Cochlear Implant Performance after Round Window Insertion

B.J. Kang, BA1; D. Petti, BA2; L.A.Singer, MBA2; A.H. Kim, MD1,2
1New York Medical College, 2New York Eye and Ear Infirmary

INTRODUCTION

Objective

To evaluate the effect of speech performance after undergoing round window (RW) cochlear implantation in patients who underwent traditional cochleostomy (C) surgery.

Methods

Design: Prospective study.

Setting: Academic cochlear implant center.

Participants: Patients who meet CIs with criteria were enrolled. All patients were enrolled in a prospective RW study meeting CI criteria who underwent traditional cochleostomy (C) surgery. Comparison group was drawn from a sequential series of patients undergoing CI surgery between 2004 and 2011. Patients meeting the following criteria were included: CI candidates of all ages and both ears with available postoperative HINT scores.

RESULTS

No significant differences were found between the RW and C group with regards to age, duration of deafness, and etiology.

The round window membrane can serve as a landmark during cochlear implantation and can help to avoid the potential for histologic damage to the basilar membrane. Several studies have shown that combined hearing, known as combined electric and acoustic stimulation (EAS), can improve overall speech, music awareness, and speech recognition. Success of EAS is dependent on the creation of an acoustic signal adequate to preserve residual hearing.

METHODS AND MATERIALS

Speech perception testing was used on CI recipients using CNC, NUCHIPS, and HINT upon the completion of 1 year. Five time points were included for analysis. All patients were included in the RW group.

Speech Performance Comparison between the RW Group and Controls

Results

601 patients underwent cochlear implantation between 2004 and 2011. 84 of 186 patients who underwent RW surgery were included in the study. To date, this is the first study demonstrating the long-term speech performance after RW surgery in adults.

Comparative Analysis of Speech Perception Scores

For matched standard cochleostomy patients, average age of implantation ranged from 2.3 to 85.5 years (mean: 43.6±25.0). Eight patients had a previous CI surgery in the contralateral ear. We stratified crosstranslational and intra-aural controls for the RW study. Average duration of hearing loss was 23.7 years for the RW insertion group and 21.9 years for the C group. For both groups, the right side was implanted at a higher rate as well. Age of implantation, duration of hearing loss, and etiology were similar for CI candidates in the groups.

Speech perception scores were also compared between the RW and C groups.

Patient Selection

Institutional review board approval was obtained for the study. Patients were drawn from a sequential series of patients undergoing CI between 2004 and 2011. Patients meeting the following criteria were included: CI candidates of all ages and both ears with available postoperative HINT scores.

CONCLUSIONS

Although the importance of hearing preservation and surgical techniques that promote residual hearing, RW insertion in the context of CI surgery may not be as much of an issue for cochlear implant candidates.

REFERENCES

Poster Design & Printing by Genigraphics

Phone: (408)887-8569
Email: bryan_kang@nymc.edu

Academic cochlear implant center.