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Clinical Records

Delayed extrusion of a cochlear implant: a case report of an implant extruding 21 months after the original operation

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Abstract
We present a case report of a lady who received a Nucleus 22 Channel cochlear implant in July, 1992. She presented again in April, 1994 when the cochlear implant had extruded spontaneously. The possible aetiology of this extrusion, as well as the technique of surgical management, is discussed.

Key words: Cochlear implant

Case report

A 64-year-old lady with bilateral profound deafness secondary to otosclerosis received a multichannel cochlear implant (Nucleus 22 Channel) on the 24th of July, 1992. The operation was technically straightforward and was performed through an inverted U post-auricular incision leaving a 1 cm margin around the body of the implant. The post-operative course was uneventful. The stitches were removed on the seventh post-operative day and the patient was discharged after one week. Shortly after her discharge a prolene suture extruded through the skin.

The operation was successful as far as her hearing was concerned. At follow-up in May 1993, 18 months after the operation, she had a free-field audiogram showing thresholds averaging 35 dB at the speech frequencies. The wound was reported normal and the implant was being worn all her waking hours.

On the 17th April, 1994, this patient was referred again because she felt something extruding through the skin behind her ear. There was also some discomfort in the post-auricular region. She was immediately transferred to our hospital and admitted. On arrival, we found that the posterior one-third of the implant was extruding through the skin (Figure 1). The skin overlying the implant was atrophic and congested. There was also some discharge surrounding the implant. A swab was sent for culture which revealed *Staphylococcus spp.* She was started on intravenous antibiotics and 24 hours later she was taken to theatre for surgical repair. Another cochlear implant was made available in case it was needed.

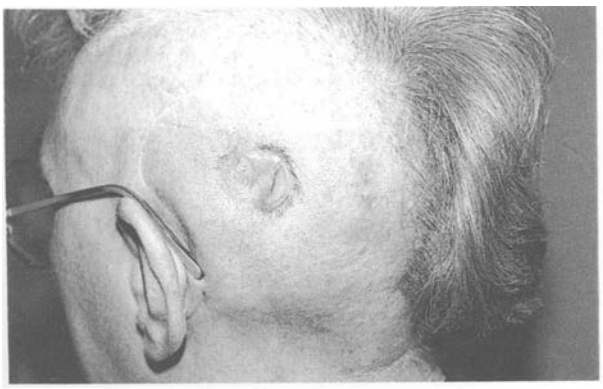

FIG. 1
Patient at presentation with the body of the implant extruding through the skin. Note the necrotic edges of the skin defect and the discolouration of the overlying skin.

Surgical technique in steps

(1) Excision of devitalized skin overlying the posterior part of the implant which left a skin defect about 4 × 4 cm.

(2) A large rotation flap (Figure 2) was elevated by creating a curved limb projecting postero-superiorly from the skin defect.

(3) A galeal flap was raised, based superiorly (Figure 2).

(4) The implant package was anchored to the skull by two nylon sutures because we discovered that the original tying sutures were undone and loose.

(5) Finally a two-layered closure using a large rotation skin flap and an underlying transposition galeal flap was performed.

Discussion

Fortunately, complications of cohlear implantation are relatively rare. Most of the complications mentioned in the literature deal with immediate and short-term complications. Among the most commonly encountered problems are those associated with the incision and post-auricular flap (Cohen *et al.*, 1987; Miyamoto, 1993). Of the flap problems cited in the literature, necrosis, haematoma, seroma and infection are mentioned Cohen *et al.* (1987). Our case illustrates an unexpected delayed complication which occurred 21 months after the initial implantation.

This was probably not the first delayed extrusion, but we did not find any similar case in the literature. Miyamoto (1993) mentioned that out of 125 cochlear implants performed at Indianna University Medical Center there were two cases of delayed

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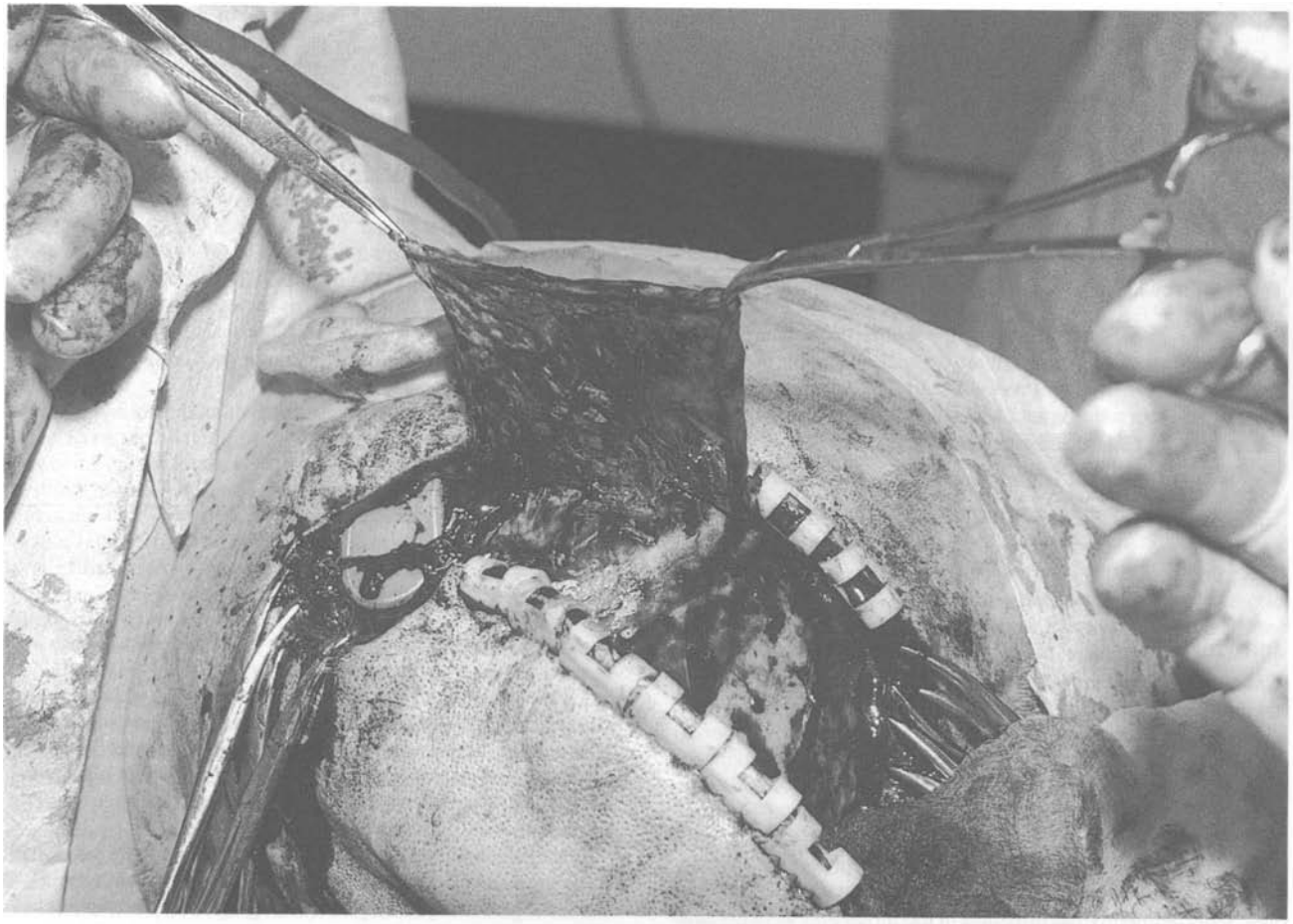

FIG. 2

Intra-operative photograph of the site of the operation. Note the galeal transposition flap held between two artery forceps and ready to be laid over the implant.

cochlear implant extrusion. Both cases were associated with the large inductive coils of the original design of the Nucleus 22 Channel implant. One breakdown resulted in extrusion of the coil and the second was managed using a small rhomboid flap. However, no details were given of the exact timing of the extrusion nor of the possible aetiology.

In our case it was obvious that the implant was rocking against the skin because of the loose tie-over prolene sutures. We think that this resulted in pressure atrophy and delayed necrosis of the overlying post-auricular skin. Another contributing factor was the design of the early Nucleus 22 Channel implant which was unslotted therefore giving a natural spring effect of the body of the implant against the overlying skin.

Either a transposition flap or a rotation flap could be used for the repair of the skin defect resulting from delayed flap necrosis. We preferred in this case a two-layered closure using a large rotation skin flap and an underlying transposition galeal flap. Securing a tie-over prolene suture was also a necessity in this case.

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