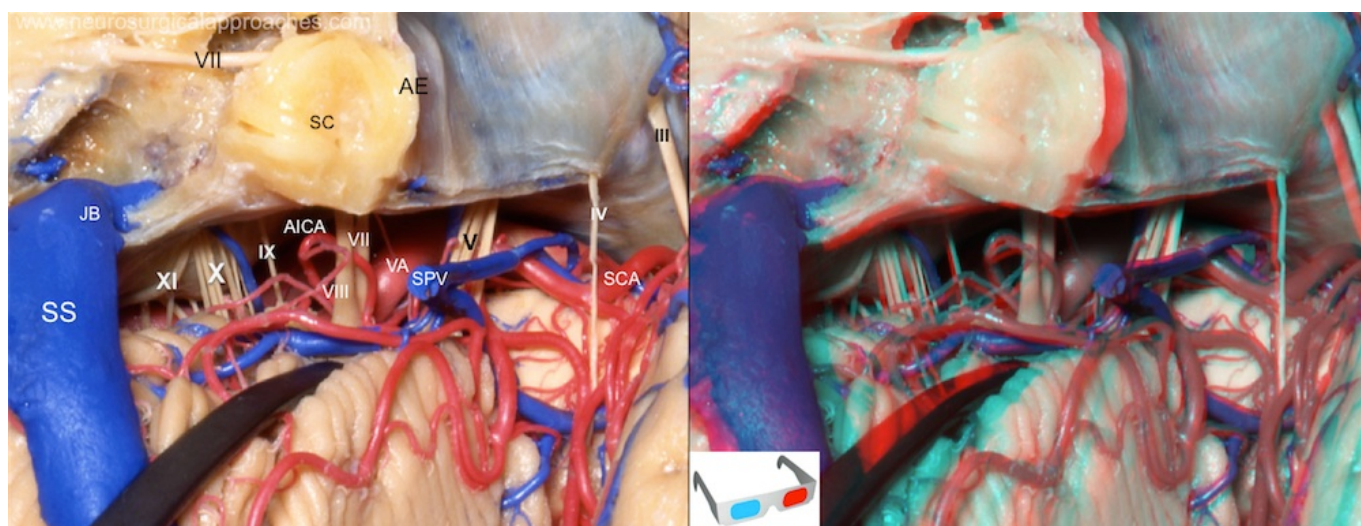


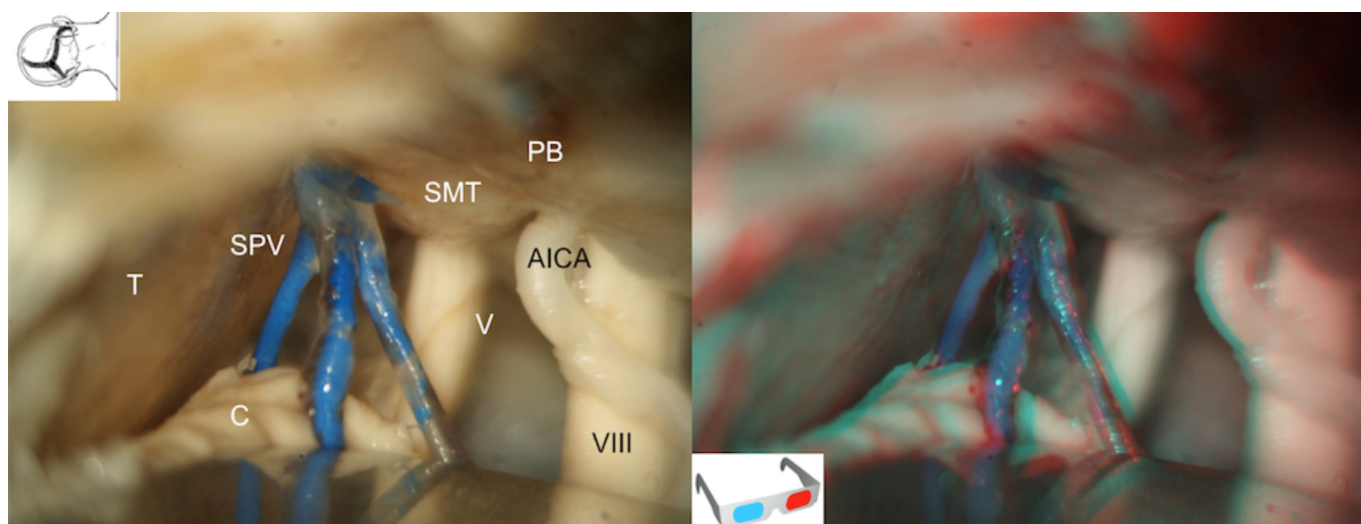
Superior petrosal vein

The superior **petrosal vein**, is one of the most constant and largest drainage pathways in the **posterior fossa**.

Preoperative **3D imaging** provides reliable and detailed information about the intraoperative anatomical relationship between the **trigeminal nerve** and the SPV. This evaluation is useful for **preoperative planning** ¹⁾.



AE: **arcuate eminence**; AICA: **anteroinferior cerebellar artery**; JB: **jugular bulb**; SC: **semicircular canals**; SCA: **superior cerebellar artery**; SPV: **superior petrosal vein**; SS: **sigmoid sinus**; VA: **vertebral artery**.



AICA: **Anterior inferior cerebellar artery**; C: **Cerebellum**; PB: **Petrosal part of the temporal bone**; SPV: **Superior petrosal vein**; SMT: **Suprameatal tubercle**; T: **Tentorium**; V*: **Motor roots of the trigeminal nerve**.

Classification

The superior petrosal **veins** were divided into three groups:

Type I which emptied into the [superior petrosal sinus](#) above and lateral to the [internal acoustic meatus](#).

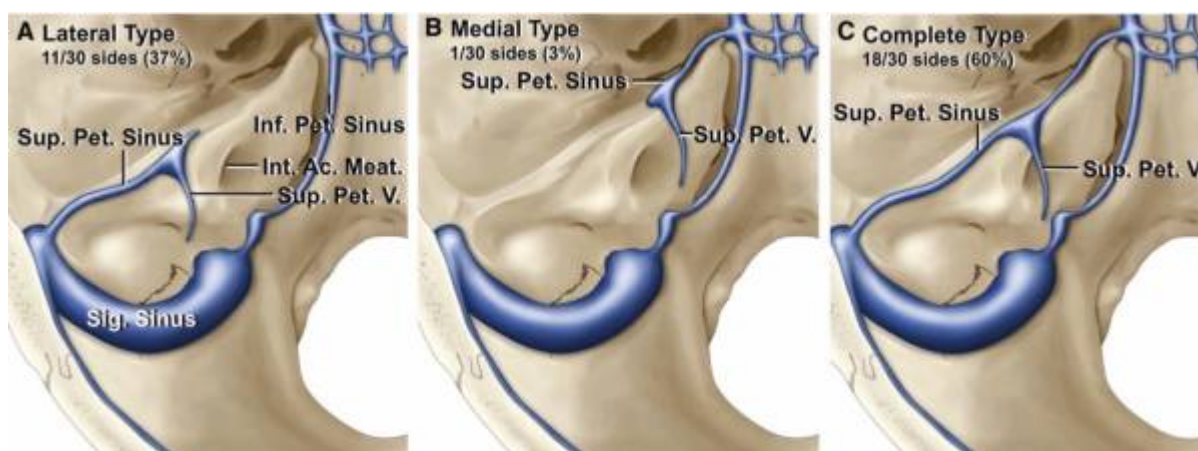
Type II which emptied between the lateral limit of the trigeminal nerve at [Meckel's cave](#) and the medial limit of the [facial nerve](#) at the internal acoustic meatus.

Type III which emptied into the superior petrosal sinus above and medial to Meckel's cave. In both the petroclival and anterior petrous types, the most common vein was Type III which is the ideal vein for a retrosigmoid approach.

In contrast, the Type II vein which is at high risk of being sacrificed during a suprameatal approach procedure was most frequent in posterior petrous type, in which the superior petrosal vein was not largely an obstacle.

Intraoperative sacrificing of veins was associated with a significantly higher rate of venous-related phenomena, while venous complications occurred even in cases where the superior petrosal vein was absent or compressed by the tumor. The variation in the superior petrosal vein appeared to differ among the tumor attachment subtypes, which could permit a satisfactory surgical exposure without dividing the superior petrosal vein. In cases where the superior petrosal vein was previously occluded, other bridging veins could correspond with implications for the crucial venous drainage system, and should thus be identified and protected whenever possible ²⁾.

Matsushima Classification



In cases in which the superior petrosal sinus and veins are absent, care should be directed to preserving the collateral drainage through the galenic and tentorial tributaries. Although surgical strategies for intraoperative management and preservation of venous structures are still controversial, knowledge of the possible anatomical variations is considered to be essential to improve surgical outcomes ³⁾.

Superior petrosal vein injury

see [Superior petrosal vein injury](#).

¹⁾

Xiong NX, Zhou X, Yang B, Wang L, Fu P, Yu H, Wang Q, Abdelmaksoud A, Yuan Y, Liu W, Huang Y, Budrytė K, Huang T, Zheng X. Preoperative MRI Evaluation of Relationship between Trigeminal Nerve

and Superior Petrosal Vein: Its Role in Treating Trigeminal Neuralgia. J Neurol Surg A Cent Eur Neurosurg. 2019 Mar 26. doi: 10.1055/s-0038-1669399. [Epub ahead of print] PubMed PMID: 30913572.

²⁾

Watanabe T, Igarashi T, Fukushima T, Yoshino A, Katayama Y. Anatomical variation of superior petrosal vein and its management during surgery for cerebellopontine angle meningiomas. Acta Neurochir (Wien). 2013 Oct;155(10):1871-8. doi: 10.1007/s00701-013-1840-8. Epub 2013 Aug 30. PubMed PMID: 23990034; PubMed Central PMCID: PMC3779012.

³⁾

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