

ORIGINAL RESEARCH

Outcome of patients undergoing microvascular decompression for trigeminal neuralgia

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ABSTRACT:

Background: The present study was conducted to assess the outcome of patients undergoing microvascular decompression for trigeminal neuralgia. **Materials & Methods:** The present study was conducted on 54 cases of trigeminal neuralgia (TN) who were treated surgically with microvascular decompression (MVD) over a period of 3 years. In all patients VAS and the Barrow Neurological Institute (BNI) scoring system were recorded. **Results:** Out of 54 patients, males were 30 and females were 24. Grade I was seen in 35, II in 12, III A in 3, III B in 1, IV in 2 and V in 1 patient. The difference was significant ($P < 0.05$). Microvascular decompression was performed in superior cerebellar artery in 20 cases and follow up period was 28.4 months, Pon. trigeminal V in 15 cases with 25.2 months follow up, Trans. pon. V in 10 cases with 26.1 months, AICA in 6 cases with 28.2 months follow up and no definite cause in 3 with 27.3 months follow up. Secondary outcome was excellent and good. **Conclusion:** Authors found that microvascular decompression (MVD) as management for trigeminal neuralgia (TN) have excellent primary and secondary outcome.

Key words: Microvascular decompression, Trigeminal neuralgia, Barrow Neurological Institute (BNI) scoring system.

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INTRODUCTION

Trigeminal neuralgia (TN) or tic douloureux is a painful condition affecting the face. It is commonly unilateral and is characterized by brief attacks of lacerating neuropathic pain over the face that lasts from several seconds up to 2 min; it may either be provoked or may occur spontaneously.¹ The peak incidence of TN occurs in the fifth to seventh decades with 90% of cases starting after the age of 40. It is almost never seen before the third decade unless it is associated with multiple sclerosis. Most patients are treated initially with a variety of medications up to the maximal dose that they can tolerate.²

Various safe and effective surgical treatment alternatives for TN now exist such as MVD, percutaneous radiofrequency rhizotomy, glycerol rhizolysis, percutaneous balloon microcompression and GKS.³ All of these surgical procedures have been proposed as treatments of choice for TN in various studies published at different times. It is suggested that unrelieved vascular

compression of the trigeminal nerve entry zone initiates a focal demyelination that causes firing in the trigeminal primary afferents which is enhanced by impairment of the inhibitory systems in the trigeminal brainstem complex.⁴ It has been stated that increased firing of wide dynamic range (WDR) neurons in the nucleus caudalis and hypersensitivity of low-threshold mechanoreceptors (LTMs) in the nucleus oralis are responsible for the paroxysmal pain of trigeminal neuralgia which may occur in response to noxious and non-noxious stimuli.⁵ The present study was conducted to assess the outcome of patients undergoing microvascular decompression for trigeminal neuralgia.

MATERIALS & METHODS

The present retrospective study was conducted in the department of oral & maxillofacial surgery. It consisted of 54 patients of trigeminal neuralgia treated surgically in the last 3 years. The study protocol was approved from institutional ethical committee.

General information such as name, age, gender etc. was recorded. Parameters related to patients were recruited from departmental case history performa. All patients were treated with microvascular decompression (MVD) surgery. Visual analog scale (VAS) and the presence of residual pain were recorded. The BNI scoring system was used as follows Grade I - no pain and no medication required, Grade II - occasional pain and no medication required, Grade III A - no pain and continued use of medications required, Grade III B - some pain, which was adequately controlled with medication, Grade IV - pain improved but not adequately controlled on medication and Grade V - no pain relief whatsoever. Secondary outcome was recorded as excellent, good and fair. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

Total Patients:	54	
Gender	Male	Female
Number	30	24

Table II: BNI scoring system

Grade	Number of Patients	P value
I	35	0.01
II	12	
III A	3	
III B	1	
IV	2	
V	1	

*The difference was significant (P< 0.05).

Graph I: BNI scoring system (I-V)

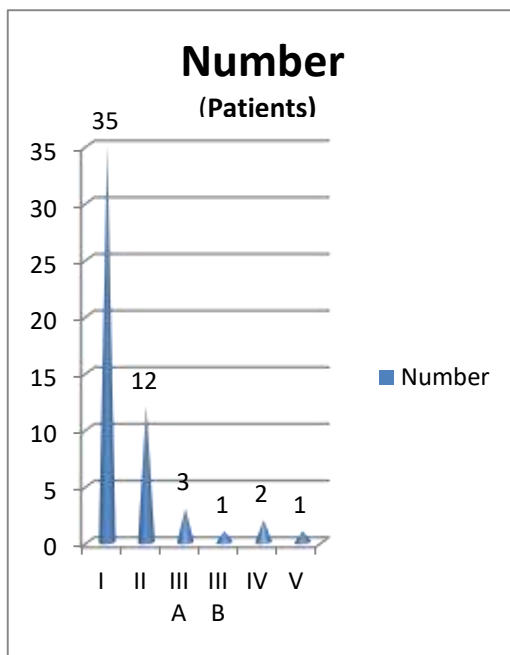
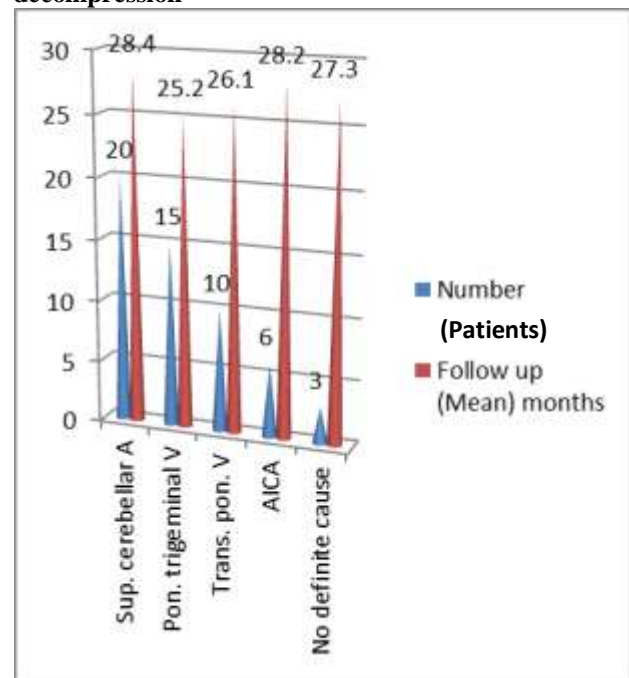


Table III: Post-operative outcome after microvascular decompression (MVD)

Vessel	Number	Follow-up (Mean) months	Secondary outcome
Sup. cerebellar A	20	28.4	Excellent
Pon. trigeminal V	15	25.2	Excellent
Trans. pon. V	10	26.1	Good
AICA	6	28.2	Excellent
No definite cause	3	27.3	Good

Graph II: Post-operative outcome after microvascular decompression



DISCUSSION

Trigeminal neuralgia (TN) is a characteristic neuropathic pain involving the trigeminal nerve distribution. Trigeminal neuralgia is the most common cranial neuropathy, with a mean incidence of four per 100,000 in the healthy population.⁶ TN pain is limited to the distribution of one or more of the divisions of the trigeminal nerve, with the maxillary division being involved in 17% of cases, the mandibular in 15%, and both branches in 32%. TN never spreads across the midline nor does it ever present on both sides of the face simultaneously.⁷

Most patients are treated initially with a variety of medications such as carbamazepine, phenytoin, gabapentin and baclofen up to the maximal dose that they can tolerate. For those who do not receive adequate pain relief from medications or who cannot tolerate the side effects surgical intervention is a feasible option although the designation of the best surgical treatment for TN in

the general population remains controversial.⁸ The present study was conducted to assess the outcome of patients undergoing microvascular decompression for trigeminal neuralgia.

In present study out of 54 patients, 30 were males and 24 were females. Grade I was seen in 35, II in 12, III A in 3, III B in 1, IV in 2 and V in 1 patient. Tomasello et al⁹ conducted a study in which all patients fulfilling the inclusion criteria were offered MVD surgery. Freedom from pain was achieved immediately after surgery in 95.2% (n = 20) of patients in group 1 and 90.5% (n = 19) had sustained relief over the follow-up period. There were no statistical significance recurrences or surgical complications in group 1, while 53.3% (n = 8) of the subjects in group 2 showed poor response with pharmacotherapy over the same period of time and many patients experienced drug intolerance that had statistical significance.

In our study microvascular decompression was performed in superior cerebellar artery in 20 cases and follow up period was 28.4 months, Pon. trigeminal V in 15 cases with 25.2 months follow up, Trans. pon. V in 10 cases with 26.1 months, AICA in 6 cases with 28.2 months follow up and no definite cause in 3 with 27.3 months follow up. Secondary outcome was excellent and good. Piatt et al¹⁰ found in their patients that the median follow-up duration was 16.5 months. Twenty-two patients (42.3%) had complete pain relief, 14 (26.9%) had partial but satisfactory pain relief and in 16 patients (30.8%) the treatment failed. Seven patients (13.5%) reported a recurrence during the follow-up period and 25 (48.1%) reported a significant (50%) decrease in their pain within the 1st month post-treatment. The mean decrease in the total dose of pain medication was 75%. Patient's self-reported QOL scores improved 90% and the overall patient satisfaction score was 80%.

Salama et al¹¹ assessed the outcome of microvascular decompression (MVD) in patients with more than 3 years history of intractable idiopathic trigeminal neuralgia. Patients in group 1 (n = 21), which included 8 females and 13 males underwent MVD and were followed up for 2 years. Group 2 (n = 15) which included 6 females and 9 males, received pharmacotherapy. Freedom from pain was achieved immediately after surgery in 95.2% (n = 20) of patients in group 1, and 90.5% (n = 19) had sustained

relief over the follow-up period. There were no statistical significance recurrences or surgical complications in group 1 (P>0.5), while 53.3% (n = 8) of the subjects in group 2 showed poor response with pharmacotherapy over the same period of time and many patients experienced drug intolerance that had statistical significance.

CONCLUSION

Authors found that microvascular decompression (MVD) as management for trigeminal neuralgia (TN) have excellent primary and secondary outcome.

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