Dual V2 and V3 Peripheral Pulsed Radiofrequency Ablation for Successful Trigeminal Neuralgia Treatment: A Case Report

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Introduction: Radiofrequency ablation is a common treatment for trigeminal neuralgia when medical treatment has failed, as it has been shown to be comparably effective to surgery with a better complication profile[1] . The elderly population, who are at a high risk for surgery, is a good candidate for this treatment. Currently, semilunar ganglion radiofrequency ablation (GRF) is the widely used approach[2] ; however, recently, peripheral radiofrequency ablation (PRF) of the V2 and V3 branches has been reported with comparable results[3].

Objectives: To report a case of trigeminal neuralgia that was successfully treated with dual V2 and V3 peripheral nerve ablation therapy.

Methods: Case study.

Results: One month postoperatively, the patient reported a VAS score of 0/10 for trigeminal neuralgia after V2 and V3 peripheral nerve ablation.

Case Description: A 70-year-old female presented with chronic right facial pain for 8 years, with a constant sharp pain VAS score of 8-10/10. Imaging studies revealed no pathological findings, and there were no known conditions for secondary trigeminal neuralgia. She was not on anticoagulation and did not have any coagulation defects. The pain did not respond well to opioids, SNRI, GABAnergic agent, and benzodiazepine. The patient could not tolerate carbamazepine, and her sleep and mood were significantly affected. Cervical MBB and ESI had no effect. Initially, the patient complained of pain in the V2 distribution, but after a V2 block, the pain on the V3 distribution worsened. Therefore, pulsed radiofrequency ablation was done on V3 first after a nerve block trial on V3. Then, V2 pulsed radiofrequency ablation was done 4 weeks later. Pulsed RFA was done for 2.5 minutes at 42°C with 20msec pulses every 0.5s. The procedures had no complications. The patient reported a VAS score of 0-2/10 without any pain medications 1 month postoperatively.

Discussion/Conclusion: Radiofrequency ablation is gaining popularity as a treatment option for trigeminal neuralgia because it is minimally invasive, effective, and repeatable[2] . With pulsed radiofrequency ablation, pain relief can be obtained without concerns about heat-related complications[4] , such as permanent damage to the motor component in the mandibular nerve (V3). GRF has been preferred due to its high success rate and ability to confirm needle placement by reproducing pain. However, PRF is advantageous in safety because it avoids entry into the cranium, which can elicit devastating complications such as optic nerve injury and intracranial hemorrhage[5] . PRF's effectiveness has also been validated in recent studies, where it was compared to GRF by a randomized controlled trial[6] . Furthermore, staged procedures for each branch of trigeminal neuralgia provide a better understanding of the main pathologic location and are better tolerated in elderly patients because PRF usually does not provoke severe pain that GRF has[6] . Although PRF has a higher recurrence rate[3] and cannot alleviate pain

in the V1 distribution, its benefits in safety and repeatability make it an excellent option for the treatment of trigeminal neuralgia.

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