

Percutaneous Interventions for Trigeminal Neuralgia in Multiple Sclerosis, Which One is Better? A Systematic Review

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OBJECTIVE

- A systematic review will help clarify the outcomes of percutaneous balloon compression and percutaneous retrogasserian glycerol rhizotomy in multiple sclerosis patients with trigeminal neuralgia



BACKGROUND

- Trigeminal neuralgia (TN), or tic douloureux, is a condition in which severe facial pain is caused the loss of fibers or demyelination within the fifth cranial nerve
- Up to 6% of multiple sclerosis (MS) patients witness TN
- First line treatment is medication, including anticonvulsants or antidepressants

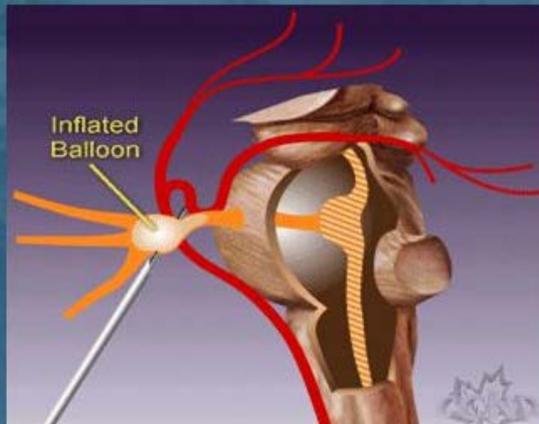
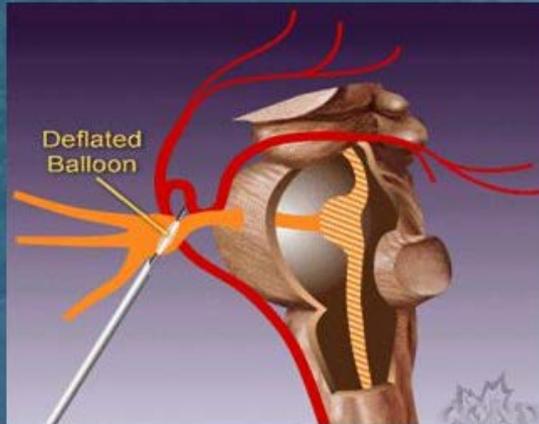


BACKGROUND

- Refractory pain is surgically managed
- Multiple surgical techniques are utilized, however, percutaneous treatments have some of the best, and most immediate, pain free relief percentages
- This is a systematic review to determine the outcome of percutaneous balloon compression (PBC) and percutaneous retrogasserian glycerol rhizotomy (PRGR) in MS patients with TN



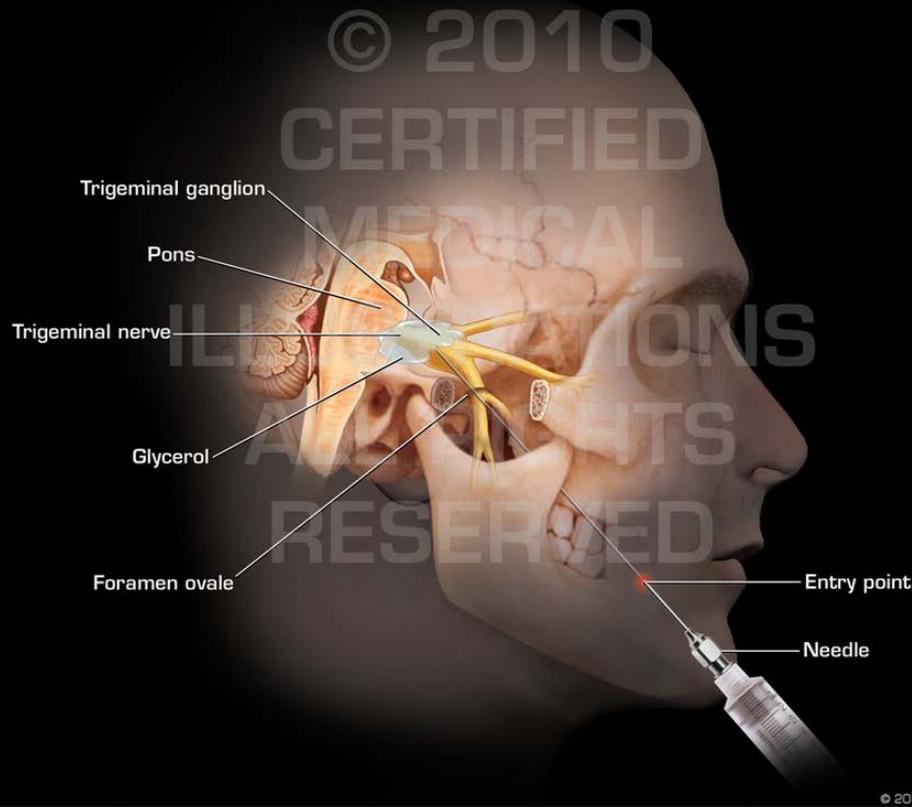
BACKGROUND



PBC: Balloon compression of the Trigeminal Nerve

BACKGROUND

Injection of Glycerol for Retrogasserian Rhizotomy of Trigeminal Nerve



PRGR: Injection of Glycerol for the Trigeminal Nerve

MATERIALS & METHODS

- A literature search on PubMed was carried out with major subheadings including:
 - Multiple sclerosis
 - Percutaneous balloon compression
 - Percutaneous retrogasserian glycerol rhizotomy
- Papers from 2005 to 2015 were included
- Inclusion criteria included MS patients undergoing either PBC or PRGR
- Exclusion criteria including papers without numeric data and languages other than English



MATERIALS & METHODS

- Data was extracted including:
 - The immediate pain free interval (IPFI)
 - Recurrence rate (RR)
 - Major complications (MaC)
 - Minor complications (MiC)



MATERIALS & METHODS

- Major complications included:
 - Meningitis
 - Long term numbness
 - Corneal reflex loss
 - Herpes simplex
- Minor complications included:
 - Soft tissue hematoma
 - Dysesthesias
 - Weakness
 - Temporary numbness
 - Decreased corneal reflex



MATERIALS & METHODS

- The MedCalc (16.2.1) software was used for data entry and analysis
 - The random effect model was used to estimate the pooled proportion given the heterogeneity inherent in the meta-analysis
 - Comparison of PBC and PRGR in terms of IPFI, RR, MaC, and MiC were calculated using chi-square
 - P value < 0.05 is considered statistically significant

RESULTS

- Based on a systematic review of 8 included studies, the proportions and differences of PBC and PRGR effectiveness on IPFI, RR, MaC, and MiC were calculated and presented in Table 1

	Total Patients	IPFI	RR	MaC	MiC
PBC	57	89.9%	67.97%	4.65%	27.9%
PRGR	218	81%	60.50%	7.60%	10.41%
Difference		8.90%	7.47%	2.95%	17.52%
<i>p-value</i>		0.1133	0.3017	0.4373	0.0007

Table 1. Comparison of outcomes of PBC and PRGR

RESULTS

- There was an IPFI in 81% of PRGR cases and 89.90% of PBC cases
- The overall RR was 67.97% for PBC compared to 60.50% with PRGR
- The MaC associated with PBC was 4.65% versus PRGR of 7.60%
- The effect of PBC and PRGR on IPFI, RR, and MaC demonstrated no significant difference
- However, a higher incidence of MiC associated with PBC, 27.93%, as compared with PRGR, 10.41%, was statistically significant with a p-value of 0.0007



CONCLUSION

- ***Overall, both PBC and PRGR are the least invasive surgical interventions for pain relief in MS patients with TN***
- ***The two interventions are equal when considering immediate pain free relief, recurrence rate and major complications.***
- ***The use of each application will always be impacted upon each individual patient's clinical state or desired outcome, but overall PRGR will result in less minor complications compared to PBC***



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