



Petrous Carotid Canal Sympathetic Plexus Schwannoma: A Case Report and Literature Review

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Case Presentation

- A 40-year-old female presented with progressive left-sided hearing loss and aural fullness for 10 years. No visual defects.
- Previously diagnosed with eustachian tube dysfunction status post tympanostomy tube placement without resolution in symptoms.
- Audiogram revealed a mild-to-moderate purely conductive hearing loss on the left with type B tympanometry, WRS 100%. (Fig. 1).
- Exam notable for blue bulging mass with effusion in the left middle ear.
- Presented with a CT Temp Bone w/o IV con which showed an expansive mass within the left petrous carotid canal (Fig. 1).
- Extensive diagnostic work-up (Fig. 1-3) revealed likely schwannoma of the petrous carotid sympathetic plexus.
- Decision to monitor with serial MRI given mild symptoms and excellent hearing despite focal cochlear invasion by tumor.

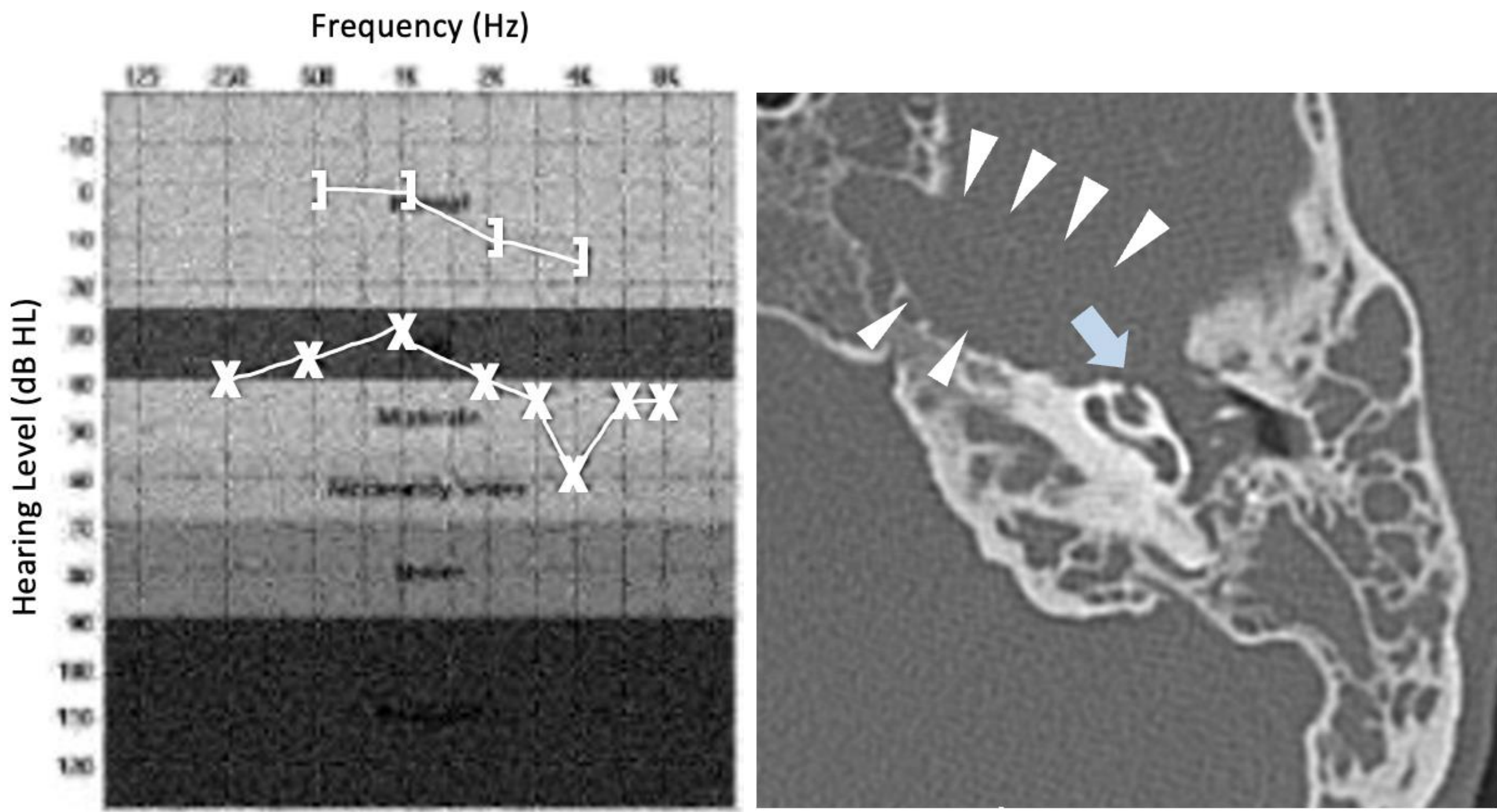


Figure 1. Left) Audiogram of left ear. Tympanometry and WRS not shown; **Right)** CT Temporal Bone w/o IV contrast showing expansile lesion in petrous carotid canal (white arrows) and focal dehiscence of the apical turn of the cochlea (blue arrow).

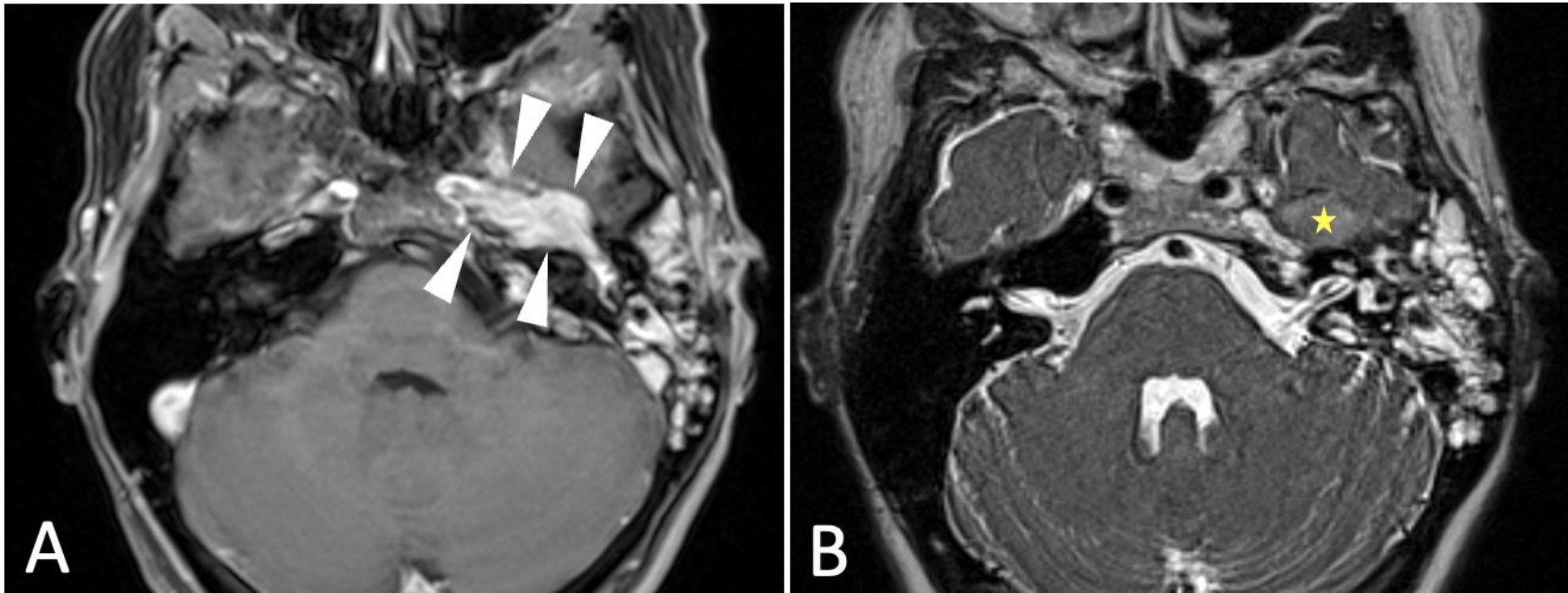


Figure 2. A) MRI post-contrast showing a large homogeneously enhancing mass on T1 (arrow heads) extending from the foramen lacerum to the cavernous sinus with protrusion into the epitympanum; and an **B)** isointense mass with compression of petrous carotid on T2 (star).

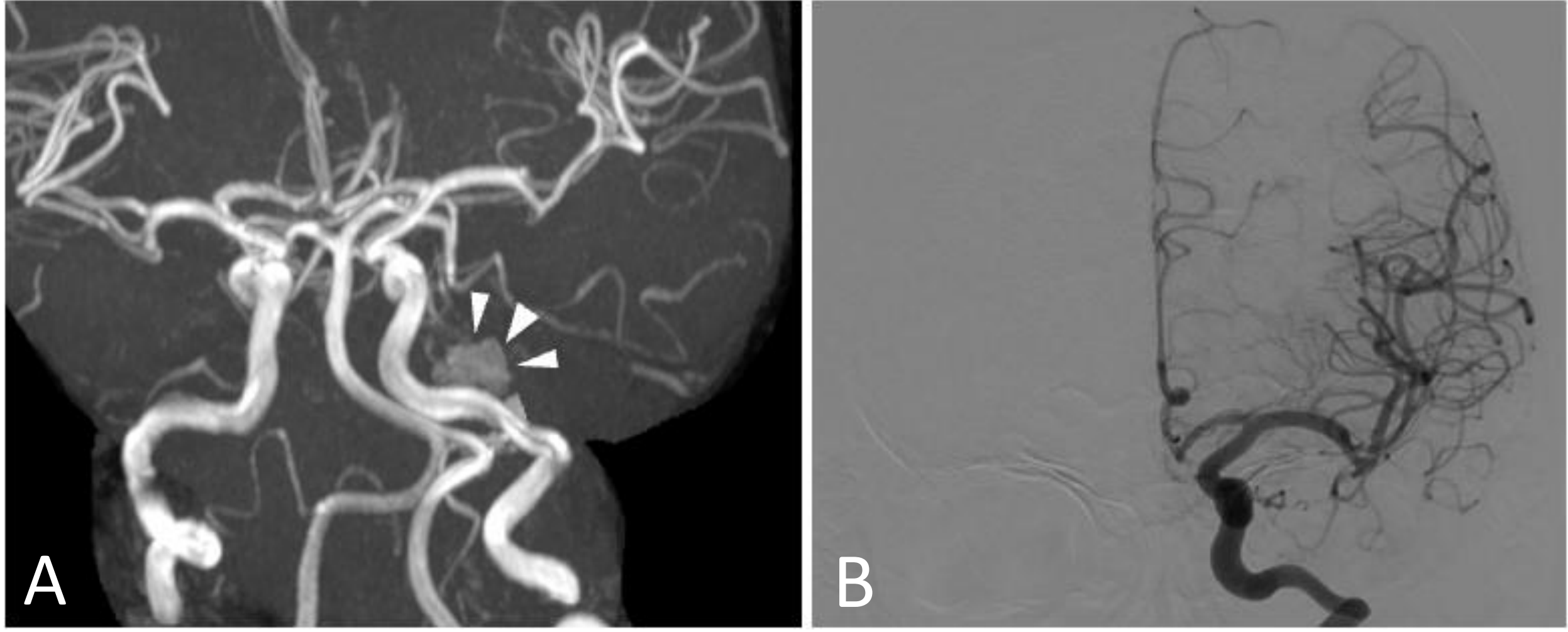


Figure 3. A) MR angiogram was concerning for left internal carotid aneurysm or pseudoaneurysm; **B)** Digital subtraction angiography ruling out aneurysm or pseudoaneurysm.

Literature Review

- Petrous apex schwannomas (PAS) are rare with only 7 other cases reported in the literature (below).

Case	Symptoms / Exam	Imaging	Location	Treatment
27 y.o. female ¹	HA, HL, diplopia Abducens palsy, MEE	CT – Expansile, enhancing mass, projection towards promontory MRI – T1-isointense; T2-hyperintense DSA – Near occlusion of ICA	Petrous carotid canal	Surgical resection (not specified)
59 y.o. male ²	Tinnitus	CT – Contrast enhancing mass	Intraosseous	Suboccipital craniotomy
46 y.o. female ³	Aural fullness Pink mass filling mesotympanum	CT – Enlargement of petrous carotid canal MRI – T1 enhancing post-contrast CTA – Patent ICA	Petrous carotid canal	Fisch type B infratemporal fossa approach
52 y.o. male ³	Conductive HL MEE	CT – Expansion of canal with erosion into petrous apex, encroaching cavernous sinus MRI – T1 enhancing; T2 poorly enhancing CTA – lateral compression of petrous ICA	Petrous carotid canal	Middle fossa transpetrous approach
48 y.o. female ⁴	Headache V2/V3 hypoesthesia	CT – 7 mm, well-defined lytic lesion	Intraosseous	Subtemporal extradural approach, partial Kawase approach
54 y.o. male ⁵	Diplopia, aural fullness Abducens palsy	CT – 40 mm mass with erosion of carotid canal MRI – T1 enhancing post contrast DSA – superolateral displacement of cavernous and petrous ICA	Petrous carotid canal	Subtemporal extradural approach
47 y.o. male ⁶	Diplopia Abducens palsy	CT – 35 mm lytic lesion posterior to carotid canal; heterogenous enhancement with contrast MRI – T1-hypointense; T2-hyperintense	Intraosseous	Subtemporal epidural approach with anterior petrosectomy

Abbreviations: HL, hearing loss; HA, headache; MEE, middle ear effusion

Results / Discussion

- Including ours, 5 out of 8 cases were found in the petrous carotid canal, while 3 were intraosseous within the petrous apex.
- Common radiographic findings include smooth expansion of the petrous carotid canal and avid homogenous enhancement with contrast on MRI.
- Hearing loss, aural fullness, abducens palsy and persistent middle ear effusion are common findings.
- The most common surgical approach was via a subtemporal craniotomy.
- Schwannomas are classically slow-growing tumors. While surgical resection is a common approach, monitoring with serial imaging can be a viable option when only mild symptoms present.
- While exceedingly rare, petrous apex schwannoma is an important diagnosis to include on the differential for a petrous apex mass.

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