

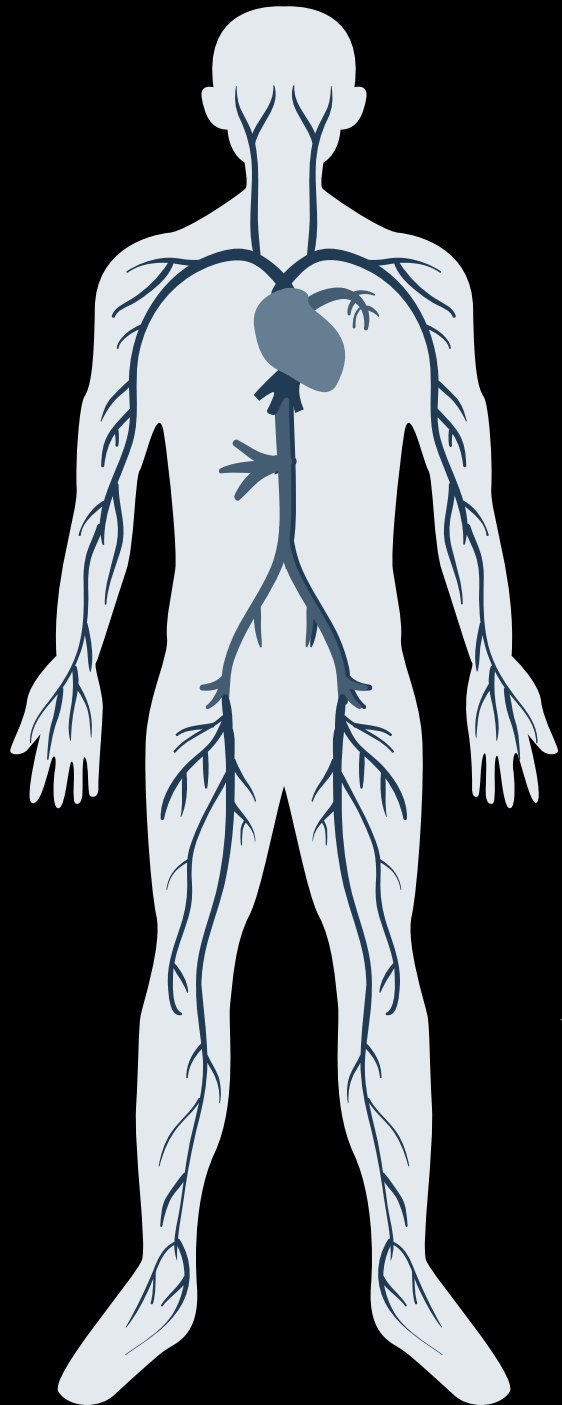
Hidden Patterns: Rare Radiologic Clues in Temporal Bone Pathology

By: Emily Jagenburg BS¹, Lima Carol MD², and Abdul Majid Khan MD²



¹ Oakland University William Beaumont School of Medicine

² Corewell Health Department of Radiology



CASE PRESENTATION

HISTORY OF PRESENT ILLNESS

A 35-year-old female with progressive, asymmetrical left-sided conductive hearing loss in the last 4 years. She also reports progressive left sided facial weakness, initially intermittent, but now constant.

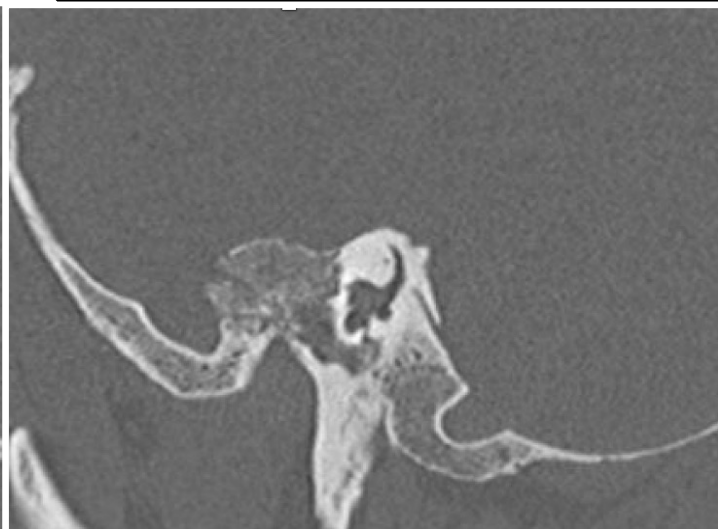
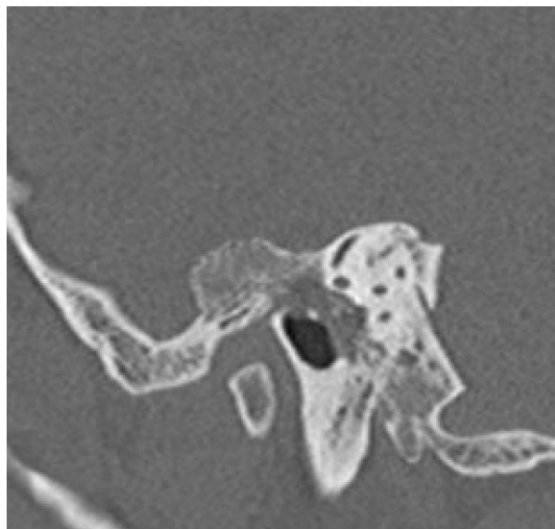
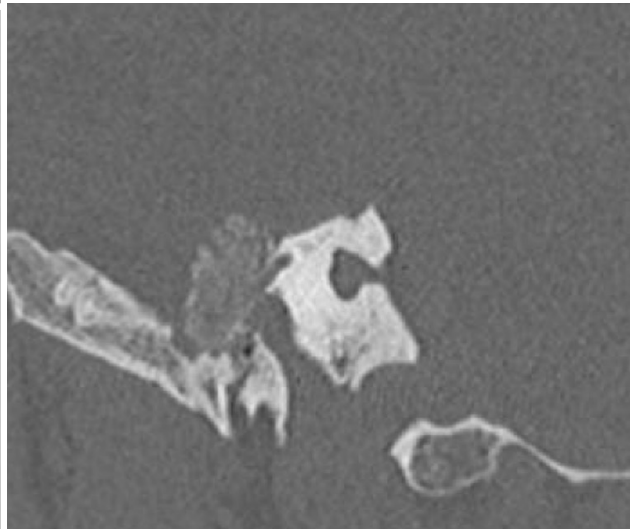
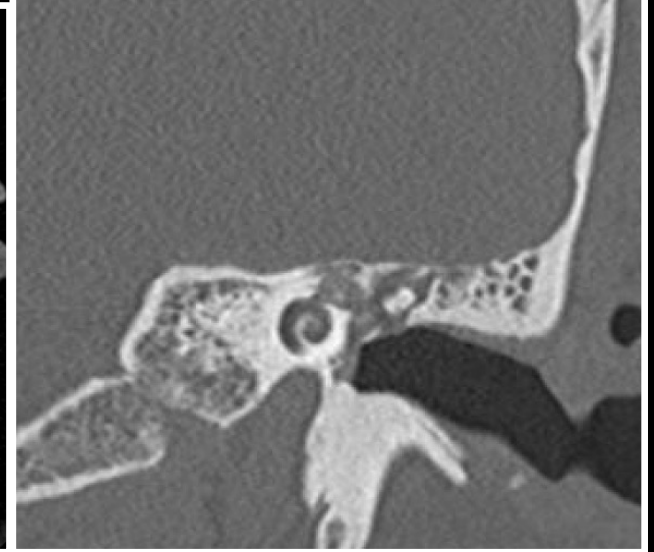
PMH: None significant

PSH: Tonsillectomy, lumbar laminectomy

Meds: None

Allergies: None

Social: None



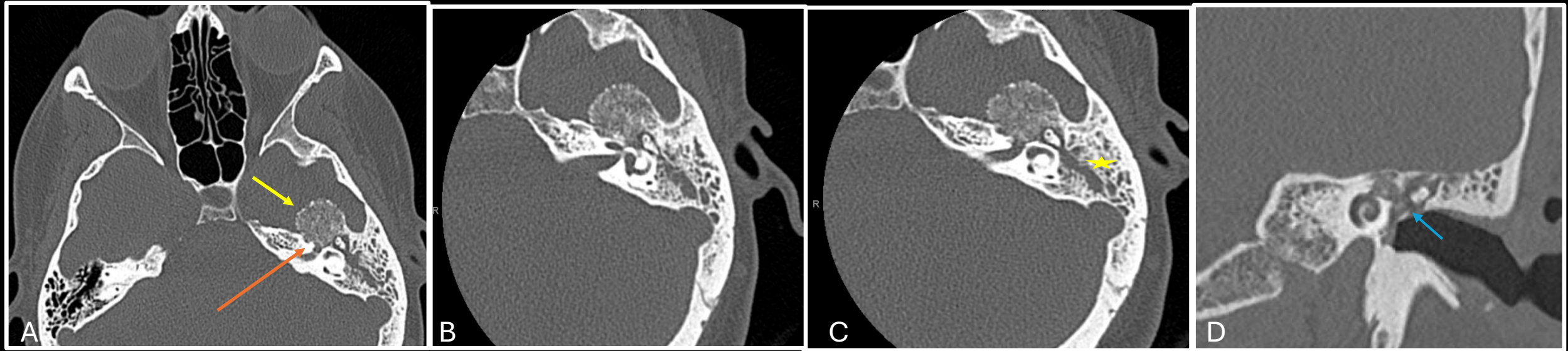
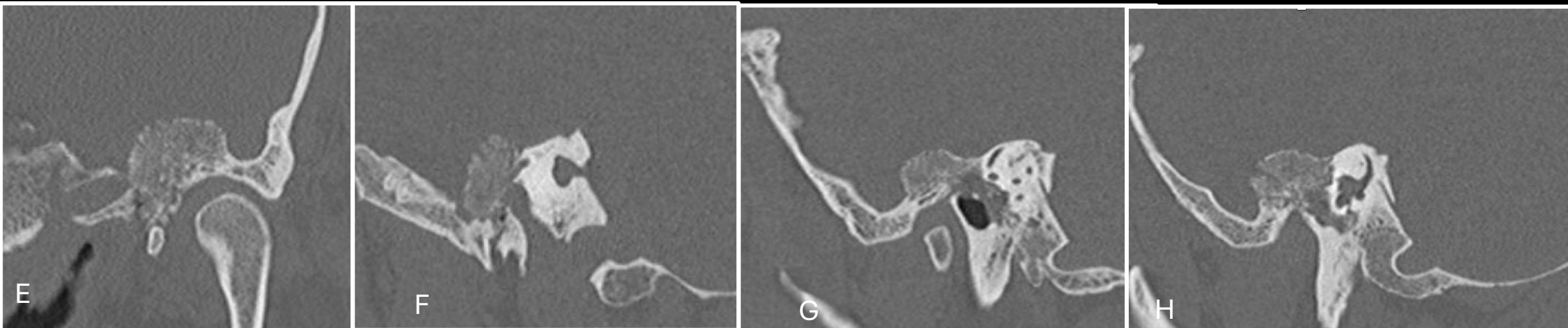
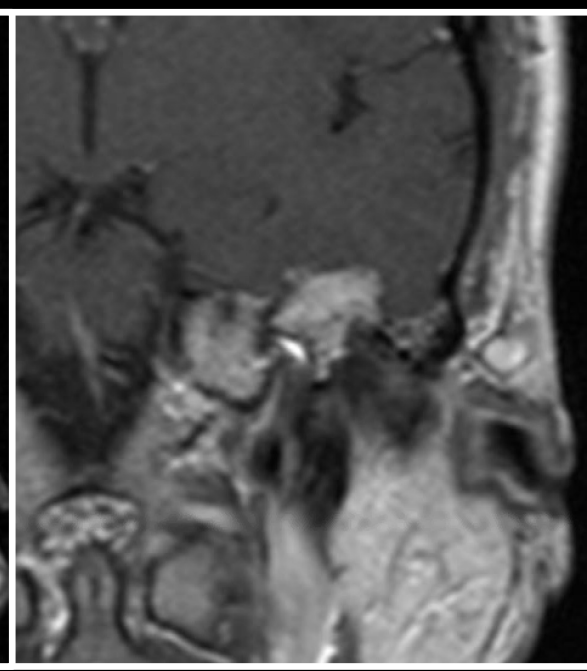
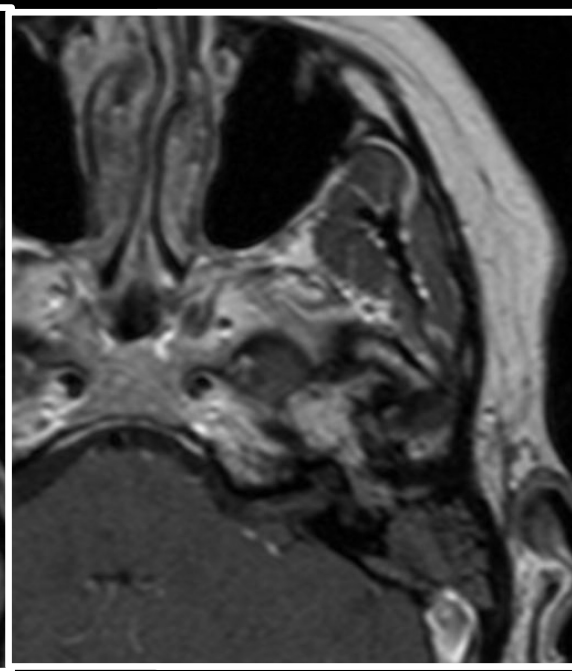
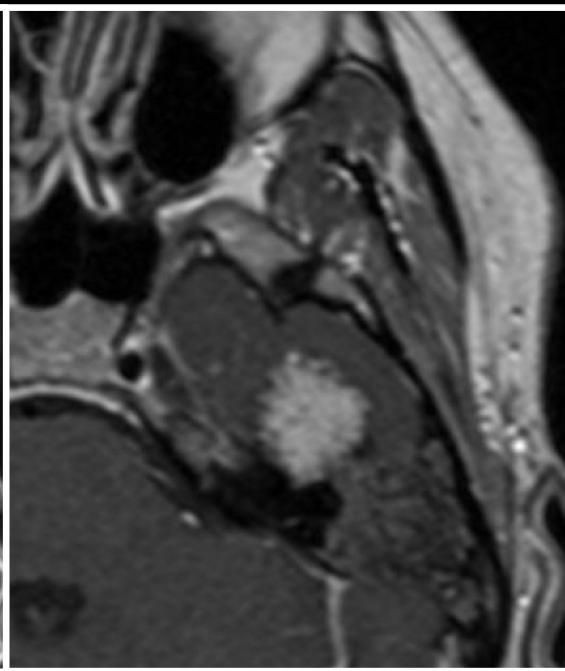
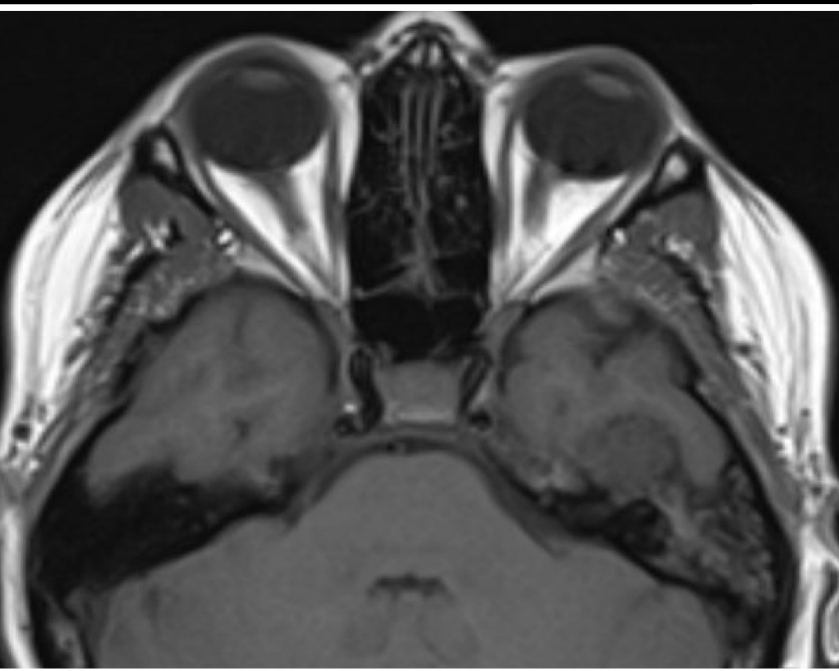
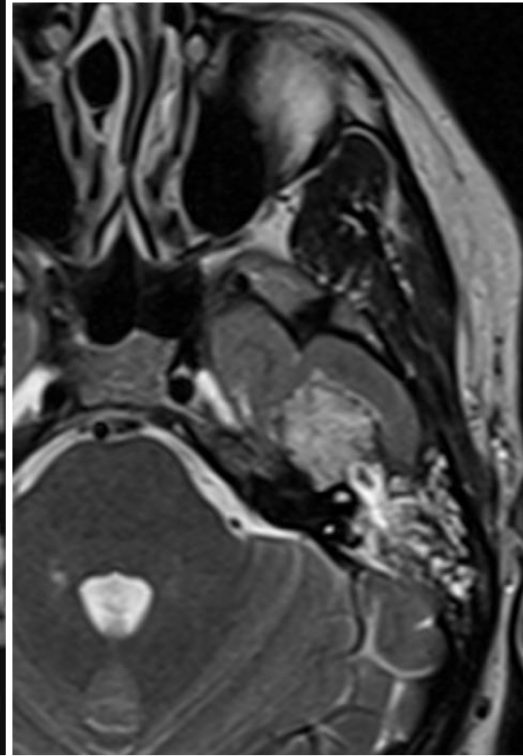
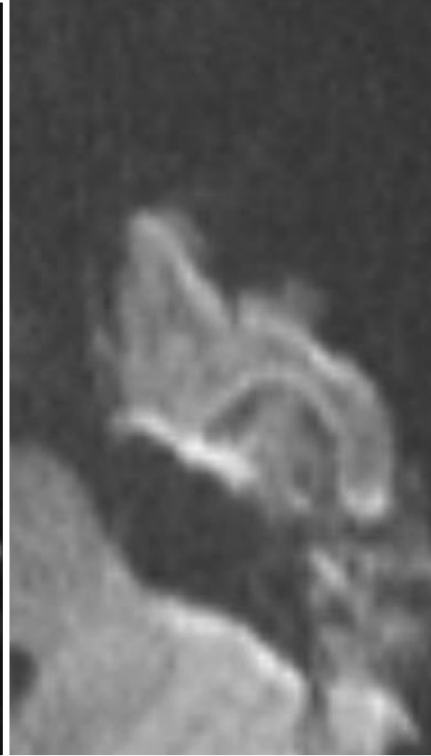
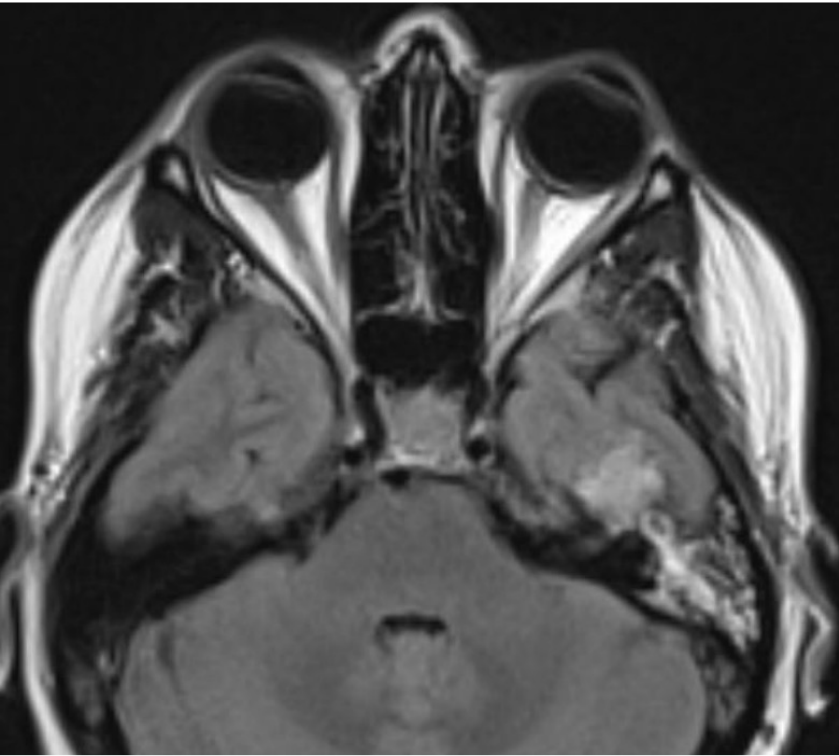


Figure 1: Axial (A-C), Coronal (D-E), and Sagittal (F-H) bone window CT of the temporal bone reveals a large, expansile, hyperattenuating mass involving the left temporal bone (yellow arrow). The mass originates from the geniculate fossa of the left facial nerve (orange arrow) and extends to the distal labyrinthine and proximal tympanic segments. Internal high-attenuation spiculations and a honeycomb appearance suggest the mass is consistent with a hemangioma. Additionally, there is opacification throughout the left middle ear cavity (blue arrow) and mastoid air cells (yellow star), likely secondary to obstruction.





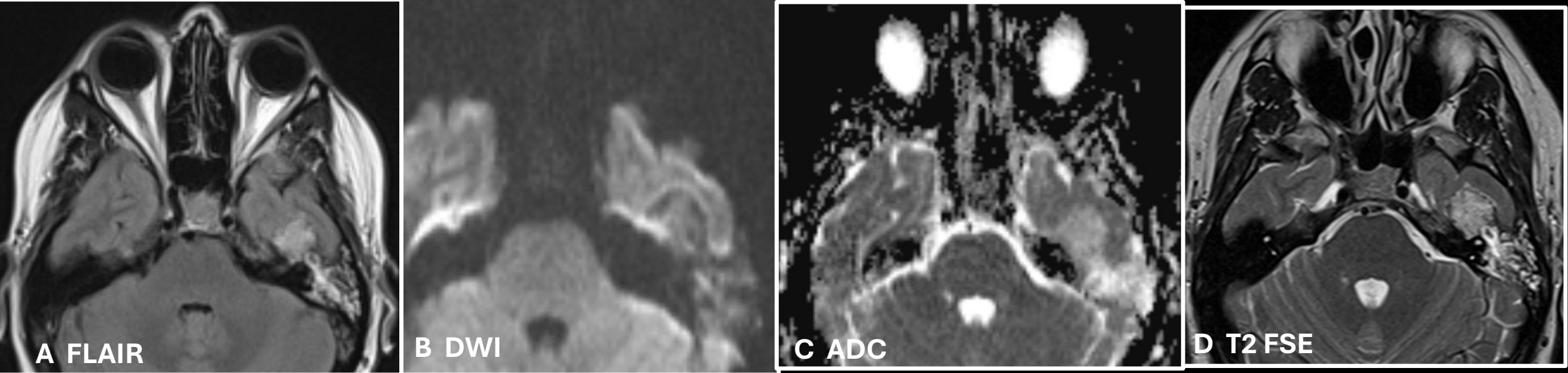
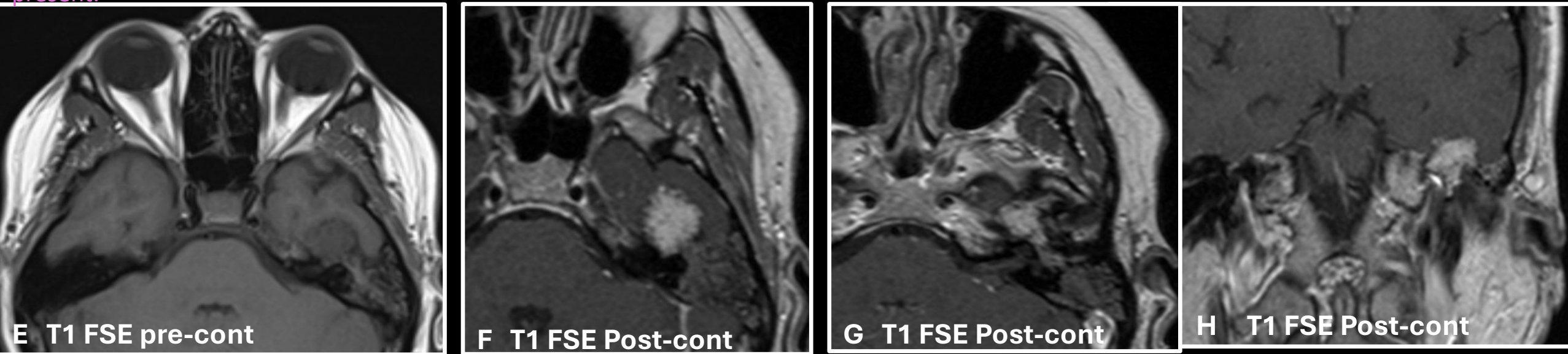


Figure 2: Axial MRI images (A-G) and coronal (H) demonstrate a T2 hyperintense, T1 hypointense, non-restricting, and hyper-enhancing extra-axial mass along the greater wing of the left sphenoid causing mass effect on the left temporal lobe anteriorly and superiorly, with no significant parenchymal edema. The lesions extends from the geniculate segment of the left facial nerve, with thickening of the facial nerve and surrounding hyper-enhancement. Post-obstructive mucosal thickening and enhancement are noted in the left mastoid air cells, with fluid signal present.



Temporal Bone Hemangioma - Clinical Pearls

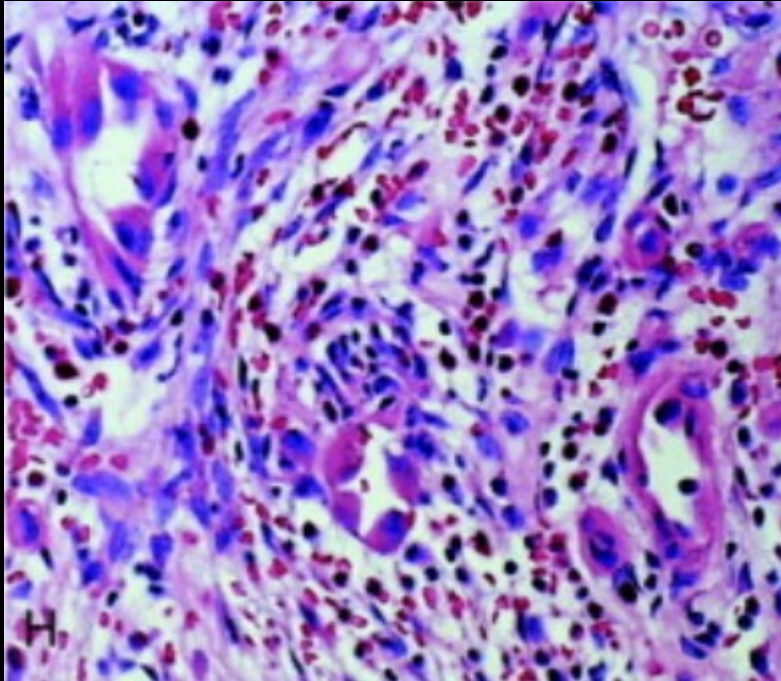


Figure 1: Histopathological section demonstrating endothelial cell-lined vascular channels, characteristic of a temporal bone hemangioma. Image obtained from a different patient.¹

Epidemiology

- Intraosseous hemangiomas account for only 1% of all primary bone tumors.²⁻⁷
- They are most commonly located in the vertebrae, with an estimated prevalence of 10% in adults.⁶

Clinical Presentation

- These tumors are typically asymptomatic and are often discovered incidentally during imaging for unrelated conditions.²⁻⁴
- When symptomatic, the most common presentation is due to mass effect. Rarely, they may present as a pathologic fracture.^{1,2,6}

TREATMENT & COMPLICATIONS

Treatment

- Surgical excision with intraoperative facial nerve (CN VII) electromyography (EMG) is indicated for symptomatic lesions.
- Postoperative biopsy confirmed diagnosis of intraosseous hemangioma involving the left facial nerve.

Complications

- Local recurrence rates are low.²
- Surgical risks include bleeding, infection, and complications related to anesthesia.
- Tumor proximity to the facial nerve increases risk for permanent hearing loss, tinnitus, taste disturbances, dizziness, facial weakness, and other neurological complications.^{1,2}

Intraosseous hemangioma

- MRI Findings: Signal intensity varies depending on lipid content. Typically T1 hyperintense (lipid rich) and T2 hyperintense^{2,3}
- CT Findings: Mixed or sclerotic bone lesion with thickened "corduroy" vertical trabeculation^{2,3}

Paget Disease

- Older demographic
- MRI Findings: Signal intensity varies: T1 hypointense, T2 hyperintense, with a speckled appearance⁵

DIFFERENTIAL DIAGNOSIS

Osteonecrosis

- Often inciting history, e.g. trauma, radiation, though can be idiopathic
- Double line sign on T2-weighted MRI, with peripheral hypointense sclerosis surrounding inner bright granulation tissue^{6,7}

Intraosseous Lipoma

- Stage 1: Homogenous T1/T2 hyperintensity (lipid); absent signal on STIR (intrinsic suppression)⁴
- Stage 2: Hypointense T1 and variable T2 signal (either hyperintense or hypointense)⁴
- Stage 3: Fluid cavities surrounded by sclerosis⁴

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