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Cochlear implant: post-surgical complications

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ORIGINAL RESEARCH ARTICLE

ABSTRACT

The aim of this study was to develop an article on complications associated with Cochlear Implant (CI) surgeries performed over a decade at the University Hospital (HU) – Federal University of Santa Catarina (UFSC). A recurrence rate of approximately 9% of complications was observed. Of these, vertigo, device displacement, surgical infection and facial paralysis were the most common.

Keywords: Hearing loss, Cochlear implant, Post-operative complications.



Implante coclear: complicaciones postquirúrgicas

RESUMEN

El objetivo fue promover un artículo sobre las complicaciones asociadas a las cirugías de Implantes Cocleares (IC) realizadas a lo largo de una década en el Hospital Universitario (HU) – Universidad Federal de Santa Catarina (UFSC). Hubo una recurrencia de aproximadamente el 9% de las complicaciones. De estos, el vértigo, el desplazamiento del dispositivo, la infección quirúrgica y la parálisis facial fueron los más comunes.

Palabras clave: Pérdida auditiva, Implante coclear, Complicaciones postoperatorias.

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INTRODUCTION

The impact of hearing loss on an individual's health is well established, and is associated with higher rates of social isolation, loss of autonomy, reduced job opportunities, depression, and impaired language development and use¹⁻⁴.

In Brazil, the 2019 National Health Survey⁵ showed that 1.7 million people reported using some type of hearing aid. However, by cross-referencing data on the use of hearing aids and the household income of users, the study proposes the hypothesis that low-income individuals may be deprived of access to hearing aids that they potentially need.

The device is installed through surgery, which is currently recognized by global consensus as relatively simple and low-risk¹⁻¹⁰. However, when postoperative complications occur, they result in great frustration in caring for the patient's physical and mental health, in addition to the financial expenses involved, which illustrates the need to expand studies on the subject¹¹. Furthermore, the analysis of surgical complications is essential for a better assessment of new procedures and devices, in addition to improving the criteria for indicating surgery and standardizing the management of future complications based on evidence^{12, 13}.

In the most recent literature on the subject, the classification proposed by Cohen and Hoffman¹⁴ has been used for postoperative complications of cochlear implant (CI) surgery, dividing them into "major" (or "major") - when they require a new surgery and/or hospitalization for treatment - and "minor" (or "minor") - when they can be managed with expectant or exclusively with medication, without the need for hospitalization.

In view of this, the objective of this article is to promote a study of complications related to CI surgeries performed at the University Hospital (HU) of the Federal University of Santa Catarina (UFSC) - Brazil.

METHODOLOGY

This is an observational, descriptive, and retrospective study that analyzed the medical records of 205 patients who underwent CI surgery at HU-UFSC between 2011

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and 2021.

The inclusion criteria were: CI surgeries performed at HU-UFSC with at least 1 year of postoperative follow-up and agreement to participate in the study. The exclusion criteria were: surgeries performed less than 1 year postoperatively, surgeries in patients who did not consent to the study, and surgeries in patients whose medical records had insufficient data. The Cohen and Hoffman12 proposal (minor or major) was used to classify the complications found, as described in the introduction.

RESULTS AND DISCUSSION

Over the 10 years studied, 205 patients underwent surgery, with a total of 253 ears operated. In this scenario, some data were relevant for the subsequent analysis of postoperative complications.

As for gender, 122 (59.5%) were female patients and 83 (40.5%) were male. 156 (61.7%) surgeries were performed on the right ear and 97 (38.3%) surgeries on the left.

Now, regarding the findings related to postoperative complications, these occurred in 22 (8.7%) surgeries, of which 5 (2%) were considered major and 17 (6.7%) were minor, according to the classification of Cohen and Hoffman14, as detailed in Table 1.

Complications	Number (n)	Percentage (%)
Major		
Internal component failure	4	1,6
Internal device displacement	1	0,4
Minor		
Vertigo	11	4,3
Surgical site infection	2	0,8
Facial paralysis/paresis	2	0,8
Internal component failure	1	0,4
Internal device displacement	1	0,4
Total	22	8,7

Tabela 1 – Post-surgical complications, classified as minor and major

Furthermore, regarding the technique, of the 178 surgeries in which the round window was used for insertion of the electrodes, complications occurred in 14 (7.9%), while in the 74 surgeries in which cochleostomy was used, these occurred in 8 (10.8%). Furthermore, the occurrence rate of vertigo using the round window was 5%, while in

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cochleostomy it was 4%.

At this point, it is worth highlighting that the duration of the work (10 years) and the sample size (205 patients and 253 surgeries) are relevant factors for comparative analysis with other studies, since these are sometimes carried out with larger samples and periods, as is the case of Brito *et al.*¹⁰, Farinetti *et al.*¹⁵, Halawani *et al.*¹² and Theunisse *et al.*¹³.

That said, regarding the rates of postoperative complications of CI surgery, the Service is consistent with the data found in the literature. This is because the rate of general complications (8.7%) is within the spectrum found from 6.4 to 19.9% in the literature review. In fact, the specific rates follow the same pattern, with a value of 6.7% for minor complications (6.4 - 24.6% in the literature) and 2% for major complications (0 - 17.5%) ^{10-13, 15-17}.

FINAL CONSIDERATIONS

In this article, in the 253 CI surgeries, a percentage of 8.7% of complications was observed, of which 6.7% were minor and 2% were major. The most frequent complication was vertigo, which was present in 4.3% of the surgeries.

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