

Does Recovery Surgery of the Temporary Unilateral Conductive Hearing Loss Caused by Otosclerosis Retrieve Binaural Hearing Skills?

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Objectives: We aimed to measure multiple aspects of binaural hearing skills of individuals with temporary unilateral conductive hearing loss (UHL) who were candidates for a recovery operation, and monitor their performance for one year following the surgical intervention.

Background: It has been over 60 years since stapedectomy was applied as a successful invasive intervention for correcting the conductive component of the hearing loss resulted from otosclerosis (Quaranta et al., 2005). This result could be represented on the audiogram (Luntz et al., 2009). However, the regular audiometry in quiet is insufficient to reflect the consequences of the temporary asymmetrical hypoacusis on binaural hearing skills. An improvement in speech perception in noise in six months after the surgery has been documented (De Seta et al., 2009). Yet, there is scarcity evidence regarding the trend of this improvement over time and the attempt to assess various features of binaural hearing abilities.

Methods: Five individuals with UHL as a result of otosclerosis were scheduled to perform the following measurements before and in 2, 6, and 14 months after the recovery surgery: pure tone audiometry, sound localization, binaural loudness summation, squelch effect, detection threshold of inter-aural time difference, and brainstem binaural interaction component. The participants experienced the UHL for 1, 5, 7, and more than 10 years. The results were compared with the performance of age-matched normal hearing listeners.

Results: Despite evidence of restoring the pure tone hearing thresholds in the early post-surgery appointment, regaining the binaural hearing skills was scattered across the scheduled timeline and was represented with between-subject variabilities.

Conclusions: It appears that the duration of the hearing loss before the recovery surgery of otosclerosis and the complexity of the tasks contribute to the results obtained post-operatively. The findings of this study could be applied as a counseling tool for the clinical practice.