The Effect of Language Ability and Residual Hearing on Speech Perception Outcomes for Older Children Using Multichannel Cochlear Implants

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Early-deafened teenagers or young adults have shown somewhat disappointing performance with cochlear implants in the past, however, in recent years a proportion of older children have demonstrated excellent speech perception performance. There is a great deal of variability in speech perception performance within this group. It is important to investigate the factors influencing performance so that adolescents and their families can make informed decisions regarding cochlear implant surgery. This study considered a number of possible predictive factors in a group of 25 children implanted in Melbourne between the ages of 8 and 18 years. Subjects completed open set speech perception testing using BKB sentences both pre- and postoperatively, and pre-operative language testing using the Peabody Picture Vocabulary Test. Data were collected regarding the type of hearing loss, age at implant, age at hearing aid fitting, audiometric details, and the pre- and post-operative communication mode. Multivariate analysis suggested that three factors were associated with post-operative speech perception performance. Results were improved for subjects with better pre-operative speech perception, better pre-operative language ability, and when the duration of profound hearing loss was shorter. These three factors accounted for 66% of the variance in this group. The results of this study suggest that children who have useful pre-implant speech perception, and higher age-equivalent scores on language measures, would be expected to do well with a cochlear implant. A shorter duration of profound hearing loss is also advantageous. Mean speech perception scores for the older group were not significantly different from younger children.

The Effects of Post-Implant Habilitation on Long-Term Outcomes for Children Using Multichannel Cochlear Implants

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Those working in the cochlear implant field advocate a regular habilitation program for young children receiving implants. Developing auditory skills and the incorporating these into general language development are considered to be key areas for such programs. Investigations of speech perception and language outcomes have demonstrated that the emphasis of spoken language development appears to enhance the results for implanted children. It remains difficult, however, to demonstrate the effect of habilitation as a separate factor and to determine how much individual attention is desirable for each child. This preliminary study considered the long-term speech perception and language outcomes for two groups of children who received Nucleus cochlear implants in Melbourne. The first group (n = 17) was identified as receiving regular habilitation from the Melbourne Cochlear Implant Clinic over a four year post-operative period. A second group (n = 11) was identified as receiving very little regular habilitation over the post-operative period. Language and speech perception results for these two groups showed significant differences in performance on a wide range of measures. The group who received regular, formal habilitation formance on all included only cong ing-impaired child nificantly on m experience at the more comprehen siify these results o dren, and t confounding var results provide sup of regular long cohlear implant p
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