Trigeminal schwannoma surgery

Trigeminal schwannomas require a comprehensive surgical strategy.

Comprehensive knowledge of the anatomical features of trigeminal schwannoma TSs is essential in planning surgery to achieve complete tumor resection.

Their proximity to the critical skull base neural and vascular structures increases the complexity of surgical treatment.

The dumbbell-shaped subtype is the most challenging.

Many surgical approaches have been described for each type of trigeminal schwannoma TS. For type M tumors, Pollack et al. reported two cases where TSs were less than 3-cm in size and could be totally resected via a frontotemporal extradural and intradural approach. Yasui et al. reported two cases of total resection via an orbitozygomatic infratemporal approach. Yoshida and Kawase remarked that the frontotemporal extradural and intradural approach is the most straightforward surgical strategy for type M tumors. On the other hand, Zhang et al. used a frontotemporal craniotomy with or without zygomatic osteotomy, while Fukaya et al. suggested that the optimal surgical approach for type M TS is a subtemporal approach.

For type P tumors, Yasui et al. reported two cases of total resection via transpetrosal transtentorial approach. Yoshida and Kawase used the lateral suboccipital or anterior transpetrosal approach. Zhang et al. used a lateral suboccipital craniotomy. Fukaya et al. suggested that the optimal surgical approach for type P TS is an anterior transpetrosal approach.

For type MP tumors, Yasui et al. used a transpetrosal transtentorial approach or a two-stage operation using a fronto-pterional approach after a lateral suboccipital craniotomy. On the other hand, Fukaya et al. and Yoshida and Kawase performed their operations via an anterior transpetrosal approach. Zhang et al. reported that various conventional and skull base approaches are required for type MP tumors because of their complexity, such as the extradural-transdural-transtrigeminal pore approach via a frontotemporal craniotomy and orbitozygomatic osteotomy, and the temporal base transtentorial approach via a subtemporal craniotomy [1)].

Trigeminal schwannoma endoscopy

Trigeminal schwannoma endoscopy.

Videos

In this video, we describe the technical nuances of an extended middle fossa approach for large trigeminal schwannoma with cavernous sinus extension resection. A 44-year-old right-handed female with several months' history of progressive right facial paresthesia and pain in the distribution of V3 mainly. On physical examination, she had decreased sensation to light touch over the right V1 to V3

distribution with loss of cornel reflex. The brain MRI showed 3.5 cm bilobed mass extends from the pontine root entry zone to the cavernous sinus. Craniotomy was performed and followed by middle fossa dural peeling, peeling of temporal lobe dura away from the wall of the cavernous sinus, extradurally anterior clinoidectomy, drilling of the petrous apex, coagulation of superior petrosal sinus followed incision of the tentorium up to the tentorial notch with preservation the fourth cranial nerve, and tumor dissected away from V1 and then gradually removed from the superior wall of the cavernous sinus

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The technique presented here allows for complete tumor resection, safe navigation through the relative cavernous sinus compartments, and minimizes the possibility of inadvertent injury to the cranial nerves. The postoperative course was uneventful except for right eye incomplete ptosis from the swelling. Her facial pain subsided after the surgery without any extra ocular movement impairment. The link to the video can be found at: https://youtu.be/zxi2XK2R9QU [2].

1)

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4231622/

2)

Muhsen BA, Najera E, Borghei-Razavi H, Adada B. Extended Middle Fossa Approach for Trigeminal Schwannoma Resection. J Neurol Surg B Skull Base. 2021 Jun 22;83(Suppl 3):e615. doi: 10.1055/s-0041-1727108. PMID: 36068889; PMCID: PMC9440877.