

Tobias Kleinjung:

Can Cochlear Implants be a Cure for Tinnitus?

The pathophysiology of tinnitus is closely associated with peripheral hearing loss. Therefore, improvement of hearing reflects a major component of treatment from an otological point of view. There are multiple techniques in the amelioration of hearing loss which mainly depend on the extent and the location of the problem in the ear (conductive vs. sensorineural hearing loss). This lecture will discuss the value of cochlear implantation in terms of tinnitus suppression as a tool for the treatment of unilateral or bilateral profound hearing loss and deafness. Interestingly, several studies have revealed that a high percentage of patients in both conditions reported either a reduction or complete abolition of their tinnitus while wearing their cochlear implant (CI). Electrical stimulation by a CI resulted in a significant reduction in tinnitus loudness scales and significant reduction of scores of tinnitus questionnaires. To date, cochlear implantation appears to be one of the most successful treatment options for severe tinnitus. Besides clinical data, this lecture will discuss potential mechanisms of the therapeutic success in terms of tinnitus suppression. On the basis of unpublished research data from the authors' institution on a cohort of patients with single sided deafness (SSD) it will be demonstrated to what extent a cochlea implant can reverse neuroplastic changes in central nervous structures in individuals with SSD, and restore auditory function beyond improvement of hearing thresholds.