



ORIGINAL RESEARCH PAPER

Neurosurgery

RECURRENT TRIGEMINAL NEURALGIA – PERCUTANEOUS RETROGASSERIAN GLYCEROL RHIZOTOMY IS A SAFE AND SIMPLE TREATMENT

KEY WORDS: Recurrent trigeminal neuralgia; glycerol rhizotomy; glycerol rhizotomy for recurrent trigeminal neuralgia.

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ABSTRACT

AIM: All the available modalities of treatment of trigeminal neuralgia have their fair share of recurrence and treatment of recurrent trigeminal neuralgia is a vexing problem. This study has been conducted to evaluate the effectiveness of percutaneous retrogasserian glycerol rhizotomy (PRGR) in the management of recurrent trigeminal neuralgia.

MATERIALS AND METHODS: A prospective study was conducted on the patients with recurrent trigeminal neuralgia, after previous surgical or percutaneous procedures and uncontrolled with medical treatment. All of them underwent PRGR as out-patient or daycare procedure. The patients were followed up for any recurrence of pain.

RESULTS: 11 cases of recurrent trigeminal neuralgia treated with PRGR over a two year period have been studied. The follow-up is between 9 and 24 months. None of the patients reported any recurrence of pain.

CONCLUSION: PRGR is a relatively safe and simple day care procedure with a relatively lower long term failure rates. It has better acceptance for patients with recurrent trigeminal neuralgia after previous open surgical or percutaneous procedures.

INTRODUCTION

Trigeminal neuralgia(TN) is a neuropathic disorder characterized by sudden paroxysms of excruciating and lancinating electrical type of facial pain along the distribution of cranial nerve V provoked by sensory stimulus. The first line of management is medical. Medically intractable and drug sensitive patients are treated by open surgical procedure like the micro-vascular decompression (MVD), or percutaneous procedures like percutaneous retrogasserian glycerol rhizotomy (PRGR), radio-frequency thermo-coagulation, percutaneous balloon compression, radiosurgery, etc¹. All these procedures have their share of recurrence in the long-term. Some cerebello-pontine angle mass lesions and tumors like epidermoids, schwannoma, meningioma, etc. may present with trigeminal neuralgia. Recurrent trigeminal neuralgia is defined as recurrence of pain on same side after previous successful surgical or percutaneous procedure. The treatment of recurrent trigeminal neuralgia is challenging. The role of PRGR in the treatment of recurrent trigeminal neuralgia has been studied and analyzed.

MATERIALS AND METHODS

This is a prospective study conducted on patients who had recurrence of trigeminal neuralgia over a two year period. These patients had intractable trigeminal neuralgia treated with open surgical or percutaneous procedures at other centers with immediate complete pain relief and had recurrence after a pain-free interval. All these patients underwent PRGR. This was done as an out-patient or daycare procedure. The procedure was done under mild intravenous sedation and local anesthesia. Using a 20G spinal needle, the foramen ovale was entered using the Hartel's approach popularized by Hakanson². The entry point was 2.5 cm lateral to the angle of the mouth on the side of pain. The needle was directed to a point of intersection of the sagittal plane passing through the ipsilateral pupil and coronal plane passing 2.5 cm anterior to the external auditory meatus. The entry of the needle into the trigeminal cistern in the Meckel's cave was indicated by flow of cerebrospinal fluid, which may often be absent especially in repeat percutaneous procedure. The position of the tip of the needle was checked by C arm or X ray skull in the lateral view; the tip of the needle should be within 0.5 to 1 cm to the point of intersection of the line passing through the floor of the sella and clivus. Sometimes, the submento vertical view was taken to see the needle passing through the foramen ovale. 0.6 to 1 ml of anhydrous glycerol was injected and the patient was immediately made to sit with neck flexed for about 2 hours to maximize the contact of the glycerol with the trigeminal root. The patients were discharged after a few hours. The time of onset of pain-relief, post-procedural complications if any were noted. The intensity of pain

at the time of presentation and following PRGR were assessed using the Barrow Neurological Institute (BNI) pain intensity score. The patients were subsequently followed up periodically for any recurrence of pain^{3,4}. The outcome was assessed based on BNI score as excellent (I-II), good (III) or poor (IV-V).

RESULTS

This study included 11 patients and the period of study was from February 2015 to January 2017. The details of the patients are shown in Table 1. There were 6 males and 5 females and age ranged from 22 to 82 years with a mean of 44 years. The initial treatment received was MVD in 4 patients, PRGR in 2, radio-frequency thermocoagulation in 2, surgery for cerebello-pontine angle tumor/ mass lesions in 3. Prior to the PRGR procedure all these patients had recurrent facial pain with BNI pain intensity score greater than IV. Immediately after PRGR, 9 patients had facial pain relief with BNI score of I and 3 patients had a BNI score of II, which reduced to I within a few days. The period of follow up was between 9 and 24 months with a mean of 16.6 months. Immediately after PRGR, 3 patients had low grade headache with analgesics and hydration, 4 patients had transient dysesthesia and 2 patients had persistent dysesthesia which improved during long term follow up. None of the patients reported any recurrence of facial pain during the follow up period.

Table 1

S. NO	AGE/SEX	DIAGNOSIS	PRE PROCEDURE BNI SCORE	POST SURGERY BNI SCORE
1	38/M	L Trigeminal neuralgia operated 10 yrs back	IV	I
2	42/F	L Trigeminal lipoma-post surgery	V	II
3	48/F	R Trigeminal neuralgia post MVD	V	I
4	51/M	R Trigeminal neuralgia post radiofrequency ablation	V	II
5	27/M	R Trigeminal neuralgia post glycerol rhizotomy	V	I
6	39/M	L Trigeminal neuralgia post glycerol rhizotomy	IV	I
7	29/M	L CP angle tumour postsurgery facial pain	V	I
8	33/M	R Trigeminal neuralgia post MVD	IV	I

9	48/M	L Trigeminal neuralgia radiofrequency ablation	V	I
10	52/M	R Trigeminal neuralgia post MVD	V	II
11	38/M	R Trigeminal neuralgia post MVD	V	I

DISCUSSION

All the available procedures for trigeminal neuralgia have their share of recurrence. Walchenbach et al (1994) reported recurrence of trigeminal neuralgia after MVD to be about 29% on long term follow up⁵. Lee et al (2000) found a recurrence rate of 31% in cases of MVD, where the venous compression was the cause⁶. Kanpolat (2001) reported a recurrence rate of 17.4% following radiofrequency thermocoagulation on longterm follow up⁷. Karam et al (2014) found recurrence rate of 37% following gamma-knife radiosurgery on a five year follow up⁸. Kondziolka and Lunsford (2005) reported recurrence in about 23% of 1174 cases after PRGR⁹. Kodeeswaran et al (2015) reported recurrence rate of about 11% after PRGR on longterm follow up.¹⁰

The treatment of recurrent trigeminal neuralgia is essentially medical initially. Carbamazepine, oxcarbazepine, gabapentin, pregabalin, etc are used. But majority of the patients do not respond to the drugs and require repeat surgical or percutaneous procedures. Liao et al (1997) had good results in 4 out of 5 patients who underwent repeat MVD for recurrence¹¹. Bakker et al (2014) reported good results in 67% out of 33 patients who underwent repeat MVD¹². Tuleasca et al (2014) reported that 88% of patients had a good initial outcome after gamma-knife radiosurgery for recurrent trigeminal neuralgia, in a systematic review of 626 patients¹³. Bender et al (2012) reported good results in 90% of patients undergoing repeat PRGR for recurrent trigeminal neuralgia¹⁴. Our experience with PRGR for recurrent trigeminal neuralgia compares well with the other series. The 11 patients undergoing PRGR had immediate complete pain relief and all were pain free on longterm follow up.

Moreover, PRGR is a simple, safe and cost-effective procedure and can be done as a daycare or outpatient procedure and can be performed under mild sedation¹⁰. PRGR has a better patient acceptance for the above reasons, compared to repeat MVD, radiosurgery or radiofrequency thermocoagulation.

CONCLUSION

The prospective study of 11 patients with recurrence of trigeminal neuralgia undergoing PRGR has shown excellent results both in the short term and long term. PRGR is cheap, safe and effective procedure with easy patient acceptance compared to the other procedures for recurrent trigeminal neuralgia.

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Conflicts of interest

There is no such conflicts of interest

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