

CASE REPORT

Cerebrospinal Fluid Otorrhoea from an Abnormal Communication between the Internal Auditory Meatus and the Medial Wall of the Tympanic Cavity

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SUMMARY

Patients who have had middle-ear or mastoid surgery are at an increased risk of developing cerebrospinal fluid (CSF) otorrhoea. The CSF leak is usually from defects in the tegmen or posterior cranial fossa. We present a patient with CSF otorrhoea following a modified radical mastoidectomy seven years ago. There was an unusual communication between the internal auditory meatus (IAM) and the middle ear. Radiologic imaging like the MRI is useful in identifying the site of leak.

KEY WORDS:

Cerebrospinal fluid otorrhoea, Mastoid surgery, Internal auditory meatus

CASE REPORT

A 37 year old lady, with a prior history of bilateral modified radical mastoidectomies seven years earlier, developed sudden onset of copious clear discharge from her left ear following the delivery of her fourth child. She was given spinal anaesthesia during labour. Examination of the left ear revealed a pulsatile clear discharge from the middle ear cavity. A diagnosis of CSF otorrhoea was made.

She was initially managed conservatively. The left ear was packed with a BIPP (Bismuth Iodoform Paraffin Paste) pack and intravenous ceftriaxone was given. She was nursed in a 'head elevated' position, put on laxatives and advised on avoidance of straining. A high resolution CT (HRCT) scan of the temporal bone was done which showed a bony defect between the internal auditory meatus (IAM) and the middle-ear (Fig. 1).

Conservative management halted the leak, however a few months later the problem recurred. An MRI scan (Fig. 2) was done, which showed CSF leak into the middle ear via the internal auditory meatus. Surgical intervention was discussed with the patient and she consented. Intra-operatively, a CSF leak was noted from a defect anterior to the round window. There was no residual cholesteatoma. The defect was sealed with gel-foam, fat and surgicel. A lumbar drain was inserted for six days, following which the CSF leak stopped.

A year later the CSF leak recurred. This time, mastoid obliteration with abdominal fat and a blind sac closure was performed. Ten months following the mastoid obliteration,

the patient has been well with no further recurrence of CSF leak.

DISCUSSION

The aetiology of cerebrospinal fluid otorrhoea can either be congenital or acquired. The congenital form is usually due to labyrinthine abnormalities and presents in childhood^{1, 2}. Acquired forms are usually post-traumatic or secondary to surgery of the mastoid or skull-base. Less frequent causes include infection, tumours and erosion of the skull-base from arachnoid granulations^{3, 4}.

Following trauma or surgery, clear discharge is the usual presentation. Less specific manifestation which requires a high index of suspicion include unilateral serous otitis media, meningitis, pulsatile tinnitus and CSF otorrhoea^{3, 5}. Diagnosis is usually confirmed by positive glucose or β 2-transferrin. High resolution CT with intrathecal contrast (CT cisternography) is the investigation of choice in identifying the site of the leak.

In this patient the CSF leak followed an unusual course through the IAM. The cause of the bony defect in the medial wall of middle ear for this patient is uncertain. It could be due to erosion of the bony wall from her previous ear disease, an iatrogenic defect following surgery or congenital. The breach in the defect leading to the CSF leak could possibly be due to the straining during labour.

In this case, the MRI scans clearly showed the communication between the IAM and middle-ear therefore obviating the need for a more invasive contrast cisternography. In centers where this facility is available, an MRI would be a suitable, less invasive alternative.

CSF leaks from the temporal region are usually successfully managed conservatively. Surgical management is best performed by multilayered closure of the defect. The commonly used autografts include temporalis fascia, temporalis muscle, conchal cartilage, abdominal fat and bone. Middle fossa defects can be managed through either a middle cranial fossa, transmastoid route or combined approach. Posterior fossa defects require a transmastoid approach. For the more common middle fossa defect, a wide mastoidectomy is done. The dural defect is closed with suture where possible. If the defect is too large, it should be covered

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Fig. 1: Figure 1: High-Resolution CT of the Temporal Bone (Axial View). Destroyed wall between left internal auditory meatus and left middle-ear (arrow)

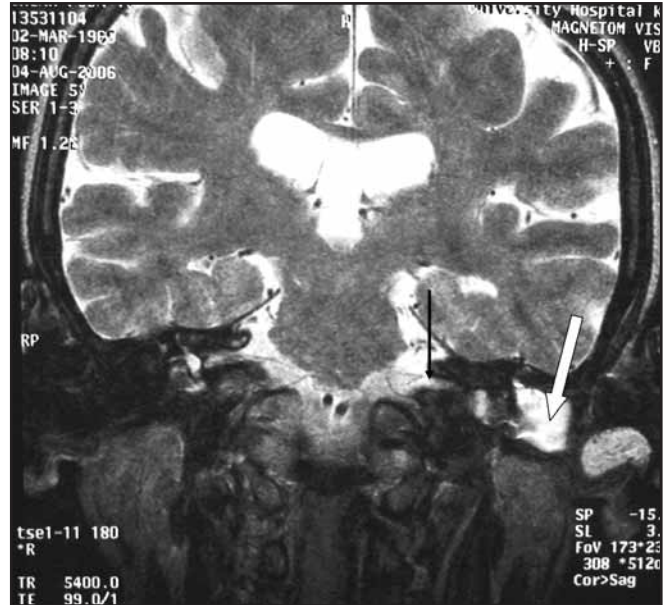


Fig. 2: T2 weighted MRI scan (Coronal View) showing CSF leak from the left internal auditory meatus (black arrow) into the left middle-ear (white arrow)

with fascia to prevent cerebrospinal fluid leak. The defect is then further reinforced in a multilayered fashion with gelfoam, surgical, temporalis muscle, abdominal fat or cortical bone. Tissue glue is often used to reinforce the closure.

Mastoid obliteration with blind sac closure is usually reserved as a final and definitive procedure as it results in conductive hearing loss and the possible complication of cholesteatoma if the epithelial lining of the external auditory canal is not adequately removed.

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