www.jcimcr.org

JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Short Report

Open Access, Volume 6

Spontaneous cochlear explantation: A rare complication after surgical site infection

Sakina El Khaoua*; Oubenjah Jalal Eddine; Ouardi Karima; Hemmaoui Bouchaib; Benariba Fouad; Errami Noureddine

ENT and Head and Neck Surgery Department, Military Hospital Mohammed V, Rabat, Morocco.

***Corresponding Author: Sakina El Khaoua**

ENT and Head and Neck Surgery Department, Military Hospital Mohammed V, Rabat, Morocco.

Email: elkhaoua.sakina@gmail.com

Received: Oct 12, 2025

Accepted: Nov 11, 2025

Published: Nov 18, 2025

Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/3840

Abstract

Cochlear implantation is a safe and standardized procedure for severe to profound hearing loss, but post-operative complications, though rare, can occur. This report describes a 62-year-old patient with bilateral cophosis who developed a Staphylococcus aureus infection at the implant site one-month post-surgery, leading to skin lesions and implant extrusion. Imaging confirmed mastoid involvement.

The expansion of implantation criteria has increased its global use, especially in younger patients, but also highlighted complications like infections, skin flap necrosis, and electrode misplacement, with infection rates ranging from 1.7% to 12%. Pediatric cases face additional risks, such as otitis media and meningitis. Risk factors include age extremes (<2 or >65 years), immunosuppression, otorrhea, and prior meningitis.

This case emphasizes the need for vigilant post-operative care and infection management, particularly in high-risk groups, and calls for further research to improve outcomes.

Introduction

Unilateral or bilateral cochlear implantation is a well-standardized and safe surgical procedure for the auditory rehabilitation of people with severe to profound sensorineural hearing loss. Since this technique has been used, many studies have reported complications after implantation requiring minimal surgery or hospital management.

Clinical observation

A 62-year-old patient, had bilateral cophosis, implanted in the right ear in 2022, she did not show any signs of allergy to silicone and cochlear implant materials, absence of immune deficiency, hormonal disorder, germs in the mastoid and no notion of local trauma. The patient had an infection at the implant site in relation to the subcutaneous receptor, evolving for a month from her admission, complicated by a skin lesion and extrusion of the implant. On clinical examination, the patient had a local superinfection at the site of implantation with a purulent and fetid discharge, painful on palpation (Figure 1). The otologic examination as well as the rest of the ENT examination were unremarkable.

Figure 1: A bacteriological and parasitological sample showed the presence of Staphylococcus aureus.

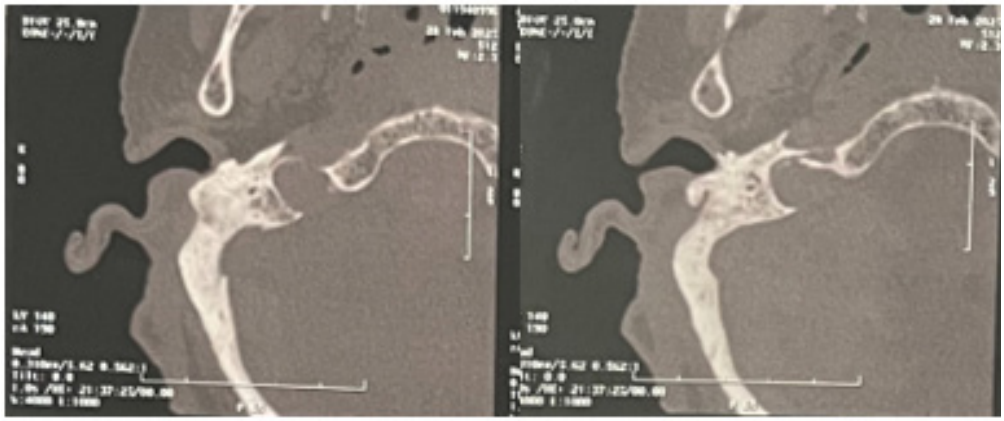

Figure 2: A CT scan of the rocks was performed objectifying a total filling of the mastoid cells.

Figure 3: The patient was put on dual antibiotic therapy with daily local care until healing.

Discussion

The broadening of the criteria for cochlear implantation, coupled with the effectiveness of this method of hearing rehabilitation, has led to a significant increase in the number of implanted patients worldwide. However, this technology, now offered to younger and younger patients, has also shed light on the issue of post-operative complications.

Over the past twenty years, many studies have analyzed these complications. One of the first papers addressing the surgical complications of cochlear implantation was published by Cohen in 1991 [1].

The most commonly reported complications include skin flap necrosis, skin infections, and improper positioning of electrodes. To date, the literature reports an incidence of 11.8% for minor complications and 3.2% for major complications [2-5]. The rate of infections varies from 1.7% to 12%, depending on the type of infection identified [6,7].

In implanted children, certain infectious complications can occur, such as acute otitis media, reactivation of serous otitis or mastoiditis. These infections can lead to implant extrusion, device failure, or, more seriously, meningitis. The risk of infection is higher in these children than in those with normal hearing, due to the risk of contamination of the inner ear by the cochleostomy, especially during the first months after the operation. Leake et al. have shown, through studies in animal models, that acute otitis media occurring in the first two weeks can cause severe cochlear damage, worsening residual hearing loss, leading to vestibular disorders and promoting cochlear ossification [8].

Several risk factors for infection have been identified, including an age of less than 2 years or more than 65 years at implantation, immunosuppression, the presence of otorrhea or cerebrospinal rhinorrhea (spontaneous or post-traumatic), the existence of neurosurgical prostheses, as well as a history of meningitis [9].

Conclusion

Cochlear implantation remains a safe surgical technique for hearing rehabilitation, with a low rate of complications, but it is important to be aware of them in order to prevent them optimally. The development of new implant technologies and the evolution of surgical techniques have led to a gradual decrease in the rate of these post-operative complications.

Declarations

Competing interests: The authors declare no competing interests.

Authors' contributions: SE wrote the article. OJ, OK, HB, FB, have reviewed the literature. NE is responsible for the corrections. All authors have read and approved the final manuscript.

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