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Titel des Beitrags:
Preservation of Basal Inner Ear Structures in Cochlear Implantation

Abstract:
The aim of this report was to examine basal trauma in implanted human temporal bones and discuss modified approaches to the basal cochlear turn to avoid destruction of basal cochlear structures. Thirty-three human temporal bones were implanted with four different cochlear implant electrode arrays manufactured by MED-EL using either a caudal approach cochleostomy or round window membrane insertions. All specimens were processed with a special histological technique that allows sectioning of undecalcified bone with the electrode in situ. All bones were evaluated histologically in terms of basal cochlear trauma. Two pathomechanisms of basal trauma could be distinguished and were evaluated separately, buckling of the basal end of the array and trauma by drilling. Using the caudal approach cochleostomy, the total percentage of destructive basal trauma was 48% compared to less than 15% when performing round window membrane insertions. Although it is still unclear whether basal cochlear trauma influences apical cochlear function or not, adapted surgical procedures and no forceful insertion maneuvers should be used when performing cochlear implantations with hearing preservation.

Stichworte:
Cochleostomy; Inner ear trauma; Electric-acoustic stimulation; Cochlear Implant

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