

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

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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)

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

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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.