Percutaneous glycerol trigeminal rhizotomy

- Outcomes After Repeat-Percutaneous Balloon Compression for Recurrent Trigeminal Facial Pain
- Trigeminal neuralgia management in patients with multiple sclerosis: A systematic review of approaches and outcomes
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- Radiation exposure and safety in low-dose CT-guided glycerol rhizotomy for trigeminal Neuralgia outside the operating room
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- Outcomes of Different Surgical Interventions for Treating Trigeminal Neuralgia: A Review
- Letter to Editor: Comments on "A history of stereotactic radiosurgery may predict failure of procedure following percutaneous glycerol rhizotomy for trigeminal neuralgia"
- A refined percutaneous rhizotomy with DSA-guided ethanol for the second-line treatment of trigeminal neuralgia

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Glycerol injection into Meckel's cave [1) 2)] : possibly lower incidence of sensory loss and anesthesia dolorosa than with radiofrequency lesion [3)]

Water-soluble contrast cisternography was recommended in the original description, may not be essential [4)]

This is performed under local anesthetic. A needle (typically 3.5“ x 20 G spinal needle) is inserted in the skin beside the mouth, and directed through an opening at the base of the skull (through the foramen ovale). A harmless dye may be injected to confirm the needle is in the precise location, as seen on an x-ray. The chemical glycerol is then injected into the space surrounding the Gasserion ganglion. This glycerol produces a relatively mild injury to the nerve with minimal risk of permanent facial numbness. While the majority of patients achieve early relief of TN pain with this technique, half of them will suffer a reoccurrence of pain within a few years. Repeat glycerol rhizotomy or other procedure may then be performed.

Case series

2016

Medical records and follow-up data from 124 primary Percutaneous glycerol trigeminal rhizotomy (PRGR) performed from 1986 to 2000 and 82 primary percutaneous balloon compression trigeminal rhizotomy (PBC) performed from 2000 to 2013 were reviewed. All patients had undergone clinical sensory testing and assessment of sensory thresholds. Analyses were performed to compare duration of pain relief, frequency of sensory disturbances, and side effects.

Median duration of pain relief was 21 months after PRGR and 20 months after PBC. Both methods carried a high risk of hypesthesia/hypalgesia (P < .001) that was partly reversed with time. Decreased corneal sensibility was common after PRGR (P < .001) but not after PBC. Dysesthesia was more common after PRGR (23%) compared after PBC (4%; P < .001). Other side effects were noted but uncommon.

PBC and PRGR are both effective as primary surgical treatment of trigeminal neuralgia. Both carry a risk of postoperative hypesthesia, but in this series, the side effect profile favored PBC. Furthermore, PBC is technically less challenging, whereas PRGR requires fewer resources. Between these 2 techniques, we propose PBC as the primary surgical technique for percutaneous treatment of trigeminal neuralgia on the basis of its lower incidence of dysesthesia, corneal hypesthesia, and technical failures [5].

1)
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2)
Sweet WH, Poletti CE, Macon JB. Treatment of Trigeminal Neuralgia and Other Facial Pains by the Retrogasserian Injection of Glycerol. Neurosurgery. 1981; 9:647–653
3)
Lunsford LD, Apfelbaum RI. Choice of Surgical Therapeutic Modalities for Treatment of Trigeminal Neuralgia. Clin Neurosurg. 1985; 32:319–333
4)
Young RF. Glycerol Rhizolysis for Treatment of Trigeminal Neuralgia. J Neurosurg. 1988; 69:39–45
5)
Asplund P, Blomstedt P, Bergenheim AT. Percutaneous Balloon Compression vs Percutaneous Retrogasserian Glycerol Rhizotomy for the Primary Treatment of Trigeminal Neuralgia. Neurosurgery. 2016 Mar;78(3):421-8. doi: 10.1227/NEU.0000000000001059. PubMed PMID: 26465639; PubMed Central PMCID: PMC4747977.