Introduction

Electrocochleography (ECochG) has received increased interest in the recent years, especially during cochlear implant (CI) electrode insertion and postoperative predictions of outcome. The Advanced Bionics (AB) system is capable of measuring ECochGs via the intra-cochlear electrode array for an acoustically delivered low-frequency sinusoidal stimulus. This information is used as feedback to the surgeon during insertion of the electrode array. Furthermore, these measurements can be performed post-operatively.

Material and Methods

ECochG signals in 10 subjects with residual hearing receiving either the AB HiResUltra SlimJ or Mid-Scala electrode arrays was measured during insertion. After complete insertion, ECochG responses to tone bursts at 125, 250, 500, 1 kHz and 2 kHz were recorded and an assumption of threshold was made via an implemented algorithm. The threshold estimation procedure was repeated at 1, 3 & 6 months post activation.

Results

ECochG threshold estimation shows a good correlation to post-OP measured PTAs. There is a post-OP drop in hearing performance.

Speech Perception Outcomes

The EAS (electric-acoustic) component was activated in patients with residual hearing initially, but switched to CI-only after measureable ECochG responses vanished. Speech perception increases over time and shows less deviation when tested at higher presentation levels (80 dB SPL).

Conclusion

Preliminary experience with ECochG recordings during surgery shows that they can be performed in most patients. Post-operatively measured ECochGs may disappear over time. Correlations with post-operatively measured pure-tone thresholds are good. Speech perception outcomes are satisfying for the first 6 months after switch-on.