



Cochlear Implantation in Patients with Advanced Otosclerosis

Piotr H. Skarzynski^{1,2,3}, Marek Porowski⁴, Andrzej Pastuszak⁴, Łukasz Plichta⁴, Aleksandra Kolodziejak¹, Henryk Skarzynski⁴

¹ Teleaudiology and Screening Department, World Hearing Center, Institute of Physiology and Pathology of Hearing, , Warsaw/Kajetany, Poland

² Heart Failure and Cardiac Rehabilitation Department, Medical University of Warsaw, 2nd Faculty of Medicine, , Warsaw, Poland

³ Institute of Sensory Organs, Warsaw/Kajetany, Poland

⁴ Oto-Rhino-Laryngology Surgery Clinic, World Hearing Center, Institute of Physiology and Pathology of Hearing, , Warsaw/Kajetany, Poland

INTRODUCTION

Severe forms of otosclerosis can lead to profound hearing loss, in which stapedotomy will not be effective. Cochlear implantation should be considered in these cases. In far-advanced otosclerosis it could be a challenge because of the alteration of anatomy of cochlea.

OBJECTIVE

To assess the hearing outcomes in cochlear implant patients with far-advanced otosclerosis who had previously undergone stapes surgery.

MATERIAL AND METHODS

The study group was 17 patients (15 women, 2 men) with far-advanced otosclerosis who had cochlear implantation. Their mean age was 52 years, mean duration of deafness was 23 years. All of them had undergone at least one operation on the implanted ear. All patients had computed tomography before surgery. Pure tone audiometry and speech audiometry were performed before and after surgery.

RESULTS

Pre-operative hearing threshold for air conduction (0.5, 1, 2, 4 kHz) was on average 109.6 dB HL (*SD*=12.3), for bone conduction it was 71.4 dB HL (*SD*=4.4). Tinnitus was perceived by 76.5% of the patients before surgery. Post-operative speech recognition score was on average 66.2% in quiet and 42.3% in noise. Facial nerve stimulation was present in one patient.

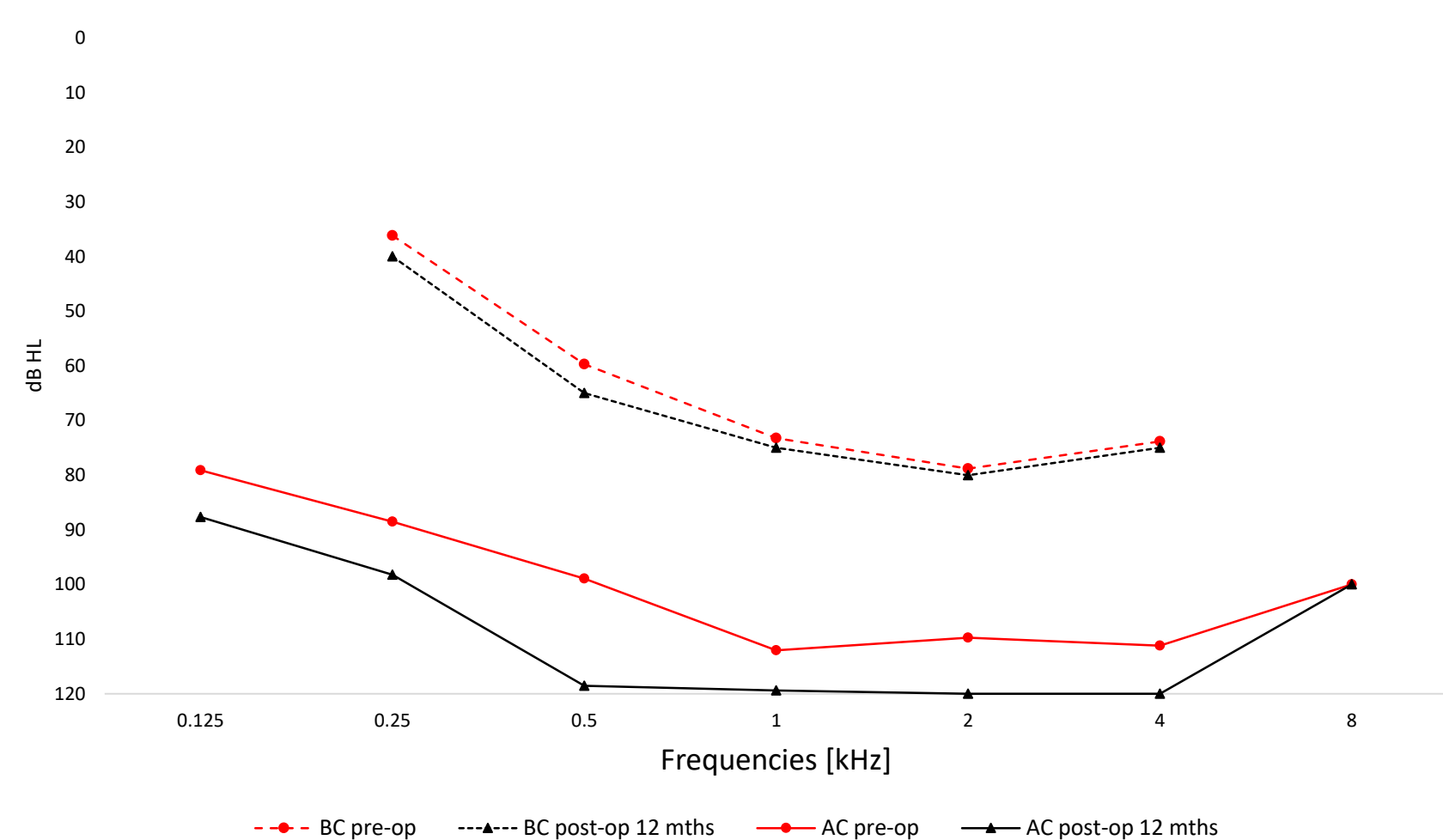


Figure 2. Pre- and 12-month-post-operative hearing thresholds in 17 implanted patients with far-advanced otosclerosis.

RESULTS

		Min	Max	M	SD
AC Operated ear	Pre	82.5	120.0	108.0	12.8
	1 month	108.8	120.0	118.8	3.0
	6 months	113.8	120.0	119.3	1.6
	12 months	117.5	120.0	119.5	1.0
BC Operated ear	Pre	62.5	73.8	71.4	4.4
	1 month	73.8	73.8	73.8	0.0
	6 months	73.8	73.8	73.8	0.0
	12 months	73.8	73.8	73.8	0.0
AC Contralateral ear	Pre	57.5	120.0	85.7	19.7
	1 month	65.0	120.0	86.5	18.2
	6 months	61.3	120.0	87.9	19.7
	12 months	67.5	120.0	89.6	19.0
BC Contralateral ear	Pre	35.0	73.8	58.8	14.3
	1 month	35.0	73.8	59.5	14.1
	6 months	30.0	73.8	59.8	14.1
	12 months	33.8	73.8	60.6	13.3

Table 2. Average hearing thresholds of 17 patients before and after CI implantation. Min, minimum; Max, maximum; M, mean; SD, standard deviation. Thresholds averaged over 0.5, 1, 2, and 4 kHz.

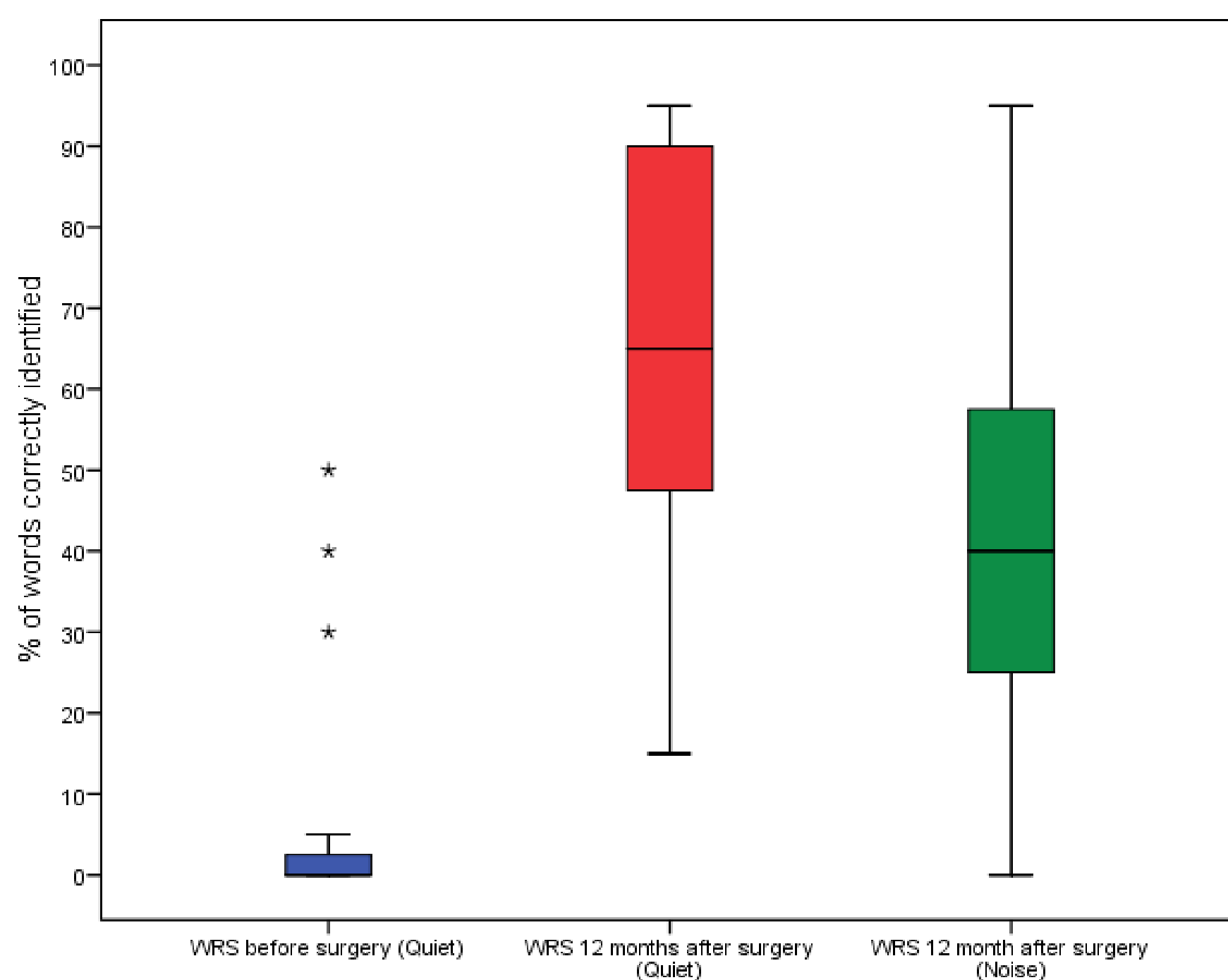


Figure 3. Word recognition scores (%) in quiet (before surgery, blue) and in quiet and noise 12 months after CI implantation (red and green).

CONCLUSIONS

Patients with far-advanced otosclerosis, and who had previously undergone stapes surgery, are likely to experience a deterioration in hearing and receive insufficient benefits from hearing aids. Cochlear implantation can improve their hearing and provide good speech understanding.

