
BOOK REVIEW

The University of Melbourne — Nucleus Multi-Electrode Cochlear Implant (*Advances in Oto-Rhino-Laryngology*, Vol. 38). G.M. Clark et al. Basel: S. Karger (1987). 189 pp., \$89.50.

This book is a valuable reference on the Nucleus 22-electrode multichannel cochlear implant authored by G.M. Clark in collaboration with 15 other researchers at University of Melbourne and Cochlear Pty Limited. Research in the development of this implant, as well as results for implant recipients (post-lingually deafened adults and children, and prelingually deafened adults) are summarized up to the early 1980s.

The first sections review theories of frequency coding in the ear, applications to frequency coding by electrical stimulation, biological safety (materials and surgical procedures), and the engineering of the receiver-stimulator and speech processor. The reader should have a good understanding of auditory physiology, psychophysics of the auditory system, biological engineering, and electrical stimulation to fully appreciate the overview in this monograph. These sections are well illustrated with figures from the 149 references, though findings are treated summarily in an ongoing narrative of the generalized results.

The latter half of the book discusses patient selection, surgery, psychophysical and speech perception results for postlingually deafened adults, and a protocol and preliminary results with children and prelingually hearing-impaired adults. The criteria for cochlear implant candidacy for postlingually hearing-impaired adults are reviewed, including the battery of audiological tests used pre- and post-operatively. It is mentioned that patients are tested with the most effective aid — hearing aid or tactile device — to determine if better results for communication could be expected with the cochlear implant; but the only preoperative score mentioned in the text is 0% on open-set word recognition testing. There are no other results reported on speech perception testing in either of the conventional aided conditions to compare with post-operative implant results. There is also no mention of rehabilitative intervention, for example auditory training, with either the recently fitted hearing aid or tactile device prior to determination of candidacy. Included is a review of the research that led to the current speech processing strategy of converting voicing to rate of stimulation and first and second formants to place of stimulation.

The last section discusses cochlear implants for prelingually deafened adults and the children's protocol, including preliminary results of speech perception

testing, speech production, and language assessment. Again, no comparisons between hearing aid, tactile aid, and cochlear implant results are reported. The section concludes with a statement that there are variations in performance and this may be due to age at onset of deafness, method of education used, motivation of the patient, and age at implantation.

In summary, this monograph is an excellent historical account of the development of the Nucleus 22-electrode multichannel cochlear implant. A large amount of detailed information has been condensed into a 173-page text. It was the editor's intent that this book be useful for active investigators in otolaryngology, audiology, speech pathology, and education of the deaf. This is not a book for an introduction to cochlear implants, and rehabilitative audiologists may be disappointed in the lack of focus on comparative device performance and on training. However, it is recommended reading for cochlear implant team members considering the Nucleus 22-electrode cochlear implant for their patients.

Catherine Clark, MS
Rehabilitative Audiologist/Instructor
National Technical Institute for the Deaf
Rochester Institute of Technology