OBJECTIVE: To evaluate the possibility of preservation of low-frequency hearing in atraumatic cochlear implant electrode insertion procedures for combined, ipsilateral electric and acoustic stimulation.

MATERIAL AND METHODS: A total of 21 patients were implanted with a MED EL C40+ cochlear implant using an atraumatic electrode insertion technique to preserve residual low-frequency hearing. Pure-tone audiometric thresholds were measured pre- and postoperatively to evaluate the degree of preserved hearing. Speech discrimination tests in quiet and with background noise were performed in a patient with successful hearing preservation.

RESULTS: Using the atraumatic electrode insertion procedure with an insertion depth of 360 degrees (18-24 mm), hearing preservation could be achieved in 18/21 patients (85.7%). Three patients (14.3%) lost their residual low-frequency hearing after the implantation. Residual hearing was preserved completely in 13 patients (61.9%) and partial hearing preservation was possible in 5 (23.8%). Preliminary speech discrimination tests showed a dramatic benefit for the combined electric and acoustic stimulation mode compared to cochlear implantation alone. CONCLUSION: Preservation of low-frequency hearing in cochlear implantation is possible in patients implanted because of profound high-frequency deafness. With the development of new, more atraumatic
electrode designs, preservation of residual hearing should be further improved.