

Abstract

The aim of this study was to compare monosyllabic word perception in patients who underwent cochlear implant surgery with three different manufacturers: Advanced Bionics, Med-El, and Nucleus/Cochlear. The cochlear implant manufacturers were anonymized and denoted as A, B and C. Data was collected from Karolinska University Hospital for patients operated between September 2014 and April 2023, with one-year follow-up. A total of 291 patients were included. Word perception tests were performed pre- and postoperatively. In addition to implant manufacturer, pure tone average (PTA) before surgery, age at implantation, electrode type, childhood hearing impairment, operated side and gender were recorded. The focus was on PTA and age at implantation, which previous research has shown can affect cochlear implant outcomes. The Kruskal-Wallis test was used for pairwise comparisons between manufacturers. Correlation analyses were performed to investigate associations between word perception and PTA as well as age. The results of this study showed a significant difference in improved word perception between cochlear implant brands. PTA and age showed weak negative correlations with word perception. The results suggest that manufacturer C provided the greatest improvement in speech perception, but further prospective studies are needed to determine the causes of the observed differences between manufacturers. Factors such as electrode type, duration of hearing loss, and patient demographics should be investigated.

Keywords: age at implantation, cochlear implants, cochlear implant manufacturers, monosyllabic words, postoperative outcomes, pure tone average (PTA), speech perception.