SPEECH PERCEPTION & INDIRECT BENEFITS FOR SEVERELY HEARING IMPAIRED CHILDREN USING COCHLEAR IMPLANTS.

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The benefits to speech perception, speech production, communication, and quality of life were investigated for severely hearing impaired children using cochlear implants and hearing aids. For the youngest children, assessments of handicaps performance benefits prior to the child developing speech. language tests were important factors in determining communication, and quality of life were investigated for medical technology.

Cochlear implants may provide consistent with those reported in the literature, and suggested that the cochlear implant is highly cost-effective as a medical technology.

The Application of Discriminant Function Analysis Techniques to Assess the Link between Audiological Measures Obtained Prior to Cochlear Implantation and Speech Perception, Speech Production and Speech Intelligibility Outcomes Following Implantation.

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We describe a novel approach to the problem of prediction of later outcomes for children with cochlear implant using exploratory rather than inferential statistical techniques. No attempt is made to predict later outcomes, but rather the outcomes are used to isolate potential discriminating variables. This approach avoids the limitation and assumptions inherent in techniques such as multiple linear regression. It is not as dependent on sample size and it uses descriptive statistics that allow for exploration rather than prediction to formulate a model.

We examine three principal outcomes for very young children three years following surgery: speech perception (IRR/Mc Cormick Automated Toy Test), speech production (Mean Length Utterances) and speech intelligibility (Speech Intelligibility Rating). The results show that there differing patterns of discriminating variable for each of these outcomes. For example after three years of cochlear implant use, speech perception shows a strong link with duration of deafness and with the degree of residual hearing prior to cochlear implantation.

Speech intelligibility and speech production are linked also to these factors but they show higher emphasis on the factor of age at onset of deafness. Other interesting findings will be reported.

Having explored this method, we believe that Discriminant Function Analysis has potential for future applications in the cochlear implant field.

Free Communications Cochlear Implants

NEURAL RESPONSE TELEMETRY (NRT): EUROPEAN FIELD TRIAL


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Neural Response Telemetry (NRT) is a new clinical technique to measure the Electrical Compound Action Potential (ECAP) via the Nucleus CI24M cochlear implant.

Aims. The aim of the present study was to characterise the growth and recovery functions of the NRT response across a large group of adult cochlear implant users. The secondary aim was to investigate T and C levels (Threshold and Maximum Comfort levels) measured at different stimulation rates.

Method. Over 70 adults across 11 European cochlear implant centres, participated. All centres carried out NRT measurements on 3-5 electrode pairs spaced in the basal, central and apical areas of the electrode array for each subject. NRT testing was completed as part of an outpatient session, using windows software (NRT, 2.0) developed by N. Deet et al. All participating centres followed a strict test protocol to ensure comparability of test results across subjects.

Results. After optimising test parameters for recording an ECAP with any individual subject, the NRT measurements (both growth and recovery functions) could be completed in 2 minutes per electrode pair. NRT responses were obtained on all test electrodes, In the majority of subjects, by following the test protocol. Some intra-subject variations in NRT response were observed on different electrodes. For example, double peaked ECAPs were more likely to be found on apical electrodes. Two subjects without a measurable ECAP on NRT had acquired deafness as the result of head injury.

Conclusions. Neural Response Telemetry (NRT) is a quick and reliable method of assessing peripheral neural function across the electrode array in the majority of CI24M patients. Further clinical potential of this technique is currently being evaluated in intraoperative NRT studies.

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