

has recently been utilised in this group with favourable outcomes. A more challenging group are those with intractable vertigo and they have traditionally posed a significant management dilemma.

Methods: Retrospective case note review was performed in a tertiary referral centre. Three female patients with recurrent incapacitating attacks of vertigo despite conservative management underwent simultaneous labyrinthectomy and cochlear implantation. Two patients had unaidable hearing preoperatively. One patient had moderate-severe sensorineural loss and was suffering from frequent debilitating drop attacks that had resulted in injury.

Results: There was complete resolution of vertigo in all patients in our series. Speech perception in quiet and ability to hear in background noise improved in all cases. Review of the literature demonstrated a small number of cases worldwide in whom simultaneous labyrinthectomy and cochlear implantation have been performed with successful outcomes.

Conclusion: Surgical labyrinthectomy is an effective method for elimination of vertigo in patients with Ménière's disease. The major disadvantage in the past was loss of residual hearing. Cochlear implantation is now an option in these patients. The benefits of simultaneous labyrinthectomy with cochlear implantation include prevention of implantation of a fibrosed or ossified cochlea, a decrease in the duration of deafness and a single operative procedure. This technique should be considered as a management option in carefully selected patients.

doi:10.1017/S0022215116005508

ID: IP054

Magnetic Resonance Imaging surveillance after subtotal petrosectomy and blind sac closure: A review of radiological findings and long term follow up

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Learning objectives:

1. Learn about the MRI features of the temporal bone post SP BSC.
2. Understand more about the behaviour of the temporal bone when it has been isolated from the external environment.
3. Understand the role of MRI in surveillance of the temporal bone post SP BSC.

Introduction: Long term follow up is recommended following subtotal petrosectomy (SP) with cavity obliteration and blind sac closure (BSC) of the external auditory canal to detect recurrent or iatrogenic cholesteatoma and chronic otitis media (COM). Follow up has historically been a

challenge both clinically and radiologically. Recent advances in MRI have transformed our ability to survey patients post SP BSC. The objectives of this study were to: i. Characterise the MRI features post SP BSC; ii. Assess the behaviour of the temporal bone and disease persistence/progression post SP BSC; iii. Classify the radiological features and define their consequences for clinical care.

Methods: Retrospective case note review was performed in a tertiary referral hospital of 23 patients who underwent SP BSC between November 2004 and October 2013. MRI surveillance was carried out over a mean follow up period of 48 months (range 14–116). MRI features over time were compared to clinical course and surgical findings.

Results: Otitis media with effusion is a common finding in the unventilated temporal bone but appears to have little if any clinical consequence. Revision surgery was performed on clinical grounds in four patients (17%) and concerning imaging features but no clinical concerns in three patients (13%). Radiological findings correlated with operative and histological findings for cholesterol granuloma and mucosal COM but there was discrepancy in the diagnosis of cholesteatoma.

Conclusions: The MRI features of the temporal bone post SP BSC are described. A grading system for radiological findings is proposed to guide surveillance and possible further surgical intervention.

doi:10.1017/S002221511600551X

ID: IP055

Hearing loss and cognitive decline in Singapore: status quo of an island nation

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Learning objectives:

1. Understand the challenges related to hearing health and cognitive decline in seniors facing a small country that has undergone rapid development over the last 50 years.
2. Identify ways that may start to address these through education and research.

Introduction: The burden of dementia continues to rise worldwide. Hearing loss has been independently associated with accelerated cognitive decline and identified as an independent risk factor for all-cause dementia. Singapore is a small country facing a rapidly ageing population. This study aims to review the current status of hearing health and cognitive decline in seniors in Singapore.

Methods: A literature search of articles published in English was conducted based on PRISMA guidelines.

Results: The prevalence of dementia is estimated to be 10% in those ≥60 years and increases with age. Interethnic

differences have been identified (lower in ethnic Chinese compared to Malays and Indians). Data estimating the prevalence of hearing loss in ageing Singaporeans is scant. Thresholds of >40 dB in the better ear were found in 54% and in at least one ear in 87%. Untreated hearing loss in the elderly results in significant decline in the quality of life of both the individual and their family. Self-perception of hearing loss is a very poor indicator of the presence of hearing loss. Between 20 and 33% of hearing impaired seniors were willing to consider a hearing aid; between 23 and 83% felt that it was unnecessary. Seniors who are independent in their activities of daily living (ADLs) are more likely to consider hearing aids than those who are ADL dependent and housebound.

Conclusions: Hearing loss and cognitive impairment will become increasing public health concerns. Further studies assessing whether the treatment of hearing loss can slow the rate of cognitive decline among older adults are required.

doi:10.1017/S0022215116005521

ID: IP056

Transient hearing loss and objective tinnitus induced by mouth opening: a rare connection between the temporomandibular joint and middle ear space

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Learning Objectives:

Objectives: To describe objective tinnitus complicated with transient low-tone hearing loss coinciding with mouth opening, which was related to the connection between the mandibular fossa and middle ear space.

Patients: A 41-year-old man presented with tinnitus, ear fullness, and hearing loss in the left ear on mouth opening.

Main Outcome Measures: Clinical case records, audiological data, and radiological analyses including computed tomography (CT) and magnetic resonance imaging.

Results: Hearing thresholds on the ipsilateral side, which were evaluated with mouth opening, showed elevations of

approximately 20 dB in the frequencies below 1000 Hz. Again, peak pressure on the tympanogram deviated negatively to -220 mmH₂O under mouth opening without changing peak amplitude. These results showed that the tensor tympani would not have contributed to movement of the ear drum in the present case. High-resolution CT with multi-planar reconstruction showed a connection between the mandibular fossa and middle ear space, as revealed by a gas collection around the joint capsule evaluated in 2 phases (with and without mouth closing). Ear symptoms resolved after myringotomy.

Conclusions: Although an influence of temporomandibular disorder (TMD) on tinnitus perception has been debated, whether this association is causal or fortuitous has remained contentious. The present case showed a unique feature of tinnitus attributed to a connection between the mandibular fossa and middle ear space. This connection might be related to the petrotympanic fissure (with or without variant course), which is a narrow slit allowing the TMJ and middle ear space to communicate. Radiological analysis including high-resolution CT with multi-planar reconstruction referring to the petrotympanic fissure would be helpful to clarify the pathogenesis of patients suffering from otological symptoms related to TMD.

doi:10.1017/S0022215116005533

ID: IP057

The mastoid tegmen: A new clinical radiological classification

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Learning Objectives: Variations in normal tegmen and inner ear anatomy.

Surgical considerations when operating near the tegmen.

Introduction: The tegmen is a thin, variable plate of bone that separates the mastoid and middle ear cavity from the intracranial compartment. Serious complications such as cerebrospinal fluid leakage, neural tissue injury may arise when operating near the tegmen. One important risk factor for dural complications is the low placement of the tegmen. This study aims to determine the radiographic location of the tegmen tympani using the lateral semicircular canal (LSCC) as a landmark in adult patients with normal temporal bones.

Methods: 100 high resolution temporal bone CT scans from patients with hearing loss were examined retrospectively. We included scans from adult patients with normal temporal bone anatomy and no previous ear surgery. The distance between the LSCC and the lowest point of the tegmen tympani was measured in both the sagittal and coronal planes. 60 patients with cholesteatoma having undergone mastoidectomy procedures within the past 6 years were also analyzed retrospectively.

Results: The mean tegmen height was 4.1 mm in the coronal plane and 2.5 mm in the sagittal plane. The measured heights using the LSCC as our landmark demonstrated a unimodal distribution with some variance.