Gerontology. 2010;56(3):351-8. Epub 2010 Jan 12.

Current trends in treating hearing loss in elderly people: a review of the technology and treatment options - a mini-review.

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Abstract

BACKGROUND: According to the World Health Organization (WHO), by 2025 there will be approximately 1.2 billion people in the world over the age of 60, which marks a shift in world population to a greater proportion of older people. An estimated 70-80% of adults between 65 and 75 years of age suffer from presbycusis, or age-related, bilateral sensorineural hearing loss (HL) in the high frequencies. Presbycusis is correlated with decreased quality of life (QoL) and depression and according to WHO, is a leading cause of years lived with disability in the adult years.

OBJECTIVE: The purpose of the current study was to review the body of literature on treatment options and considerations for the elderly population, as there is a variety of audio-technology available today to treat presbycusis.

METHODS: A PubMed literature search was conducted using the keywords 'presbycusis/presbyacusis/geriatric AND hearing aids/cochlear implants/electric acoustic stimulation/middle ear implants' and 'elderly AND cochlear implants'. References were also mined from papers found.

RESULTS: 431 articles were considered in this review of treatment options for elderly patients suffering from presbycusis.

CONCLUSION: Hearing aids and cochlear implants (CIs) are the most commonly used devices for treating mild-severe presbycusis. Reported outcomes with hearing aids indicate they are an effective method for treating mild-moderate HL in cases where the patient is appropriately fitted and is willing, motivated, and able to use the device. Depending on the type and severity of the HL and the specific needs of the patient, electric-acoustic stimulation and active middle ear implants may also be appropriate solutions for treating presbycusis. Finally, very positive QoL and speech perception outcomes have been documented in treating severe-profound presbycusis with CIs. In some studies, QoL outcomes have even exceeded expectations of elderly patients.

Gerontology. 2010;56(2):123-8. Epub 2009 Aug 27.

Cochlear implantation in elderly patients: surgical and audiological outcome.

Migirov L, Taitelbaum-Swead R, Drendel M, Hildesheimer M, Kronenberg J.

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Abstract

BACKGROUND: Deteriorated hearing affects speech perception and speech production, and negatively impacts on social interaction, employment, income, and, as a result, the quality of life of the elderly population. Lack of satisfaction with conventional hearing aids motivated part of them to turn to more sophisticated cochlear device systems.

OBJECTIVE: To investigate the outcome of cochlear implantation (CI) among elderly cochlear implant recipients.

METHODS: The medical records of 20 postlingual patients aged >65 years at the time of CI, who were followed up for a period of at least 12 months were retrospectively reviewed for age at the time of CI, the cause and duration of deafness, hearing aid experience, comorbidities, complications of the procedure and audiological outcome. Pre- and post-CI speech perception performance was tested using a battery of speech perception tests.

RESULTS: In addition to bilateral severe to profound hearing loss, all 20 patients had some comorbidities and 13 had more than 2 pathologies that are associated with hearing impairment. Major complications such as facial nerve paralysis and foreign body reaction were rare (n = 2). Minor complications such as disequilibrium (n = 5) and wound problems (n = 5) resolved spontaneously or were successfully managed conservatively. There were no complications associated with general anesthesia used during the CI procedure. Statistical analysis using the Wilcoxon Signed Rank Test showed significant differences ($p < 0.01$) between the pre- and postspeech perception categories. No significant correlations were found between the background data: unaided thresholds, aided thresholds, duration of profound deafness, duration of hearing aid use prior to CI, speech perception before CI and speech perception performance after CI using Pearson correlations.

CONCLUSION: CI was found to be associated with significant hearing benefit in elderly candidates. However, every CI candidate must be informed about possible complications associated with the procedure, especially related to the vestibular system. At the same time, it should be made clear that life-threatening conditions are rare and that the surgery is usually safe.

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Abstract

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Otol Neurotol. 2009 Oct;30(7):921-9.

Younger- and older-age adults with unilateral and bilateral cochlear implants: speech and spatial hearing self-ratings and performance.

Noble W, Tyler RS, Dunn CC, Bhullar N.

University of New England, Armidale, New South Wales, Australia.

Abstract

OBJECTIVE: Compare results of cochlear implantation in younger and older adults in the domains of disability and handicap, as well as in tests of word recognition and localization, across unilateral implant (CI), bilateral (CI + CI), and CI with an acoustic hearing aid in the nonimplanted ear (CI + HA).

DESIGN: Three parts: retrospective (postimplant only) analysis; prospective (preimplant versus postimplant); correlation between age and benefit from CI versus CI + CI. Two age groups, older and younger than 60 years, for the first 2 analyses; age is a continuous variable for the third analysis.

SETTING: Tertiary referral hospital clinic.

PATIENTS: Postlingually severely-to-profoundly hearing-impaired adults: Totals of 68 CI, 36 CI + CI, and 38 CI + HA in the retrospective part of the study; totals of 30 CI, 18 CI + CI, and 16 CI + HA in the prospective parts. Numbers vary from these totals on individual measures.

INTERVENTIONS: Patients receive either 1 or 2 cochlear implants; some with 1 CI opt to retain a hearing aid in the nonimplanted ear.

OUTCOME MEASURES: Principal measures: Hearing Handicap Inventory for the Elderly, Hearing Handicap Questionnaire, Speech, Spatial and Qualities of Hearing Scale, word recognition test, and soundfield localization test. The study is exploratory, but proceeding from a null hypothesis of no expected contrast as a function of patient age.

RESULTS: All patient groups show significant benefit after implantation. No significant age-related differences are observed in patients with unilateral

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RESULTS: All patient groups show significant benefit after implantation. No significant age-related differences are observed in patients with unilateral

implant, nor in CI + HA group. In the CI + CI group, the younger cohort showed very substantial increases in both performance and self-rated abilities; the older cohort provides more mixed outcomes.

CONCLUSION: Results for the CI group confirm and extend earlier research. The result for the younger group of CI + CI patients demonstrates the consistent incremental benefit obtained from a bilateral procedure. The mixed outcome observed in the older CI + CI group might be due to individual differences in interaction between effects of aging and the ability to integrate binaural cues.

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J Otolaryngol Head Neck Surg. 2008 Aug;37(4):488-94.

Impact of cochlear implantation on speech understanding, depression, and loneliness in the elderly.

Poissant SF, Beaudoin F, Huang J, Brodsky J, Lee DJ.

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Abstract

OBJECTIVE: To compare speech understanding ability, the level of depression, and the degree of loneliness experienced by elderly cochlear implant (CI) users (>or= 70 years), adult CI users (<or= 60 years), and elderly hearing aid (HA) users (>or= 70 years).

DESIGN: Clinical study.

SETTING: Tertiary academic neuro-otologic and audiologic centre.

METHODS: Three groups of patients were enrolled: (1) nine unilateral CI users 70 years or older at the time of implantation (mean 77.7 years), (2) eight

unilateral CI users 60 years or younger at the time of implantation (mean 51.1 years), and (3) nine bilateral HA users 70 years or older (mean 77.5 years). Subjects underwent speech perception testing and completed two scales regarding their perceived levels of depression (pre-/post-CI) and feelings of loneliness (pre-/post-CI).

MAIN OUTCOME MEASURE: Speech understanding scores in quiet and in noise and quality of life indicators (UCLA Loneliness Questionnaire, Geriatric Depression Screening Scale).

RESULTS: There were no perioperative complications. No significant differences in speech understanding ability in quiet or in noise between elderly and younger CI patients were observed ($p < .05$). Cochlear implantation decreased perceived depression in elderly recipients and loneliness in both elderly and younger recipients. Finally, elderly CI users were no more depressed or lonely than their age-matched peers with mild-to-moderate hearing loss who use HAs.

CONCLUSIONS: Cochlear implantation in elderly patients results in speech perception abilities comparable to those of younger CI recipients, as well as measurable improvements in depression and loneliness.

PMID: 19128581 [PubMed - indexed for MEDLINE]

Rev Laryngol Otol Rhinol (Bord). 2007;128(1-2):65-8.

Bilateral cochlear implantation in a patient with long-term deafness.

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Abstract

PURPOSE OF THE STUDY: 1) To report the case of a 70-year-old patient with a history of auditory deprivation for 80% of his life and who received bilateral cochlear implants and 2) to discuss different aspects of the case, including duration of auditory deprivation, the decision for bilateral implantation, age at implantation, and the use of this treatment modality for tinnitus.

CASE REPORT: A two-stages bilateral cochlear implantation was performed in a 70-year-old patient with long-term deafness without operative or post-operative problems with excellent functional result.

DISCUSSION: Various studies have reported that in patients with long-term auditory deprivation, the results of cochlear implants are delayed and sometimes unsatisfactory when compared to patients with more recent post-lingual deafness. However they did not contraindicate the surgery. The positive results with the first implant (both for the tinnitus and the hearing loss) motivated the patient and medical team to proceed to bilateral implantation.

CONCLUSION: Patients with longstanding auditory deprivation can achieve good functional results even though at a slower rate. The use of bilateral cochlear implants accelerates and optimizes the final outcome.

PMID: 17633669 [PubMed - indexed for MEDLINE]

Acta Otolaryngol Suppl. 2004 May;(552):64-7.

Cochlear implants in elderly people: preliminary results.

Sterkers O, Mosnier I, Ambert-Dahan E, Herelle-Dupuy E, Bozorg-Grayeli A, Bouccara D.

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Abstract

The objective of this study was to evaluate the benefit of cochlear implantation in adults aged 60 years and over. Twenty-eight patients, older than 60 years and with profound bilateral sensorineural hearing loss, received a cochlear implant between 1991 and 2001. The mean age was 66 years and the median follow-up was 22.5 months. Speech perception scores before and after implantation were analyzed retrospectively in order to evaluate the benefit of cochlear implantation. There was a significant improvement of the disyllabic words and sentences scores after implantation. The patients who were over 70 years performed as well as those who were younger. The surgical procedure was well tolerated in all patients. One patient developed a postoperative vertigo due to a perilymphatic fistula. In conclusion, cochlear implantation offers improvement in speech perception to the elderly population, as in the younger population. A careful assessment of the physical status of these patients remains essential in order to evaluate the risk-benefit of this procedure.

PMID: 15219050 [PubMed - indexed for MEDLINE]

Am J Otol. 1995 Sep;16(5):609-15.

Cochlear implantation in the elderly.

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Abstract

The purpose of this study was to compare the audiologic and surgical results of elderly patients receiving cochlear implants with other adult patients, and to evaluate the benefit of cochlear implantation in the geriatric population. Twenty-

eight patients, aged 60 to 80 years, who received the Nucleus 22 channel cochlear implant were studied retrospectively. Mean audiologic test scores increased significantly after implantation. Postoperative audiologic test scores of this elderly population are comparable to those of a matched group of younger adult patients. The surgical procedure was well tolerated in all elderly patients, and there were two postoperative complications requiring revision procedures. A questionnaire was used to assess implant use and the impact of cochlear implantation on the quality of life in this elderly population. Average implant use per day was 13.8 hours, and 65% of patients were able to recognize voices over the telephone. More than 80% of patients believed that their quality of life had improved significantly, that their self-confidence had increased, and that their decision regarding implantation was correct. The results of this study indicate that elderly patients with bilateral, profound, sensorineural hearing loss should not be denied consideration for cochlear implantation based on age alone.

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Otolaryngol Head Neck Surg. 1993 Apr;108(4):329-33.

The benefits of cochlear implantation in the geriatric population.

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Abstract

The deterioration of speech-understanding abilities in the aged that results from factors such as reduced speed and accuracy in processing has been well documented. The purpose of this study was to evaluate whether the geriatric population could benefit from a cochlear implant, despite the possibility of

reduced processing abilities. Twenty patients, ages 65 to 85 years, with bilateral profound sensorineural hearing loss received the Nucleus multichannel cochlear prosthesis at NYU Medical Center. All patients underwent extensive preoperative medical and audiologic assessments to determine candidacy. The surgical procedure was well-tolerated by all patients. Mean postoperative test results revealed significant improvements in both auditory performance and quality of life as a result of implant usage. These data support the concept that although a reduction in the processing of sensory stimulation might exist, the elderly can process a new auditory code delivered by means of a cochlear implant.

PMID: 8483603 [PubMed - indexed for MEDLINE]