Medically refractory trigeminal neuralgia in multiple sclerosis

- Long-term outcomes of peripheral nerve field stimulation in patients with refractory trigeminal neuralgia: a cohort study
- Deep brain stimulation of the hypothalamic region: a systematic review
- What Is New and Effective in Treating Refractory Trigeminal Neuralgia?
- Radiofrequency thermocoagulation for the treatment of trigeminal neuralgia associated with a focal pontine lesion: illustrative case
- Atrophy and Severe Kinking of Trigeminal Nerve Root by Duplicate Trunks of Superior Cerebellar Artery in an Elderly Patient with Trigeminal Neuralgia
- Trigeminal neuralgia in multiple sclerosis: Association with demyelination and progression
- Percutaneous Rhizotomy of the Gasserian Ganglion in Patients With Mass Lesion-Associated Trigeminal Neuralgia: A Case Series
- Augmented Reality-Assisted Percutaneous Rhizotomy for Trigeminal Neuralgia

The optimal treatment for medically refractory trigeminal neuralgia in multiple sclerosis (MS-TN) patients is unknown.

Surgical interventions are less effective for the treatment of MS-related TN compared with classic TN, and higher recurrence rates are observed and is more difficult to manage pharmacologically.

Treatment failure occurs in most of the MS-related TN patients independently of the type of treatment.

Lee et al. compared treatment outcomes between stereotactic radiosurgery (SRS) and radiofrequency ablation (RFA).

They performed a retrospective study of MS-TN patients treated with SRS or RFA between 2002 and 2019. Outcomes included degree of pain relief, pain recurrence, and sensory changes, segregated based on initial treatment, final treatment following retreatment with the same modality, and crossover patients.

Sixty surgical cases for 42 MS-TN patients were reviewed. Initial pain freedom outcomes and rates of retreatment were similar (SRS: 30%; RFA: 42%). RFA resulted in faster onset of pain freedom (RFA: <1 week; SRS: 15 weeks; $p < 0.001$). SRS patients with pain relief had longer intervals to pain recurrence at 2 years ($p = 0.044$). Final treatment outcomes favored RFA for pain freedom/off-medication outcomes (RFA: 44%; SRS: 11%; $p = 0.031$), though RFA resulted in more paresthesia (RFA: 81%; SRS: 39%; $p = 0.012$). Both provided at least 80% of adequate pain relief. Crossover patients did not have improved pain relief.

SRS and RFA are both valid surgical options for MS-TN. Discussion with providers will need to balance patient preference with their unique treatment characteristics [1)].

Microvascular decompression

see Microvascular decompression for trigeminal neuralgia and multiple sclerosis.

Gamma Knife surgery

Between July 1992 and November 2010, 43 cases with more than 1 year of follow-up were operated with GKS for TN related to MS and prospectively evaluated in the Timone University Hospital, Marseille, France. Radiosurgery using the Gamma Knife (model B or C or Perfexion) was performed. A single 4-mm isocenter was positioned at a median distance of 8 mm (range 5.7-14.7) anterior to the emergence of the nerve. A median maximum dose of 85 Gy (range 75-90) was delivered. Results: The median follow-up period was 53.8 months (12-157.1). Thirty-nine patients (90.7%) were initially pain free. Their actuarial probability of remaining pain free without medication at 6 months, 1, 3, 5 and 10 years was 87.2, 71.8, 43.1, 38.3 and 20.5%, respectively, and remained stable till 12 years. The hypoesthesia actuarial rate at 6 months, 1 and 2 years was 11.5, 11.5 and 16%, and remained stable till 12 years. GKS proved safe and effective in this special group of patients [2].

Balloon compression

see Percutaneous balloon compression trigeminal rhizotomy for multiple sclerosis related trigeminal neuralgia.

References

1)
Lee AT, Raygor KP, Elefant F, et al. Comparison of Stereotactic Radiosurgery and Radiofrequency Ablation for Trigeminal Neuralgia in Multiple Sclerosis Patients [published online ahead of print, 2020 Sep 3]. Stereotact Funct Neurosurg. 2020;1-8. doi:10.1159/000509315

2)
Tuleasca C, Carron R, Resseguier N, Donnet A, Roussel P, Gaudart J, Levivier M, Régis J. Multiple Sclerosis-Related Trigeminal Neuralgia: A Prospective Series of 43 Patients Treated with Gamma Knife Surgery with More than One Year of Follow-Up. Stereotact Funct Neurosurg. 2014 Jul 8;92(4):203-210. [Epub ahead of print] PubMed PMID: 25011487.