



# Comparative Evaluation of Percutaneous Radiofrequency Rhizotomy, Stereotactic Radiosurgery and Microvascular Decompression in the Management of Refractory Trigeminal Neuralgia

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## Introduction

Choosing the optimal treatment modality for refractory trigeminal neuralgia (TN) is multifactorial, and has not been well defined in the literature. In this review we specifically explore the role of three factors in determining the treatment modality: age, recurrence rate, and cost.

## Methods

Retrospective chart review of patients who underwent percutaneous Radiofrequency Rhizotomy (RFR), Stereotactic Radiosurgery (SRS) and Microvascular Decompressions (MVD) for trigeminal neuralgia between the periods of 2003 to 2011.

Figure 1



An example of radiofrequency procedure. Intraoperative fluoroscopy targeting the foramen ovale.

## Results

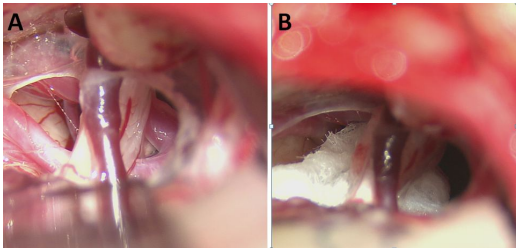
- A total of 95 procedures were identified, including 46 MVD's, 27 RFR, and 22 SRS.
- The average age of patients who had: (1) MVD was 52±12 (24-75), (2) SRS was 67±15 (25-85), and (3) RFR was 71±11 (51-89).
- Preliminary results suggest recurrence of symptoms in 3/46 patients treated with MVD, 3/21 treated with RFR, and none in the patients initially treated with SRS.
- The total charges for the 3 procedures were (mean ± SD): 56 ± 2.5x1000, 1.3 ± 0.8x1000, and 44±1.6x1000 US dollars, for MVD, RS, and SRS respectively. Actual payments varied depending on health insurance coverage.

Table 1

	Rf	Mvd	SRS
n	27	43	74
Female	17 (63%)	25 (58%)	51 (67%)
Right side	14 (52%)	24 (56%)	44 (58%)

Patient demographics and laterality

Figure 2



Example of Microvascular surgery pre (A) and post (B) decompression.

Table 2

	Rf	Mvd	SRS
n	27	43	74
Follow-up from 1 <sup>st</sup> procedure (yrs)	5.9+/- 5.1	2.2+/-3.9	1.2+/- 1.7
2 <sup>nd</sup> procedure	17/27 (63%)	8/43 (19%)	11 (15%)

Follow up period and need for second procedure as indication of symptomatic recurrence.

Table 3

	Rf	Mvd	SRS
n	27	43	74
Pain	1.9+/- 1.7	1.2+/- 2,4	2.1+/- 2.6
Numb	14/28 (50%)	11/43 (26%)	14/74 (19%)
Meds	20/28 (71%)	16/43 (37%)	37/74 (50%)

Outcome in terms of post preocudural numbness, pain and need for medications.

Table 4

	Rf	Mvd	SRS
n	28	43	74
Surgical complications		3/43 (7%) 2 CSF leaks, 1 meningitis	1 unhappy with numbness
Total bill	3,900+/- 650 (n=13)	48,100+/- 5,500 (n=38)	42,700+/- 1,900 (n= 18)

Posto preocudral complications, and cost related.

## Conclusions

Despite their unique advantages, the charges for the 3 procedures vary considerably.

- MVD was the most expensive procedure, and was least likely associated with facial numbness. SRS and RFR were recommended for older patients.
- SRS is expensive, and requires several weeks before symptomatic improvement.
- RFR is associated with immediate response, performed as an outpatient, and is the cheapest of the 3 procedures; however it is associated with the highest rate of recurrence.

## Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of cost involved, age and recurrence rate factors in choosing suitable management options 2) Discuss the pros and cons for each of the available treatment modlities, 3) Identify a cost effective treatment for refractory TN.