

How I Do It..

Single stage procedure to drain Otogenic Brain Abscess Using the Transmastoid Approach

Zaffarullah M.W.

Teaching Hospital, Kegalle, Sri Lanka.

Drainage of otogenic brain abscesses situated away from the tegmen is a challenge. Although there has been significant progress since one of the earliest recorded descriptions by Sir William Macewen in 1893, the complex three dimensional anatomy of the region contribute to challenges in drainage. The author describes a single stage trans mastoid technique for the drainage of otogenic brain abscesses situated away from the tegmen that could be practiced at centres that do not have neurosurgical facilities without added morbidity.

Introduction

In spite of advances in the management of complications of unsafe chronic suppurative otitis media, the mortality of otogenic brain abscess is in the range of 30-40%. This requires urgent therapeutic intervention.

The basic concepts in treating otogenic brain abscesses include immediate decompression of the abscess, prompt eradication of the primary otogenic nidus, and the active prevention of abscess recurrence. Otogenic brain abscesses with intracranial complications are often located adjacent to the temporal lobe and cerebellum, with the middle segment of the temporal lobe and lateral lobe of the cerebellum most highly affected. The infection spreads intracranially through bony defects in the tegmen tympani or Trautmann's triangle or via spread of an infected clot within small emissary veins of the skull to the venous sinuses. Given this location, such abscesses are often amenable to drainage via a transmastoid approach, thus avoiding an additional craniotomy.

Those patients in whom the abscess was located at some distance from the mastoid were judged to be unsuitable for trans mastoid approach thus requiring repeated abscess drainage via burr holes or complete excision, including the abscess capsule. Both of these are major operations associated with a higher incidence of neurological deficits. Further surgery is needed to eradicate the primary focus of infection in the form of radical or modified radical mastoidectomy.

To avoid repeated surgeries for otogenic temporal lobe abscesses located at some distance from mastoid, the author describes a one stage transmastoid approach.

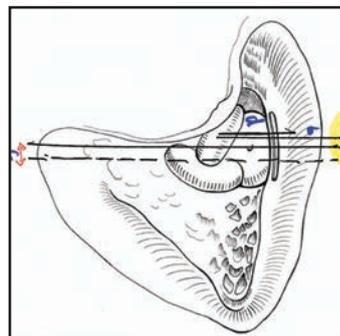
The diagnosis must be confirmed by Contrast enhanced CT scan.

The operative technique

This consisted of radical mastoidectomy to clear the primary focus of infection followed by resection of the brain abscess through the same approach. A curvilinear retro - auricular incision was given. Firstly, the "triangle of attack" was defined which is limited anteriorly by the spine of Henle and external auditory meatus, postero-inferiorly by the sigmoid sinus and superiorly by the temporal line and the tegmen plate of the middle fossa. The drilling was performed in this triangle and a standard radical mastoidectomy carried out. The tegmen was removed of adherent granulations, but did not reveal any bony dehiscence.

The midpoint of the abscess cavity was located by measuring the distance from the following constant landmarks with the assistance from the radiology colleague.

- a. The distance from the squamous temporal bone at the level of tegmen medially.
- b. The distance from the most prominent point of the lateral semicircular canal superiorly.
- c. The vertical distance from the tip of the mastoid anteriorly.
- d. The distance from the most prominent point of the lateral semicircular canal to the tegmen.
- e. The distance $b - d$ (tegmen to the midpoint of abscess cavity).



Next, a needle was bent to the distance of e {ieThe distance $b - d$ (tegmen to the midpoint of abscess cavity)} and advanced the full length of e , gently through the meeting point of a , b and c .



Pus was aspirated. Temporalis fascia and perichondrium grafts were placed over this area to reinforce the tegmen. Middle ear was repaired and the mastoid cavity was partially obliterated with bone pate. Adequate meatoplasty was performed.

Conclusion

Post-operative CT revealed a minimal residual abscess cavity after one week and the patient's temperature , full blood count and CRP settled.

Trans-mastoid approach to otogenic abscess situated further away from the tegmen using the landmarks described offers several advantages over the conventional two-stage method of dealing with this problem. The primary focus of infection is eradicated along with the secondary complications in a single approach. This spares the patient the added morbidity caused by two separate incisions and anaesthetic procedures and also reduces the mortality, rate of recurrence and complications. This procedure can be attempted at centres without neurosurgical facility .In addition, the duration and cost of hospital stay are markedly reduced. The author recommends further evaluation of this approach in a larger prospective study.

