

Anomalous Facial Nerve in a Case of Atticoantral Chronic Otitis Media with Mastoid Abscess

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PRESENTATION OF CASE

An 18 years old female patient came to emergency medicine department on 3rd July 2020 in the evening hours with massive swelling extending in front, above and behind left ear. Associated with severe, throbbing, intermittent headache since past 4 days patient also had high grade fever. Patient also had a history of left ear foul smelling discharge, scanty in amount, non-blood tinged, not aggravated or relieved with upper respiratory tract infection (URTI), not relieved with medications and not associated with giddiness.

Clinical examination revealed a swelling in left preauricular region extending to temporoparietal region displacing left pinna downwards and outwards. Bilateral periorbital swelling was present (Figure 2, 3). Mastoid tenderness was conspicuous. Whitish foul smelling, non-blood-tinged discharge was present in left external auditory meatus. Further ear examination was not possible due to oedema, swelling and thick discharge in external auditory canal (EAC).

In view of extensive swelling with its epicenter in mastoid region, left unsafe chronic otitis media (COM) with complication was suspected and was admitted to ENT ward. General investigations were normal except leucocytosis. While patient was put on antibiotics, neurosurgical opinion was sought and magnetic resonance imaging (MRI) brain with contrast was planned to map the abscess. MRI (Figure 1) which was suggestive of left squamosal COM and mastoiditis with intracranial extradural abscess in left temporoparietal region. MRI also uncovered large subgaleal abscess in the left temporo-occipito-parietal region along the sternocleidomastoid (SCM) muscle with thrombosis of left transverse and sigmoid sinus. Neurosurgeons found no need for intervention from their side.

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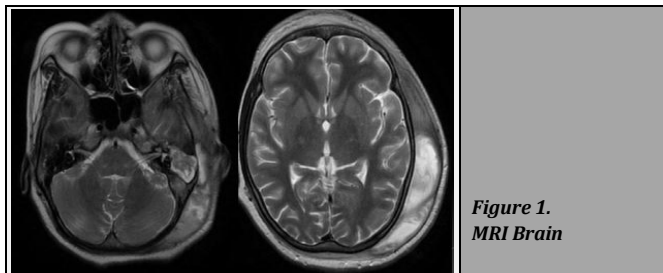


Figure 1. MRI Brain



Figure 2. Periorbital Swelling



Figure 3. Swelling after Incision and Drainage

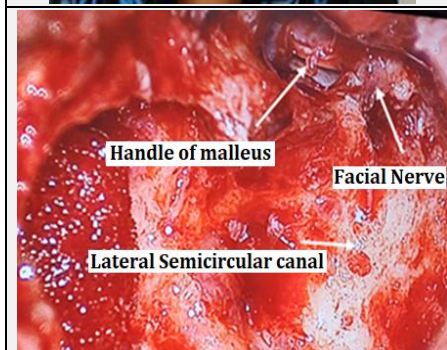


Figure 4. Abnormal Course of Facial Nerve Lateral to Handle of Malleus



Figure 5. Facial Nerve Stimulator

DISCUSSION OF MANAGEMENT

Subgaleal swelling in left temperoparietal region was aspirated three times and finally reponded to incision and drainage. As a definitive measure, patient was posted for tympani mastoid exploration.

Intraoperative Findings

Mastoid cortex was thin with destruction of posterior canal wall and lateral attic wall. Large cholesteatoma present in mastoid cavity with granulations surrounding suggesting long-standing disease. Sigmoid sinus plate was destroyed so also the dural plate. While incus got destroyed, handle of malleus and stapes foot plate resisted destruction and were visualized. While surgery advanced, a thick cord like structure was seen passing laterally to handle of malleus. Unusual as it was anomalous course of dehiscent facial nerve (FN) was suspected and confirmed with facial nerve monitor (Figures 4, 5). Further surgical steps were accomplished preserving this structure.

Post-operatively facial nerve function was intact. Higher systemic antibiotics were administered according to sensitivity and delayed wound healing was observed.

DISCUSSION

Facial nerve anomalies are well known due to maldevelopment in the adjacent structures.¹ Abnormality in the development of 1st and 2nd brachial arch like bony wall of the facial nerve canal, the stapes, the styloid process and / or external auditory canal are associated with anomalous course of facial nerve in tympanic and mastoid segment of the facial nerve, known to the nerve of the second branchial arch.² The facial nerve is located in the posterior part of the structures formed from Reichert’s cartilage. The longest course of facial nerve which is present in the temporal bone is dependent on the bony structures which are derived from Reichert’s cartilage.³ Thus, with abnormality in the structures like stapes crura and lack of fusion of the crura to the footplate, the tympanic and mastoid segments of the facial nerve may assume a more anterior and inferior course, which will take a more direct route or “migrating” anteriorly to the end organ, the muscles of facial expression.⁴

The commonest facial nerve abnormalities being dehiscence of facial nerve seen frequently in tympanic portion followed by geniculate ganglion region and mastoid segment. Nerve traversing between oval and round window, nerve emerging from temporal bone at pyramid segment, crossing promontory inferior to both oval and round window, bifurcating and embracing crura of stapes, backward hump at pyramidal eminence, bifurcated or trifurcated mastoid segment, facial nerve represented as a fibrous strand and occasionally dividing within temporal bone before entering in stylomastoid foramen are some of the rare anomalies.

While variations in the course and structure of FN has been reported profusely, a very rare anomaly of the facial nerve is being reported here. Tympanic segment of facial nerve normally run along the medial wall of middle ear. Instead in very rare occurrence in this patient dehiscent FN was seen lying over (lateral) to the handle of malleus (confirmed by facial nerve stimulator and recorded Figure 4)

The nerve at this site can make it vulnerable to trauma and may lead to iatrogenic facial nerve palsy. Facial nerve lying lateral to the ossicles, behind tympanic membrane⁵ has been reported but it was associated with congenital aural atresia.⁶

The case reported by us was without external ear deformity, probable predictor of deviant course poses larger surgical challenge and hence mandates high degree of suspicion and vigilance.

CONCLUSIONS

Considering anatomical variations in temporal bone and by extension of facial nerve, we feel it is imperative to employ facial nerve monitor in every surgery involving temporal bone.

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Disclosure forms provided by the authors are available with the full text of this article at jemds.com.

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