

Introduction: Diffusion-weighted magnetic resonance imaging has been proven to be a very effective technique for the follow up and diagnosis of cholesteatoma. Non-ecoplanar techniques offer the best results as far as sensibility and specificity are concerned. However, one of the main problems of these techniques is the appearance of false positives.

Objective: The aim of this study is to review the number of patients diagnosed of cholesteatoma since 2008 and evaluate sensitivity, specificity, positive predictor value and negative predictor value of PROPELLER diffusion-weighted magnetic resonance imaging in cholesteatoma diagnosis, with special attention to false positive and false negative cases.

Results: In a sample of 146 patients since 2008 we have found a sensitivity of 95'12%, specificity of 83'09%, positive predictive value of 86'66% and negative predictive value of 93'65%. We have found that the main cause for false positives to be the presence of middle ear infections. False negative cases are due to auto-evacuation or suction cleaning in the clinic before MRI is performed.

Conclusions: T1 and diffusion sequences, and diffusion coefficient are useful in differentiating cholesteatoma from inflammatory/granulation tissue in order to avoid unnecessary surgical procedures due to false positive results. Suction cleaning is not recommended before radiological examination to avoid false negative cases.

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Middle ear implants in chronic ears (R774)

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Long-term Results and Revision Surgery of the Vibrant Soundbridge

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Learning Objectives:

The number of patients treated with the Vibrant Soundbridge (VSB) has increased since its approval for conductive and mixed hearing loss. Patients with history of chronic otitis and cholesteatoma have subsequently been rehabilitated with the VSB. The revision rate in chronic otitis media and cholesteatoma patients is around 10% to 30% depending on the surgical technique used. Aim of this presentation is to analyze the long-term results of the VSB with focus on revision surgery. 238 VSB were implanted in two centers and revision cases reviewed. In 48 (20%) of the cases, a revision surgery was necessary to improve functional performance of the VSB or treat recurrent COM or cholesteatoma. A revision to a cochlea implant was necessary in 5 (2%) cases due to

insufficient rehabilitation with a VSB. Two (1%) patients were reimplanted with a Bonebridge. Seven (3%) patients had recurrent disease without functional impairment of the implant. The highest revision rate was found with FMT coupling to the round window not using couplers. A peak number of revision surgeries were observed 3 years after the initial surgery.

The rate of revision surgery is comparable to conventional tympanoplasty techniques. Fibrosis, insufficient aeration or recurrent perforations can be observed similarly. Revision surgery can be performed safely in patients with a VSB and recurrent middle ear disease.

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Middle ear implants in chronic ears (R774)

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Middle ear implants – technique and outcome

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Learning Objectives: video instruction session

Introduction: Middle ear implants (MEIs) such as VSB[®] (Vibrant soundbridge) are attractive and alternative treatments for patients with conductive, sensorineural, and mixed hearing loss who do not benefit from, or who choose not to wear, conventional hearing aids (HA). Recent studies suggest that MEIs can provide better improvements in functional gain, speech perception, and quality of life than HA, while there certain risks associated with the surgery should be taken into consideration, including facial nerve or chorda tympanica nerve damage, dysfunctions of the middle and inner ears, and future device failure/explantation.

Materials and Methods: In our institute, twelve patients received VSB implantation. The cause of conductive or mixed hearing loss was middle ear diseases in all cases. Round window vibroplasty via transmastoid approach was conducted. The bony lip overhanging round window membrane (RWM) was extensively but very carefully drilled to introduce the Floating Mass Transducer (FMT). Perichondrium sheets were used to stabilize the FMT onto RWM.

Results: Significant improvements of free-field Pure Tone Audiogram (PTA) from 250 Hz to 8000 Hz were confirmed ($P < 0.001$). Hearing gain up to 40 dB was achieved from 1000 Hz to 4000 Hz range. No deterioration in both air conduction and bone conduction at PTA was noted at 20 weeks after the surgery. Monosyllable speech perception in both quiet and noise conditions improved significantly ($P < 0.001$). Speech discrimination score in both quiet and noise conditions improved significantly too ($P < 0.001$).

Discussion: In the future, it is likely that there will be an increasing population even in Japan that will meet the criteria for MEIs such as VSB. However, the long-term efficacy and safety of these devices should be established.