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3D-CT analysis of FMT location after VSB surgery - Its correlation to hearing performances

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Educational Objective: At the conclusion of this presentation, the participants should be able to demonstrate that the hearing performance (BC-V threshold) after VSB surgery tended to be better as the FMT angle to RW became larger (more perpendicular to the surface of RWM) and suggest that the measurements of the FMT angle to RW/OW during VSB surgery should be promising and very useful procedure in future to predict much better hearing performances with VSB.

Objectives: In Japan, the clinical trial of VSB (Vibrant Soundbridge®, Med-El) implantation has just been ended, and the data concerning on the efficacy and the safety of VSB surgery has now been under the judgement by PMDA of the Ministry of Health, Labour and welfare. The present study was designed to see whether to not 3D-CT analysis of the FMT angle to RW/OW should be useful to predict the hearing performances with VSB.

Study Design: Retrospective analysis of 3D-CT images reconstructed from 2D-CT images after VSB surgery.

Methods: After VSB implantation, thin-sliced 2D-CT images (0.625 mm slice) with GE Discovery CT750 HD® (GE, USA) were collected and 3D-CT images were reconstructed by using Zio station® (Amin, Japan). The locations of round window (RW) and oval window (OW) were identified, and the angle of FMT to RW/OW (FMT angle) was measured. The correlation between FMT angle and BC-V (bone conduction threshold-vibrograph) threshold was finally evaluated.

Results: The FMT angle was scattered from 36.9 degree to 83.9 degree. The BC-V threshold (averaged at 1-4 kHz) was scattered from 15 to 31.7 dB (n=11, RWV). The correlation between FMT angle and BC-V threshold did each to the significant level (P=0.049, Spearman rank correlation), indicating the negative correlation between them ($y = -0.2494x + 38.21$, $R^2 = 0.36322$).

Conclusions: The hearing performance (BC-V threshold) after VSB surgery tended to be better as the FMT angle to RW became larger (more perpendicular to the surface of RWM). If the measurements of the FMT angle to RW/OW during VSB surgery could be possible in future, it might be able to contribute to the achievement of much better hearing performances with VSB.

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Family-centered care in children with hearing loss

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Congenital hearing loss might have devastating impacts on children's social skills since it is regarded as a communication disorder. Family-centered care (FCC) is a new method that focuses on empowering parents by enhancing positive parent-child interactions. The goal of FCC is to create a balanced partnership with families so that they could participate in all aspects of evaluation and therapy sessions. Each family is believed to be unique and fully familiar with children's needs. Therefore, they should play an active role in rehabilitation programs. One useful strategy is to identify and treat children with hearing loss by engaging their family in various aspects of child care, matching the rehabilitation process with family goals, supporting and facilitating choice of child care approaches for families, and ensuring flexibility in organizational policies, procedures and practices, so that services could be adapted to the cultural values of each family. Families should be allowed to get involved in the intervention process to the extent that they desire. Family-centered services improve parents' satisfaction with the services, help families to identify and successfully rely on their capabilities, reduce parental stress, and produce positive outcomes for children.

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