Cochlear Implant in Far Advanced Otosclerosis
Performance-Complications-Long Term Results

Introduction: Severe otosclerosis may be treated with CI. However progressive changes of the disease could be followed by modifications in hearing performance.

Objective: To evaluate clinical characteristics of these patients, complications, and observation of the benefits of implants to medium and long term.

Design: retrospective.

Key Words: Otosclerosis; stapedectomy; hearing loss; cochlear implant; tinnitus; Facial Nerve Stimulation (FNS).

Material and Method: 32 adult patients, range age 50 years old, 22 women and 10 men, with profound neurosensory hearing loss and otosclerosis far advanced, were treated with implants multi-channel cochlear implants (CI). 3 patients had initially stapedectomy in the same ear of the cochlear implant. All patients had a previous otological medical examination, psychological, audiometry and 0% of speech discrimination with well fitted hearing aid, CTS (4 of them with RMI) in order to determine hypodensity or morphologic changes within the cochlea. Clinical and audiological observations of their performance were analyzed. Implants and n°: Advanced Bionics 4, Med-El 2, Nucleus 26. The time of use of CI in the sample, was ranged 1 to 16 years.

Results: CTS with morphologic changes in the cochlea in 24/32 patients (Rotteveel’ s grading): 12 had type 2 (localized retrofenestral disease), 6 type 3 (retrofenestral diffuse) (fig. 1). Full insertion inside the cochlea in 28/32 cases, where in 6 patients it was necessary to drill the bone in 4 to 6 mm in the tympanic basal turn of the cochlea. 4 patients had partial insertion of electrodes, one of them with 2 electrodes in the IAC (fig. 2) and leakage of CSF (otosclerosis Type 3). 2 with stimulation of the facial nerve (FNS) (otosclerosis type 3) and was managed with deactivation of the offending electrodes and resetting the current levels for comfort level. 4 patients experienced diminution of the auditory skill in the time by failures of the device, where 3 were reimplanted, with upgrade of the same brand and they obtained improvement of the performance. Auditory diminution and presence of sudden episodes of tinnitus, with sensation of resounds, were observed in 5 patients (otosclerosis type 3), where in 1 the tinnitus diminished with fitting. Good discrimination in the speech in 26/32 patients. Mediocre performance in 5/6 patients (otosclerosis type 3) being good in one of them (fig. 3 & 4).

Conclusion: Patients with far advanced otosclerosis demonstrated good performance with CI in 26/32 cases. In the cases with otosclerosis type 3, 5/6 patients had more difficulty in the insertion of electrodes, 1 of them with 2 electrodes within the IAC and leakage of LCR, and 5 of these recipients with tinnitus and poorer auditory outcome, with greater number of calibrations and adjustments in levels T and C. Only two patients, 2/32 had FNS and were in otosclerosis type 3 with straight electrodes. None with perimodiolars.

Bibliography: