Cochlear implantation with preservation of residual deep frequency hearing

BACKGROUND: The aim of the present paper is to evaluate the clinical parameters in patients implanted for combined, ipsilateral electric-acoustic stimulation of the auditory system. METHODS: A total of 18 patients with residual deep frequency hearing were implanted with a Combi 40+cochlear implant (MED-EL, Austria). Insertion depths ranged from 18 to 22 mm (360 degrees). A modified surgical technique should contribute to hearing preservation in low frequency regions of the cochlea. Pure-tone audiometric thresholds were measured pre- and postoperatively. A speech audiometric evaluation was performed on two subjects. RESULTS: Utilizing adapted surgical procedures, the preservation of low frequency hearing was accomplished in 16 of 18 subjects (88.9%). Seven (38.9%) patients had complete and nine (50.0%) partial preservation of residual hearing. The speech discrimination scores of two patients documented an increase in sentence intelligibility when compared with only the cochlear implant. CONCLUSIONS: Hearing preservation in cochlear implant surgery is possible. Insertions of 360 degrees provide a full functioning cochlear implant to stimulate sufficient neural structures for above average discrimination scores with the implant alone. A synergistic effect of the electric and the acoustic stimulation modes leads to high discrimination scores in background noise.