less subjective numbness than LIT-TP throughout visits. At three years, soft tissue status, sensibility, and numbness were comparable between groups. Device use was consistent among groups (83-86% daily users). All groups demonstrated significant improvement in HRQoL post-surgery based on GBI, GHSI, and APHAB total scores.

Conclusion:

Compared to LIT-TP, m-MIPS showed comparable implant survival, fewer (adverse) skin reactions, and earlier sensibility and numbness recovery. M-MIPS resulted in favorable clinical and QoL outcomes with low intra- and postoperative complication rates until three years after surgery. It is, therefore, considered a safe technique for BAHl insertion. Moreover, with a shorter surgery time and the ability to operate under local anaesthesia in a controlled outpatient setting, m-MIPS appears to be a more efficient alternative to LIT-TP.

P044 Single-stage bone-anchored hearing implant surgery in children: a prospective comparative research

Drs. Emma Teunissen¹, Tjerk Aukema^{1,2}, Dr Coosje Caspers¹, Kim Bakkum¹, Dr Ivo Kruyt¹, Dr Froukje Cals¹, Prof dr Emmanuel Mylanus¹, Prof dr Myrthe Hol^{1,2}

¹Radboudumc, ²University Medical Center Groningen

Objective:

To compare the clinical outcomes of single-stage BAHl surgery with two-stage surgery in children up to nine years and to ascertain the safety of one-stage surgery in this population.

Methods:

A test group of 21 children (31 implants) implanted with a wide diameter implant in single-stage surgery using the linear incision technique was compared with a historical control group of 50 children (62 implants) implanted in two stages. The primary outcome measure was implant survival during 1-year follow-up. Secondary outcomes included causes of implant loss, implant stability, soft tissue reaction, surgical- and loading time.

Results:

One implant (3.2%) was lost in the test group vs. three implants (4.8%) in the control group. Single-stage surgical- and loading times were significantly shorter than the two-stage surgery times with 28 minutes (22 ± 8 min vs. 50 ± 17 min; $p<0.001$) and 13 weeks (6.3 ± 0.8 weeks vs. 19.0 ± 7.7 weeks; $p<0.001$), respectively. The test group showed less adverse soft tissue reactions, albeit of no significant difference from the control group.

Conclusion:

The data of this first prospective controlled trial between single- and two-stage BAHl surgery in children from 4-9 years show favorable implant survival for the single-stage surgery.

P045 Living diversity: Clinical focus on multilingual patients with cochlear implants

[Susann Thyson](#)¹, [Maika Werminghaus](#)¹, Prof. Thomas Klenzner¹

¹Cochlear Implant Center, Department Of Otorhinolaryngology, Medical Faculty And University Hospital

Objectives:

The German healthcare system faces the challenge of integrating people with migration background (MB) into the existing supply system. There are about 23.8 million people with a MB living in Germany. However, data on the utilization of rehabilitative health care services by people with a MB are incomplete. 79% of people with a MB speak at least two languages. The aim was therefore to analyse the multilingual patient clientele of the Hearing Centre Düsseldorf with regard to language diversity, language use in daily life and language proficiency.

Methods:

The study group included multilingual, adult patients with cochlea implants (PwCIs) from Hearing Centre Düsseldorf who underwent CI aftercare. Language diversity and use of languages in daily life were assessed using a research-specific questionnaire. The Common European Framework of Reference for Languages (CEFR) was used to determine language proficiency in German.

Results:

Data from n=48 multilingual PwCIs were analysed. PwCIs received CIs for an average of 66 months (SD 66.9) and had a mean age of 55.7 years (SD 16.6). The PwCIs had a PTA4 (dB HL) of 33.07 (SD 7.59). The Evaluation of the Freiburg Monosyllabic Word Recognition Test showed an average speech comprehension of 46.91% at 65dB SPL. The subjects spoke 13 different languages. The most common languages were Polish (35.42%) and Russian (14.58%). 33 PwCIs reported that they used their first language $\geq 50\%$ in daily life. 26 PwCIs used their second language german $\geq 50\%$ in daily life. More than 70% of the PwCIs classified their language competence in their second language german as proficient or independent.

Conclusion:

The data obtained show that more than half of the PwCIs used their first and second language to a similar extent in daily life, which is reflected in the assessment of language competence as proficient or independent. The determination of language profiles can help to derive patient needs and requirements when dealing with multilingual PwCIs in order to ensure quality of care and equal access to CI care. Knowledge of the language profiles of multilingual PwCIs can lead to an increased awareness of the needs of this patient group.

P046 Living diversity: Clinical focus on multilingual patients with cochlear implants

Susann Thyson¹, Maika Werminghaus¹, Prof. Dr. med. Thomas Klenzner¹

¹Cochlear Implant Center Duesseldorf, Department Of Otorhinolaryngology, Medical Faculty And University Hospital Duesseldorf, Heinrich-Heine-University

Objectives:

The German healthcare-system faces the challenge of integrating people with migration background (MB) into the existing supply system. There are about 23.8 million people with a MB living in Germany. However, data on the utilization of rehabilitative health care services by people with a MB are incomplete. 79% of people with a MB speak at least two languages. The aim was therefore to analyse the multilingual patient clientele of the Hearing Centre Düsseldorf with regard to language diversity, language use in daily life and language proficiency.

Methods:

The study group included multilingual, adult patients with cochlea implants (PwCIs) from Hearing Centre Düsseldorf who underwent CI aftercare. Language diversity and use of languages in daily life were assessed using a research-specific questionnaire. The Common European Framework of Reference for Languages (CEFR) was used to determine language proficiency in German.

Results:

Data from n=48 multilingual PwCIs were analysed. PwCIs received bilateral or unilateral CIs for an average of 66 months (SD 66.9) and had a mean age of 55.7 years (SD 16.6). The PwCIs had a PTA4 (dB HL) of 33.07 (SD 7.59). The Evaluation of the Freiburg Monosyllabic Word Recognition Test showed an average speech comprehension of 46.91% at 65dB SPL. The subjects spoke 13 different languages. The most common languages were Polish (35.42%) and Russian (14.58%). 33 PwCIs reported that they used their first language $\geq 50\%$ in daily life. 26 PwCIs used their second language German $\geq 50\%$ in daily life. More than 70% of the PwCIs classified their language competence in their second language German as proficient or independent.

Conclusion:

The data obtained show that more than half of the PwCIs used their first and second language to a similar extent in daily life, which is reflected in the assessment of language competence as proficient or independent. The determination of language profiles can help to derive patient needs and requirements when dealing with multilingual PwCIs in order to ensure quality of care and equal access to CI care. Knowledge of the language profiles of multilingual PwCIs can lead to an increased awareness of the needs of this patient group.

P047 SmartNav in cochlear implantation under local anesthesia

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Cochlear implantation is an effective and safe method of rehabilitation for severe hearing loss, regardless of the age of the patient. Particularly in older patients, the risks associated with general anaesthesia are increasing and we must consider whether they are acceptable in the pursuit of improved quality of life. In recent years, cochlear implantation has been increasingly performed under local anaesthesia (LA) or in combination with neuroleptanalgesia (NLA). SmartNav is a new technology that enables continuous monitoring of electrode array insertion in Cochlear implants, determination of angular depth of insertion, performance of transimpedance matrix (TIM) and exclusion of tip-fold over, measurement of impedances and standard neural response telemetry (NRT). In the present cohort, we used it in senior patients operated with a combination of LA and NLA.

Between January and April 2024, we performed the study at the Department of Otorhinolaryngology Head and Neck Surgery, First Faculty of Medicine, Charles University, University Hospital Motol and performed CI under the combination of LA and NLA in a total of 6 patients in whom electrode array insertion was monitored by SmartNav. The average age of the patients was 73 years, all were male. All patients had progressive hearing loss in adulthood.

Full insertion of the CI622 electrode array was achieved in all patients. The average angular depth of insertion was 332 degrees, the average insertion velocity was 0.32 mm/s. TIM excluded tip-fold over in all patients, which was subsequently confirmed by postoperative X-ray. In 5 of the 6 patients, the procedure could be completed under NLA/LA, in one patient the procedure had to be converted and completed under general anesthesia, using a laryngeal mask.

Cochlear implantation under LA/NLA is a safe method to minimize the risks associated with general anesthesia. All SmartNav system features could be used during surgery, with the exception of NRT. In the presented miniseries, there was 100% concordance of the TIM excluding tip-fold over and postoperative X-ray. The SmartNav system is an effective and safe tool even for procedures performed in LA or NLA. Funding: NW24J-06-00119.

P048 Decrease in eCAP thresholds between intra- and postoperative assessments is associated with changes in the CI-induced intracochlear electric field

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Objectives:

Electrically-evoked compound action potential (eCAP) thresholds are routinely used in cochlear implantation 1) to verify intraoperatively the responsiveness of the auditory nerve to electrical stimulation, 2) to assist in setting the stimulation level of individual electrode contacts in device fitting, and 3) to monitor postoperatively changes in the responsiveness when troubleshooting of problematic cases. A decrease in the eCAP thresholds between intra- and postoperative assessments is typically observed. We hypothesized that the decrease could, in part, be explained by changes in the properties of the intracochlear electric field (EF) due to a fibrotic response, as measured by the trans-impedance matrix (TIM).

Methods:

The clinical data available for 143 consecutive ears implanted with the lateral-wall Cochlear Nucleus Slim Straight electrode array were analyzed. For 15 to 29 ears, intra- and postoperative eCAP thresholds via neural response telemetry (NRT) were available for a given contact along the electrode array with a corresponding TIM measurement. Intra- and postoperative peak and width values of the intracochlear EF were computed based on a model of exponential decay of the EF. Changes in the transimpedance peak (in ohm) and width (in mm) were correlated with the changes in the NRT threshold (in current level; CL).

Results:

The mean (\pm SD) decrease between intra- and postoperative NRT threshold was 9.8 ± 2.5 CL and this was more pronounced in the basal section (13 vs. 9.9 and 4.7 CL in the middle and apical sections, respectively). The peak value of the EF increased 130 ohms and the width decreased 0.75 mm on average. There was a statistically significant negative association between the change in the NRT threshold and the corresponding change in the EF peak in the basal and apical sections of the array ($r = -0.37$ and $r = -0.35$; $p < 0.01$, respectively). The association with the EF width was nonsignificant.

Conclusion:

The postoperative increase in the peak of the intracochlear EF is reflected in an increased responsiveness of the auditory nerve. This may be due to fibrotic tissue formation around the electrode array increasing the effectiveness of electrical stimulation.

P051 Glomus tympanicum: how i do it

Professor Ahmed Allam¹

¹Barking Havering And Redbridge University Hospitals, ²Mansoura University

Objective: role of endoscope in
managing glomus tympanicum

Methodes:

evaluation of 12 patient operated by other and review of complication and challenging steps

Results:

12 patient with glomus tympanicum have been operated with complete removal, 1 patient had tympanic membrane perforation, 2 had scaring .

Conclusion:

its safe to use endoscope for complete removal of glomus tympanicum.

Videos will be provided

P055 TOPICAL VERSUS INJECTABLE LIDOCAINE FOR MYRINGOTOMY WITH INSTALATION OF VENTILATION TUBE

Jakov Ajduk¹

¹University Hospital Sestre Milosrdnice

Objective:

To compare the assessment of pain during myringotomy and ventilation tube insertion when using topical lidocaine spray with the use of lidocaine injection

Methods:

Fifty adult patients were recruited for this research and underwent local anesthetic ear procedures. 30 patients underwent a one-sided ear procedure and 20 had a bilateral procedure. 29 patients got lidocaine injections and 21 got topical lidocaine. Post-operatively they were asked to mark their perceived level of pain on a visual analog scale (VAS), verbal rating scale (VRS), and numeric rating scale (NRS).

Results:

The overall pain level was estimated as either mild pain or moderate pain on VAS. The median level of pain for both procedures on NRS was 1,9 out of 10.

Conclusion:

The pain level in patients who got topical lidocaine spray and injection lidocaine is not drastically different, although procedure when topical lidocaine was used was slightly less painful.

P056 Ear Cooling as a future Hearing Protecting Therapy? Appraisal of the Current Literature and Findings of a Feasibility Study

Dr. Med. Dominik Péus¹, Prof. Dr. med. Andreas Radloff¹

¹Universitätsklinik für Hals-Nasen-Ohren-Heilkunde, Evangelisches Krankenhaus Oldenburg

Objectives:

To elucidate the following key topics: the protective effect of cooling on hearing; the pros and cons of hypothermia in human neurotologic disorders; and potential methods of administering hypothermia. Moreover, to investigate the feasibility and acceptability of bilateral ear in healthy probands.

Methods:

A systematic literature review in Pubmed and Cochrane Library was done. For investigation of the subjective tolerability bilateral ear cooling with 30° C and 24° C water irrigations each for 20 minutes were performed in 10 healthy subjects. Objective measures were the change in the eardrum temperature and transient evoked otoacoustic emission (TEOAE) in single frequencies after cooling. Additionally, Visual Analog Scale (VAS) was used to capture the subjectively perceived vertigo sensation.

Results:

Ten studies were identified concerning the otoprotective properties of hypothermia. Nine of these were rodent in vivo studies (mice, rats, gerbils, guinea pigs). One study involved human subjects and investigated hypothermia in idiopathic sensorineural hearing loss. Disorder models included ischemia and noise damage, ototoxicity (cisplatin and aminoglycoside), and CI-electrode insertion. All ten studies demonstrated significant otoprotection for their respective endpoints. No study revealed or expressly investigated otodestructive effects. In our feasibility study we found that simultaneous bilateral ear cooling with 30°C and 24°C tempered water reduces TEOAE signal-to-noise ratio (SNR) values in determined frequencies (1.0, 1.4, 2.0, 2.8, 4.0 kHz) with statistical significance. Reduction in Total-TEOAE response level was solely significant post-24°C-cooling, while being non-significant after 30°C cooling. Simultaneous bilateral stimulation at 30° C was tolerable, and the eardrum temperature was significantly reduced by 2.31 ± 1.2 K. In comparison, 24° C cooling leads to a more pronounced vertigo and dizziness, but decreased the eardrum temperature significantly by 5.01 ± 3.04 K. Thus, symmetric bilateral cooling emerged as a crucial factor in minimizing discomfort.

Conclusions:

These preliminary results indicate that bilateral ear cooling is feasible and tolerable also in humans without antivertiginous medication and support the conducting of further work to explore and refine the clinical applicability and impact of ear cooling in otolaryngology.

P057 Intratympanic injections: What is there beyond steroids and aminoglycosides? A literature review.

Dr Zacharias Kalentakis¹

¹Ent Clinic Sismanogleio General Hospital Of Attiki

Objectives:

Intratympanic drug administration is a simple and effective therapeutic procedure. The patency of the round and oval window is increased, the diffusion of the drug in the inner ear is promoted, and the residence time of the drug in the target organ is prolonged. However, beyond the usual pharmaceutical substances, newer data show a number of molecules with a beneficial otological effect.

Methods:

After a systematic review of the literature of the last twenty years under the term «intratympanic injection treatment», we studied 727 articles. We focused on 59 of them which concern the intratympanic administration of newer substances, apart from those already extensively studied (steroids, aminoglycosides).

Results:

Three articles dealt with isosorbide, 2 of them showed improvement against endolymphatic hydrops in Meniere's disease, while one showed the inferiority of the molecule compared to steroids in the treatment of hearing loss in Meniere's patients. In five articles on botulinum toxin, in 2008 there was the first record of safe intratympanic administration in experimental animals, followed by studies between 2017-2023 that highlight a positive effect against myoclonic tinnitus, otitis externa and vertigo in the context of acoustic neuroma. Six articles studied the clinical utility of alpha-lipoic acid, the first in 2009 showing the pharmacokinetic superiority of topical versus systemic administration. The rest of the articles highlighted its positive effect on hearing loss of various causes (sudden, noise-induced or cisplatin). 13 articles dealing with intratympanic lidocaine infusion showed clinical benefit, both as monotherapy and in combination with corticosteroids, against Meniere's disease and tinnitus. Finally, for the intratympanic injection of hydrogels, 32 articles were evaluated, the vast majority of which related to hyaluronic acid. Hyaluronic is widely used as a «vehicle» molecule for both dexamethasone and gadolinium, for therapeutic and diagnostic purposes respectively due to its viscosity and adhesive properties. It has been shown to be useful in SSNHL, Meniere's, drug ototoxicity and auditory trauma.

Conclusion:

Intratympanic infusion is a safe and reliable treatment method. The round window is easily filled regardless of the formulation and injection site. New pharmaceutical molecules are applied in clinical practice with significant safety and efficacy.

P058 Adaptive Injectable Hydrogel Promotes the Repair of Infected Middle Ear-Mastoid Bone Defects by Regulating Tissue Microenvironment

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¹Department of Otolaryngology Head and Neck Surgery, Guangzhou Red Cross Hospital of Jinan University, ²National Engineering Research Center for Healthcare Devices, Guangdong Key Lab of Medical Electronic Instruments and Polymer Material Products, Institute of Biological and Medical Engineering, Guangdong Academy of Sciences

Objectives:

Chronic suppurative otitis media (CSOM) and middle ear cholesteatoma (MEC) are prevalent disorders in the otology specialty. A major challenge is how to efficiently eliminate dormant opportunistic infections, control inflammation, and repair middle ear-mastoid defects simultaneously to enhance surgical recovery.

Methods: An injectable hydrogel containing a reactive oxygen species (ROS)-sensitive dynamic cross-linked network formed by connecting the phenylboronic acid group on Alg-PBA with catechol groups on HA-DA and TA@Ag NPs was developed to address bone abnormalities caused by inflammation in the middle ear-mastoid.

Results:

HA-DA/Alg-PBA/TA@Ag NPs hydrogels had excellent tissue adhesion properties and ductility due to the catechol groups, which were proved by the adhesion experiments of the subject's finger skin and fresh pig skin. Due to the dynamic phenylborate link and a large number of catechol groups, the hydrogel matrix has significant self-healing properties through rheological mechanics and self-healing experiments after hydrogel cleavage, and superb oxidation resistance is shown by ROS fluorescence assay and DPPH scavenging experiments. Since the hydrogel was also equipped with TA@Ag NPs, immunofluorescence technology has certified that it has the ability to regulate macrophage M2 polarization, and bacterial plating experiments also show that the hydrogel has exceptional antibacterial activity. Micro-CT, histological analysis and staining methods jointly confirmed that hydrogel can effectively inhibit the inflammatory response in defective tissues under middle ear-mastoid inflammation, promote vascularization and bone regeneration in middle ear-mastoid inflammation damaged tissues.

Conclusion:

Hydrogels could be a versatile material for healing defects in bones in the infected middle ear-mastoid.

P061 The Role of CGRP-Based Therapies in Managing Vestibular Migraine: A Retrospective Study

Dr Vishal Pawar¹, Dr Haripriya GR

¹Aster DM Healthcare

Objectives:

Vestibular migraine (VM) poses unique diagnostic and therapeutic challenges due to its overlapping symptoms with other vestibular disorders. This study aims to assess the efficacy of calcitonin gene-related peptide (CGRP) based therapies in improving symptom management and quality of life for patients with VM.

Methods:

We conducted a detailed retrospective observational cohort study at Aster Gardens Specialty Vertigo Clinic in Dubai, UAE. Twelve patients diagnosed with VM, adhering to stringent inclusion criteria, were treated with CGRP-based therapies (Erenumab, Rimegepant, Eptinezumab). The study assessed treatment outcomes using the Migraine Disability Assessment Score (MIDAS), Dizziness Handicap Inventory (DHI), and a visual analogue scale for headache and vestibular symptoms over a three-month period.

Results:

The treatment resulted in significant improvements in both headache and vestibular symptoms. MIDAS scores decreased from an average of 48.75 to 23.9 ($p=0.002$), and DHI scores improved from 43 to 14.25 ($p=0.0022$). Additionally, the visual analogue scale scores for headache and dizziness showed marked reductions, suggesting an overall enhancement in patient quality of life.

Conclusion:

CGRP-based therapies significantly alleviate symptoms in patients suffering from VM, offering a promising therapeutic avenue. This study supports the potential of CGRP-based treatments in the routine management of VM, advocating for further clinical trials to validate these findings and explore long-term effects. The results could help refine treatment guidelines, making a considerable impact on patient outcomes in VM management.

Keywords:

Vestibular Migraine, CGRP Therapies, Erenumab, Rimegepant, Eptinezumab, Clinical Efficacy

P062 Long Term Sequela of Paediatric Acute Mastoiditis Threatened with Mastoidectomy

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¹University Clinical Centre Maribor, ENT

OBJECTIVES:

Although acute mastoiditis is quite common and despite of more than a century of evidence in treatment recommendations far less is known about the sequela of the disease itself and surgical treatment performed, especially in the long term.

METHODS:

A retrospective review of patients operated with the diagnosis of acute mastoiditis between 2004 and 2019 was performed. Only patients who underwent unilateral mastoidectomy with tympanostomy due to acute otomastoiditis, as well as contralateral tympanostomy due to simultaneous acute otitis media were included in the study.

30 patients that met the inclusion criteria were then invited to answer COMQ-12 questionnaire and perform extended high frequency audiometry. For analysis patients were grouped according to the procedure performed mastoidectomy, tympanostomy and control groups, 30 ears in each group which yields 90 ears altogether.

RESULTS:

Median age (min., max.) at the time of operation was 2,1 (0,64, 11,3) years, median (min., max.) symptom duration before the operation was 3,0 (0, 11) days. 3 out of 12 questions answered in COMQ-12 questionnaire yielded statistically significant difference to control group, these are about hearing in quiet, noise and tinnitus. Significant correlation was found between audiometric results and worsened perception of hearing in quiet and noise as well as with perception of tinnitus and high frequency hearing loss. Most importantly, significant correlation was also found between duration of symptoms and worsened hearing perception in questionnaire. Hearing thresholds were significantly different in medium and high frequencies between control and mastoidectomy groups but insignificantly different between mastoidectomy and tympanostomy groups as well as tympanostomy and control groups.

CONCLUSIONS:

Majority of the acute mastoiditis cases are well and have insignificant differences when compared to general population regarding the COMQ-12 questionnaire. Since difference between hearing in tympanostomy and mastoidectomy groups is insignificant, additional impact on hearing due to surgical procedure is unlikely. Symptom duration before surgery seems to be a significant factor in long term hearing performance of these patients so prompt surgical therapy is advised.

P063 Acquired aural atresia after an ear piercing: a case report

Dr. Gillian Barzaga¹

¹East Avenue Medical Center

Objectives:

To give the chronology in the development of an acquired external auditory canal atresia in a pediatric patient

To discuss relevant mechanisms in acquired external auditory canal atresia.

Methods:

This is a case report.

Results:

A 7-year old Filipino female consulted in the ENT clinic for right ear discharge. 6 years prior to consultation, ear piercings were made bilaterally, and the mother claimed to notice development of rashes on her right ear lobule, spreading into the external auditory canal, eventually causing its lumen to narrow. There was occasional right ear discharge. She was brought to a private physician and received an unrecalled diagnosis. They were advised to delay the operation due to the age of the patient. 1 year prior to consultation, there was closure of external auditory canal.

Physical examination had absence of an external auditory canal on the right; what remained was a superficial fossa on where the meatus should have been. Both lobules had closed piercings. Tuning fork showed Weber lateralizing to the right, a negative Rinne test on the right, and a prolonged Schwabach on the right, indicative of conducting hearing loss on the right. Audiometry revealed a 53.3dB hearing level on the right and normal hearing acuity on the left. She also had a type A tympanogram pattern.

Temporal bone CT scan showed a heterogenous density completely occupying the right external auditory canal as well as soft tissue densities completely occupying the right middle ear cavity and mastoid air cells. The tympanic segment of the left facial nerve appears to be involved as well as the aditus. The scutum appeared slightly blunted.

Conclusion:

Acquired atresia of the external auditory canal is an unusual cause of conductive hearing loss and this is classified by etiology: post-traumatic, post-operative, neoplastic, and post-inflammatory. The patient reported in this paper developed atresia in her right ear after having an infected ear piercing. This is the first reported case of post-inflammatory acquired aural atresia in the Philippines. The incidence of post-inflammatory aural atresia is 0.6 cases per 100000, as of 1998. There are no large series addressing its exact incidence.

P065 Exploring Approaches to Vertigo in Research: A Bibliometric Study

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Vertigo, a common symptom encountered in clinical settings, affects millions worldwide, posing significant diagnostic and management challenges. Bibliometric studies play a pivotal role in addressing these hurdles by comprehensively approaching published literature. Analysis of research trends, gaps, and advancements homogenizes existing knowledge. This enables clinicians and researchers to systematically approach vertigo evaluation and management, ultimately improving patient outcomes.

OBJECTIVES:

The study aimed to quantitatively analyze trends in vertigo research and its management using bibliometrics. By evaluating publication patterns, citation metrics, and collaboration networks, the study sought to track the overall growth trajectory of vertigo-related research, including management and pharmacology.

METHODS:

The study utilized two databases – Web of Science (WOS) and PubMed, each offering distinct advantages and disadvantages. To capture vertigo-focused-studies, specific search strings were employed. All studies up to March 31, 2024, were included. Data analysis, coding, and visualization were conducted using MS Excel, RStudio, Biblioshiny, and VOSviewer.

RESULTS:

A total of 18,221 publications were identified in one of the databases, showing a progressive increase over the years, particularly in 2020, 2021, and 2022. Among the more than 16,300 publications since 1980, authored by at least 40,000 academics, top journal sources include Otology & Neurotology, Acta Oto-Laryngologica, Frontiers in Neurology, the Laryngoscope, and the European Archives of Oto-rhino-laryngology. Notably, high-income countries dominated in terms of relevant publications and prolific authors. The most common disease-specific keyword was Benign Paroxysmal Positional Vertigo, with physical therapy modalities and vertigo drug therapy being frequently mentioned management strategies. “Pathologic nystagmus” was a consistent keyword in recent years, with “COVID-19/pandemic” trending in newer publications. Analyses also highlighted various domains such as themes, publication types, geographic distribution, and collaborative networks.

CONCLUSION:

The bibliometric study highlighted the evolution of vertigo-centered research, especially in the management aspect. The increasing number of publications reflects a growing interest in the field. Research trends underscore the importance of global collaboration and the dynamic nature of research and its responsiveness to clinical challenges. Such studies enable clinicians and researchers to effectively navigate literature, leading to a more standardized approach in identifying gaps in evaluation and management, ultimately leading to improved patient outcomes.

P066 Global Prevalence of Chronic Suppurative Otitis Media: A Modelling Study

[Anjola Onifade](#)¹, [Henriette Wakatolo](#)¹, [Prof. Mahmood Bhutta](#)¹

¹University Hospitals Sussex

Objective:

Chronic Suppurative Otitis Media (CSOM) detrimentally impacts hearing and quality of life, especially in low-resource environments. This study synthesised recent published literature on prevalence in community settings to model overall global prevalence.

Methods:

In accordance with PRISMA guidelines, a systematic search was conducted across the Ovid and Embase databases for community-based studies on CSOM published between 2002 to February 6, 2023. Prevalence data were extracted and assessed for heterogeneity. Co-variables were examined for evidence of potential modifiers of prevalence, including income, rural vs. urban settings, disease subtypes, age, and sex. Global prevalence was modelled, accounting for modifiers.

Results:

From an initial pool of 4,854 articles, 29 community-based cross-sectional studies met our criteria. Studies predominantly originated from lower-income regions and involved paediatric populations. Incidence rates were not reported. Only a minority of studies reported on hearing impairment, affecting 50-78% of cases. Detailed symptomatology, such as the frequency of otorrhoea, was notably underreported, with only one study providing such data. Significant heterogeneity meant meta-analysis was not appropriate. There was a correlation between CSOM prevalence and income level. We did not find consistent evidence of a correlation in prevalence with age, sex, or rural versus urban settings. Modelling was therefore undertaken only on the basis of income level, based on World Bank income group data. Overall global prevalence of CSOM was estimated at 4.02%, affecting a total of 318 million people, with 119 million cases in South-East Asia, 60 million in the Western-Pacific, 48 million in Africa, 43 million in the Eastern-Mediterranean and 44 million in the Americas. Due to the lack of available data from the studies, an estimation for Europe could not be provided.

Conclusion:

The study is the most accurate to date on prevalence on CSOM and, highlights a persistent and major public health concern. Standardized diagnostic criteria and disease definitions are needed for future studies. Our study reinforces the critical need for international initiatives to prevent and manage CSOM, with implications for healthcare providers and policymakers.

P067 EVALUATION OF HEARING LOSS IN PATIENTS WITH OSAS

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¹Ent Clinic Sismanogleio General Hospital Of Attiki, ²2nd University ENT Department, University General Hospital Attikon

Objectives:

Obstructive sleep apnea (OSA) is one of the most common respiratory disorders characterized by intermittent upper airway obstruction during sleep resulting in episodes of apnea and/or hypopnea and awakenings associated with a respiratory event (RERA). While, the sense of hearing is based on the transmission of sound through the auditory pathway. It is a complex and quite sensitive pathway that begins from the external ear and ends in the auditory cortex of the brain, mediated by structures very sensitive to vascular insufficiency and hypoxemia such as the hair cells of the cochlea.

Methods:

In this prospective study we measured the hearing level of individuals with a new onset OSAS.

Results:

Twenty two participants, (16 men, 6 women) with a mean age of 50.8 years old were included in the study. These individuals did not refer previous otologic history or any systematic disease associated with hearing problems. Clinical examination, otoscopy and tympanometry were normal. The pure tone audiogram revealed a slight sensorineural hearing impairment in both ears. A gradual deterioration was observed in high frequencies. The mean hearing level for 4kHz was 35dB for the right ear and 40dB for the left ear, while the hearing level for 8kHz was 45dB for both sides.

Conclusion:

A few studies, with inconsistent results, have examined the possibility that nocturnal obstructive apnea-hypopnea affects the auditory pathway, however literature lacks consistency regarding the relationship between sleep apnea and hearing loss. Our study for correlation between OSAS and hearing loss was held at a clinical and not an experimental level. Audiological data are primarily based on subjective measurements of the pure tone audiogram. This fact decreases the degree of objectivity of the findings, however it allows speed, convenience and zero cost in data collection.

P068 Prelinguistic Development in Children with Cochlear Implants: A Retrospective Chart Review

[Maika Werminghaus](#)¹, [Susann Thyson](#)¹, [Lina Bellers](#)¹, Prof. Dr. med. [Thomas Klenzner](#)

¹Medical Faculty and University Hospital Duesseldorf

Objective:

The treatment of cochlear implant (CI) for children with profound hearing impairment includes surgical intervention and rehabilitation. The period from initial activation of the speech processor to the emergence of the first word is crucial for a child's subsequent linguistic development and requires careful observation and support. A standardized approach to assessing prelinguistic language within CI after care has not been established. This study aims to investigate the prelinguistic development of children with cochlear implants (CwCI) and to identify parameters facilitating standardized assessment.

Methods:

The prelinguistic development of CwCI was analyzed based on vocalizations and classified using the German version of the SAEVD-R (Standardized Assessment of Early Vocal Development - Revised). This assessment comprises 23 different types of vocalizations assigned to 5 hierarchically organized developmental stages. Relevant parameters regarding prelinguistic development were selected and systematized for chart review.

Results:

Data collection involved retrospective review of records of 84 CwCI, aged 0 to 4 years (mean=1.4y, SD=0.9), who underwent unilateral or bilateral implantation between January 2011 and June 2023 at the University Hospital Düsseldorf. 61 received bilateral cochlear implants, 34 of them had a two-stage procedure.

Records included demographic information, medical diagnoses, auditory tests, and documentation of pre- and post-implantation assessments.

Prelinguistic vocalizations were transcribed using the SAEVD-R model and additional parameters such as quotation or paraphrase, child imitation, gesture or sign support, and singing were considered in the classification of utterances. Additionally, further relevant points from the areas of motor skills, language reception, and production were documented as first shown events.

Conclusion:

A systematic approach was essential for retrospective data analysis, involving variable selection, categorization and classification, and transformation into nominal scalable data. Evaluation of these parameters will reveal whether children consistently progress through developmental stages and identify deviations from expected trajectories. Systematic observation of prelinguistic developmental stages enables early detection of stagnation or deviations, facilitating timely interventions and providing support for parental counseling following initial implantation adjustments.

P069 Reduction of Otologic Symptoms Following Biologic Therapy in Patients with Asthma and Chronic Rhinosinusitis with Nasal Polyps

MD Anna Suikkila¹, MD, PhD Annina Lyly², MD, PhD Riitta Saarinen¹, MD, PhD Marie Lundberg¹, MD, PhD Lena Hafrén¹

¹Department of Otorhinolaryngology - Head and Neck surgery, University of Helsinki and Helsinki University Hospital, ²Skin and Allergy Hospital, University of Helsinki and Helsinki University Hospital

Objectives:

Multiple biologic medications are available for both severe asthma and chronic rhinosinusitis with nasal polyps (CRSwNP). Otologic symptoms are common among asthma and CRSwNP patients, and otitis media (OM) is considered a part of the associated multimorbidity. However, few studies describe the effect of biologics on symptoms of OM. This study aimed to explore, if biologics prescribed for asthma or CRSwNP relieve otologic symptoms as well.

Methods:

We retrieved patients who were prescribed biologic medication for CRSwNP or OM from our Electronic Patient Records (EPRs) at our tertiary referral Ear, Nose and Throat (ENT) Center. Additionally, we included patients from our two previous studies on otologic manifestations of NSAID-exacerbated respiratory disease (NERD), who were prescribed biologic medication for CRSwNP or asthma at our Skin and Allergy Center. We excluded patients who were followed up for less than 12 months.

The background information and the response to the biologic medication were collected from EPRs. The regular visits were at 0 months, 4-6 months, and 12 months and included physical examination and collection of two validated patient-reported outcome measures (PROMs): Sino-Nasal Outcome Test-22 (SNOT-22) and otology specific Ear Outcome Survey-16 (EOS-16).

Results:

A total of 40 patients were included. All of them had CRSwNP, whereas 90% had asthma. Only 50% had normal ear status before biologic medication. The main indication of biologic therapy was CRSwNP (70%), asthma (22.5%), and OM (7.5%).

The SNOT-22 scores were significantly lower at 12 months in all the Ear/Facial domain questions. In detail: ear fullness (Z=-3.22, p=0.001), dizziness (Z=-5.538, p<0.001), ear pain (Z=-2.849, p=0.004), facial pain/pressure (Z=-4.94, p<0.001). Similarly, significantly lower scores were seen in the EOS-16 (Z=-2.79, p=0.005).

Conclusion:

The biologics prescribed for asthma and CRSwNP are associated with a significant reduction in otologic symptoms. More prospective studies are warranted to explore associated OM as a new target for biologic therapy.

P070 Post-inflammatory aural atresia in a pediatric female

Dr. Gillian Barzaga¹, Dr. Melanie Grace Cruz¹

¹East Avenue Medical Center

Objectives:

To give the chronology in the development of an acquired external auditory canal atresia in a pediatric patient

To discuss relevant mechanisms in acquired external auditory canal atresia.

Methods:

This is a case report.

Results:

A 7-year old Filipino female consulted in the ENT clinic for right ear discharge. 6 years prior to consultation, ear piercings were made bilaterally, and the mother claimed to notice development of rashes on her right ear lobule, spreading into the external auditory canal, eventually causing its lumen to narrow. There was occasional right ear discharge. She was brought to a private physician and received an unrecalled diagnosis. They were advised to delay the operation due to the age of the patient. 1 year prior to consultation, there was closure of external auditory canal.

Physical examination had absence of an external auditory canal on the right; what remained was a superficial fossa on where the meatus should have been. Both lobules had closed piercings. Tuning fork showed Weber lateralizing to the right, a negative Rinne test on the right, and a prolonged Schwabach on the right, indicative of conducting hearing loss on the right. Audiometry revealed a 53.3dB hearing level on the right and normal hearing acuity on the left. She also had a type A tympanogram pattern.

Temporal bone CT scan showed a heterogenous density completely occupying the right external auditory canal as well as soft tissue densities completely occupying the right middle ear cavity and mastoid air cells. The tympanic segment of the left facial nerve appears to be involved as well as the aditus. The scutum appeared slightly blunted.

Conclusion:

Acquired atresia of the external auditory canal is an unusual cause of conductive hearing loss and this is classified by etiology: post-traumatic, post-operative, neoplastic, and post-inflammatory. The patient reported in this paper developed atresia in her right ear after having an infected ear piercing. This is the first reported case of post-inflammatory acquired aural atresia in the Philippines. The incidence of post-inflammatory aural atresia is 0.6 cases per 100000, as of 1998. There are no large series addressing its exact incidence.

P071 Approaches to Vertigo in Research: A Bibliometric Study

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INTRODUCTION:

Vertigo, despite being a common symptom encountered in clinical settings, remains challenging to diagnose and manage. Bibliometric studies provide a structured and comprehensive approach to published literature by analyzing research trends, gaps, advancements and consolidating existing knowledge. This approach may help clinicians and researchers systematically approach vertigo evaluation and management for improved patient outcomes.

OBJECTIVES:

To quantitatively summarize publication patterns, citation metrics and collaboration networks, and to reveal the evolution and future trajectory of published literature related to vertigo diagnosis, management and pharmacology.

METHODS:

The PubMed database was searched using search term “vertigo” in either the title or abstract. Publications until March 31, 2024, were extracted. Details of extracted publications were analyzed and visualized using MS Excel, RStudio version 2023.12.1, and Biblioshiny version 4.1.

RESULTS:

A total of 18,221 publications were identified in one of the databases, showing a progressive increase over the years, particularly in 2020, 2021, and 2022. Among the more than 16,300 publications since 1980, authored by at least 40,000 academics, top journal sources include Otology & Neurotology, Acta Oto-Laryngologica, Frontiers in Neurology, the Laryngoscope, and the European Archives of Oto-rhino-laryngology. Notably, high-income countries dominated in terms of relevant publications and prolific authors. The most common disease-specific keyword was Benign Paroxysmal Positional Vertigo, with physical therapy modalities and vertigo drug therapy being frequently mentioned management strategies. “Pathologic nystagmus” was a consistent keyword in recent years, with “COVID-19/pandemic” trending in newer publications.

CONCLUSION:

The bibliometric study highlighted the evolution of vertigo-centered research, especially in the management aspect. The increasing number of publications reflects a growing interest in the field. Research trends highlight the importance of global collaboration and the dynamic nature of research and its responsiveness to clinical challenges. Such studies enable clinicians and researchers to effectively navigate literature, leading to a more standardized approach in identifying gaps in evaluation and management, ultimately leading to improved patient outcomes.

P072 A research project to understand vaping habits and the perception of vaping in the MSE trusts.

Miss Shruti Darak¹, Mr Ryan Bushell¹, Mr Yayha Dakhri¹

¹Anglia Ruskin University

Title: A research project to understand vaping habits and the perception of vaping in the MSE trusts.

Purpose:

As the popularity of vaping continues to rise in society amongst younger population, understanding its effects on health remains a crucial area of research. In terms of health risks of vaping in ENT, there is limited evidence of its harmful effects. A handful of papers have shown that there is a link between vaping and oral mucosal lesions and allergic rhinitis. This poster aims to determine the vaping habits and perception of vaping amongst patients.

Methods:

Questionnaires regarding perceptions of vaping and the knowledge of the health risks behind it were created. Then from February to May 2024 we collected data from Basildon, Southend and Broomfield hospitals from patients coming into ENT clinics and the ENT wards. Analysing this data, showed many trends regarding societal views of vaping and some suggestions on campaigns to ban them.

Results:

People who vape only 23.8% think its very harmful, whereas people who don't vape, 60.2% people think its harmful. From the data we collected we found out people who vape, only 27.9% are extremely aware of the health risks. Whereas people who don't vape 34% are extremely aware of the health risks. The general trend show that the population of people who vape are younger than people who don't vape. The average age of vape users were 41.1 years old, emphasising that the younger demographic of people in society are the main users of vapes. 28.9% people who vape have never received any health risk information about vaping and another big proportion have seen it in media and have not received information by health professionals.

Conclusion:

Those who vaped were in the younger age group, whether it be due to the packaging, the flavours or any other reasons. Both groups agree that vaping is addictive and agree that there should be more strict regulations on vaping, however those in the vaping group had a higher proportion who were unsure on whether there should be stricter regulations.

P073 Jugular Foramen Syndrome secondary to Temporal Bone Squamous Cell Carcinoma with Skull Base Osteomyelitis

For example dr., PhD, drs. Aleli Francis Rivera-Onia¹, Dr. Jona Minette Ligon, Dr. Melanie Grace Cruz

¹East Avenue Medical Center Philippines

Objectives:

The objective of the study is to present a case of Jugular Foramen Syndrome secondary to Temporal Bone Squamous Cell Carcinoma of the Ear with Skull Base Osteomyelitis

Methods:

Reviews of current literature related to squamous cell carcinoma of the temporal bone and jugular foramen syndrome were utilized and its management. Patient underwent Canal Wall Down Mastoidectomy with an initial benign histopathology however with recurring ear mass, the final histopathology is temporal bone squamous cell carcinoma.

Results:

The initial presentation of the disease is benign in nature. However, progression of facial paralysis, recurring ear mass with bleeding, osteomyelitis of the temporal area, hoarseness, dysphagia and paralyzed vocal cords deemed an aggressive tumor. a second operation with neurosurgery is performed for lateral skull base management, temporal bone debridement and exploration of bleeding temporal vessels. the patient's recurrent ear mass presented with final histopathology of Temporal Bone squamous cell carcinoma. Patient is co managed with oncology.

Conclusion:

Management of Temporal Bone Squamous cell carcinoma is aggressive in nature and very complex because the initial presentation of the disease has been benign and surgical technique such as canal wall down mastoidectomy has been used however the initial biopsy was benign in nature (cholesteatoma). it was through time and quick progression of the patient disease presenting with facial paralysis, dysphagia, hoarseness, ear bleeding and recurring ear mass has been predictive of the result as jugular foramen syndrome and a mass of malignant pathology in nature. the final biopsy on the second operative is temporal bone squamous cell carcinoma. it is recommended that a good management and multidisciplinary approach with a team of neurosurgeons and oncologist is recommended for this aggressive type of tumor.

P074 Jugular Foramen Syndrome secondary to Temporal Bone Squamous Cell Carcinoma with Skull Base Osteomyelitis

Aleli Francis Rivera-Onia¹, Dr. Jona Minette Ligon¹, Dr. Melanie Grace Cruz¹

¹ORL-HNS Section of Otolaryngology, Neuro-otology and Audiology East Avenue Medical Center Philippines

Objective:

The objective of the study is to present a case of a 26 year old male diagnosed with Jugular Foramen Syndrome secondary to Temporal Bone Squamous Cell Carcinoma of the Ear with Skull Base Osteomyelitis.

Methods:

Reviews of current literature related to squamous cell carcinoma of the temporal bone and jugular foramen syndrome were utilized and its management, reviewed. Patient underwent Canal Wall Down Mastoidectomy with a follow up operation of Revision Mastoidectomy with Exploration and Ligation of Ear Vessel and Neck Exploration. The final histopathology resulted to Keratinizing Squamous Cell Carcinoma, Moderately Differentiated.

Results:

The initial histopathology of the disease is benign in nature. However, with progression of the patient's facial paralysis, recurring ear mass with bleeding, osteomyelitis of the temporal area, hoarseness, dysphagia and paralyzed vocal cords, the following signs and symptoms deemed an aggressive tumor. Jugular Foramen Syndrome was contemplated as a diagnosis along with Skull Base Osteomyelitis. A second operation with neurosurgery is performed for lateral skull base comanagement, the findings were an intact dura area, hence no contemplation of exploration of the middle cranial fossa was done. Revision Mastoidectomy and exploration of ear and neck vessel were done with findings of an intact external carotid artery and superficial temporal artery. Bleeding around the posterior auricular artery was controlled. the patient's recurrent ear mass presented with final histopathology of Temporal Bone Keratinizing Squamous Cell Carcinoma, Moderately Differentiated. A third operation was contemplated and patient is co managed with oncology and palliative medicine.

Conclusion:

Management of Temporal Bone Squamous cell carcinoma is complex because the initial presentation of the disease is benign. However, with progression of the patient disease with the following signs and symptoms mentioned, it is recommended that a good management and multidisciplinary approach with team of doctors from neurosurgery, oncology and palliative medicine is recommended for holistic management and timely operation of the aggressive tumor.

P078 Middle Ear Implant Vibration Measurements using OCT Vibrometry

MD. PhD. Mick Metselaar¹, MSc. Ruben Niemantsverdriet, MSc. Harry de Vries, Coen

Greidanus, PhD. Koenraad Vermeer

¹Erasmus MC

Objectives:

Passive middle ear implants (PORP, TORP, stapes prosthesis) aim to restore ossicular chain function but often result in residual air-bone gaps post-surgery. Current diagnostic tools like CT and otoscopy lack functional assessment capabilities. Optical coherence tomography (OCT) offers non-invasive, high-resolution imaging and functional assessment via OCT vibrometry (OCTV). OCTV measures vibrational characteristics of middle ear structures, providing insights into implant and ossicle mobility.

This study used a novel OCTV device to evaluate the visibility and measure the mobility of four middle ear implants in four patients post-operatively and compared findings with audiometry results, offering an assessment of implant functionality.

Methods:

OCT-imaging was performed in 5 patients: 2 PORP, 2 TORP and 1 with a stapes prosthesis. The OCT device employs a swept source to quickly capture high-resolution cross-sectional images of the middle ear space. Our device's sensitivity near the zero-delay line was measured at 99.5dB with a roll-off of 0.17dB/mm. The laser sweep rate was set at 90kHz, while the frequency of the emitted acoustic wave was fixed at 1000 Hz, with power levels kept below 95 dB(A).

The scanning procedure involved acquiring multiple repeated A-lines at different parts of the middle ear implants, taking a maximum of 110 ms. Subsequently, the amplitude was computed using custom-built software. These results were compared to the audiometry measurements at 1000 Hz.

Results:

All patients showed visibility of the lateral part of the prosthesis, while the medial part and stapes footplate were not visible. Two patients with PORP had a 20 dB post-surgery air-bone gap. OCTV revealed average vibration amplitudes of 36 nm and 0.3 nm for the head of the implant. A TORP patient had a 30 dB air-bone gap and an average vibration amplitude of 6 nm.

Conclusion:

OCT proves promising for post-operative middle ear implant assessment, providing visibility of implants and enabling OCTV mobility measurements even behind the TM. This facilitates analysis of implant-TM or incus acoustic coupling. A notable difference in vibration amplitude for two PORP implants, despite similar air-bone gaps, suggests potential issues like fixation or improper connection at the implant's rear end, not visible via OCT.

P079 Histology of the human cochlea using fluorescent confocal microscopy

Professor Alexandre Karkas¹, Dr Jamila Shimi¹, Mr Arnaud Vanden Bossche¹, Mr Florian Bergandi¹, Pr Hubert Marotte¹, Dr Kelly Daouda¹

¹University Medical Center Of Saint-etienne

Background and Aims:

Immunofluorescence of the decalcified-transparized cochlea for imaging by laser-scanning confocal microscopy (CFM) has been described in animals and patients during surgery. Since we analyzed human cadaveric temporal bones (TBs), immunohistochemistry was not feasible because of the deteriorated status of many cochlear proteins. We used fine sections of the cochlea without decalcification or transparization to preserve the osteocytic network of otic capsule while visualizing intracochlear minute structures.

Materials & Methods:

Ten TBs underwent posterior tympanotomy and round window exposure. Five of them underwent cochlear implantation. TBs were sectioned to blocks of 1cm³ containing the otic capsule. Blocks were impregnated with fluorochromes (fluorescein and methylene blue), ethanol, and resin. Thereafter, they were sectioned to 0.5mm-slices and analyzed by CFM.

Results:

Fluorescent-CFM showed the bone matrix in blue, neural elements in green, and cell nuclei in red. At higher magnification, it showed the spiral ligament and stria vascularis and at even higher magnification, it showed the organ of Corti with the sensorineural interface. In the 5 implanted TBs, we noted 1 case of microfracture of basilar membrane without electrode migration into scala vestibuli (Eshraghi stage 2) and 1 case of elevation of basilar membrane (Eshraghi stage 1).

Conclusions:

We described fluorescent-CFM in the human cadaveric TB without immunohistochemistry. Those innovative images displayed the histology of cochlear structures at a submillimetric level. Besides, CFM revealed $\leq 100\mu\text{m}$ -microtraumas after cochlear implantation which wouldn't be visible with conventional imaging. We did not use decalcification or transparization in order to preserve bony structures. Thanks to fluorochromes, ethanol, resin, and microsections, we were able to visualize osteocytes around the cochlea while exposing the smallest cochlear structures like stria vascularis and Corti's organ. We called our technique "semi-transparization".

P080 The Role of CT scan in Hearing Preservation for Cochlear Fistula in Cholesteatoma: Report of Two Cases

Asso. Prof Kanu Saha¹, Bishwajit Bhowmik¹

¹Bangabandhu Sheikh Mujib Medical University

Objective:

To evaluate the role of CT scan in diagnosing fistula over the promontory in cholesteatoma and preservation of hearing after surgery.

Methods:

This is a retrospective review of two cases of cholesteatoma with cochlear fistula diagnosis confirmed on CT scan and per-operative evidence.

Results:

Two cases of pars tensa retraction pocket cholesteatoma presented with aural discharge and hearing impairment. One patient had a history of vertigo. Pure tone audiogram of both patients reported moderate conductive hearing loss. HRCT scan of the temporal bone reported features of chronic ototo-mastoiditis with unremarkable cochlea or vestibule. Both cases underwent canal down mastoidectomy, and the fistula was noticed during the per-operative period. A review of the imaging correlated the bony dehiscence over the promontory. In one case, the cholesteatoma matrix was firmly adherent to the footplate and promontory. The footplate and basal turn of the cochlea opened during the removal of the matrix.

Consequently, the ear became dead. In the other case, the matrix over the dehiscent promontory was left. A follow-up showed a pearl over the promontory, which was partially removed as an office procedure, and the area was kept open. During the follow-up, no recurrence was noticed to date. The hearing is maintained in the preoperative stage.

Conclusion:

Cochlear fistula in cholesteatoma is invariably missed. Only a keen study of the imaging focused on promontory in cholesteatoma can help diagnose it before surgery. Keeping the cholesteatoma matrix over the fistula may develop pearl, which can be managed as an office procedure, and hearing can be preserved.

P081 Middle Ear Implant Vibration Measurements using OCT Vibrometry

MSc Harry de Vries¹, MSc Harry De Vries¹, Coen Greidanus¹, PhD Koenraad Vermeer¹, MD, PhD Mick Metselaar²

¹Acoustic Insight, ²Erasmus Medical Center Rotterdam, Department of Ear Nose and Throat (ENT)

Objectives:

Passive middle ear implants (TORP and PORP) aim to restore ossicular chain function but often result in residual air-bone gaps post-surgery. Current diagnostic tools like CT and otoscopy lack functional assessment capabilities. Optical coherence tomography (OCT) offers non-invasive, high-resolution imaging and functional assessment via OCT vibrometry (OCTV). OCTV measures vibrational characteristics of middle ear structures, providing insights into implant and ossicle mobility.

This study used a novel OCTV device to evaluate the visibility and measure the mobility of four middle ear implants in four patients post-operatively and compared findings with audiometry results, offering an assessment of implant functionality.

Methods:

The OCT device employs a swept source to quickly capture high-resolution cross-sectional images of the middle ear space. Our device's sensitivity near the zero-delay line was measured at 99.5dB with a roll-off of 0.17dB/mm. The laser sweep rate was set at 90kHz, while the frequency of the emitted acoustic wave was fixed at 1000 Hz, with power levels kept below 95 dB(A).

The scanning procedure involved acquiring multiple repeated A-lines at different parts of the middle ear implants, taking a maximum of 110 ms. Subsequently, the amplitude was computed using custom-built software. These results were compared to the audiometry measurements at 1000 Hz.

Results:

All patients showed visibility of the lateral part of the prosthesis, while the medial part and stapes base were not visible. Two PORP patients had a 20 dB post-surgery air-bone gap. OCTV revealed average vibration amplitudes of 36 nm and 0.3 nm for the head of the implant. A TORP patient had a 30 dB air-bone gap and an average vibration amplitude of 6 nm. A stapes prosthesis patient had a 20 dB gap and an average vibration amplitude of 24 nm.

Conclusion:

OCT proves promising for post-operative middle ear implant assessment, providing visibility of implants and enabling OCTV mobility measurements even behind the TM. This facilitates analysis of implant-TM or incus acoustic coupling. A notable difference in vibration amplitude for two PORP implants, despite similar air-bone gaps, suggests potential issues like fixation or improper connection at the implant's rear end, not visible via OCT.

P082 Tympanic Membrane Segmentation using OCT

MSc Ruben Niemantsverdriet¹, MSc Harry De Vries¹, Coen Greidanus¹, PhD Koenraad Vermeer¹, MD, PhD Mick Metselaar²

¹Acoustic Insight, ²Erasmus Medical Center Rotterdam, Department of Ear Nose and Throat (ENT)

Objectives:

Optical coherence tomography (OCT) is a non-invasive, high-resolution imaging method that swiftly provides three-dimensional images of the middle ear. These images allow for quantification of middle ear structures, such as tympanic membrane (TM) thickness maps and distance measurements between TM and rear wall. Proper segmentation of the TM is useful for performing these measurements.

In this study, we semi-automatically segmented 15 TMs of not complaining ears of 11 patients with a disorder of the contralateral ear at the Erasmus Medical Center and visually inspected their quality against anatomical standards.

Methods:

The OCT device employs a swept source to quickly capture high-resolution cross-sectional images of the middle ear space. Our device's sensitivity near the zero-delay line was measured at 99.5dB with a roll-off of 0.17dB/mm and the laser sweep rate was set at 90kHz. Volumetric scans were made of the posterosuperior quadrant of the middle ear and consisted of 300 by 150 A-lines. Scans were corrected for the fan-beam geometry and the TM was semi-automatically segmented using 3D Slicer.

Results:

Segmentation of the TM was possible for all 16 ears, as the frontal and rear boundaries of the TM were visible in the OCT images. Visual inspection of all segmentations was in accordance with anatomical norms.

Conclusion:

OCT effectively images the TM, facilitating accurate segmentation and qualitative assessment. Furthermore, its potential extends to imaging and segmenting other middle ear structures, including the malleus, incus, stapes, and rear wall. Such capabilities hold promise for applications like surgical implant planning.

P083 Comparison of CT with and without artefact removal algorithms and CBCT in post operative CI imaging; a temporal bone study

Md, Phd Matti Iso-mustajärvi¹, MSc, PhD Hanna Matikka¹, Md, PhD Sini Sipari¹, MSc, PhD Juha Koivisto², MSc, PhD Siru Kaartinen¹, MSc, PhD Ari-Petteri Ronkainen¹, MD, prof Juhana Hakumäki¹, MD, Prof Aarno Dietz¹, MD Henri Viitanen¹

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Objectives:

The constant development of imaging devices and image processing has resulted in better image quality with more detailed visualization of anatomical structures. In CI imaging, metal artifacts can still obscure the evaluation of electrode placement, particularly electrode dislocation through the basilar membrane. Artifact removal algorithms (ARA) for pacemakers (PM) and neurostimulators (NS) have been developed to minimize distortions in images caused by these implants. For CI imaging, the use of ARAs have not yet been reported. In addition, the cone-beam computed tomography has been shown to be better in terms of postoperative CI imaging of metallic artifacts. We aimed to evaluate computed tomography (CT) images with and without ARA in comparison with CBCT images to determine the most suitable postoperative imaging modality for clinical use.

Methods:

We gathered six freshly frozen temporal bones (TB) from a medical autopsy (approval 251/32/200/02) and inserted three SlimJ electrodes and three MidScala electrodes (Advanced Bionics, Valencia, USA). The TBs were imaged with CT (Siemens Somatom, Erlangen, Germany) and CBCT (Promax Planmecca, Helsinki, Suomi). Both CT and CBCT were used to scan the TBs according to a clinical protocol. Additionally, in the CT scans, a pacemaker and neurocoil ARA were used. Images were evaluated by two neuroradiologists and two ENT specialists regarding the overall image quality (OIQ) and suitability for trauma evaluation (TE) (scores from 1 to 5).

Results:

The CBCT protocols were ranked best in both OIQ (mean 4.125, median 4, IQR; 4, 5) and TE (mean 4.42, median 4, IQR; 4, 5). CT without ARA had a mean evaluation score of 3 (median 3, IQR; 3, 3). The poorest evaluations were NC (mean 1.3, median 1, IQR; 1, 2) and PM (mean 2.9, median 3, IQR; 3, 3). CBCT was evaluated significantly better than CT in terms of both OIQ and TE ($p < 0.001$).

Conclusion:

Overall, CBCT was evaluated better in postoperative CI imaging of TBs. The ARAs tested in this study did not provide any benefits in CI imaging. Currently, no specific ARA have been developed for CI imaging, and the use of ARAs developed for different regions and implants is not recommended.

P087 CONSERVATIVE MANAGEMENT VS OBLITERATIVE PETROSECTOMY FOR CSF LEAKS AFTER MIDDLE EAR & MASTOID SURGERY

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A cerebro-spinal fluid (CSF) leakage after surgical procedures on the mastoid or epitympanic spaces is an occasional but dreadful complication. If left untreated, it can lead to meningitis or other intracranial suppurative complications.

A CSF leakage can occur when a defect in the bony floor of the lateral skull base, i.e. in the roof of the petrous pyramid, is caused by osteolytic pathologies or inadvertently or necessarily produced during otosurgical procedures performed to remove the pathology.

Either pre-operatively recognized or intra-operatively identified defects are conventionally repaired through a limited subtemporal craniotomy with elevation of the temporal lobe or through a combined transmastoid and middle cranial fossa (MCF) approach. A more conservative intervention through the mastoid alone has been proposed by some Authors in order to reduce the morbidity of the procedure. A "lateral" petrosectomy with fat obliteration, blind-sac closure of the outer ear canal (OEC) and permanent plugging of the Eustachian tube (ET) is warranted for larger defects or recurrent leakage after conservative procedures.

In conservative procedures, several materials have been used to reconstruct bony defects of the lateral skull base: autologous and homologous cartilage or bone, lyophilized homologous dura mater, pre-formed hydroxylapatite (HA) blocks, titanium or carbon fiber mesh, and myofascial pedicled or distant free flaps. Each material has unique advantages, but each of them also has disadvantages that can lead to failure of the implantation, adverse reactions, or complications.

The Authors will review the pros and cons of each surgical approach, the available materials to repair temporal bone defects, with special emphasis on the transmastoid route.

Finally, they will provide a flowchart of management based on etiology and on an anatomical compartmental classification of the bone defects causing CSF leaks, modified from Sanna et al., (2018)

P088 Differential diagnosis of Retroauricular Abscess in a Pediatric Patient: A case report

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Objectives:

This case report aims to present a rare occurrence of acute retroauricular abscess after trauma or acute infection or both in the same time, and to discuss the clinical presentation, diagnostic workup, treatment approach, and outcome. The objectives include highlighting the challenges in differential diagnosis, early recognition, appropriate diagnostic workup, and emphasizing the importance of timely intervention in preventing complications.

Methods:

A detailed description of the patient's clinical history, physical examination findings, radiological investigations, and management strategies is provided. The diagnostic workup included complete ENT examination, X-ray Schueller's view, computed tomography (CT) imaging of the temporal bone, laboratory findings, audiometry, tympanometry, and microbiological analysis of retroauricular abscess formation obtained via incision. Treatment modalities, including antibiotic therapy and surgical intervention, are discussed.

Results:

The patient presented with symptoms of otalgia, fever, headache, and rhinorrhea for three days, and with retro and supraauricular swelling, erythema, tenderness, and protrusion of pinna. One month ago patient received a blow in the retroauricular region after which he had a hematoma and was hospitalized in another institution. CT imaging revealed an opacification in the mastoid cavity, and tympanic cavity on both sides without clear evidence of bone erosion and retroauricular abscess on the left side. Empirical antibiotic therapy was initiated promptly, followed by surgical intervention for incision and drainage on the left side and bilateral insertion of ventilation tubes. During the surgery, it was confirmed that the temporal bone was not affected, consistent with the findings from the scan. Consequently, mastoidectomy was not performed. The patient showed significant clinical improvement with resolution of symptoms after surgical treatment and completion of antibiotic therapy.

Conclusion:

This case highlights the importance of differential diagnosis in patients with retroauricular swelling. Early recognition of clinical symptoms, adequate diagnosis, prompt initiation of appropriate antibiotic therapy, and consideration of surgical intervention are crucial for achieving favorable outcomes and preventing potential complications.

P089 Extended Modified Bondy Mastoidectomy - a Novel Technique for Hearing Preservation in Cholesteatoma Surgery

Asso. Prof Kanu Saha¹

¹Bangabandhu Sheikh Mujib Medical University

Objective:

Mario Sanna refined the drawbacks of Gustave Bondy's technique and named it the modified Bondy technique, which is well-accepted in modern otology. This technique is applied when cholesteatoma involves and extends laterally to an intact ossicular chain. Later, Mario Sanna introduced extended modified mastoidectomy, where cholesteatoma lies and extends medially to ossicles. This study aims to evaluate the outcome of the extended modified Bondy technique applied when cholesteatoma extends medially to ossicles.

Methods:

The extended modified Bondy technique was used on 12 patients with epitympanic cholesteatoma, and it was retrospectively reviewed from April 2017 to March 2024. Cholesteatoma developed from epitympanic retraction and progressed medial to ossicles with variable extension in epitympanum and mesotympanum. Canal wall down mastoidectomy was performed while maintaining the integrity of the incudostapedial and incudomalleal joint in cases of the intact ossicular chain and cases of partial erosion of the malleus head and short process or body of the incus. The drilling was carefully executed without touching the ossicles. The squamous epithelium was thoroughly cleaned. The cases were followed up to see the recurrence of cholesteatoma and hearing status.

Results:

The malleus head, short process, or body of the incus was found eroded to variable degrees while maintaining the ossicular integrity in 12 cases (100%). The preoperative audiogram showed normal to mild conductive hearing loss. At least 3-6 months of follow-up findings were recorded in 10 cases. Of which dry ear was achieved in 10 (100%) cases. No recurrence was found in follow-up cases. Pearl-like residual cholesteatoma was noted in the epitympanic part of the cavity in two instances, which were managed as a local procedure. The air-bone gap was unchanged in 10 cases. No sensorineural hearing loss or dead ear was encountered.

Conclusion:

The extended modified Bondy mastoidectomy is indicated in selective cases of epitympanic cholesteatoma extended medial to the integrated ossicular chain. The surgeon's patience and skill can help thoroughly clear the disease. This technique ensures complete disease eradication with minimum recurrence as a single-stage procedure while hearing is maintained.

P090 Unusual presentation of Tubercular Mastoiditis

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Objective:

The presentation of tuberculosis (TB) in the temporal bone is variable and mysterious. It attributes diagnostic dilemmas and is usually associated with delayed diagnosis with severe complications. This study aims to describe three cases of TB mastoiditis with unusual presentation and management.

Methods:

This is a retrospective review of 3 cases of tubercular mastoiditis treated between March 2019 and February 2023. All available preoperative, postoperative, and follow-up documentation were reviewed.

Results:

Three cases of tubercular mastoiditis presented with variable clinical features, which raised a diagnostic dilemma. Case 1: A 23-year-old male presented with aural discharge and hearing impairment with a pulsatile polypoidal mass occluding the external auditory canal. The patient underwent canal wall up mastoidectomy. The tissue was sent for histopathology, which reported tuberculosis. The patient received four drug regime antitubercular therapy and responded with complete recovery of symptoms. Case 2: A 20-year-old woman presented with ear discharge and otalgia in the right ear. There was a tender swelling over the post-auricular region and granulation tissue polyp in the external auditory canal. Histopathological examination of representative tissue was reported to favor tuberculosis. She also developed lateral sinus thrombosis, which was confirmed by CT scan and MRI. Right canal wall down mastoidectomy was performed along with the decompression of lateral sinus thrombosis. The patient received four drug regime antitubercular therapy and responded with complete recovery of symptoms. Case 3: A nine-year-old boy presented with discharge from the right ear for over a year with a previous history of mastoidectomy and tympanoplasty. Otoendoscopic examination showed granulation tissue occluded the external auditory canal for which he underwent canal wall down mastoidectomy. Extensive granulation tissue was removed from the middle ear and the mastoid cavity. Histopathological examination of granulation tissue confirmed tuberculosis. The patient received four drug regime antitubercular therapy and responded well.

Conclusion:

A high index of clinical suspicion is necessary in cases of unusual granulation tissue presentation in the external auditory canal to exclude tuberculosis. Early recognition and prompt diagnosis can help start antitubercular therapy with or without surgery to complete recovery without fatal complications.

P090 Unusual Presentation of Extracranial Abscess in Cholesteatoma

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Objective:

Abscesses may occur at different sites among the extracranial complications of cholesteatoma, which raises a diagnostic dilemma. This study aims to analyze unusual sites of abscess presentation, surgical treatment, and outcome in four cases of cholesteatoma.

Methods:

This is a retrospective review of four cases of cholesteatoma with unusual sites of abscess presentation operated between December 2020 and May 2023. All available preoperative, postoperative, and follow-up documentation (clinical history, otoscopic pictures, audiological evaluations, imaging studies, and operative findings) was retrospectively reviewed.

Results:

Four cases of epitympanic cholesteatoma presented with abscesses in different sites.

Case 1: A 14-year-old girl presented with right epitympanic cholesteatoma with features of meningitis. A painful swelling had been noticed in her right post-auricular region behind the mastoid process, and needle aspiration confirmed the abscess formation. An imaging study confirmed the presence of an abscess at the exit of the emissary vein and lateral sinus thrombosis on the right side. Clinical and imaging study confirmed it a case of Griesinger's sign with abscess. Case 2: A 19-year-old male presented with cholesteatoma in the right ear with a sub-periosteal abscess in the post-auricular, parietal, and occipital regions. The presence of lateral sinus thrombosis was demonstrated by imaging. Case 3: A 25-year-old male presented with cholesteatoma in the right ear, granulation tissue polyp in the external auditory canal, and two different abscesses in the neck, one behind the midzone of the sternocleidomastoid muscle and another at the supra-clavicular region. Case 4: A 12-year-old boy presented with left epitympanic cholesteatoma complicated with lateral sinus thrombosis on the left side communicating with an abscess on the sub-occipital region.

Conclusion:

Abscesses may present in unusual sites in cholesteatoma. A high index of clinical suspicion and imaging can help diagnose and manage cases without morbidity or mortality.

P091 Gelatin versus Chitosan as packing materials in endoscopic myringoplasty for chronic suppurative otitis media

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Background:

There are various factors influencing the success of myringoplasty. However, there is a lack of research focusing on the impact of various middle ear packing materials on the outcomes of myringoplasty. Gelfoam, an absorbable gelatin sponge, is commonly used as a packing material in myringoplasty, though it has been reported to induce middle ear fibrosis or adhesions. Posiseq, a carboxymethylated chitosan-based sponge, has useful properties including hemostasis, anti-adhesion, antimicrobial activity, biodegradability and non-toxicity. Given these benefits, Posiseq may be a useful alternative for supporting the graft in myringoplasty. This study compares the graft healing rates when Posiseq and Gelfoam were used as packing materials for endoscopic myringoplasty.

Methods:

An audit was performed of all patients who underwent endoscopic myringoplasty for chronic suppurative otitis media under the Otolaryngology department of Ng Teng Fong General Hospital between June 2021 and March 2024. Patients were followed up at least 3 months after surgery. Graft success was defined as the presence of an intact graft without perforation at the end of 3 months after surgery.

Results:

A total of 91 patients were analyzed. Gelfoam and posiseq were used in 40 and 51 patients respectively. The mean age of patients were 47.9 (+/- 15.3) and 54.1 (+/- 13.6) years respectively. ($p=0.044$) The overall graft success rate of the 91 cases was 79.1% ($n=72$) and failure was 20.9% ($n=19$). The most common type of graft used was tragal perichondrium (46.1%, $n=42/91$), with a success rate of 80.9% ($n=34/42$). The differences in graft success rates among the various graft types was not statistically significant. ($p=0.129$) (Table 2)

Graft success rate for grade 3 perforations was 92.8%, though differences in graft success rates across perforation sizes did not reach statistical significance. ($p=0.399$) There was also no significant difference in the success rate between the posiseq group (80.4%, $n= 41/51$) and the gelfoam group (77.5%, $n=31/40$). ($p=0.736$)

Conclusion:

Posiseq packing affords at least equivalent success when compared to gelfoam packing for endoscopic myringoplasty surgery. It should be considered as a competitive alternative packing material given its other benefits of reducing adhesions and promoting wound healing.

P092 The Surgify Safety Burr: The characteristics and surgical results of a novel tissue-selective cutting burr for temporal bone drilling

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Objective:

Temporal bone (TB) drilling is often required in different medical conditions, such as cholesteatoma or mastoiditis. However, it carries a potential risk of damage to the facial nerve, sinus sigmoideus, and dura. Conventional cutting burrs (CCBs) are effective at cutting bone but may easily cause soft tissue damage. A novel 5.4-mm cutting burr, the Surgify Safety Burr (SSBTM), with a moving, self-centering ring placed around the cutting tip, was developed to prevent soft tissue injuries. The tip requires gentle pressing against a hard surface to initiate cutting, and when it reaches the soft tissue, the pressure vanishes, allowing the ring to come out and prevent cutting and soft tissue injuries.

Methods:

SSBTM was compared with 5.0 mm CCB in 20 cadaveric fresh-frozen TBs. Ten TBs were drilled using SSBTM and ten using CCB. The time taken to complete the mastoidectomy and number of inadvertent errors were recorded. Mastoidectomies were performed by three otosurgeons (one novice and two experienced). Burr characteristics were graded on a scale of 1 (poor) to 5 (superior). Soft-tissue protection features of SSBTM were subjectively assessed using three cadaver heads. Three otosurgeons completed one mastoidectomy each (the sigmoid sinus and tegmen dura exposed) with SSBTM and provided a subjective assessment of soft tissue protection features.

Results:

No statistically significant differences were found in procedure times and number of inadvertent errors ($p=0.69$), efficiency of bone cutting ($p=0.14$), or noise level ($p=0.16$) between SSBTM and CCB. However, SSBTM was perceived as significantly superior to CCB in terms of the absence of jumping ($p<0.001$), durability ($p<0.01$), predictability ($p<0.001$), and precision ($p<0.001$). With three fresh cadaveric heads, SSBTM was determined to be excellent for soft tissue protection without perforation or tearing. A perforation of the sigmoid sinus was created only when drilling intentionally for an extended amount of time.

Conclusion:

SSBTM is a feasible alternative for TB drilling. Handling and controllability were superior, as indicated by the absence of soft-tissue damage. With proper training, SSBTM can result in safer TB drilling circumstances. Further studies are needed to comprehensively assess the features and limitations of SSBTM for TB drilling.

P093 Tympanoplasty after the Blast-related Tympanic Membrane Perforation

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Blast-related ear injuries often present as damage to the sensitive structures of the inner and middle ear, such as the cochlea, ossicular chain, tympanic membrane /TM/, which may result in transient or permanent hearing loss and tinnitus.

Objectives:

The objectives of this study were to assess the prevalence of blast-related middle ear injuries among servicemembers wounded in 2020 Artsakh conflict, identify the effectiveness of standard methods of tympanoplasty for blast ear injuries, Identify the effectiveness of Endoscopic noninvasive perichondrial graft myringoplasty (ENIM) without elevation of tympanomeatal flap for anterior ruptures of TM.

Material and methods:

317 explosion-wounded patients with multiple trauma admitted to various departments of Astghik Tertiary Medical Center, from which 125 (39.4%) patients had TM perforation. This study includes only 62 /mean age- 27,4 y.o/ patients who continued to stay under our control. In 4 patients TM perforation was bilateral /66 cases/. In 33/50%/ perforations were total and subtotal. In most cases patients had moderate hearing loss /41-55dB/. In cases of ossicles damage there were moderate to severe hearing losses /56-70dB/. In patients with bilateral perforations, we repaired the worse hearing ear first.

We have started tympanoplasties no early than 1 month after the injury. Standard approaches /18postauricular,14transmeatal,13endaural/ had been used in most cases of tympanoplasty. 21 patients with anterior perforations with no visualization of anterior margin of perforation through the microscope having mild to moderate hearing loss had been undergone ENIM.

Results:

from all 66 cases. 58 (87.8%) were successful, while 8(12,2%) were not. 2 initially total perforations were reduced to small perforations. 2 failures were due to water explosion, other 4 because of inflammation. The average improvement of hearing in air conduction was 19.5dB.

Conclusion:

Blast-induced TM perforations are challenging. However, we found that standard tympanoplasty techniques work well. ENIM without elevation of the meatal flap has a high healing rate. It shortens the duration of surgery, diminished postoperative period discomfort, has good anatomical and functional results.

P094 Neuroendocrine tumors of the middle ear. Another use of laser KTP in Otolaryngology surgery.

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Objectives:

Less than 1% of all neuroendocrine neoplasms appear in the middle Ear, being defined as middle ear adenomatous neuroendocrine tumors (MEANTs). Only 198 patients have been reported. Usually has a benign behavior, however, severe recurrence cases and distant metastases have been reported. There is no staging system and therefore its management is not clear, laser being one of them. Laser usage within middle ear surgery has evidence and reports in cholesteatoma surgery, paraganglioma and otosclerosis. Thus we theorize that the KTP laser would be an optimal alternative for MEANTs. We present a 3 case report of MEANTs and a literature review in MEANTs.

Methods:

Retrospective clinical analysis and description of 3 MEANTs patients treated in our center. We also performed a literature search up to 1980 using PubMed and a nonsystematic review of pertinent articles was undertaken.

Results:

Case 1: 30 yo male with hearing loss, ear fullness and pulsatile tinnitus. CT and MRI scans show a middle ear lesion. 1st exploratory tympanotomy showed a yellowish mass in the mesotympanum, epitympanum, surrounding the ossicles. Histology: fibrous tissue infiltrated by cords and islands of epithelium cytologically bland. Immunohistochemistry shows reaction to pan cytokeratin, cytokeratin 7, chromogranin and synaptophysin, consistent with MEANTs. 2nd exploratory tympanotomy showed complete recurrence of tumor. Total tumor removal was achieved with KTP laser. 7 month follow-up MRI scan shows no recurrence. Case 2: 63 yo patient with radiological diagnosis of paraganglioma exploratory tympanotomy shows a tumor non consistent with glomus. KTP laser was used to aid biopsy and limit damage. Tumor deliberately left between crura to avoid damage to inner ear. Histology confirms MEANT. Post MRI shows only residual tumor in between stapes. Patient currently awaiting further excision with aid of KTP laser to enable complete excision.

Conclusion:

KTP laser has many features ideal for otology surgery, such as non-contact removal of tissue, not generating acoustic energy, being absorbed by hemoglobin and promoting coagulation. Thus this use would be effective in surgical removal and recurrence of MEANTs.

P095 Vital Signs Variability In Young Adults (18 - 30 Years Old) During Caloric Testing With Videonystagmography

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Objective:

To compare heart rate variability in young adults (18-30 years old) during caloric testing with videonystagmography (VNG).

Methodology:

63 volunteers (35 women and 28 men) aged 18-30 with no history of dizziness were recruited. Each participant underwent 45 minutes of examination and performed posturography, Fukuda - Unterberg test, video-head-impulse test (vHIT), spontaneous nystagmus testing (SNy), and caloric videonystagmography test. Standard-protocol air-based caloric test was conducted along with monitoring of vital signs, including heart rate, blood pressure, respiratory rate, EKG, and pulse oximetry. Both vestibulocochlear nerves were stimulated by 48°C and 24°C air flow for 60 seconds and 60 seconds were left for nystagmus counting. Two males were excluded from the study due to syncope during caloric VNG.

Results:

Before starting the caloric VNG testing, the median heart rate variability (HRV) for males was 75.5 beats/min, $p = 0.013$, while for females, the median HRV was 78.0 beats/min, $p = 0.021$. After stimulation with 48°C air of the right vestibulocochlear nerve, the median heart rate variability (HRV) for males was 77.5 beats/min, $p = 0.563$, while for females, the median HRV was 81.0 beats/min, $p = 0.011$. After stimulation with 48°C air of the left vestibulocochlear nerve, the mean HRV for males was 75.1, $p = 0.074$, while for females, the mean HRV was 85.5 (SD - 15.6, min. 44.0, max. 121.0), $p = 0.202$. After stimulation with 24°C air of the right vestibulocochlear nerve, the median HRV for males was 66.0, $p = 0.022$, while for females, the median HRV was 80.0, $p = 0.029$. After stimulation with 24°C air of the left vestibulocochlear nerve, the median HRV for males was 70.0, $p = 0.007$, while for females, the median HRV was 81.0, $p = 0.027$.

Conclusion:

Strong correlations were found between resting HRV and HRV after stimulation with both 48°C and 24°C air of the right and left vestibulocochlear nerves, indicating a relationship between baseline HRV and changes induced by vestibular nerve stimulation. Cold airflow applied to the vestibulocochlear nerve statistically significantly decreases heart rate.

P099 EUSTACHIAN TUBE ENDOSCOPIC EVALUATION PROTOCOL

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The Eustachian tube communicates the nasopharynx to the middle ear and it is key in the ventilation, drainage of secretions and protection of the middle ear. The dysfunction of this structure can manifest as various symptoms, such as aural fullness, hypoacusis, tinnitus, autophonia, among others. Eustachian tube dysfunction is broadly categorized into two main types: patulous and obstructive, the former, with a less severe subtype related to barochallenges. Many of these symptoms can overlap across the two types of dysfunction, making clinical diagnosis challenging.

To address this, the endoscopic evaluation of the Eustachian tube has emerged as a valuable tool for assessing both structural and functional abnormalities. It also allows differentiation between the different types of dysfunction. This procedure has emerged as a valuable tool in the diagnosis of Eustachian tube dysfunction and in guiding treatment decisions. Here we provide a description of the endoscopic evaluation of the Eustachian tube and present a rationale for interpreting the findings.

P100 Eustachian balloon Dilation: Does it really work ?

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Objective: Evaluation of role of Eustachian balloon dilation in Eustachian tube dysfunction

Methods:

30 patients were evaluated using ETD7 Questionnaires before and after.

Results:

73 % improvement and satisfaction

Conclusion:

patient selection is the key for success of balloon dilation for Eustachian tube dysfunction

P101 Surgical Management of Patulous Eustachian Tube

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The aim of this study is to introduce an options of conservative and surgical treatment of of the clinical condition, which is described as patulous Eustachian tube. Patulous Eustachian tube dysfunction (PETD) is thought to result from a longitudinal concave defect in the mucosal functional valve, usually in the anterolateral wall of the Eustachian tube (ET).

The surgical treatment results of 10 patients are commented. Two types of surgical procedures were used. There were 3 patients which were treated with the hyaluronic acid Eustachian tube injection. Another 7 patients underwent tuboplasty and ET augmentation and closure with septal cartilage.

Satisfactory results after 24 months of follow-up were obtained in 5 patients after tuboplasty.

Results of hyaluronic acid injection were unstable and temporary. Surgical videos and discussion will be provided.

Tuboplasty and ET augmentation using septal cartilage may be a safe and effective option for severe PETD cases.

P102 Reconstruction techniques and complications of the canal wall in obliteration tympanoplasty for primary cholesteatoma or troublesome radical cavity surgery: a literature review

Drs Nathalie van Rhee

Objectives:

to provide an overview of canal wall reconstruction techniques in patients undergoing obliteration tympanoplasty for primary cholesteatoma or troublesome radical cavities. Reporting difficulties, complications and revision techniques. We aim to give insight in the current successes and challenges in canal wall reconstruction for further durable research into this topic.

Methods:

database search (PubMed). Inclusion criteria: patients undergoing canal wall reconstruction and mastoid obliteration for cholesteatoma/ chronic suppurative otitis media or radical cavity revision surgery. Studies were only included with a maximum of 15 years since publication date. The various reconstruction techniques were inventoried and described. Outcome measures: complications of the reconstructed posterior external auditory canal (EAC), cholesteatoma recidivism, otorrhea and hearing rehabilitation.

Results:

twenty-two articles were included; 14 cholesteatoma, 8 radical cavity reconstruction. Follow-up times ranged from 6 months to 8.5 years. Canal wall reconstruction techniques were temporary removal and replacement of the canal wall and reconstruction with bone chips, cartilage, prosthesis or soft tissues. Failure of the combination of reconstruction and obliteration requiring revision surgery or conversion to a radical cavity or subtotal petrosectomy was reported in 11 of 22 articles. Failure was due to material resorption, gap formation or breakdown through infection. Most reported complications were transient otorrhea (3-82%) and EAC or tympanic membrane abnormalities (0-47%). Cholesteatoma recurrence was found in 0-29% of cholesteatoma and 0-5% of radical cavity revision patients. Auditory functioning tended to improve.

Conclusion:

a wide variety of canal wall reconstruction techniques are being used for cholesteatoma and troublesome radical cavity revision surgery. The different reconstruction methods combined with obliteration seem to provide relative successful outcome in obliteration tympanoplasty. Despite this success, minor and major complications resulting from reconstruction failure remain a persistent problem. For minor EAC and tympanic membrane abnormalities and major canal wall breakdown revision surgery was often performed. However, due to great heterogeneity of the included studies, overall evidence was low. High quality prospective research is required for better understanding of the factors influencing successful canal wall reconstruction.

P108 Assessment of tinnitus severity in patients undergoing ossicular chain reconstruction of the middle ear

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Tinnitus can emerge as a potential side effect after ear surgery, with reported incidence rates varying based on the surgical procedure and individual factors. Approximately 2-3% of patients may experience tinnitus following surgery.

The aim of this study was to evaluate audiological and tinnitus-related outcomes in patients undergoing ossicular chain reconstruction (OCR). The study group comprised individuals who underwent OCR due to ossicular chain pathology and presented with tinnitus symptoms between January 2017 and January 2022. Tinnitus severity was assessed using the Polish version of the Tinnitus Handicap Inventory both before and after the surgery. Middle ear reconstruction involved the use of Partial Ossicular Replacement Prosthesis (PORP) or Total Ossicular Replacement Prosthesis (TORP).

Following ossicular chain reconstruction, there was a notable reduction in both the air-bone gap (ABG) values and tinnitus scores compared to the pre-operative outcomes. A comprehensive evaluation of tinnitus can aid in identifying its specific causes and guide appropriate management or treatment.

P109 A food supplement as a treatment option for tinnitus and headache

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Objectives:

Tinnitus is defined as the perception of sounds in the absence of a corresponding auditory signal and affects approximately 10% of the population. They are associated with comorbidities that significantly affect quality of life such as hyperacusis, hearing loss, insomnia, depression, chronic pain syndromes, and headache. The latter covers a wide range of conditions with headache as the main symptom without underlying pathology. To evaluate the influence of the above pathological conditions on the quality of life, well standardized questionnaires such as the Tinnitus Handicap Inventory (THI) for tinnitus and the Headache Impact Test (HIT-6) for headache are used.

Methods:

Patients with co-existing tinnitus and headache were included in this prospective study. For the treatment of tinnitus, a food supplement with Ginkgo biloba extract, magnesium, melatonin, vitamin B12 and zinc. was administered and the changes in the THI and HIT-6 questionnaires from the beginning of the treatment and at the end of it were evaluated.

Results:

From the 32 participants, 80% were men and had a mean age of 49.4 years. The mean duration of tinnitus at the beginning of treatment was 23 months. One patient presented with unilateral tinnitus (left). Sensorineural hearing loss was found in four patients (three with moderate and one with low degree in the high frequencies). The imaging test did not reveal any pathologies. The THI at day zero was 29.8, while 90 days later it had decreased by 2.4 points with SD=1.9 and 95%CI: 0.8-3.02, $p=0.008$. A statistically significant (95%CI: 0.01-1.85, $p=0.06$) reduction was also found in HIT-6, in which the initial 50.4 became 49.2 at the end of the treatment (decrease 1.2 ± 1.6). Moreover, in a 11-Point numerical scale the annoyance of tinnitus and headache was moved from 7.68 to 7.61.

Conclusion:

Our study is of particular interest since it concerns two independent clinical entities that have not been extensively examined together. Our results revealed that an improvement in quality of life was addressed with the administration of tinnitus treatment. The small and heterogeneous sample as well as the short duration of the follow-up may weaken some of the findings.

P113 Comparison of Intratympanic Steroid and Hyperbaric Oxygen Salvage Therapy Hearing Outcomes in Idiopathic Sudden Sensorineural Hearing Loss

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Objectives:

Systemic steroids are the most common therapy in sudden sensorineural hearing loss (SSNHL). It is unknown why 40% of patients do not respond to systemic steroid therapy. Salvage treatment includes intratympanic steroids (ITS) and hyperbaric oxygenation (HBO) therapy, with inconsistent results reported. This study aimed to compare the results of ITS and HBO therapy in patients with SSNHL that previously failed systemic steroid therapy.

Methods:

This is a comparative retrospective nonrandomized interventional cohort study, enrolling 126 patients with SSNHL. Out of these, 35 patients received HBO therapy, 43 patients received ITS, and 48 patients did not receive any second-line therapy (control group). Pure-tone audiograms were performed before and after the salvage therapy in the ITS and HBO groups and at the same time interval in the control group. Study variables included age, time until therapy initiation, tinnitus status, and hearing outcomes, with a cutoff criteria of cumulative >30 dB improvement on all frequencies indicating recovery.

Results:

ITS and HBO therapy were associated with statistically significant hearing recovery at all frequencies compared to systemic steroids. The results show an average hearing improvement of 13.6 dB overall frequencies (250 to 8000 Hz) after ITS therapy and 7.4 dB in HBO therapy in comparison to the control group. Presence of tinnitus before therapy was negatively correlated with hearing improvement. Patients with tinnitus present at the start of therapy improve 4.67 dB less on average compared to those without tinnitus. ITS therapy significantly reduced tinnitus compared to the other two treatment options. Patients with tinnitus present before therapy significantly improve hearing at low frequencies, compared to the control group.

Conclusions:

ITS and HBO therapy show superior hearing results compared to observation alone after failed oral steroid therapy for SSNHL. ITS shows an additional positive impact on tinnitus reduction and shows superior hearing outcomes after salvage therapy.

P120 Prelinguistic Development in Children with Cochlear Implants: A Retrospective Chart Review

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Objective:

The provision of cochlear implants (CIs) for profoundly deaf children in their first year of life encompasses surgery followed by after care. The period from initial activation of the speech processor to the emergence of the first word is crucial for a child's subsequent linguistic development and requires careful observation and support. A standardized approach to assessing prelinguistic language within CI after care has not yet been described. This study aims to investigate the prelinguistic development of children with cochlear implants (CwCI) and to identify parameters facilitating standardized assessment.

Methods:

The prelinguistic development of CwCI was analyzed based on vocalizations and classified using the German version of the SAEVD-R (Standardized Assessment of Early Vocal Development - Revised). This assessment comprises 23 different types of vocalizations assigned to 5 hierarchically organized developmental stages. Relevant parameters regarding prelinguistic development were selected and systematized for chart review.

Results:

Data collection involved retrospective review of records of 84 CwCI, aged 0 to 4 years (mean=1.4y, SD=0.9), who underwent unilateral or bilateral implantation between January 2011 and June 2023 at the University Hospital Düsseldorf. 67 received bilateral cochlear implants, 15 of them had a two-stage procedure.

Records included demographic information, medical diagnoses, auditory tests, and documentation of pre- and post-implantation assessments.

Prelinguistic vocalizations were transcribed using the SAEVD-R model and additional parameters such as quotation or paraphrase, child imitation, gesture or sign support, and singing were considered in the classification of utterances. Additionally, further relevant points from the areas of motor skills, language reception, and production were documented as first shown events.

Conclusion:

A systematic approach was crucial for retrospective data analysis, involving variable selection, categorization and classification, and transformation into nominal scalable data. Evaluation of these parameters will reveal whether children consistently progress through developmental stages and identify deviations from expected trajectories. Systematic observation of prelinguistic developmental stages enables early detection of stagnation or deviations, facilitating timely interventions and providing support for parental counseling following initial implantation adjustments.

P121 Risks and benefits of modified skin incision for Cochlear™ Osia®2 System Implantations - semi-circular Over-The-Neck Incision scOTNI

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Objectives:

The natural progression in surgical approaches for implanting systems such as the Cochlear™ Osia®2 involves seeking alternative solutions to ensure patient safety, improve surgical outcomes (including aesthetics), and simplify the procedural process.

Methods:

This study employed a prospective analysis. The analyzed group consisted of 14 patients who underwent Osia 2 system implantation using a circular incision around the neck. The data were categorized into three groups: Group A: Preoperative data (e.g. demographics, indications); Group B: Intraoperative data (e.g. implant position modification, bleeding, sutures); Group C: Postoperative data (e.g. healing, scar appearance, processor connection)

Results:

Among the operated patients, one complication (7.14%) required reoperative treatment and skin graft coverage. As a result, the average time for processor connection extended to 3 weeks. Intraoperative data analysis revealed the need to adjust the planned implant position in 14.28% of cases without modifying the incision.

Conclusion:

The semicircular over-the-neck incision (scOTNI) technique is a straightforward and well-defined surgical procedure that provides convenient visibility for planned BI300 implantation. While the procedure is safe, attention must be paid to hemostasis and external dressing to avoid excessive pressure and the risk of necrosis.

P122 Evaluation of hearing loss in patients with osas

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Objectives:

Obstructive sleep apnea (OSA) is one of the most common respiratory disorders characterized by intermittent upper airway obstruction during sleep resulting in episodes of apnea and/or hypopnea and awakenings associated with a respiratory event (RERA). While, the sense of hearing is based on the transmission of sound through the auditory pathway. It is a complex and quite sensitive pathway that begins from the external ear and ends in the auditory cortex of the brain, mediated by structures very sensitive to vascular insufficiency and hypoxemia such as the hair cells of the cochlea.

Methods:

In this prospective study we measured the hearing level of individuals with a new onset OSAS.

Results:

Twenty two participants, (16 men, 6 women) with a mean age of 50.8 years old were included in the study. These individuals did not refer previous otologic history or any systematic disease associated with hearing problems. Clinical examination, otoscopy and tympanometry were normal. The pure tone audiogram revealed a slight sensorineural hearing impairment in both ears. A gradual deterioration was observed in high frequencies. The mean hearing level for 4kHz was 35dB for the right ear and 40dB for the left ear, while the hearing level for 8kHz was 45dB for both sides.

Conclusion:

A few studies, with inconsistent results, have examined the possibility that nocturnal obstructive apnea-hypopnea affects the auditory pathway, however literature lacks consistency regarding the relationship between sleep apnea and hearing loss. Our study for correlation between OSAS and hearing loss was held at a clinical and not an experimental level. Audiological data are primarily based on subjective measurements of the pure tone audiogram. This fact decreases the degree of objectivity of the findings, however it allows speed, convenience and zero cost in data collection.

P123 Per-operative Identification of Schwartz Sign in Otosclerosis

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Objective:

The Schwartz sign has been reported during the otoscopic examination of otosclerosis patients. However, per-operative findings correlated with the Schwartz sign have not yet been described. This case report aims to define a case of otosclerosis with the identification of the Schwartz sign during stapedotomy.

Method:

A 24-year-old male presented with progressive hearing loss in both ears for 6-7 years with occasional tinnitus. Otoendoscopic examination revealed a normal tympanic membrane. The tuning fork test showed Rinne negative in both ears, and Weber lateralized to the right ear. A pure tone audiogram on the right revealed an air conduction average of 68.75 dB and a bone conduction average of 21.25 dB with 47.50 dB ABG (air-bone gap) in 500,1000,2000 and 4000 Hz. The patient underwent a stapedotomy in the right ear. The ear was examined under a microscope during surgery, and the reddish hue over the intact tympanic membrane was not prominent. However, after the elevation of the tympanomeatal flap, a diffuse reddish area was seen over the promontory, which raised the differential of tympanic paraganglioma or a vascular lesion. But, per operatively, it was excluded as it was not a tumor-like swelling or not attached to Jacobson's nerve and had no visible pulsation. The stapes footplate was whitish, thick, and fixed. A pure tone audiogram on the right revealed an average of 68.75 dB and a bone conduction average of 21.25 dB with 47.50 dB ABG (air-bone gap) in 500,1000,2000 and 4000 Hz. Right stapedotomy was performed using a Skeeter drill, and recovery was uneventful. He had significant improvement in hearing. Postoperative pure tone audiogram in the right revealed an air conduction average of 17.5 dB and bone conduction average of 11.25 dB with 6.25 dB ABG (air-bone gap) in 500,1000,2000 and 4000 Hz.

Conclusion:

Otosclerotic foci in and around the footplate with a non-pulsatile vascular lesion over the promontory confirm the Schwartz sign. The surgeon can proceed with stapes surgery without difficulty in differentiating the Schwartz sign from any other lesion, such as a paraganglioma or vascular lesion.

P124 Advance rotational skin flap to treat an otologic wound complication

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Objectives:

Surgical wounds complications in otologic surgeries can require advanced surgical management, one of those being local skin flaps. Different flaps have been described for postauricular complications, however they usually rely on a healthy surrounding anatomy. Here we present a case that required an advanced rotational flap in order to close a complicated surgical wound due to a complicated past medical history.

Methods:

Retrospective clinical analysis and description of a patient treated in our center. We also performed a literature search using Pubmed and a nonsystematic review of pertinent articles.

Results:

53 yo female with medical history of brain injury at 11 yo, with multiple brain bleeds that required decompressive craniotomy bilaterally. In January 2024 she developed meningitis. After the diagnostic lumbar puncture clear fluid discharge appeared from the right ear, beta 2 transferrin positive. Scans showed a moth eaten skull base defect on the right side with chronic CSF leak. A possible chronic CSF leak in the ear that led to meningitis was proposed. Skull base MDT suggested a skull base defect closure with subtotal petrosectomy and blind sac closure. Surgery was performed and the subtotal petrosectomy was filled with abdominal fat graft. 2 weeks follow up the patient presented a retroauricular wound dehiscence secondary to a superficial post op wound infection, for which she was admitted for wound debridement and antibiotics. The next 2 weeks the wound was still open (1cm x 1cm) with fat graft protruding. A two layer temporalis myofascial flap was not possible because of the past neurosurgical surgeries, so a rotational cervico facial flap was performed. The surgery had no incidents, confirming that there was no CSF leak and that the fat graft was healthy. 1 month follow up shows a complete wound closure.

Conclusion:

Otologic surgeries can come to require different skin flaps in order to treat advanced surgical complications. The key factor for a proper skin flap success is the intrinsic skin vascularity.

P125 Changes of bone hearing threshold after otosurgery by patients with suppurated chronic otitis media and cochlear fistula – own experiences, literature review

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Aim:

We try to find and discuss factors which have impact on bone conduction threshold changes in patients operated with suppurated chronic otitis media with present cochlear fistula. We summarize our results of bone hearing threshold in cases of these operations and try to compare with results of metaanalysis.

Material and methods:

The retrospective analysis with help of EPR involves the patients operated on middle ear inflammation due to chronic infection in the Department of Otolaryngology Regional Hospital Kolin, Czech Republic in the years 2010-2023. 407 otosurgeries were performed in the lump in this period of time.

Results:

269 patients were operated with chronic otitis media. We indicated 86 patients for surgery with active suppurative form of chronic otitis media. 6 patients had confirmed cochlear fistula in the course of the operations, 5 patients had hearing bone threshold better than 50dB on frequencies 500, 1000, 2000, 4000Hz before and after operation. Patients were observed minimally 2 years by tone audiometry after the surgery. Practical deafness was discovered in 1 patient before the surgery. Suppurative middle ear inflammation with confirmed cochlear fistula were not confirmed as a clear reason for significant deterioration of bone threshold before and after operations in our patients.

There are no accessible specific metaanalysis data for these cases. All authors describe small groups of these patients with different results of postoperative hearing bone threshold. There were only generally define the principles of middle ear surgery in these cases. Main recommendations are to let the minimal rest of the matrix of cholesteatoma on the borders of fistula, earliness of covering and closing the fistula, without suction or invasive intervention nearby the fistula.

Conclusions:

Cochlear fistula with suppurative middle ear inflammation is described as a one of the most risk factors for preserving bone hearing threshold. Despite the literature conclusions we do not note any patient with chronic middle ear suppuration et cochlear fistula with significant deterioration of hearing bone threshold after the middle ear operation in our cohort.

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