



PATIENT SPOTLIGHT

Petrous Apex Cholesterol Cyst

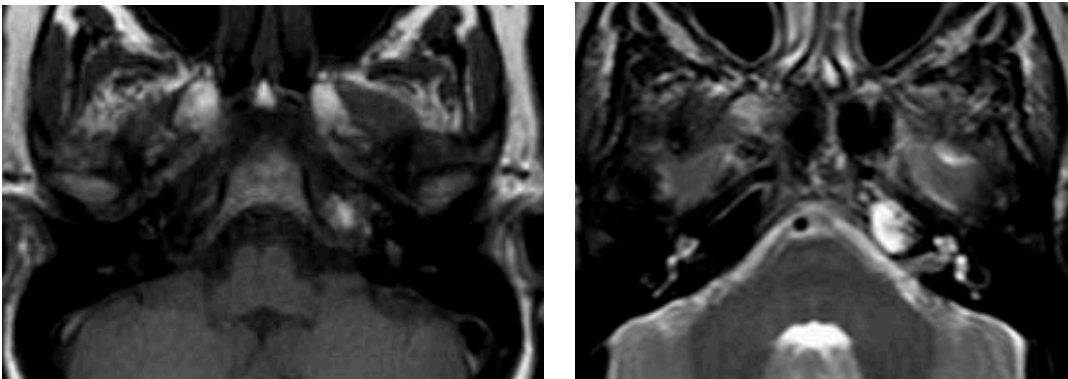


Fig 1 - MRI scan showing hyperintense lesion of left petrous apex on both T1 (left) and T2-weighted (right) images. There is no enhancement with contrast.

A 56 year old female patient complained of left sided retrobulbar headaches. MRI revealed a lesion of the petrous apex.

INCIDENCE AND PATHOGENESIS

Cholesterol granuloma is the most common pathologic entity in the petrous apex, and is thought to arise from hemorrhage within the air cells of the petrous apex. Cholesterol and hemosiderin in the blood products provokes an inflammatory reaction with granuloma formation. Obstruction of the petrous apex outflow tract results in an expansile, erosive inflammatory lesion.

CLINICAL SIGNS

These lesions usually remain asymptomatic until they are large enough to erode bone and press on adjacent structures of dura, V or VII nerve, or inner ear. The most common presenting symptoms are hearing loss, tinnitus, dizziness, headache, facial twitching, facial pain or paresthesia, diplopia, or facial weakness. Asymmetric pneumatization of the petrous bone (which is not pathological) is common and does not require any treatment.

Every patient with an abnormal finding on MRI should have a non-contrast CT scan to look for bone erosion or expansion. Cholesterol granuloma contains fat (cholesterol) and inflammation, and is bright on T1 and T2 MRI (Fig. 1), does not enhance with contrast, and shows bone erosion and expansion on CT (Fig. 2).



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Fig 2 - CT showing an expansile lesion of the left petrous apex with erosion of critical bone on medial surface.

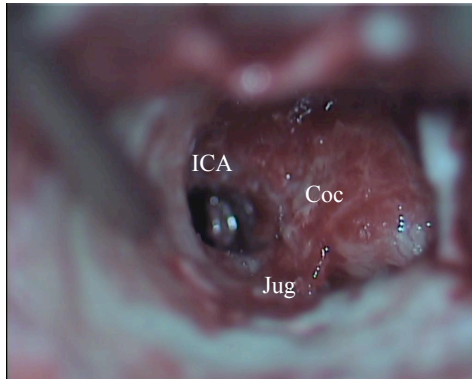


Fig 3 - Surgical photo of the left petrous apicectomy. Brown cyst fluid emerges from the surgical tract. ICA - Internal carotid artery, Jug - Jugular bulb, Coc - Cochlear promontory

TREATMENT

Non-surgical treatment is appropriate for asymptomatic cholesterol granulomas without erosion of the bony cortex on CT. This may represent the majority of incidentally discovered cases.

Surgical Treatment

When possible, the infracochlear approach offers the most direct route to the petrous apex. A post-auricular incision is made and a tympanomeatal flap is elevated. The bony ear canal is widened, and the hypotympanic air cells are drilled away. A triangular bony tract is identified, bounded anteriorly by the internal carotid artery, posteriorly by the internal jugular vein, and superiorly by the cochlea (Fig. 3). The tract is developed with a diamond bur at a slow speed, progressing in an anteromedial direction, until the cyst is encountered. Turbid chocolate-colored fluid will emerge under pressure once the cyst cavity is entered. The tract is gently widened. Semi-solid material (cholesterol) is evacuated with suction, and the cyst wall is stripped with fine forceps. Care should be taken not to violate the dura, and to have the carotid artery in view. The cyst cavity is then irrigated copiously with saline, and a tube of thin Silastic is inserted into the tract. The tympanomeatal flap is replaced. Sometimes a temporal graft will be needed to span the defect.

Cholesterol granulomas can also be approached via an endoscopic transsphenoidal route in many cases. The CT will demonstrate whether there is an adequate surgical tract. When neither of these routes is anatomically feasible, or when a solid tumor exists, a translabyrinthine, transcochlear, or middle cranial fossa approach might be needed.



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