

Effectiveness of Repeat Glycerol Rhizotomy in Treating Trigeminal Neuralgia

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Introduction

Percutaneous glycerol rhizotomy (GR) is used to treat trigeminal neuralgia (TN) with reported pain relief lasting 2-3 years. GRs performed at a single center were retrospectively analyzed to compare pain relief and durability between initial and subsequent procedures.

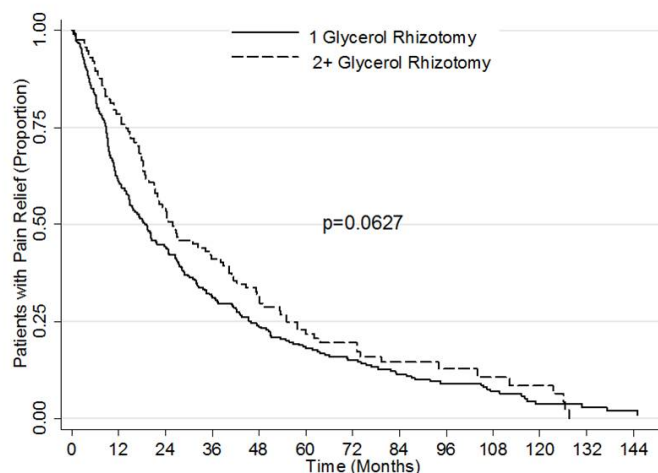
Methods

Between 1998 and 2010, 547 patients with TN underwent 708 GRs. Outcomes were available for 647 GRs (91.4%) and 61 GRs (8.6%) were excluded for limited follow-up. Comparisons were made between 504 initial GRs (GR1) and 143 subsequent GRs (GR 2+). Fisher's exact test was applied to assess initial pain relief using the Boulder-Stanford (B-S) pain relief scale. Durability was assessed by median time to pain recurrence for all procedures that achieved good pain relief outcomes (B-S 1 or 2, n=514, 361 failures, 153 censored). Predictors of failure were assessed by applying multivariate Cox-regression analyses.

Initial Pain Relief after Glycerol Rhizotomy

Outcome (Boulder-Stanford scale)	Procedure number				Total	
	1		2+			
	N	%	N	%	N	%
1	328	65%	106	74%	434	67%
2	59	12%	17	12%	76	12%
3	51	10%	5	3%	56	9%
4	66	13%	15	10%	81	13%
Total	504		143		647	

Kaplan-Meier Time to Pain Recurrence



Results

Pain relief outcomes in first GR1 were excellent in 328 (65%), moderate in 59 (12%), mild in 51 (10%), and unchanged in 66 (13%). In GR2+ 106 had excellent (74%), 17 (12%) had moderate, 5 (3%) had mild, and 15 had unchanged outcomes (10%) ($p=0.031$). There was a trend towards improved durability with prolonged median time to failure in GR2+ (27 months; 95% CI: 22-39) as opposed to GR1 (19 months; 95% CI: 15-24), however this was not significant ($p=0.0627$). Multivariate analysis showed prior GR to be an independent predictor of durability as patients with 2 or more GRs were 21% less likely to fail than patients with single GR (hazard ratio 0.79, 95% CI 0.63-0.98, $p=0.032$). Age, gender, duration of TN symptoms, nerve distributions involved, and history of other surgical treatments of TN were all non-significant.

Learning Objectives

To understand the indications for glycerol rhizotomy in patients with recurrent trigeminal neuralgia.

To determine the efficacy of GR to treat conventional TN in patients with recurrent symptoms.

Conclusions

Patients experienced better pain relief outcomes and improved durability with additional glycerol rhizotomies beyond the initial treatment.