TPM Vol. 32, No. S1, 2025
ISSN: 1972-6325
https://www.tpmap.org/

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RECURRENT PTERYGOPALATINE/INFRATEMPORAL SCHWANNOMA MANAGED WITH FRONTO-TEMPORAL-ORBITAL ZYGOMATIC TUMOR EXCISION: A CASE REPORT

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Abstract

Background: Schwannomas are benign, slow-growing nerve sheath tumors originating from Schwann cells. Although they can occur anywhere in the body, their occurrence in the pterygopalatine or infratemporal fossa is extremely rare. Their deep anatomical location, proximity to vital neurovascular structures, and potential for recurrence pose diagnostic and therapeutic challenges.

Case Report: We report the case of a 49-year-old female who presented with recurrent pterygopalatine/infratemporal schwannoma, manifesting as pain and swelling in the fronto-temporal region along with deviation of the angle of the mouth. She underwent surgical excision via a fronto-temporal-orbital zygomatic approach. Anesthetic management involved careful preoperative preparation, maintenance of hemodynamics, and airway precautions due to the risk of difficult intubation. The tumor was successfully excised and the patient was transferred to intensive care for postoperative monitoring.

Conclusion: Schwannomas of the pterygopalatine and infratemporal fossae are rare but surgically curable benign tumors. Early diagnosis, meticulous surgical planning, and careful anesthetic management are crucial for optimal outcomes.

Keywords: Schwannoma, pterygopalatine fossa, infratemporal fossa, recurrent tumor, skull base surgery, case report

INTRODUCTION

Schwannomas, also known as neurilemmomas, are benign, encapsulated tumors arising from Schwann cells that form the myelin sheath of peripheral nerves. They represent approximately 25–45% of head and neck tumors, most commonly arising in the vestibulocochlear nerve (cranial nerve VIII) [1,2]. In contrast, schwannomas arising from extracranial branches of the trigeminal nerve, especially those located in the pterygopalatine or infratemporal fossa, are exceedingly rare [3,4].

The infratemporal fossa and pterygopalatine fossa represent anatomically complex regions of the skull base, harboring critical neurovascular structures including branches of the maxillary nerve, internal maxillary artery, and pterygoid venous plexus. Tumors arising here often remain asymptomatic for prolonged periods due to their deep location, only becoming clinically evident when they enlarge enough to cause pain, facial swelling, trismus, cranial nerve deficits, or deformity [5].

Recurrent schwannomas in this location are even rarer. Recurrence is typically associated with incomplete excision, difficulty in accessing deep extensions, or tumor adherence to critical structures [6]. Surgical excision remains the mainstay of treatment, and various approaches have been described, including transmaxillary, transoral, endoscopic endonasal, infratemporal, and fronto-temporal-orbital zygomatic approaches [7]. The choice depends on tumor size, location, extension, and surgeon experience.

Anesthetic management of such cases is challenging. Difficult airway, risk of massive hemorrhage due to proximity to the maxillary artery and cavernous sinus, and hemodynamic fluctuations during skull base tumor excision require thorough preparation [8,9].

Here, we present a case of recurrent pterygopalatine/infratemporal schwannoma in a middle-aged female, successfully managed by surgical excision via a fronto-temporal-orbital zygomatic approach, with emphasis on anesthetic and surgical considerations. We also review the available literature on such rare cases, highlighting clinical presentation, approaches, outcomes, and recurrence.

Case Presentation:

A 49-year-old female, weighing 49 kg, presented with complaints of pain and swelling in the fronto-temporal region, associated with deviation of the angle of the mouth. She had a known history of schwannoma in the same region, for which she had previously undergone excision. Histopathology from the prior surgery had confirmed a benign schwannoma. The patient was referred for evaluation of recurrent tumor.

On physical examination, there was a swelling in the fronto-temporal area with mild facial asymmetry. Neurological examination revealed deviation of the angle of the mouth. Airway assessment revealed Mallampati class III with restricted mouth opening, suggestive of potential difficult intubation. Cardiovascular and respiratory examinations were unremarkable. Baseline blood investigations were within normal limits.

Contrast-enhanced MRI revealed a well-defined, multilobulated lesion in the infratemporal and pterygopalatine fossae, extending into the cranial base, suggestive of recurrent schwannoma. No intracranial invasion was noted. Echocardiography revealed normal left ventricular systolic function (ejection fraction 62%).

Anesthetic Management

Preoperative optimization included nebulization, premedication with glycopyrrolate (0.2 mg), midazolam (2 mg), fentanyl (100 µg), and careful airway planning. Two large-bore IV cannulae were secured. The patient was preoxygenated for 3 minutes with 100% oxygen and induced with propofol (100 mg), dexmedetomidine (1 µg/kg), ketamine (25 mg), and muscle relaxation with rocuronium (40 mg). Endotracheal intubation was performed successfully using video laryngoscopy after difficult airway precautions.

nesthesia was maintained with oxygen, air, and sevoflurane, supplemented with opioids and muscle relaxants. Intraoperatively, the patient experienced transient hypotension requiring vasopressor support with norepinephrine infusion. One unit of packed red cells was transfused. Total blood loss was approximately 1100 ml.

Fig 1- X ray chest of the study subject

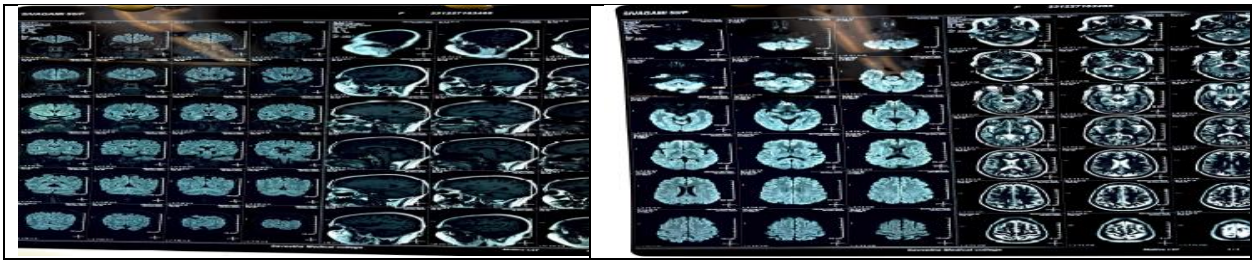

Fig 2 – CT head images of the subject

Fig 3- Anaesthesia & Surgegical Procedure done for the study subject

Surgical Management

A fronto-temporal-orbital zygomatic approach was chosen for exposure. This provided wide access to the infratemporal and pterygopalatine fossae while preserving neurovascular structures. The recurrent schwannoma was identified and dissected meticulously from surrounding tissues. Multiple feeding vessels were ligated and cauterized. Complete gross excision of the tumor was achieved.

Postoperative Course

The patient was shifted to the intensive care unit (ICU) for postoperative monitoring. She remained hemodynamically stable and was extubated after ensuring adequate respiratory function. Analgesia was maintained with opioids and NSAIDs. Deep vein thrombosis prophylaxis was continued. The postoperative period was uneventful and the patient was discharged on the seventh postoperative day. Follow-up at 3 months showed no evidence of recurrence or neurological deficit.

DISCUSSION

Schwannomas are benign tumors arising from Schwann cells, typically presenting as slow-growing masses. Extracranial schwannomas of the head and neck constitute around 25% of cases, but those involving the pterygopalatine or infratemporal fossae are rare, with only a limited number of cases reported worldwide [10,11].

Epidemiology and Rarity

The infratemporal and pterygopalatine fossae are deep-seated anatomical regions rarely affected by primary tumors. Schwannomas in these regions most often arise from branches of the maxillary nerve, vidian nerve, or sympathetic fibers [12]. Review of literature suggests fewer than 50 reported cases of schwannomas in the pterygopalatine fossa [13].

Clinical Presentation

Patients typically present late due to the tumor's deep location. Common symptoms include facial pain, swelling, trismus, nasal obstruction, or cranial nerve palsies [14]. In our case, pain and swelling with deviation of the mouth were the key manifestations. Recurrence, as in this case, is particularly uncommon and usually associated with incomplete prior resection [15].

Imaging and Diagnosis

MRI is the imaging modality of choice. Schwannomas typically appear as well-defined, encapsulated, heterogenous masses with enhancement after contrast [16]. Our patient's MRI showed multilobulated mass in the pterygopalatine and infratemporal fossae, consistent with recurrent schwannoma. Histopathology remains the gold standard for confirmation [17].

Surgical Approaches

The mainstay of treatment is complete surgical excision, with multiple approaches described in the literature. The transmaxillary or transoral approaches provide limited exposure and carry a risk of incomplete excision [18], while the endoscopic endonasal approach offers a minimally invasive option but is less suitable for large or recurrent tumors [19]. The infratemporal approach allows good exposure but is technically demanding [20]. The fronto-temporal-orbital zygomatic approach, which was chosen in our case, provides wide access to the skull base and facilitates safe and complete excision [21]. Comparative literature indicates that recurrence rates are lowest with surgical approaches that ensure complete exposure and resection [22].Anesthetic Challenges

Airway difficulty, risk of massive blood loss, and hemodynamic instability are the main challenges [23]. Our patient had Mallampati class III with restricted mouth opening, necessitating video laryngoscopic intubation. Intraoperative blood loss exceeded 1 liter, requiring transfusion. Similar challenges have been reported by other authors [24,25].

Recurrence and Prognosis

Recurrence is rare for schwannomas if excision is complete [26]. In our case, recurrence followed prior incomplete excision. Prognosis is generally excellent when tumors are fully resected, with very low malignant transformation risk [27].

Our case is notable for being a recurrent tumor, managed successfully with a skull base approach and careful anesthetic planning. Our case report is comparable with the selected case reports of pterygopalatine and infratemporal schwannomas, their management approaches, and outcomes [24,26,27].

CONCLUSION

Recurrent schwannomas of the pterygopalatine and infratemporal fossae are extremely rare. Their management requires a multidisciplinary approach involving radiological assessment, meticulous surgical planning, and vigilant anesthetic management. The fronto-temporal-orbital zygomatic approach provides excellent exposure for safe excision of recurrent tumors. With careful perioperative care, prognosis is favorable, and recurrence can be minimized.

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