

**CASE REPORT: RADIOFREQUENCY ABLATION OF THE GASSERIAN GANGLION FOR ISOLATED TRIGEMINAL NEURALGIA DUE TO PITUITARY MACROADENOMA**

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ABSTRACT Isolated trigeminal neuralgia (TN) due to pituitary macroadenoma is an uncommon presentation. While pituitary tumors often manifest with visual or hormonal disturbances, selective involvement of the trigeminal nerve via cavernous sinus invasion is rare [1]. We report a case of a 54-year-old woman with left-sided TN due to a pituitary macroadenoma abutting the cavernous sinus refractory to conservative management. The pain was successfully treated with Gasserian ganglion radiofrequency ablation (RFA), resulting in complete and sustained pain relief. This case emphasizes the importance of considering neoplastic causes in TN and highlights the utility of RFA for long-term pain control when medical and surgical measures prove insufficient [2].

KEYWORDS : Trigeminal Neuralgia, Pituitary Macroadenoma, Cavernous Sinus, Gasserian Ganglion, Radiofrequency Ablation, Facial Pain

INTRODUCTION

Trigeminal neuralgia (TN) is a debilitating facial pain syndrome typically caused by neurovascular compression [1]. However, structural lesions such as tumors can present with similar symptoms and demand a different diagnostic and therapeutic approach [3,5]. Pituitary macroadenomas rarely present with isolated trigeminal symptoms unless they extend laterally into the cavernous sinus [3]. In such cases, conventional pharmacologic treatment may be ineffective, and surgical resection may provide only partial relief [5]. Radiofrequency ablation (RFA) of the Gasserian ganglion provides a focused interventional alternative for achieving pain control [2,6].

Case Presentation

A 54-year-old female presented to the pain clinic with severe paroxysmal pain in the left maxillary (V2) and mandibular (V3) divisions of the trigeminal nerve. The pain was described as electric shock-like, triggered by brushing teeth, washing face and chewing, rated 9/10 on the Numeric Rating Scale (NRS). There were no associated visual, hormonal, or systemic symptoms. She had been suffering from progressively worsening facial pain for six months, unresponsive to carbamazepine and pregabalin. Contrast-enhanced MRI showed a pituitary macroadenoma (21×23×17 mm) with suprasellar extension and left cavernous sinus abutment (Knosp grade 2), without optic chiasm or brainstem compression. Meckel's cave structures were intact. This anatomical proximity paralleled the symptom distribution and endorsed a causal relationship. With normal blood investigations, a diagnosis of isolated TN secondary to cavernous sinus invasion by a pituitary macroadenoma was made [3].

Neurosurgical Evaluation and Decision-Making

The neurosurgical team assessed the patient and, considering the tumor's location (cavernous sinus involvement), its stable size, lack of visual or endocrine impact, and the patient's preference against open surgery, recommended symptom management with RFA.

Intervention

Given the suboptimal response to medical management, the patient was considered for left Gasserian ganglion RFA. After obtaining consent and attaching standard ASA monitors, a 22-gauge radiofrequency cannula was introduced via the foramen ovale under fluoroscopic guidance. Proper placement was confirmed through sensory and motor stimulation (masseter contraction at 0.3 mV indicating V3 involvement). Sequential thermal lesions were created using 55°C to 70°C for 60 seconds each, targeting V2 and V3 divisions [2,6].

Outcomes

- Immediate: Complete pain relief reported on the same day, with NRS dropping from 9/10 to 0/10.
- Follow-up: At one and three months, the patient remained symptom-free and was able to discontinue all medications. No sensory or motor deficits were observed post-procedure.

DISCUSSION

This case underscores the need to consider structural pathologies, including pituitary macroadenomas, in patients with atypical or refractory TN [3,5]. Cavernous sinus invasion, even without gross compression of the trigeminal nerve, can provoke significant neuropathic facial pain [5].

Gasserian ganglion RFA is a proven interventional pain management technique with excellent efficacy for medically intractable TN [1,2,6]. In contrast to pharmacologic management, which may be insufficient and poorly tolerated, and surgical resection, which might be incomplete, RFA offers focused neuromodulation with minimal complications [2,6]. This case demonstrates that in tumor-related TN, RFA can serve as both a primary interventional strategy and an effective salvage option following partial tumor control [2].



Fig:1 Showing Lateral View of Needle Targeting Area of Gasserian Ganglion.

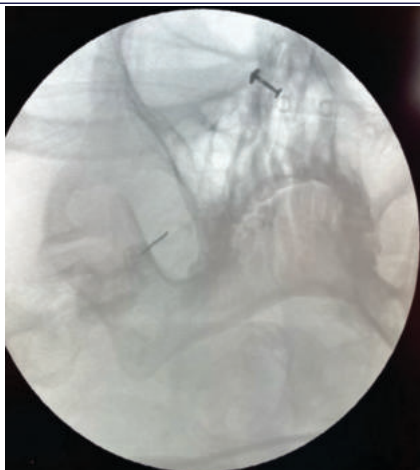


Fig: 2 Showing Needle Entry into Lateral Part of Foramen Ovale.

CONCLUSION

Radiofrequency ablation of the Gasserian ganglion is a safe and effective intervention for isolated TN secondary to pituitary macroadenoma. It should be considered in patients with persistent symptoms despite pharmacologic and neurosurgical management. Early identification of tumor-associated neuralgia and timely interventional therapy can significantly enhance patient quality of life [1,2,6].

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