Combined Electric and Acoustic Stimulation of the Auditory System: Results of a Clinical Study

Abstract:
Combined electric and acoustic stimulation (EAS) of the auditory system is a new therapy for patients with severe to profound high- and mid-frequency hearing loss but remaining low-frequency hearing. In a prospective study, 13 patients with low-frequency hearing of better than 60 dB below 1 kHz were implanted with a MED-EL COMBI 40+ cochlear implant. Pure tone thresholds as well as monosyllabic word scores and Hochmair-Schulz-Moser sentences in quiet and in noise were measured with hearing aids, cochlear implant alone and in the combined stimulation mode (EAS) in the same ear. Hearing could be partially preserved in 11 out of the 13 patients. All patients scored significantly higher with cochlear implant alone than with hearing aids. Seven patients scored higher in the EAS mode than with cochlear implant alone for sentences in noise, 4 remained unchanged, and 2 could not use EAS. Synergistic effects of EAS were most prominent for hearing in noise with increases of up to 72% as compared to cochlear implant alone.

Stichworte:
Hearing impairment; Cochlear implant; Hearing aids; Electric and acoustic stimulation; Deafness