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Hearing outcomes after otosclerosis treatment with hearing aid compared to stapedotomy: Preliminary results from a prospective intervention study

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Introduction

Hearing loss caused by otosclerosis is commonly treated with either hearing aid (HA) rehabilitation or surgical intervention, i.e. stapedotomy (ST). However, few studies have prospectively compared surgical outcomes with non-invasive HA treatment.

The aim of this study was to compare hearing outcomes one year after unilateral treatment with either HA or ST in subjects with previously untreated otosclerosis. Comparisons were made using both audiological assessments and patient reported outcome measures.

Population

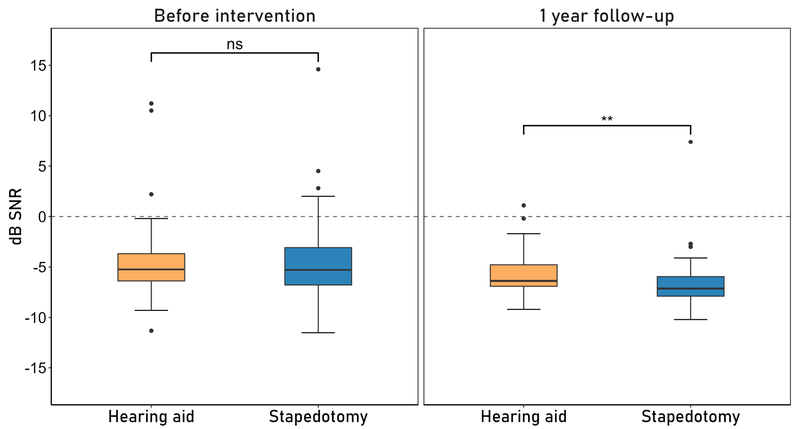
This is a prospective intervention study involving subjects from five different clinics. Eligible subjects were adult patients scheduled to undergo either unilateral HA rehabilitation or ST with previously untreated otosclerosis, a hearing loss ≥30 dB HL based on air conduction pure tone average at 0.5, 1, 2 and 4 kHz (PTA4), a bone conduction PTA4 of ≤30 dB HL and an air-bone gap ≥20 dB at 0.5 and 1 kHz. A total of 96 (ST n = 64, HA n = 32) subjects aged 23-65 years were included in the preliminary results presented here.

Speech reception thresholds

Speech Reception Thresholds (SRT) in noise, with a target of 50% recognition, were performed using sound field measurements of Hagerman matrix sentences, using fixed noise at 65 SPL and an adaptive speech signal.

The preliminary SRT results showed significant lower (better) thresholds on average for the ST group compared to the HA group, $p < 0.01$. However, the median difference was small.

Speech reception threshold in noise: intervention ear



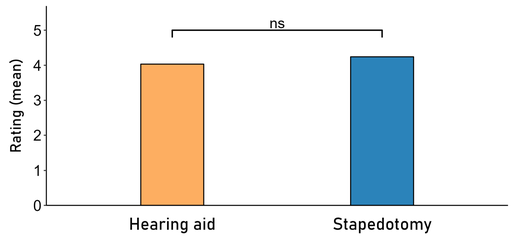
Wilcoxon signed-rank test: ** = $p < 0.01$, ns = not significant

Subjective outcome

From the *Glasgow Benefit Hearing Aid Benefit Profile*[1] questionnaire the subcategory regarding hearing in noise (Question 3) after intervention was compared. There was no significant difference in this comparison, $p > 0.05$.

According to the question regarding satisfaction from the Swedish version of the Glasgow Benefit In-ventory[2] there was a high satisfaction in both groups one year after intervention. Again, there was no significant difference between the two groups, $p > 0.05$.

Q: Are you satisfied with the surgery/hearing aid?
(1 = Much worse to 5 = Much better)



Wilcoxon signed-rank test: ns = not significant

Conclusion

The preliminary results indicate that both ST and HA are valid treatments for patients with otosclerosis. However, ST seems to be more likely to result in measurable improvement in hearing. Hearing aids, on the other hand, remain a good solution for patients who are unable or unwilling to undergo surgery.

References

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2. Redfors, Y. D., Jönsson, R., Tideholm, B., & Finizia, C. (2019). Psychometric properties of the Swedish version of the Glasgow Benefit Inventory in otosclerosis subjects. Laryngoscope Investigative Otolaryngology, 4(6), 673–677. https://doi.org/10.1002/lio2.320

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