Anatomy of the tegmen plate:

Gray’s Anatomy of the Human Body

The Tegmental Plate or Roof (paries tegmentalis) is formed by a thin plate of bone, the tegmen tympani, which separates the cranial and tympanic cavities. It is situated on the anterior surface of the petrous portion of the temporal bone, it is prolonged backward so as to roof the tympanic antrum (tegmen antri) & matoid (tegmen mastoidae), and forward to cover the semicanal for the Tensor tympani.
Clinical types of tegmen plate defects:

- Primary (spontaneous)
- Secondary:
  - Cholesteatoma
  - Necrotizing inflammations of the temporal bone (diabetes mellitus)
  - Traumatic
  - Surgical (iatrogenic)
  - Neoplastic
- Accidently discovered
Accidently discovered tegmen plate defect

**Clinical presentations:**
- Unilateral persistent OME
- Aural fullness+/− hearing loss
- CSF otorhea - otorhinorhea
- Life threatening events (meningitis)
- Pulsating external and/or middle ear masses
- History of chronic ear infection
- History of ear trauma/surgery
Spontaneous or Primary defect with brain herniation

Spontaneous osteodural defects of the temporal bone: diagnosis and management of 12 cases

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Postoperative tegmen defect with meningoencephalocele CT scan
CT scan & MRI

Repair from underneath:

Concept for repair

- Dissection of tissues off the meningoencephalocele
- Reduction or excision of the meningoencephalocele
- Tucking of cartilage above the bony edges (underlay)
- Free muscle graft
- +/- tissue glue
- Covering by fascia (overlay)
- Filling cavity by Gelfoam
Dissection of tissues (skin flap of the mastoid bowl) off the meningocele !!!!!!!!!!!!

Reduction of meningocele and tucking of conchal cartilage graft above the bony margins of the tegmen defect (underlay)
Cartilage graft:

• Conchal cartilage
• Curved like the shape of the floor of the middle cranial fossa
• Malleable and easy to handle
• Tuck the cartilage so that it dissects its way between the dura and the bone; to avoid over dissection which may cause the cartilage graft to slide away from its intended position

Free muscle graft to stabilize cartilage at lateral end of the tegmen defect to prevent slipping (+/- tissue glue)
Temporalis fascia grafting
(overlay)

Repositioning of the skin flap of the mastoid bowl
Meningoencephalocele of the Temporal Bone Repaired with a Free Temporalis Muscle Flap — Case Report

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Necrotizing inflammation of the temporal bone (diabetes mellitus)
Glial Choristoma

Meningioma
Message:
• Awareness of different clinical presentations
• CT scan for bony defect assessment
• MRI for detection of meningocele

Message:
• Repair the defect when encountered in the primary surgical procedure to avoid difficult & dangerous dissection
• Repair from underneath (transmastoid) is suitable for defects in the tegmen antri and tegmen mastoidae
• Repair from above via middle cranial fossa approach reserved for tegmen tympani defects to avoid ossicular damage