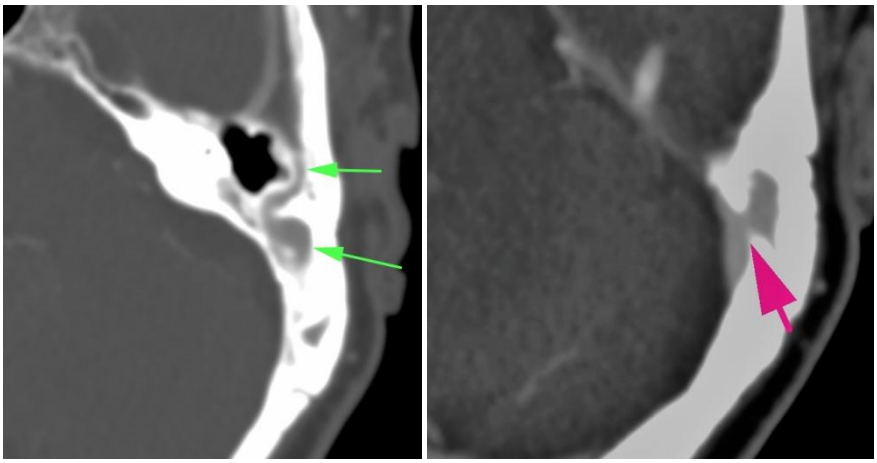
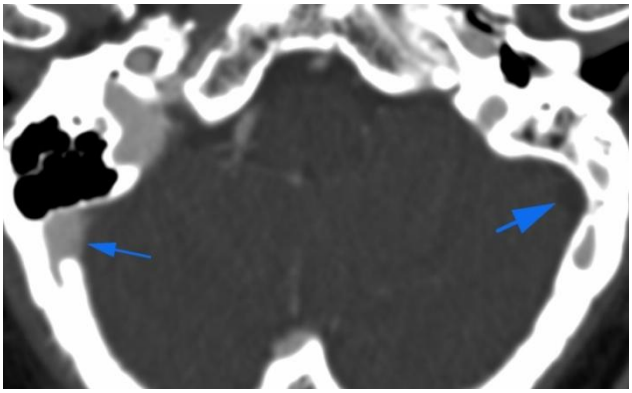
THE PETROSQUAMOUSAL SINUS: A RARE MORPHOLOGIC VARIANT OF POSTERIOR FOSSA DURAL SINUSES AND EMISSARY VEINS

INTRODUCTION: The emissary veins play a role in the extracranial venous drainage of the dural sinuses by connecting the internal and external venous network of the skull. The petrosquamosal sinus (PSS) is considered an emissary vein. The PSS is a well known yet rarely reported anatomical variant among the transmastoid emissary vein outlets. The incidence of persistent PSS is approximately 1% in routine CT examinations. We report two cases demonstrating this rare entity and describe its CT scan features.

Case 1: A 48 year old female with history of left posterior parietal scalp swelling was referred for CT angiography (CTA) of head which revealed an enhancing vascular tuft within the soft tissues of the scalp which was suggestive of arterio-venous malformation (AVM). An incidental note was made of a dilated and tortuous osseous groove measuring 4-5mm in diameter arising from the dorsolateral portion of the left transverse sinus (Pink arrow), before the confluence of transverse sinus with the superior petrosal sinus. It was seen traversing over the lateral superior surface of the petrous bone and draining anteroinferiorly via trasmastoid vascular venous channel into the left squamous temporal region. The left sigmoid sinus appeared atretic (Thick blue arrow). These findings were consistent with **persistent petrosquamousal sinus** (Green arrow).





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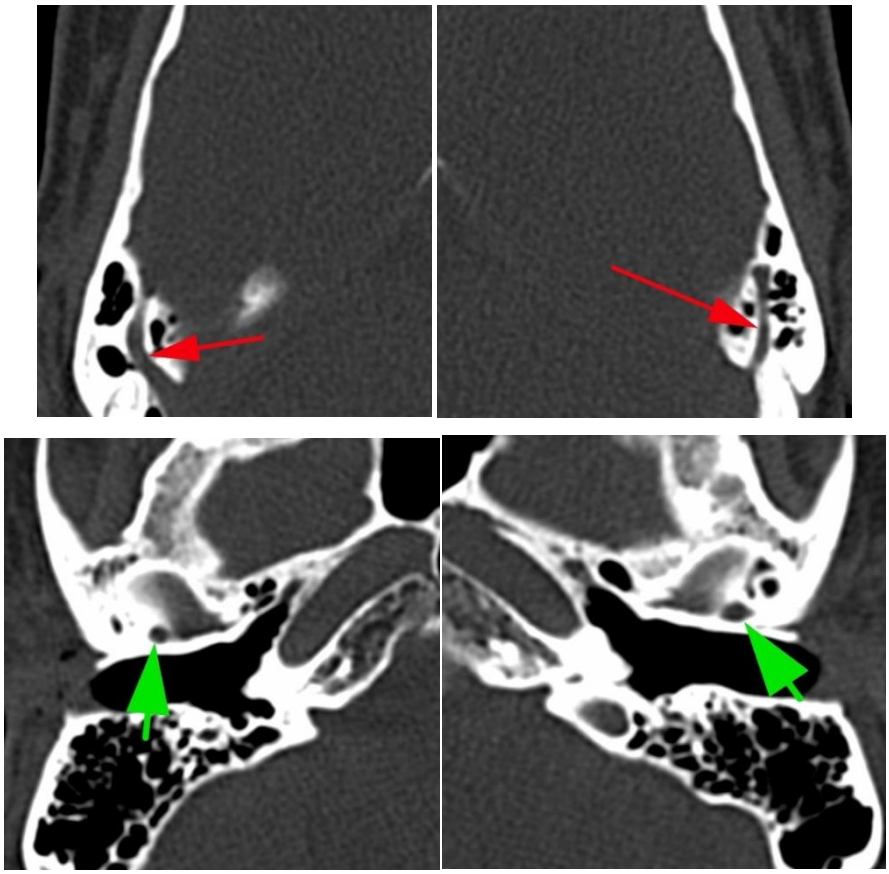
Case 2: A 40 year old male with history of head injury was referred for CT scan of brain and orbit, which revealed bifrontal subgaleal hematoma and right preseptal hematoma. The axial reconstructions in bone window revealed bilateral 3mm wide osseous canals (red arrows) originating from the anterior portion of the transverse sinus, passing through the lateral portion of petrous bone and draining anteroinferiorly in close proximity to the temporo-mandibular junction. The CT features of this transosseous canal was consistent with **bilateral persistent PSS** (Red arrows), most likely draining into the retromandibular vein via the **foramen retroarticulare/ postglenoid foramen** (Green arrows).



DISCUSSION: The PSS is a fetal vein along the petrosquamosal fissure that generally regresses by birth. It courses along the junction of the squamous and petrous portion of the temporal bone and opens into the transverse sinus. It has two drainage pathways: one anteroinferiorly into the retromandibular vein via the foramen retroarticulare and one anteromedially into the pterygoid venous plexus via the foramen ovale. Dilated PSS and mastoid emissary vein was an incidental finding in our cases, although its association with pulsatile tinnitus and vertigo is well documented. The PSS is vulnerable to injury and may be a source of bleeding and sigmoid sinus thrombosis during surgery of the skull base or middle ear. Retrograde spread of infection or tumors of the external auditory canal and mastoid cavity may be promoted by this developmental venous variant. HRCT and MR imaging can assess both the anatomy and function of emissary veins accurately.

Regards,

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