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Free Papers (F772)**ID: 772.4****Correlation between hearing results, CT-scan images and intraoperative findings in cholesteatoma related labyrinthine fistula**Presenting Author: **Soledad Boleas-Aguirre**

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Learning Objectives: Learning objectives: In this study there was no association between fistula size on CT-scan and hearing level before cholesteatoma surgery. The type of fistulae found intraoperatively did not correspond to postoperative hearing.

Introduction: To compare audiological results before and after surgery in subjects suffering from horizontal semicircular canal (HSC) fistulae due to cholesteatoma. To assess whether there was any relationship between 1) fistulae size according to preoperative CT-scan and pre-operative bone-conduction hearing, and 2) type of fistulae found during surgery and post-operative bone-conduction hearing.

Methods: Retrospective evaluation including 21 adults suffering from cholesteatoma with preoperative CT-scan images. Intervention: open mastoidectomy with identification of HSC fistulae. Outcomes: to compare bone conduction thresholds before and after surgery and, to assess for correlation between 1) fistulae size on preoperative CT scan and preoperative bone conduction hearing loss, and 2) type of fistulae identified during surgery and postoperative bone conduction hearing loss. The study protocol was approved by the Ethical Committee on Clinical Research of our institution.

Results: After surgery we detected a decline in bone conduction thresholds. We could not establish correlation between fistulae size on CT-scan and bone conduction hearing in the preoperative setting. Similarly, there was no correlation between fistulae type found during surgery and postoperative bone conduction hearing.

Conclusions: In this series of subjects presenting with HSC fistulae due to cholesteatoma, we verified an increase in hearing loss after surgery. Correlation between fistula size on CT-scan and hearing level prior to surgery was not established. There was no correlation between the type of fistulae found during surgery and postoperative bone conduction hearing.

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Free Papers (F772)**ID: 772.5****Lessons learned from false positive diffusion weighted MRI findings in the follow-up after cholesteatoma surgery**Presenting Author: **Willem Berkovits**Willem Berkovits¹, Michele Costa², Pim de Graaf³, Erik Hensen³, Frits Smit³, Paul Merkus³¹VU University Medical Center, ²Spirito Santo Hospital, Pescara, Italy, ³VU University Medical Center, Amsterdam

Learning Objectives: It is advisable to combine non-EPI DW MRI findings with ADC mapping and interpretation using all clinical and radiologic information available. After use of fat obliteration techniques extra care in interpretation is required as fat necrosis can be a cause of false positivity. When in doubt one should not be hesitant to repeat scanning.

Introduction: Non-Echo-Planar Diffusion-weighted magnetic resonance imaging (non-EPI DW MRI) is increasingly proposed to replace the standard second look surgery in the follow-up after cholesteatoma surgery because of its high sensitivity and specificity. However, we have encountered several cases of positive MRI results in patients, in whom no recurrent or residual disease was found during subsequent surgery. We like to discuss our lessons learned.

Methods: Retrospective analysis of all false positive cases in our center during non-EPI DW MRI follow-up, after initial cholesteatoma surgery.

Results: Six patients underwent ear surgery, based on positive non-EPI DW MRI findings, during which no cholesteatoma was found. Case history and all available imaging of these cases were re-evaluated and compared to histologic results. The subsequent causes for false positive non-EPI DW MRI's were fat necrosis (after fat obliteration), fibrous connective tissue, foreign body reaction, calcified material and bone dust.

Conclusion: Non-EPI DW MRI is a reliable method for follow-up but can result in both false-negative as well as false-positive results.

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Free Papers (F772)**ID: 772.6****Accuracy of PROPELLER DW MRI in diagnostics of middle ear cholesteatoma**Presenting Author: **Suzan Al Kole**Suzan Al Kole¹, Kjell Tveterås², Yousef Yavarian³, Michael Gaihede²¹Aalborg University Hospital, Denmark, ²Department of Otolaryngology, Head&Neck Surgery, ³Department of Radiology

Learning Objectives: In my experience, when you get a group of professionals together and give them the opportunity to determine what they'd like to talk about, you'll end up with enough viable.

Introduction: Various techniques of diffusion-weighted (DW) magnetic resonance imaging (MRI) have shown valuable in diagnosing middle ear (ME) cholesteatoma high accuracy. PROPELLER (periodically rotated overlapping parallel lines) is one of these techniques and the purpose of this study was to investigate its accuracy in detection of primary acquired ME cholesteatomas.

Methods: In a prospective study 37 cases with clinically suspected primary acquired ME cholesteatoma underwent DW PROPELLER MRI scannings prior to surgery. One neuro-radiologist with expertise in Head & Neck Imaging evaluated the images without knowing the surgical findings. The surgical findings were compared with the radiology findings, and outcome measures included sensitivity, specificity, positive and negative predictive values.

Results: Cases with cholesteatoma demonstrated hyperintense foci on PROPELLER DW MRI. In 37 patients, surgery revealed cholesteatoma in 31 cases; 29 of these were MRI positive, whereas two were negative; these cases were between 2–3 mm in diameter. Surgery revealed no cholesteatoma in six cases, and these were all MRI negative. Sensitivity, specificity, and positive and negative predictive values were 94%, 100%, 100%, and 75%, respectively. In the 29 cases with positive radiological findings, the extent and location of the cholesteatoma correlated well with the surgical findings.

Conclusion: DW PROPELLER MRI imaging is an effective and reliable technique in the diagnosis of cholesteatoma diagnosis with high sensitivity and specificity as well as high correlation between the extension of the disease and surgical findings. Thus, this technique is a promising radiologic tool, however further studies are warranted with more patients.

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Free Papers (F772)

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Repeated postoperative follow-up diffusion-weighted Magnetic Resonance Imaging to detect residual cholesteatoma

Presenting Author: **Emmanuel Mylanus**

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Learning Objectives:

Aim: In many clinics non-EPI DWI has replaced second look surgery because of its high negative predictive value. In our institution, follow-up DWI is performed at least twice after surgery. Aim of this study was to determine the yield of the second follow-up MR-DWI (MR-DWI2) after in patients with a negative first follow-up MR-DWI (MR-DWI1) and an absence of clinical otoscopic suspicion of recurrence or residual cholesteatoma.

Methods: Between 2006 and 2013 we retrospectively included 45 ears in 44 patients which had undergone cholesteatoma surgery, had a negative MR-DWI1 performed 6–24 months after surgery, an MR-DWI2 performed at least 6 months after MR-DWI1 and an absence of clinical suspicion of recurrence or residual cholesteatoma between surgery and MR-DWI2. Two radiologists independently scored MR-DWI1 and MR-DWI2. Descriptive analysis were used for determining the yield of MR-DWI2. Interobserver agreement was calculated using Cohen's kappa statistics.

Results: In 14 of 45 ears (31%) MR-DWI2 was equivocal (n = 6, 13%) or positive (n = 8, 18%). Interobserver agreement indicated substantial agreement ($\kappa = 0.75$). Patients with a positive MR-DWI2 were younger of age compared to those with an equivocal or negative MR-DWI2. In the group of 8 patients with positive MR-DWI2, 6 were operated on with surgical confirmation of cholesteatoma in 5 of these patients. In 1 patient only fatty tissue was found.

Conclusion: The most important finding of this study is that 31% of MR-DWI2 showed equivocal or positive evidence of cholesteatoma despite clinical and MR-DWI1 follow-up. Given the known high sensitivity and specificity of non-EPI DWI, good quality of the included DWI examinations and high interobserver agreement in our study, it seems very unlikely this can be explained by a missed cholesteatoma larger than 2–3 mm on MR-DWI1. It is also striking that patients with a positive follow-up MR-DWI2 are younger of age. This may influence follow-up strategies in the future.

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Cholesteatoma Management in the XXI Century (N773)

ID: 773.1

Management of the facial nerve in cholesteatoma surgery: Multidisciplinary approach in a Facial Paralysis Unit

Presenting Author: **Luis Lassaletta**

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Learning Objectives: Upon completion of this presentation, the attendant should be able to: Learn the main aspects to consider when dealing with a facial nerve surrounded or invaded by cholesteatoma. Have a general idea about facial nerve reconstruction depending the status of the nerve, the time of evolution and patient's preferences.

Introduction: The incidence of facial paralysis in patients with middle ear cholesteatoma is generally low but still present in 2016. Particular situations such as petrous bone cholesteatoma, in which facial nerve involvement is reported to be as high as 45% to 65% of cases, or revision cases may lead to facial nerve problems more frequently.