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Introduction: Averaging of audiometric data into numbers for description of results after stapes surgery is standard for benchmarking and comparison of results; but methods vary. This study evaluate the impact of different choices as a basis for outcome measures.

Material & Methods: Audiometric data were retrieved from the Swedish Quality Register for Otosclerosis Surgery for 3159 surgeries conducted during 2013–2024 with complete pre- and postoperative pure tone audiometry measurements of 0.5, 1, 2, 3, and 4 kHz. Outcomes were calculated in two ways: using 3 kHz versus 4 kHz in four-frequency averaging of air conduction, bone conduction, air-bone gap, and gain.

Results: The proportion of successful cases (defined as a postoperative air-bone gap ≤ 10 dB) increased from 62.9% to 79.0% when using 3 kHz instead of 4 kHz on mean four-frequency air bone gap. When 3 kHz was replaced by averaging 2 and 4 kHz, a significantly larger four-frequency air-bone gap was seen in comparison to using the measured 3 kHz.

Conclusions: This study showed a significant impact on postoperative four-frequency air-bone gap depending on whether the frequency 3kHz or 4kHz was included in averaging. Bone conduction measurements at 4 kHz produced an anomalous measured hearing level, resulting in a disproportionate impact of the 4 kHz frequency on postoperative four-frequency air-bone gap. Comparison of results that use different calculation methods should therefore be done with caution. We advocate using the methods recommended by the Committee on Hearing and Equilibrium of the American Academy of Otolaryngology–Head and Neck Surgery for uniformity in presentation of results.

References: Committee on Hearing and Equilibrium guidelines for the evaluation of results of treatment of conductive hearing loss. AmericanAcademy of Otolaryngology-Head and Neck Surgery Foundation, Inc (1995) Otolaryngol neck Surg Off J Am Acad Otolaryngol Neck Surg. Sep;113(3):186–7.

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