



TRANSMASTOID REPAIR OF LARGE TEGMEN DEFECTS SUSANA MATHEW

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Abstract : Dehiscences of the temporal bone can arise due to various factors. Such a dehiscence can lead onto herniation of brain tissue or meningoencephalocele. Here we describe one such case. The clinical findings, radiological images and the operative technique of repair have been explained

Keyword : Dehiscence, temporal bone, meningoencephalocele, transmastoid repair

Introduction

Defects of the skull base in relation to the ear can be caused due to various reasons. It could be congenital, traumatic, infective or idiopathic. Such defects can in turn lead to meningocele or meningo-encephalocele, meningitis and Cerebrospinal fluid leaks.(1) Meningo-encephalic herniation is a rare phenomenon and causes life threatening complications like meningitis, cerebral abscess etc. However with advanced imaging modalities and surgical techniques, it is possible to identify the same and operate. The dura is quite strong to support the underlying brain parenchyma against herniation. However,, underlying edema probably due to cerebritis can contribute to the herniation. (2) Transmastoid repairs for tegmen defects have been sought in view of fewer complications than an intracranial route. Post operative recovery is also faster. Here we describe a 50 year old lady with a large tegmen defect resulting in a meningoencephalocele. A transmastoid approach was done and the defect repaired. This case occurred after two surgeries which was done on the same ear for chronic otitis media with cholesteatoma. The history, examination, imaging and the treatment have been described.

Case Report

A 34 year old housewife from Bangladesh presented to us with complaints of left ear pain and left ear discharge for the past 10 years. The discharge was continuous, scanty, purulent, foul smelling and blood tinged. She also complained of decreased hearing on the left side which was insidious in onset, progressive. She could manage conversational speech. There was no history of tinnitus, giddiness or facial weakness. There were two mastoid

surgeries done in the past, one in 14 and the other in 2011. Details of these surgeries were not available. She had no nasal or throat complaints. She had no co-morbidities. On examination of the left ear, a scar was seen in the post aural region and a smooth, soft mass was seen filling the entire canal obscuring the view of the tympanic membrane. Right ear was normal. Fistula sign was negative and there was no tragal or mastoid tenderness. Facial nerve was intact bilaterally.

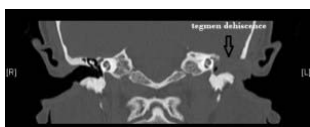
The nasal and oral examination were normal. A high resolution computerized tomogram (HRCT) of the temporal bone showed a post operative defect in the tegmen tympani and petrous part of temporal bone of 10mm * 14 mm. There was herniation of inferior temporal lobe through the defect which was extending into middle ear cavity and reaching upto the floor of the external auditory canal. Additionally, a Magnetic Resonance Imaging (MRI) of the brain was done which showed post op fluid filled cavity in left middle ear cleft with some peripheral rim enhancement. There was evidence of a large defect in tegmen tympani and in petrous temporal bone on same side with herniation of part of inferior temporal lobe. CSF was noted through the defect extending upto the bony canal of external auditory canal on same side. A diagnosis of left sided post-operative meningoencephalocele of the mastoid was made and she was planned for surgery. She underwent a left temporal bone meningoencephalocele excision with repair of tegmen defect and mastoid obliteration with blind sac closure under general anaesthesia. During surgery, a skin covered smooth mass was seen in the external auditory canal. Post aural scar with a fistula was present. Tegmen defect of 1.25*1 cm dimensions with a meningo-encephalocele with granulation was found protruding from the defect. No cerebrospinal fluid (CSF) leak. The mastoid cavity was filled with cholesteatoma sac. Stapes supra structure was present but other ossicles were absent. Facial bony canal was intact. Multi layered closure of tegmen defect was done with temporalis fascia, conchal cartilage, fascia lata and sealed with tissue glue. Her post operative period was uneventful. She was put on strict bed rest with head end elevation for 2 days.

Discussion

Tegmen tympani forms the roof of the middle ear. Temporal bone separates the subarachnoid space containing CSF and the middle ear space. Dehiscence can occur in this part of the bone. The causes include congenital malformations, iatrogenic causes, infectious diseases, cholesteatomas, infection of skull base. A handful of them can be spontaneous. (1) Patients with tegmen dehiscence can present with middle ear pathology, serous otitis media, headaches, tinnitus and conductive hearing loss. (3) They can also present with herniation of brain tissue, like in this case. These occur mainly following a middle ear infection like cholesteatoma. The three surgical approaches for repair of CSF otorrhea include- transmastoid approach, middle fossa craniotomy and a combined approach. These options can be chosen based on location of defect, surgeon's experience or surgical access. (4) The advantages of transmastoid approach includes fewer risks and complications, and being technically easier to perform. Hearing disturbance caused due to removal of ossicles can be corrected at the same sitting or a later stage with ossiculoplasty. Imaging can be done by a HRCT or MRI. HRCT shows the tegmen defect and its delineation. However, it cannot resolve subtle differences between dura, cholesteatoma, brain, granulation tissue. This is picked up by MRI.(5) Bony defects of the cranial fossa can be closed using autologous or synthetic materials. The properties include strength to withstand intracranial pressure and compliance to form a seal. Autologous materials include fat, fascia, muscle, cartilage, bone. Synthetic materials include silastic, silicone, hydroxyapatite and titanium plate. (6) Size of defect, volume of herniated brain tissue and experience of surgeon are the deciding factors for the materials used. In our case, we used fascia and cartilage. Conchal cartilage has many advantages including ease of use, being cheaper, easy molding etc.(7) Complications of the procedure include CSF leak, transient ischaemic attack, sepsis, sensorineural hearing loss.(3) In our case, the patient was discharged from the ward after 48 hours, without any complications. Her follow up period was uneventful and is doing well 4 months after surgery with no recurrence of symptoms.

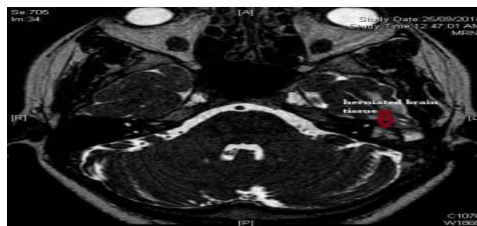
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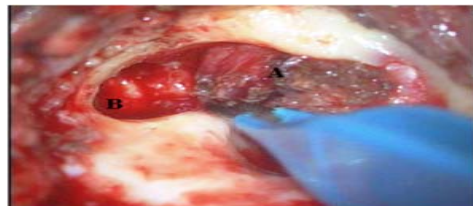


HRCT temporal bone

An Initiative of The Tamil Nadu Dr. M.G.R. Medical University
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MRI BRAIN



Intra-op Fig.1



Intra-op Fig.2



Intra-op Fig.3



Intra-op Fig.4

