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Postauricular cutaneous mastoid fistula

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Abstract

Postauricular cutaneous mastoid fistula is a rare condition. The cutaneous mastoid fistula is a very rare complication of chronic suppurative otitis media. The fistula tracts are typically difficult to manage because of the surrounding necrotic skin edges. We describe an unusual case of a postauricular cutaneous mastoid fistula and outline the surgical technique used for closure.

Key words: Cutaneous Fistula; Mastoid; Otitis Media; Surgical Flaps

Introduction

Postauricular cutaneous mastoid fistulae are rare. There are only six reported cases in the literature. The underlying causes of these cases were chronic suppurative otitis media (CSOM), including tuberculous otitis media. We report an unusual case of postauricular cutaneous mastoid fistula triggered by underlying otitis media.

Case report

A 76-year-old, fit and well woman presented with a 4-day history of an aching, burning sensation with spontaneous mucoid discharge behind her left ear. There was associated worsening of her left-sided hearing. She was systemically well and did not experience tinnitus or vertigo. She had undergone a left cortical mastoidectomy in childhood but had not experienced any otological symptoms during the intervening decades.

Clinically, the patient had a narrow and collapsed left external auditory canal (EAC). There was a collection of keratinized squamous debris in the medial part of the EAC and the tympanic membrane was not visualized. The postauricular area was slightly tender to touch but the overlying skin was not inflamed. A small cutaneous opening discharging mucoid material was identified in the mastoid antrum region (Figure 1).

An audiogram revealed moderate mixed hearing loss with an air-bone gap of 20 dB, in the low to mid-frequencies in the left ear. The right ear had mild sensorineural hearing loss in the high frequencies region. Computerized tomography (CT) showed that the left middle ear cavity was occupied with soft-tissue-density material that extended into the attic and via the widened aditus ad antrum into the mastoid air cells. More superiorly, this soft-tissue-density material extended up through the petrous bone at the limit of the superior semicircular canal. This soft tissue opacity also extended laterally and posteriorly from the attic towards the postauricular cutaneous region (Figure 2). There was also soft tissue opacity in the medial part of the EAC adjacent to the tympanic membrane. It was thought to be an epitympanic cholesteatoma extending into the mastoid air cell system.

The patient underwent exploration of the left middle ear and mastoid. Operative exploration revealed a collapsed left EAC with keratinizing squamous debris in the medial part of the EAC. Both the tympanic membrane and the skin of the EAC were intact. However, part of the posterior bony EAC wall was absent. The mastoid was explored via a postauricular incision. The cutaneous opening of the fistula and its track were excised en bloc. The fistula track extended from the skin surface into the pre-existing bony dehiscence of the tegmen. The mastoid was sclerotic, with normal mucosal lining of the residual mastoid air cell system. However, the mucosa of the mastoid antrum was very oedematous, obscuring the communication between the middle ear and the mastoid air cell system. There was no evidence of any cholesteatoma or acute infection within the middle ear cleft.

The residual mastoid air cells were removed and the ventilation pathway between the middle ear and the mastoid process was re-established. A small strip of temporalis muscle flap was rotated inferiorly to cover the tegmen bony defect and the mastoid cavity. The postauricular skin wound was closed in two layers. The EAC squamous debris was removed. Microbiological examination of the mucoid discharge from the fistula failed to reveal any bacterial organism. Histological examination of the oedematous mastoid antrum mucosa revealed chronic inflammatory change without evidence of cholesteatoma. The patient made an excellent recovery and her post-operative audiogram revealed complete closure of the air-bone gap. The wound healed well and there was no recurrent fistula at 12-month follow-up.

Discussion

Meatomastoid fistulae between EAC and mastoid are not uncommon following mastoid surgery or CSOM due to the dehiscence of bony EAC wall with deficient skin covering. However, postauricular cutaneous mastoid fistulae are rarely reported. Archaeological studies of medieval Danish skeletal remains have found evidence of cutaneous mastoid fistulae.
thought to be secondary to CSOM, but there are only six reported cases from modern times. The presentations of these patients were variable. They ranged from those asymptomatic apart from the fistulae to hearing loss, otorhoea, postauricular mass and facial nerve palsy.

Two of the reported cases developed fistulae following incision and drainage of the postauricular masses. One case underwent radical mastoidectomy in 1942. Our patient underwent cortical mastoidectomy in 1938 and the residual bony defect along the tegmen might have predisposed to the formation of the fistula. A mallet and gouge were often used during mastoidectomy many decades ago and could have resulted in unintended bony trauma to the tegmen, which then predisposed to the development of a fistula. The likely trigger factor for the occurrence of the fistula in our case was the presence of underlying otitis media. Modern surgical techniques, with drilling of the mastoid under magnification, now minimize the possibility of unintended trauma to bone and soft tissues.

Primary closure of the edges of a fistula is often unsuccessful because of the necrotic skin edges, and closure involving mastoid epithelium, periosteal flap, bone pâte, abdominal fat-free graft and rotation skin flap in combination has been described. The technique of temporalis muscle rotational flap followed by skin closure utilized in this case was simple and effective, with no recurrence at 12-month follow-up.

Conclusion

We report an unusual case of postauricular cutaneous mastoid fistula triggered by underlying otitis media. A previous cortical mastoidectomy might have been a predisposing cause. Excision of the fistula tract followed by temporalis muscle rotational flap for closure of the defect is simple and effective.

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