

Case Report

Transmandibular surgical approach in managing a giant trigeminal schwannoma: a rare case with postoperative complication

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ABSTRACT

Schwannoma is a benign tumor of the nerve sheath arising from the perineural schwann cells. Schwannomas can occur along the pathway of any somatic or sympathetic nerve. The nerves most commonly involved in schwannomas of the head and neck are the vagus and the cervical sympathetic chain. Trigeminal schwannomas are infrequent, benign tumors originating from Schwann cells. These tumors, particularly when large, mostly have late presentations and pose significant surgical challenges due to proximity to vital cranial structures. We present a rare clinical case of a 33-year-old female patient with a chief complaint of swelling on face, diagnosed as suffering from benign tumor extending from cranial base (from foramen ovale) to the parapharyngeal space. Mandibular access osteotomy was done to expose the tumor. Surgical excision of the tumor was done along with the preservation of the nerve. The patient experienced notable complications in the postoperative period, requiring multidisciplinary intervention. This report highlights the surgical planning, challenges in operative technique, and complexities of the postoperative care.

Keywords: Schwannoma, Trigeminal Schwannoma, Parapharyngeal space, Osteotomy

INTRODUCTION

Schwannomas are benign nerve sheath tumors, and trigeminal schwannomas form a small percentage of intracranial neoplasms.^{1,2} Their rarity and varied presentations make diagnosis and management challenging. They may arise from the gasserian ganglion or trigeminal branches and extend into cranial or parapharyngeal spaces depending on their origin and growth pattern.³

Multiple surgical approaches exist, the choice of approach depends heavily on tumor location, size, and associated anatomical involvement.⁴

This case discusses the successful resection of a massive trigeminal schwannoma via a transmandibular approach and elaborates on the complications encountered during the postoperative phase.

CASE REPORT

A 45-year-old female reported progressive facial asymmetry, numbness, and reduced chewing ability for one year. Physical examination revealed noticeable facial swelling on the left side, hypoesthesia in the distribution of the trigeminal nerve, and mild trismus. Radiological evaluation, including CT and MRI scans, showed a large, well-circumscribed mass extending from the middle

cranial fossa into the infratemporal and parapharyngeal spaces, consistent with a trigeminal schwannoma.

A transmandibular approach was chosen to ensure maximal tumor exposure and safe resection. Under general anesthesia, a mandibulotomy was performed to access the tumor. Complete tumor excision was achieved while preserving surrounding neurovascular structures as much as possible. Histopathological examination confirmed the diagnosis of a benign trigeminal schwannoma.⁵

Surgical technique

The procedure involved a mandibular swing approach, wherein a paramedian mandibulotomy provided direct access to the tumor. The mass, occupying both the middle cranial fossa and infratemporal fossa, was carefully dissected from the adjacent dura, vascular structures, and cranial nerves.

Intraoperative findings included a firm, encapsulated tumor with no evidence of invasion into the adjacent bone or brain parenchyma. Bleeding was well controlled, and the mandibular osteotomy site was reconstructed using titanium plates and screws. The patient was then transferred to the intensive care unit for postoperative monitoring.

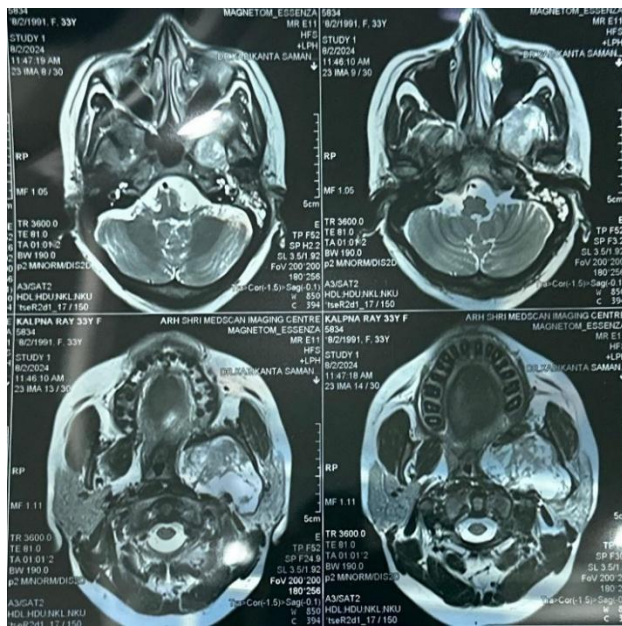


Figure 1: MRI neck and brain showing heterogenous contrast enhancement in region of Meckels cave posteriorly extending to CP angle cistern in the course of left trigeminal nerve abutting and displacing pons. Laterally, extending into floor of middle cranial fossa, Inferiorly, extending to left parapharyngeal space through foramen ovale, Medially, the lesion extended into cavernous sinus encasing cavernosal segment of left ICA over ~120 degree.



Figure 2: The removed infratemporal component of schwannoma of approximate size of 4.5×4×5 cm (AP×CC×TR).

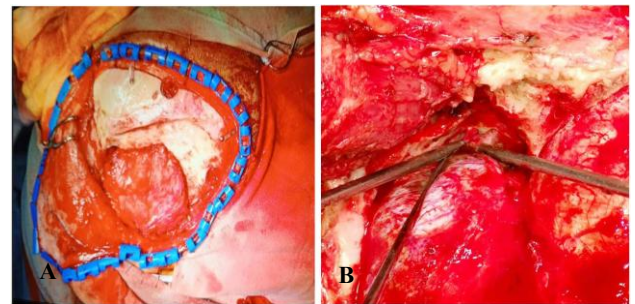


Figure 3: (A) Left temporal craniotomy with removal of zygoma and (B) removal of intracranial part of the tumour by Dolenc's approach.



Figure 4: Patient on (A) postoperative day 10 and (B) 6 months postoperative.

Postoperative course

Initially, the patient showed stable vital signs and regained consciousness without any new neurological deficits. However, within 48 hours, she developed facial

swelling, wound dehiscence, and signs of infection. A wound culture confirmed the presence of *Staphylococcus aureus*. Immediate antibiotic therapy was initiated, and the wound was surgically debrided. After repeated wound care and antibiotic management, the infection resolved, and the surgical site healed over time.

Despite the complication, the patient recovered well with minimal residual neurological deficits. Regular follow-up showed no tumor recurrence on MRI over a period of 12 months.

DISCUSSION

Trigeminal schwannomas are uncommon intracranial tumors, with varied symptoms depending on tumor extent, including pain, numbness, or trismus.⁶ Their Growth often spans multiple cranial compartments, complicating surgical removal.²

Several surgical approaches include subtemporal, pterional, and infratemporal routes.⁶ The transmandibular route offers excellent exposure for tumors extending inferiorly and extending into the parapharyngeal and infratemporal spaces. This technique permits a direct line of sight and operative control while minimizing brain retraction.

However, this approach carries risks including infection, osteomyelitis, and malocclusion.⁷ In our case, a postoperative wound infection was managed successfully with conservative intervention. Long-term prognosis is favorable after complete excision.²

CONCLUSION

This case underscores the effectiveness of the transmandibular approach in resecting extensive trigeminal schwannomas that involve multiple cranial compartments. Although associated with certain postoperative risks, the approach can lead to favorable outcomes when complications are promptly managed. Multidisciplinary collaboration and careful postoperative

monitoring remain key to improving surgical outcomes in complex skull base tumors.

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