



Surgical Outcomes of MVD in terms of Immediate Pain Relief

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KeyWords

Facial pain, Pain relief, Muscle patch, Microvascular decompression, Neurosurgeon, Trigeminal neuralgia, vascular loop compression

ABSTRACT

TIC douloureux is also known as Trigeminal neuralgia is the mostly known facial pain syndrome. It is characterized by brief but severe and recurring episodes of shock like pain affecting the one or both side of the dermatomal distribution of the trigeminal nerve. Although the exact TN source or the nature of this pain is not known till yet general consensus is that the pain is caused due to the focal demyelination in the root of the trigeminal nerve is involved. In this paper a surgical procedure called MVD (Microvascular decompression) is presented for the immediate relief from TN by considering 148 patients. Objective of this study was to analyze the efficacy of microvascular decompression for trigeminal neuralgia by using the technique of muscle graft for the purpose of immediate pain relief. This descriptive case study was carried out in two hospitals Neurosurgery Department Sheikh Zayed Hospital Rahim Yar Khan and Professor Neurosurgery Department Nishtar Hospital, Multan. The number of patients due to compression of cerebellar artery was 88 %. About 148 patients were examined in this case study. Among those 92 patients were female and rest of about 38 % i.e. 56 patients were male. Clinical evaluation was performed after 72 hours. The mean range of symptom duration was about 9.92 years. Among these patients 15 % patients were those who had peripheral neurotomy history. And 39 % of the patients were those who had dental extraction history. In this case study the most common branch of the fifth nerve causing TN was V3 thus comprising 56 % of the patients. In our study those patients who felt no pain after surgery comprised the 71 % of the total patients. Our study proved successfully that for the treatment for trigeminal neuralgia, Microvascular decompression is most effective mode of surgery in terms of immediate pain relief.

INTRODUCTION

TIC douloureux is also known as Trigeminal neuralgia is the mostly known facial pain syndrome. It is characterized by brief but severe and recurring episodes of shock like pain affecting the one or both side of the dermatomal distribution of the trigeminal nerve. Although the exact TN source or the nature of this pain is not known till yet general consensus is that the pain is caused due to the focal demyelination in the root of the trigeminal nerve is involved. Pamir (2006) called demyelination due to vascular loop compression. Research has shown that this pain is slightly more common in female of over 50 years as compared to male patients. Olson (2005) stated that this pain could be occur in any trigeminal nerve distribution like Mandibular (V3), Ophthalmic (V1) and Maxillary (V2). Dandy I 1934 proposed for the first time in history that factors which may cause Trigeminal neuralgia can be presence of neuro vascular compression. In 1962, Gardner also supported Dandy's Hypothesis. And later on Jannetta also supported Gardner by adding MDV as the best surgical procedure for the cure of trigeminal neuralgia. (Janeetta et al. 2005; Civelek, 2005). The first line of treatment by medicine is the use of Carbamazepine. But patient's History proved that it may fail with the due course of time and 50% of the patients require surgical treatment for the relief from pain. So now a days MDV is considered as the most effective surgical procedure for the treatment of trigeminal neuralgia (Civelek, 2005; Pamir, 2006).

OBJECTIVES:

Objective of this study was to analyze the efficacy of microvascular decompression for trigeminal neuralgia by using the technique of muscle graft for the purpose of immediate pain relief. This study will open the doors for the further researches in this field by providing statistical data about this disease. Moreover the comparison of the study results with the national and international studies and the similarities will provide new techniques to the future surgeons.

MATERIAL AND METHODS:

A descriptive study was carried out through the current study in order to achieve the early stated objectives. This study was performed at the neurosurgery department of Sheikh Zayed Hospital Rahim Yar Khan and Nishtar Hospital Multan. 148 patients were included in the study. The duration of this study was five years i.e. 01-07-2013 to 01-07-2018. In order to select the patients for the study CT scan, MRI and MRA (Magnetic Resonance Angiography) was performed. These tests were also performed in order to exclude atypical trigeminal neuralgia patients. So these patients were selected who were free from nerve compression pathology and thus considered as typical Neuralgia patients.

One hundred and forty eight patients admitted in the department of neurosurgery indoor and fulfilling the criteria were selected. An informed verbal consent from all those patients was obtained after explaining the cause of the study and procedure of the study. The study was conducted after obtaining the permission from the ethical committee of the hospital.

A dedicated full time staff nurse was deputed to assist in the study whose duty was to take the history and clinical statistical recordings of those patients considered fit for this study. All the operation was performed by the same neurosurgeon using muscle patch grafting technique for the immediate relief from TN pain. All those patients who were under pharmacological treatment, their drugs were stopped after surgical procedure of grafting muscle patch. Clinical evaluation was performed after 72 hours, 11th and 29th post-operative day. The pain assessment post operatively recorded in all these patients and was divided into five classes. This was done according to BNI pain scale. Post-operative pain relief evaluation was performed by separate surgeon. That surgeon performed the role of an external evaluator and was not the part of the study team.

Data Analysis and Results:

Data was entered in the pre-defined Performa. All the data was key punched and analyzed by using software SPSS 20.0. Frequencies were calculated for gender and age. About 148 patients were examined in this case study. Among those 92 patients were female and rest of about 38 % i.e. 56 patients were male. The distribution of male and female patients was as follows.

| Gender | Patients | Percentage |
|--------|----------|------------|
| Male | 56 | 38% |
| Female | 92 | 62% |
| Total | 148 | 100% |

The mean age of the patients were 43 years ranging from 21 years to 75 years. The patients suffering from TN w.r.t left side were 42 in number and those who had pain at right side were about 106 in total. The statistics of all patients is described below.

| Pain at | Patients | Percentage |
|------------|----------|------------|
| Left side | 42 | 28% |
| Right side | 106 | 72% |
| Total | 148 | 100% |

The duration of the pain identification was ranged from 5.50 months to 15.25 years. The mean range of symptom duration was about 9.92 years. Among these patients 15 % patients were those who had peripheral neurotomy history. And 39 % of the patients were those who had dental extraction history. The involvement of the various branches of fifth nerve in TN as observed in different patients is as follows.

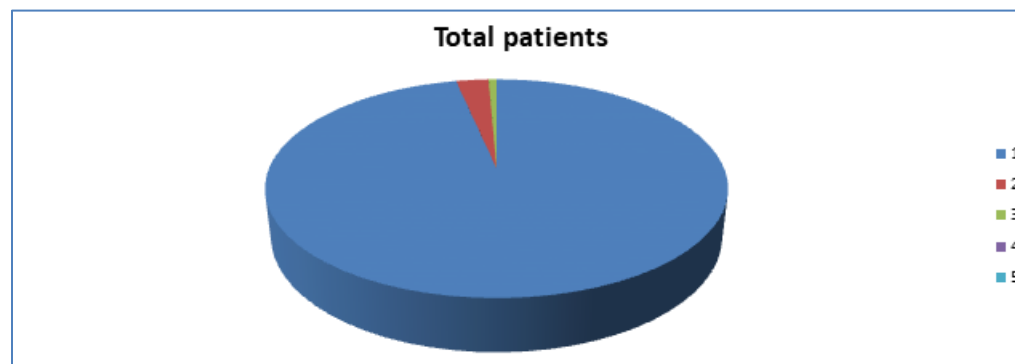
| Branch Involved | Patients | Percentage |
|-----------------|----------|------------|
| V3 | 83 | 56% |
| V2 | 52 | 35% |
| V1 | 9 | 6% |
| V2+V3 | 4 | 3% |
| Total | 148 | 100% |

In this study the various causes and operative findings of MVD in different patients of TN is described below.

| Cause | Patients | Percentage |
|----------------------------|----------|------------|
| Superior Cerebellar Artery | 130 | 88% |
| Anterior Cerebellar Artery | 6 | 4% |
| Petrosal Vein | 6 | 4% |
| Arachnoid adhesion | 6 | 4% |
| Total | 148 | 100% |

The BNIP scores as observed by the external evaluator is as follows.

| BNIP Score | Description | Total patients |
|------------|---|----------------|
| 1 | No pain, No Medication | 143 |
| 2 | Occasional Pain | 4 |
| 3 | Some pain adequately controlled by medication | 1 |
| 4 | Some pain not adequately controlled by medication | 0 |
| 5 | No pain relief | 0 |



DISCUSSION:

If we look at the glance in the history pages we will realize that hundreds of patients were operated for the pain relief from trigeminal neuralgia by using the microvascular decompression procedure. In our study it was observed that this disease was mostly happened in female patients as compare to the male patients as there were 92 patients were female while 56 patients were male. In this case study the most common branch of the fifth nerve causing TN was V3 thus comprising 56 % of the patients. Then came the number of V2 branch which comprised of 35 % of the patients. The number of patients suffered from TN due to V1 branch was 9 in number while the patients who suffered from TN due to combined effect of V2 and V3 were total 4 in number. Our study results were quite similar to the Giovanni B et al. study results in which 250 patients were observed and in their study 63 % of the patients were

suffering from TN due to V3. Our study was also similar to the Kabatas et al. who proved that mostly female were the victim of Trigeminal neuralgia. The ratio of female patients to male patients was 1.9: 1 was in the study of Haq et.al while in our study it is 1.6 :1. In this study if we look at the glance on the operative findings it will reveal that in most of the cases the cause of TN was due to compressing of superior cerebellar artery. The number of patients due to compression of cerebellar artery was 88 % which were similar to the study results of Zhang et al where the %age for such patients were 79%. In the study of Haq et al. the total number of patients who felt no pain comprised the 68 % of the total patients observed while in our study this number was 71 % of the total patients. Thus proving more improvement in the study results. In our study the patients who had occasional pain were only 28 in number thus comprising 19 % and only 15 patients complained some pain but which was adequately controlled by medication.

Conclusion

Thus our study proved successfully that for the treatment for trigeminal neuralgia, Microvascular decompression is most effective mode of surgery in terms of immediate pain relief.

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