# Stellate Ganglion Block plus Ketamine Infusion for Refractory Trigeminal Neuralgia Secondary to Multiple Sclerosis: A Novel Therapeutic Approach

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## Introduction

- Trigeminal Neuralgia (TN): Severe facial pain from demyelination in MS; this demyelination disrupts normal nerve signaling, leading to hyperexcitability and the characteristic paroxysmal pain
- Stellate Ganglion Block (SGB): Minimally invasive; blocks sympathetic nerves; most commonly used for CRPS, post-herpetic neuralgia
- Novel Combo: SGB + Ketamine for MS-TN; potential sympathetic or central modulation

## Case Description

Trigeminal neuralgia secondary to multiple sclerosis is challenging, often refractory to first-line anticonvulsants (e.g., carbamazepine, oxcarbazepine), adjuncts (e.g., gabapentinoids, pregabalin, duloxetine), and invasive procedures (e.g., glycerol rhizotomy, radiofrequency ablation, microvascular decompression). The 54-year-old patient (ASA III) described in the this case was experiencing severe daily paroxysmal pain for over 20 years despite high-dose gabapentinoids, duloxetine, several sphenopalatine ganglion blocks and prior glycerol rhizotomy. The patient also had significant response to solo SGB block or ketamine infusion which lasted for couple of weeks. After discussing all the risk and benefit the decision was made to move forward with combination therapy of SGB + Ketamine. SGB was done under combined fluoroscopy and ultrasound guidance (1cc dexamethasone, 7cc 0.5% Bupivacaine, and 2cc of 1% Lidocaine) followed by Horner's syndrome and temperature change in ipsilateral face. Two hours following SGB, 250mg of ketamine was administered over 1 hour while patient was under full monitoring. In one week follow up, the patient reported this was the first time she was able to kiss her husband in the lips without excruciating pain in 20 years. She was able to eat bagel without any issue, brushing her teeth without crying, able to do even facial all happening for the first time after very long time. The relief lasted for four months and was significantly more compare to each treatment individually.

Figure 1.

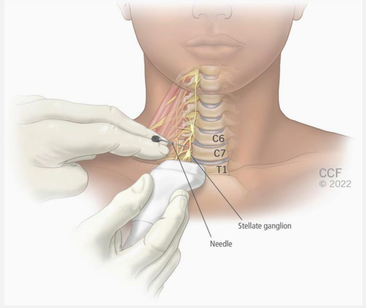



Figure 2.

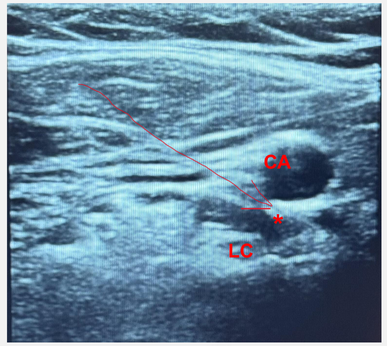



Figure 3.

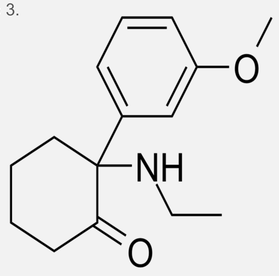



Figure 4.

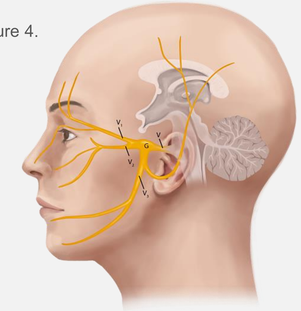


Figure 1, 2. Ultrasound guided Stellate Ganglion Block. Figure 3. Molecular structure of ketamine. Figure 4. Trigeminal neuralgia nerve distribution

## References

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## Discussion

- This case introduces a novel sequential approach: ultrasound/fluoroscopic-guided stellate ganglion block (SGB) followed by low-dose ketamine infusion (250 mg over 1 hour) in refractory MS-associated TN.
- No prior case or series has specifically documented SGB for TN in the context of multiple sclerosis. This is surprising given that central sensitization, neuroinflammation, and possible autonomic dysregulation are increasingly recognized in MS-related pain states, and SGB is known to modulate both peripheral sympathetic tone and central nociceptive processing via the cervical sympathetic chain and its connections to the trigeminal nucleus caudalis.
- Ketamine's NMDA antagonism likely provided additive benefit by halting wind-up, potentially synergistic with sympathetic interruption.
- Limitations: Duration of meaningful relief has not yet exceeded three months at the time of writing and longer-term follow-up is required. Patient had previously undergone glycerol rhizotomy which may have altered trigeminal afferent input and potentially confounded the response to sympathetic blockade.

## Conclusion

This case represents, to our knowledge, the first documented use of SGB combined with low-dose ketamine infusion for refractory multiple sclerosis–associated trigeminal neuralgia. The rapid and clinically significant response suggests that sympathetic modulation may play an under-recognized role in some cases of MS-related TN and warrants further investigation as a minimally invasive adjunct or bridge therapy in patients who have failed conventional medical and surgical management.