

Superior petrosal vein injury

A five-year review yielded 201 patients undergoing [Microvascular decompression for trigeminal neuralgia](#). [Petrosal vein](#) (PV) sacrifice, vascular compressive anatomy and post-operative complications attributable to venous insufficiency were analyzed. Preoperative and postoperative pain outcomes were analyzed.

PV was sacrificed in 118/201 (59%) of patients, with 43/201 (21%) of patients undergoing partial sacrifice versus 75/201 (37%) with complete sacrifice. No cases of venous infarction, cerebellar swelling, or fatal complications were noted in either cohort. Non-neurologic complications occurred in 1.69% (2/118) of patients with PV sacrifice and 0% (0/83) of patients with PV preservation. Neurologic deficits (facial palsy, conductive hearing loss, gait instability, memory deficit) occurred in equal proportions in PV preservation and sacrifice groups (2.41% vs 1.69%) Overall, 87.3% (145/166) patients reported their pain as "very much improved" or "much improved" at one month, and no difference between groups was identified.

This study did not find higher complication rates in patients undergoing petrosal vein sacrifice during E-MVD for trigeminal neuralgia. In this series where the petrosal vein was sacrificed only 59% of the time, it appears to be a safe technique, but larger studies will be needed to determine the true incidence of complications following PV sacrifice ¹⁾.

Basamh et al. investigated the understudied anatomical variations of the [superior petrosal vein](#) (SPV) complex (SPVC), which may play some role in dictating the individual complication risk following SPVC injury.

Microvascular decompressions of the trigeminal nerve between September 2012 and July 2016. All operations utilized an SPVC preserving technique. Preoperative balanced fast field echo (bFFE) magnetic resonance imaging, or equivalent sequences, and operative videos were studied for individual SPVC anatomical features.

Applied imaging and operative SPVC anatomy were described for fifty patients (mean age, 67.18 years; female sex and right-sided operations, 58% each). An SPVC component was sacrificed intentionally in 6 and unintentionally in only 7 cases. Twenty-nine different individual variations were observed; 80% of SPVCs had either 2 SPVs with 3 or 1 SPV with 2, 3, or 4 direct tributaries. Most SPVCs had 1 SPV (64%) and 2 SPVs (32%). The SPV drainage point into the superior petrosal sinus was predominantly between the internal auditory meatus and Meckel cave (85.7% of cases). The vein of the cerebellopontine fissure was the most frequent direct tributary (86%), followed by the pontotrigeminal vein in 80% of SPVCs. Petrosal-galenic anastomosis was detected in at least 38% of cases. At least 1 SPV in 54% of the cases and at least 1 direct tributary in 90% disturbed the operative field. The tributaries were more commonly sacrificed.

The extensive anatomical variation of SPVC is depicted. Most SPVCs fall into 4 common general configurations and can usually be preserved. BFFE or equivalent sequences remarkably facilitated the intraoperative understanding of the individual SPVC in most cases ²⁾.

Etiology

The drilling of the [suprameatal tubercle](#) during the [retrosigmoid intradural suprameatal approach](#) (RISA) puts the [superior petrosal vein](#) complex at risk of heating and mechanical injury, which may lead to cerebellar swelling and infarction.

Mortini et al. present a new technique to protect the superior petrosal venous complex during suprameatal bone drilling.

A microanatomical laboratory investigation on cadaver was conducted. The surgical technique is described and intraoperative schematic pictures are provided.

The surgical steps of this technique and the related intraoperative images are reported. One case illustration regarding the removal of a large [petrous apex meningioma](#) with [Meckel cave](#) extension is described to demonstrate the application of the technique in a clinical setting.

Reflecting a dural flap onto the posterior trigeminal nerve root and the superior petrosal vein complex can be a simple way to protect the nerve and the vein during the suprameatal bone drilling during the RISA ³⁾.

Yang et al. investigate the characteristics of [superior petrosal vein](#) (SPV) and its influence on the surgical field in [microvascular decompression for trigeminal neuralgia](#) (TN), and to analyze the effect of the surgical treatment of SPV on the surgical approach, indication and prognosis.

The clinical data of 280 patients with trigeminal neuralgia between Jan. 2013 and Jun. 2016 were collected, including the trunks and the branches of SPV, intraoperative electrocoagulation status, the surgery outcome and complications. Results: The petrosal vein during the operation was fully preserved in 152 cases (54.29%). The SPV were completely sectioned in 25 cases (8.92%), while some branches of SPV were sectioned in 103 cases (36.79%). We found that SPV have 1 to 3 trunks, accounted for 67 cases (23.90%), 168 cases (60%), and 45 cases (16.10%), while the SPV with 1 to 4 branches accounted for 17 cases (6.07%), 112 cases (40%), 136 cases (48.57%), and 15 cases (5.36%). The SPV was identified as offending vessel in 17 cases (6.07%). One patient with cutoff SPV trunk encountered cerebellar infarction and recovered completely at 2 weeks after MVD by using intravenous medication. Conclusions: MVD is the recommended treatment method for PTN, mostly SPV is unnecessary to be sectioned completely and small branches of SPV could be sacrificed. Very few patients may develop cerebellar infarction or hematoma ⁴⁾.

Complications

[Cerebellar infarction](#) after [superior petrosal vein injury](#).

References

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