CORRESPONDENCE

Cochlear Implantation in Adults

TO THE EDITOR: In response to the review article by Carlson (April 16 issue)[1] describing cochlear implantation in adults, we totally agree that such surgery is an excellent method of rehabilitation for patients who cannot hear even with the use of hearing aids. However, we would like to emphasize the importance of postoperative mapping and speech therapy in such patients. Mapping refers to the customized programming of a cochlear implant according to the specific needs of its user, a process that allows the patient to hear sound most clearly from the electrodes of the cochlear implant array.[2,3] Mapping consists of various factors that include setting of threshold and comfort levels and adjustment of such measures as pulse width (control of stimulation rate), sensitivity (fine adjustment of the sound processor), and volume.[4,5] Speech therapy is an aural rehabilitation for patients who have received cochlear implants to improve their speech perception and to learn speaking and language skills. In addition, such therapy is essential for prelingually deaf adults and children.[6] In practice, patients may expect normal hearing, but it takes prolonged rehabilitation for the best speech recognition. Thus, postoperative rehabilitation, including mapping and speech therapy, is very important in order to obtain the best outcome after cochlear implant surgery.

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No potential conflict of interest relevant to this letter was reported.

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THE AUTHOR REPLIES: I am grateful to Park et al. for their commentary. With 15,000 mechanosensory cochlear hair cells and more than 35,000 spiral ganglion cells, the "normal" human auditory system can discriminate pitch variations of less than 5 Hz and differences in sound level as small as 1 dB. Given the inherent complexity of the inner ear, it is remarkable that many users of cochlear implants can decipher complex speech through broad stimulation of severely degraded auditory pathways using less than 10 functionally independent electrodes.[1] Thus, the brain has a remarkable capacity to fill in the gaps and adapt to a relatively crude afferent input. Nevertheless, this neuroplasticity requires time. Patients often do not have appreciable improvement in speech perception for several months after surgery, and auditory performance plateaus at approximately 1 to 3 years.[2] Furthermore, music appreciation and understanding speech in a noisy environment remain problematic for many experienced implant users. Ultimately, a person's auditory outcome depends on a complex interplay between "bottom-up" auditory sensitivity to spectrotemporal cues (which is enhanced by device programming) and "top-down" linguistic and neurocognitive features that may be partially addressed through personalized intensive rehabilitation.[3]

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Since publication of his article, the author reports no further potential conflict of interest.

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