Gasserian Ganglion Stimulation in Refractory Trigeminal Neuralgia: A Single-Center Case Series

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Abstract

Introduction:Trigeminal neuralgia (TN) is a severe neurological condition characterized by intense, paroxysmal, and disabling facial pain. Management can be especially challenging in patients refractory to pharmacological and surgical therapies. Gasserian ganglion stimulation (GGS) has emerged as a potential alternative in such cases; however, its use remains limited and underrepresented in current literature.
Objective. To evaluate the clinical efficacy, pain evolution, and impact on quality of life in a cohort of patients with refractory TN treated with Gasserian ganglion stimulation at our institution.
Method:We conducted a retrospective observational study of 10 adult patients with refractory TN who underwent GGS between January 2008 and May 2025. Demographic data, clinical history, TN subtype (according to Burchiel's classification), affected territories, trigger points, and prior treatments were analyzed. Pain intensity was assessed using the Visual Analog Scale (VAS) and Barrow Neurological Institute (BNI) pain scale preoperatively, immediately postoperatively, at six months, and at final follow-up. Quality of life (QoL) and reduction in medication use were also evaluated. A female predominance (73%) was observed, with a mean age at diagnosis of 50 years. Based on Burchiel's classification, 50% had type I TN, and 20% had deafferentation pain. Prior interventions were reported in 72% (n=8), predominantly radiofrequency thermocoagulation. Preoperatively, 60% (n=6) experienced severe pain (VAS 8–10), 30% (n=3) moderate pain (VAS 4–7), and 10% (n=1) mild pain (VAS 1–3). Immediately postoperatively, 50% (n=5) reported moderate pain, 30% (n=3) severe, and 20% (n=2) mild. A significant reduction in pain was observed (p=0.002). On the BNI scale, 60% (n=6) had a score of 4 preoperatively; at six months, 80% (n=8) achieved BNI ≤3b. At final follow-up, 50% (n=5) reached BNI 2, 30% (n=3) BNI 3b, and 20% (n=2) BNI 1 (p=0.0018). Following surgery, 90% reported fair to excellent QoL. At six months, 82% had reduced medication use, with only 27% continuing pharmacological treatment at final evaluation.
Discussion: GGS appears to be a viable alternative for patients with refractory TN, especially those with multiple failed interventions. Our results align with international findings regarding procedural safety, sustained pain relief, and medication reduction. A trend was observed between the number of trigger points and pain severity, suggesting possible predictive factors, though statistical significance was not achieved in this limited sample.
Conclusions:Gasserian ganglion stimulation is a safe and effective option for treating refractory TN, providing significant pain relief, high clinical response, and sustained improvements in quality of life. These findings support its inclusion as a therapeutic alternative in complex, recurrent, or treatment-resistant cases.

References

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