

Cochlear Implantation And Treatment Of Tinnitus In Single-Sided Deafness: A Systematic Review

Brendan McDonald
Edmonton Ear Clinic, Edmonton, AB, Canada

Objectives: The aim of this study is to perform a systematic review of the literature regarding the efficacy of cochlear implantation for relief of tinnitus symptoms in patients with single-sided deafness.

Background: Single-sided deafness (SSD) is defined as a significant unilateral hearing loss with normal (or near normal) hearing contra-laterally. SSD often presents with tinnitus which can be debilitating in some cases. Tinnitus treatment can either be sound-based or focused on psychological reaction (Tinnitus Retraining Therapy). Cochlear implantation can provide access to sound-based treatment for persons with SSD.

Methods: CINAHL, PubMed, PsychInfo, and Cochrane Library databases were searched from their dates of inception to June 28, 2018 using keywords SSD, tinnitus, and cochlear implantation (and synonyms). 163 articles were identified in the databases from the search terms, of which 21 were included for review after meeting eligibility criteria. Subjects from these articles were only included in the analysis if they had preoperative tinnitus and <30 dB HL in the contralateral ear.

Results: Critical evaluation of 21 studies included data extraction of patient age, pure-tone averages of implanted and contralateral ears, implant manufacturer, tinnitus outcome measures, and study follow up duration. Tinnitus outcome measures were analyzed and summarized across all studies. 93% (n=151) found an improvement in their tinnitus compared to preoperative levels, 6% (n=10) had no improvement, and 1% (n=1) found their tinnitus to be worse.

Conclusions: Cochlear implantation in patients with single-sided deafness provides an effective treatment solution for tinnitus. Current evidence base supports cochlear implantation for SSD with debilitating tinnitus; however, further high-quality studies and randomized control trials are needed.