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Case report/Kazuistyka

Postauricular advancement fascio-cutaneo-periosteal flap for closure of mastoid cutaneous fistula

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ABSTRACT

Background: Postauricular cutaneous mastoid fistula (PCMF) is a rare complication of chronic suppurative otitis media, may also complicate ear surgery and, very rarely, has been reported to complicate congenital cholesteatoma. Few authors have given descriptions of techniques of closure, with majority agreeing on the difficulty in managing such fistula due to the necrotic nature of the margin. **Setting:** A tertiary care urban referral hospital in a developing economy. **Methodology:** A new technique of closure of PCMF is described. This technique utilizes the postauricular fascio-cutaneo-periosteal advancement flap with Burow's triangles following excision of the fistula margin. Details of this technique are described. **Results:** Two women with cholesteatoma, aged 33 and 41 years, were successfully managed using this technique. The first case was diagnosed with right ear cholesteatoma with automastoidectomy and persistent discharging cutaneous mastoid fistula and had completion of canal wall-down mastoidectomy with postoperative cleaning of the mastoid cavity. The mastoid cutaneous fistula persisted postoperative despite conservative treatment and was treated using this technique 14 months postsurgery with successful outcome. The second case with left attic cholesteatoma extending to the mastoid antrum had canal wall-up mastoidectomy with limited atticotomy, but developed persistent mastoid cutaneous fistula 4 months postoperative and was treated with this technique. She had delayed wound healing but the fistula eventually closed. Both cases have been followed up for 24 and 18 months respectively with no recurrence. **Conclusion:** Postauricular advancement flap is effective for closure of persistent cutaneous mastoid fistula.

Introduction

Postauricular cutaneous mastoid fistula (PCMF), connecting the mastoid cavity with the postauricular skin, is an unusual complication of chronic suppurative otitis media (CSOM) [1, 2] and a rare complication of cholesteatoma [3]. It is also known to complicate extensive meatoplasty and mastoidectomy, especially in cases following multiple postauricular incisions and associated poor wound healing [4].

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Aside from the discomfort of post-aural discharge, patients with PCMF often seek medical assistance for closure due to cosmetic reasons. PCMF is commonly unilateral, but bilateral occurence complicating cholesteatoma has been reported [1]. A ventilating mastoid fistula is believed to serve as a natural means of aborting the occurrence of deadly intracranial complications in cases of PCMF complicating cholesteatoma.

While a large number of simple mastoid fistulas tend to heal spontaneously with appropriate treatment of CSOM, cutaneous mastoid fistulas tend to heal very slowly [4], or not at all. This is because the inverted skin surrounding the fistula often demonstrates necrosis, with epithelial migration and fusion with epithelial lining of the mastoid cavity. This often means surgical closure is indicated.

Several techniques of surgical closure of mastoid cutaneous fistulas have been described, some with mixed outcomes and mixed results. Simple skin closure had been used for ages with extremely high failure rates. Asherson described a technique of closure of PCMF complicating mastoidectomy in a girl with zygomatic mastoiditis by transplanting temporalis muscle into the defect [5]. His technique entails elevating the edges of the fistula and transplanting a portion of the temporalis muscle into the cavity, retained in position by a stitch to the lower fold and the skin sutured over it. Luetje [6] described a technique of excising the fistula margin, everting the mastoid epithelium towards the external auditory meatus, advancing the anteriorly based periosteal flap under the everted skin edge, and using bone pate and free abdominal fat graft to obliterate the mastoid cavity, and closing the defect with a rotational skin flap. Farrior described the use of post-auricular myocutaneous flap for closure of PCMF, among other indications [7]. Lee et al. described closure of PCMF using temporalis fascia transposition flap [8]. Recently, Vira and Andrew described a technique of double layer closure of PCMF, involving the use of medially based conchal flap and temporalis fascia to close the defect [9].

The issue with most of these techniques is that because of the relative rarity of PCMF, it is difficult to prescribe any technique as one-size-fits-all for all cases of mastoid cutaneous fistula. The technique of Vira and Andrew, for example may not be applicable where conchal cartilage is already used in previous tympanomastoidectomy that is complicated by PCMF, as is the case in one of our patients.

Postauricular cutaneous advancement flap was earlier described for closure of helical rim defect [10, 11]. We describe a simpler modification of this technique that entails the use of posteriorly based fascio-cutaneo-periosteal advancement flap for closure of PCMF.

Methods and materials

The patient is positioned supine, with the affected ear uppermost, and the face turned away from the surgeon. Routine surgical cleaning of post-auricular skin area is carried out, followed by application of head and neck drape. The fistula and fistula tract are visualized (Fig. 1). The incision area is marked to include a vertical limb connecting two horizontal limbs (Fig. 2). The vertical limb will incorporate an elliptical incision around the fistula, and is situated at the postauricular groove. The horizontal limbs of the incisions are parallel to each other, and incorporate a Burow's triangle on either posterior end, and each is

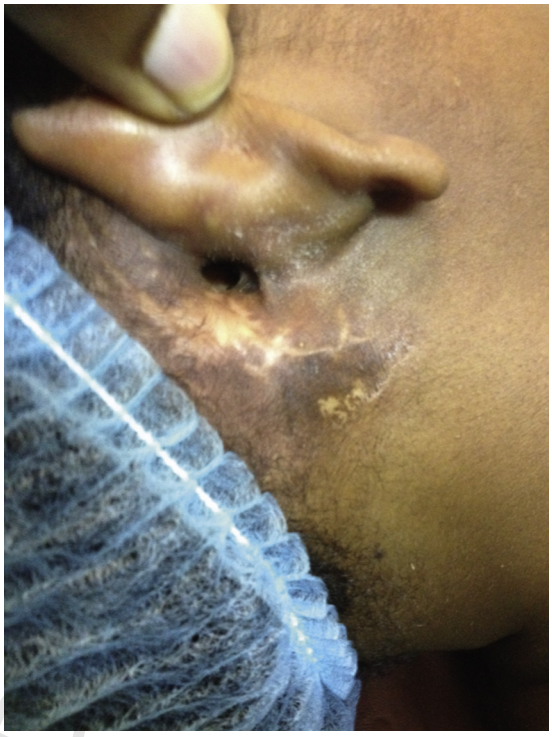

Fig. 1 – Positioning of patient for surgery

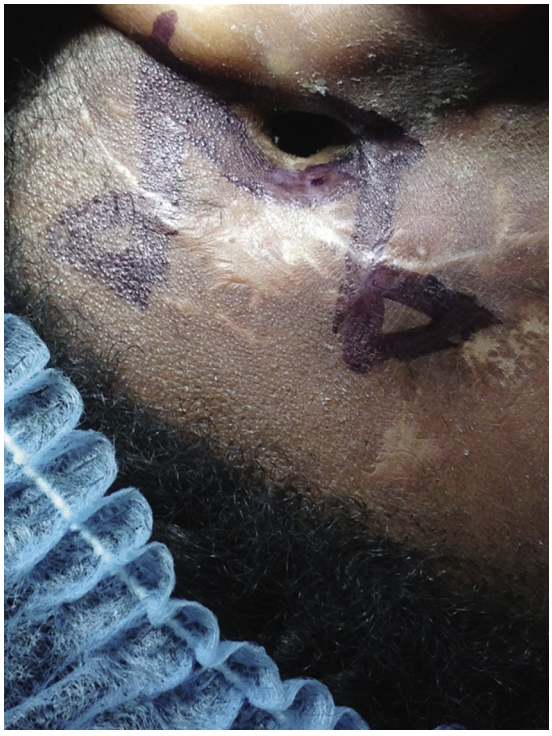

Fig. 2 – Incision area marked with methylene blue

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