

## Petrous Apex Pathologies, Brief Review on Differential Diagnosis and Surgical Considerations in Skull Base Surgery

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Petrous apex is located in the anterior-superior portion of the temporal bone and is bounded in the superior by the Meckel's cave and the middle cranial fossa, in the inferior by the inferior petrosal sinus and the jugular bulb, in the anterior by the ascending portion of the internal carotid artery and the bony labyrinth and in the posterior by the posterior cranial fossa.

In the patients with petrous apex pathologies, evaluation for nasopharynx, meninges, pituitary, clivus, sphenoid and temporal bone lesions should also be considered.

There are various lesions which can involve the petrous apex including Nasopharyngeal tumors, Cholesterol granuloma, Meningioma, Mucocele, Cholesteatoma, Histiocytosis X, ICA aneurysm, Acoustic or trigeminal neurinoma, Osteomyelitis, Cavernous sinus pathologies and Glomus, Clival (chordoma), Mesenchymal (chondroma) and Metastatic tumors.

To evaluate the patients with petrous apex lesions, various techniques can be used including CT scanning with contrast enhancement with bone density windows, Digital subtraction and normal arteriography, MRI with contrast and Audiometry.

Retro-orbital or vertex headache, Meningitis, Hearing loss, Tinnitus, Dysfunction of the Eustachian tube, Lateral rectus palsy, otorrhea, Trigeminal pain and various Cranial neuropathies, can be the symptoms of the petrous apex lesions and the patients can be presented with these symptoms.

There are various surgical approaches to reach petrous apex lesions depending on the pathologies

and cases including Infra and Transcochlear, Retro and Supralabyrinthine, Infratemporal and Middle Cranial Fossa, Partial Labyrinthectomy and Transsphenoid approaches. The goals of performing surgery for these lesions are ICA, Facial function and Residual hearing preservation, Cerebrospinal fluid leaking prevention, brainstem protection and accessing to lesions for exposure and resection.

It is important for the skull base surgeons to have detailed knowledge about petrous apex pathologies and surgical approaches to petrous apex as it is among the least accessible skull base areas. Having detailed knowledge about the relevant pathologies, surgical anatomy and approaches leads to better management of the patients with these pathologies and with lowest surgical complications.

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