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Learning Objectives:

Objectives: To identify whether certain locations at the cerebellopontine angle (CPA) and internal auditory meatus (IAM) predispose to growth of medium and large unilateral Vestibular Schwannoma (VS) residual tumour left behind at surgery.

Methods: A retrospective review of case notes and radiology scans was undertaken at the Liverpool Skull Base unit. Measurements conformed to the 2003 Consensus meeting on VS reporting.

Results: 67 unilateral sporadic VS were surgically treated between the years 2006 and 2010 of which 52 had residual tumour left behind available for analysis. Of these, 20 grew [these had previous excisions which were 4 near-total excisions (less than 5% residual tumour left), and 16 sub-total excisions (more than 5% residual tumour left)]. Follow-up was for a median of 6.4 years (6.4 to 8.1 years). Residuum was left at various locations: the CPA had 48 residuals, 21 grew (44%); the IAM had 47 residuals, 14 grew (30%). Within the IAM the porus had 47 residuals, 11 grew (23%); and the fundus had 12 residuals, 2 grew (14%). Time to growth varied between 1.75 years and 5.5 years (average 3.1 years). Of the 20 growing residuum, 17 required treatment (13 had radiotherapy, 3 had surgery followed by radiotherapy, 1 had just surgery).

Conclusions: Along with other patient, tumour, and surgical factors, the less than 95% excision of VS predisposes to regrowth of the residual tumour, and such patients should be monitored closely for at least 10 years. The data suggests that the CPA is the most likely site for residual tumour to grow and that the IAM is a safer site to leave tumour behind, if necessary. The larger the VS, the greater the size of the residual tumour left at surgery and thus the greater the chance of regrowth. These factors should be borne in mind when deciding on when to intervene in patients with growing tumours. There is a need for standardised reporting of residual tumour outcomes, which will allow accurate comparison, and pooling of data.

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Free Papers (F833)

ID: 833.4

Reconstruction of tegmen defect by transmastoid approach

Presenting Author: **Rie Kanai**

Rie Kanai, Shin-ichi Kanemaru
Medical Research Institute, Kitano Hospital

Learning Objectives: To discuss about the procedure of reconstruction of tegmen defect by transmastoid approach to prevent meningo-encephalocele.

Objective: Tegmen defect is caused by progression of middle ear disease. Sometimes, meningo-encephalocele (MEC) occur into the middle ear through tegmen defect, which can cause serious complications: meningitis, cerebro spinal fluid (CSF) leakage, epilepsy. Hearing loss also can cause by MEC pressing ossicular chain. We discuss about the procedure of reconstruction of tegmen defect by transmastoid approach to prevent MEC.

Design: Retrospective study

Subjects and method: Seven cases (2 male 5 female, mean age 65.2) with large tegmen defect or with tegmen defect and CSF leakage were enrolled in this study. These patients underwent tympanomastoidectomy with reconstruction of the tegmen defects by transmastoid approach.

The kinds of diseases were cholesteatoma in 3 cases, cholesterol granuloma in 2 cases and MEC after previous middle ear surgery in 2 cases.

We analyzed the size of the defect, the materials for reconstruction and the complications; MEC, CSF leakage, the recurrence of the diseases.

Results: The size of defects were about 8 mm in 1 cases, more than 10 mm in 3 cases and more than 20 mm in 3 cases. The tegmen defects were reconstructed by cortical bony plate with or without bone putty in all cases. In 2 cases, a part of dura was resected because lesion adhered to dura severely, then CSF leak occurred. We reconstructed also the dural defects by temporal fascia. In 2 cases with MEC, the lesion were resected by cauterization before the reconstruction of tegmen defect. We confirmed that bony tissue of tegmen was regenerated in all cases by postoperative CT scan. In 4 cases, they was confirmed during 2nd stage surgery. Although the recurrence of cholesteatoma was found distant from tegmen in one case, no patient have developed MEC, CSF leakage and other serous complication.

Conclusion: Tegmen defect can be reconstructed by transmastoid approach. Reconstruction of tegmen defect by cortical bone will be helpful to prevent MEC and CSF leakage.

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Free Papers (F833)

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Recent Strategies in the Management of Traumatic Facial Nerve Paralysis

Presenting Author: **Naohito Hato**

Naohito Hato
Ehime University

Learning Objectives: In total, 66 patients with facial nerve paralysis after temporal bone trauma were studied retrospectively. The rate of good recovery in patients undergoing

decompression surgery within 2 weeks after trauma reached 92.9%, resulting in a significantly better outcome than later decompression surgery. The ideal time for decompression surgery for the traumatic facial nerve paralysis was the first 2 weeks in patients with severe, immediate-onset paralysis. Recently, we modified the later decompression surgery using bFGF in a gelatin hydrogel to promote the regeneration of denervated nerves. Our experimental study suggested that bFGF-impregnated biodegradable hydrogel facilitates regeneration of the facial nerve in guinea pigs due to the sustained release of bFGF. Clinically, this therapeutic regimen may be useful for facial nerve decompression surgery, which is indicated for severe facial nerve paralysis. The efficacy of the novel decompression surgery will be presented.

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Free Papers (F833)

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Surgical management of Petrous Bone Cholesteatoma and facial nerve function restoration

Presenting Author: **Wei ju Han**

Wei ju Han, Ruoya Wang, Weidong Sen
Chinese PLA general hospital

Learning Objectives:

Objective: To analyze the clinical manifestations, classification, surgical approaches of Petrous Bone cholesteatoma(PBC) and restoration of facial nerve function.

Methods: From 2000 to 2014, 91 cases of petrous bone cholesteatoma underwent operations in the Chinese PLA general hospital. Clinical, audiological, and radiological findings, surgical approach with respect to the classification and facial nerve function were analyzed retrospectively.

Results: The most common symptoms were hearing loss and FN paralysis. All patients had petrous bone erosion with high resolution temporal bone CT scan. Out of the 91 PBC cases, 45 (45/91, 49.45%) were supralabyrinthine, 7(7/91, 7.69%) were infralabyrinthine, 12(12/91, 13.19%) were infralabyrinthine-apical, and 27(27/91, 29.67%) were massive with respect to Sanna's classification. All patients were radically removed the lesion. And 5 patients underwent transmastoid approach, 41 patients underwent middle fossa approach, 34 patients were performed by translabyrinthine approach, 10 patients were performed by combined transmastoid and middle fossa approach, one patient was performed by combined translabyrinthine and sphenoid sinus approach. The most common affected section of facial nerve is labyrinth segment. Facial nerve decompression, primary end-to-end anastomosis, great auricular nerve graft and nerve substitution of facial-hypoglossal anastomosis were applied to restore the facial nerve function.

Conclusions: The most common symptoms of Petrous bone cholesteatoma were hearing loss and FN paralysis. The high resolution temporal bone CT scan has important value in

finding PBC. The classification of PBC is fundamental to choose the appropriate surgical approach, and middle fossa approach is most common approach. Radical removal lesions should be prioritized over hearing preservation. Restoration of facial nerve (FN) function is achievable by reanimation procedures.

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Free Papers (F833)

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Primary tumors of the facial nerve misdiagnosed many years prior: What is the appropriate treatment?

Presenting Author: **Hj Yi**

Hj Yi
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Medical center, Tsinghua University*

Learning Objectives: This paper was to determine the characteristics of facial nerve primary tumors misdiagnosed as tumor-free conditions many years prior, and to identify appropriate treatments. The cases of five Chinese patients with misdiagnosed primary tumors of the facial nerve were reviewed; in each case, the condition had been misdiagnosed more than 8 years prior. All patients presented with progressive or complete facial paralysis and hearing loss, with or without vertigo. We reviewed pre- and post-operative images (including CT scans of the temporal bone) and MRI data. After review, all tumors were completely resected using the translabyrinthine or transmastoid approach and were confirmed to be primary tumors of the facial nerve. All tumors were totally resected. Facial-hypoglossal nerve anastomosis failed in one patient whom we sought to manage in two stages, because fibrosis developed at the end of the facial nerve. One patient accepted two-stage facial-hypoglossal nerve anastomosis and patient status improved to House-Brackmann (H-B) grade V from H-B grade VI. The other three patients chose not to undergo reconstruction. All patients recovered well, with no other complications evident after follow-up periods of 0.5–3 years. Unusual primary tumors of the facial nerve should be considered in patients with progressive facial paralysis, especially if this is accompanied by hearing loss or vertigo. Misdiagnosis creates operative difficulties, diminishes the chance of facial nerve reconstruction, and increases the likelihood of poor reconstructive outcomes.

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Bone conduction hearing devices in single sided deafness (R834)

ID: 834.1

Baha Attract System: 6-month results of a multicentre, open, prospective clinical investigation

Presenting Author: **Myrthe Hol**