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## Original Research

### Retrospective Outcome Of Patients Undergoing Surgical Treatment For Trigeminal Neuralgia

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#### ABSTRACT

**Background:** Trigeminal neuralgia is a painful condition affecting the face. The present study was conducted to assess the outcome of patients undergoing surgical treatment for trigeminal neuralgia. **Materials & Methods:** The present study was conducted on 86 cases of trigeminal neuralgia treated surgically in the last 3 years of both genders. All patients were treated with microvascular decompression (MVD) surgery. 10 points visual analog scale (VAS) and the Barrow Neurological Institute (BNI) scoring system were used. The presence of residual pain was recorded. **Results:** Out of 86 patients, males were 38 and females were 48. In 43 cases, sup. cerebellar artery was involved and follow up period was 28.2 months followed by Pon. trigeminal V in 21 cases with 25.4 months follow up, Trans. pon. V (15) with 26.5 months, AICA (5) with 28.4 months follow up and no definite cause in 3 with 27.5 months follow up. **Conclusion:** Primary and secondary outcome of patients treated surgically with microvascular decompression was excellent.

**Key words:** microvascular decompression, Trigeminal neuralgia, visual analog scale

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## INTRODUCTION

Trigeminal neuralgia is the most common cranial neuropathy, with a mean incidence of four per 100,000 in the healthy population.<sup>1</sup> Trigeminal neuralgia (TN), or tic douloureux, is a painful condition affecting the face. It is commonly unilateral and is characterized by brief attacks of lacinating neuropathic pain over the face that lasts from several seconds up to 2 min; it may either be provoked or may occur spontaneously.<sup>2</sup> 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.<sup>3</sup> Most patients are treated initially with a variety of medications (for example 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.<sup>4</sup> Various safe and

effective surgical treatment alternatives for TN now exist, such as MVD, percutaneous radiofrequency rhizotomy, glycerol rhizolysis, percutaneous balloon microcompression and GKS. All of these surgical procedures have been proposed as treatments of choice for TN in various studies published at different times.<sup>5</sup> The present study was conducted to assess the outcome of patients undergoing surgical treatment for trigeminal neuralgia.

## MATERIALS & METHODS

The present study was conducted in the Department of Oral & Maxillofacial surgery Govt. Dental College Srinagar. It comprised of 86 cases of trigeminal neuralgia treated surgically in the last 3 years of both genders. General information such as name, age, gender etc. was recorded. All patients were treated with microvascular decompression (MVD) surgery. 10 points visual analog scale (VAS) and the Barrow Neurological Institute (BNI) scoring system were used. The presence of residual pain was 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 on medication, Grade IV - pain improved but not adequately controlled on medication and Grade V - no pain relief whatsoever. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**Results**

**Table I Distribution of patients**

Total- 86		
Gender	Male	Female
Number	38	48

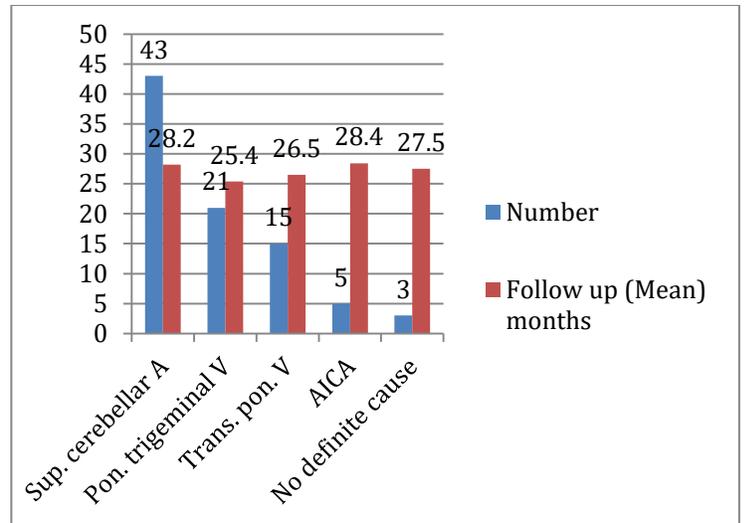
Table I shows that out of 86 patients, males were 38 and females were 48.

**Table II Post operative outcome after microvascular decompression**

Vessel	Number	Follow up (Mean) months	Primary outcome	Secondary outcome
Sup. cerebellar A	43	28.2	Free from pain	Excellent
Pon. trigeminal V	21	25.4	Free from pain	Excellent
Trans. pon. V	15	26.5	Free from pain	Good
AICA	5	28.4	Free from pain	Excellent
No definite cause	3	27.5	Free from pain	Good

Table II shows that in 43 cases, sup. cerebellar artery was involved and follow up period was 28.2 months followed by Pon. trigeminal V in 21 cases with 25.4 months follow up, Trans. pon. V (15) with 26.5 months, AICA (5) with 28.4 months follow up and no definite cause in 3 with 27.5 months follow up.

**Graph I Post operative outcome after microvascular decompression**



**DISCUSSION**

Trigeminal neuralgia (TN) is a characteristic neuropathic pain involving the trigeminal nerve distribution. The International Association for the Study of Pain (IASP) defines TN as ‘a unilateral painful disorder that is characterized by brief, electric shock like pains, is abrupt in onset and termination, and is limited to the distribution of one or more divisions of the trigeminal nerve’. The annual incidence of TN in the UK is around 26/100 000. Worldwide prevalence varies from 10 to 300/100 000. The peak age of onset is between 50 and 60 yr with a male-to-female ratio of 1:2.<sup>6</sup> The exact etiology and pathophysiology of TN remains to be clearly elucidated. According to the ‘ignition theory’, TN is the result of abnormalities in the afferent neurones of the trigeminal root or ganglion. Any injury to the axons can make them hyperexcitable, leading to this painful neuropathic condition. It has been suggested that central sensitization also plays a role in TN. Some of the risk factors in developing TN are multiple sclerosis (MS), increased age, stroke, hypertension (in women), Charcot–Marie–Tooth disease, and tumours in the region of the trigeminal nerve root.<sup>7</sup> The present study was conducted to assess the outcome of patients undergoing surgical treatment for trigeminal neuralgia. MVD has been considered the most appropriate surgical intervention for pain control in TN. The initial success rate has been reported as 92.7%, with mortality rates as low as 0.7% in larger published series. In some series, the mean time to recurrence was reported as 1.9 years, with 47 to 75% of recurrences occurring in the 1st year, and the likelihood of recurrence thereafter was 2% per year. In another series, major recurrences averaged 3.5% and minor recurrences averaged 1.5% annually.<sup>8</sup> In present study, out of 86 patients, males were 38 and females were 48. We found that in 43 cases, sup. cerebellar artery was involved and follow up period was 28.2 months followed by Pon. trigeminal V in 21 cases with 25.4 months follow up, Trans. pon. V (15) with 26.5 months, AICA (5) with 28.4 months follow up and no definite cause in 3 with 27.5 months follow up. Tomasello et al<sup>9</sup> 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.

Piatt et al<sup>10</sup> 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%. Patients' self-reported QOL scores improved 90% and the overall patient satisfaction score was 80%.

## **CONCLUSION**

Authors found that primary and secondary outcome of patients treated surgically with microvascular decompression was excellent.

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