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COMPARISON BETWEEN CRYOSURGERY AND NEURECTOMY IN MANAGEMENT OF TRIGEMINAL NEURALGIA

Dr Asma Khan[1], Dr Ayesha Shaukat[2], Dr Ayesha Khaliq[3]

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Abstract:

Introduction: *The term neuralgia is used to describe unexplained peripheral nerve pain, and the head and neck are the two most common sites of such neuralgias.* ***Aims and objectives:*** *The main objective of the study is to analyse the comparison between cryosurgery and neurectomy in management of trigeminal neuralgia.* ***Material and methods:*** *This descriptive study was conducted in Health department Punjab during January 2019 to October 2019. Diagnosis was made on the basis of history of classical display of paroxysmal pain, lasting for seconds to minutes, rapidly provokable along the distribution of branches of trigeminal nerve, triggered by light touch in a specific area or by eating, talking, washing the face, or by cleaning the teeth.* ***Results:*** *The data was collected from 60 patients. The branch involved with TN was confirmed preoperatively by injecting 2% lidocaine around the nerve branch. Mental nerve was involved in 27 (45%). Infra orbital nerve was involved in 22(36.7%) and inferior alveolar nerve was involved in 11(18.3%) patients. Thus mandibular branch was involved in 63.3% cases and maxillary branch was involved in 36.7% cases. 30 patients were allocated into Group A, undergone through cryosurgery and 30 patients for peripheral neurectomy.* ***Conclusion:*** *It is concluded that peripheral neurectomy and cryosurgery were equally effective in short term relief of pain.*

Corresponding author:
Dr. Asma Khan,

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INTRODUCTION:

The term neuralgia is used to describe unexplained peripheral nerve pain, and the head and neck are the two most common sites of such neuralgias. In most of the cases, a dentist sees the patient with the chief complaint of pain in the teeth and face before a physician does. Classic trigeminal neuralgia, as described by the International Headache Society, is 'Paroxysmal attacks of pain, lasting for a fraction of a second to 2 minutes, affecting one or more divisions of the trigeminal nerve' (Headache classification, subcommittee 2004) [1]. Trigeminal neuralgia is defined as sudden, usually unilateral, severe brief, stabbing recurrent episodes of pain within the distribution of one or more branches of the trigeminal nerve, which has profound effect on the quality of life. The mandibular branch of the trigeminal nerve is involved more commonly than the maxillary branch [2].

Trigeminal neuralgia (TN) is a disorder of fifth cranial nerve. It is a painful unilateral burden of the face, characterized by short electric shock like pain in the distribution of the Trigeminal nerve. The cause is unknown but may be due to structural lesions. The contact of vessels with trigeminal root has been confirmed by magnetic resonance imaging (MRI) studies and further supported by separating the vessel from the nerve root with immediate pain relief [3]. None of the many presented theories fully enlighten all recognized characteristics of TGN pain6, the bulk of current evidence points to the TN rather than the CNS as the site of generation of TN pain [4].

Diagnosis of cranio-facial pain is frequently not easy due to similarity in symptoms between disease processes, and the number and range of classification schemes. Since there is no laboratory test to verify the diagnosis, and obvious diagnostic criteria are necessary for clinical research and communication [5].

TN is treated by medical and surgical therapies. Medical management by pharmacological approach, while surgical management includes numerous peripheral and intracranial approaches. The medical therapy is usually 1st line of treatment, with drugs such as carbamezapine, baclofen, gabapentin, phenytoin or clonazepam in single or combination regimens. If medications are ineffective or not tolerated, surgical treatment options can be offered. Every surgical procedure carries its benefits as well as risks of complications [6].

Aims and objectives

The main objective of the study is to analyse the comparison between cryosurgery and neurectomy in management of trigeminal neuralgia.

MATERIAL AND METHODS:

This descriptive study was conducted in Health department Punjab during January 2019 to October 2019. Diagnosis was made on the basis of history of classical display of paroxysmal pain, lasting for seconds to minutes, rapidly provokable along the distribution of branches of trigeminal nerve, triggered by light touch in a specific area or by eating, talking, washing the face, or by cleaning the teeth. The pain was described as intense, sharp, superficial, stabbing, or shooting often like an electric shock. The pain was strictly unilateral at a particular paroxysm and was without any sensory or motor loss in the affected nerve area.

Study design

The data was divided into two groups. In Group A, patients were treated by Cryosurgery, while Group B, patients with peripheral neurectomy. Before intervention, patient's record was entered on the proforma. Postoperative pain relief and recurrence was assessed by history and VAS. Follow up was undertaken monthly for first four months and then at 10 month after the procedure. The success rate of the procedure was categorized into, excellent, good and poor according to pain relief and use of carbamazepine.

Statistical analysis

The data was collected and analysed using SPSS version 19. All the values were expressed in mean and standard deviation.

RESULTS:

The data was collected from 60 patients. The branch involved with TN was confirmed preoperatively by injecting 2% lidocaine around the nerve branch. Mental nerve was involved in 27 (45%). Infraorbital nerve was involved in 22(36.7%) and inferior alveolar nerve was involved in 11(18.3%) patients. Thus mandibular branch was involved in 63.3% cases and maxillary branch was involved in 36.7% cases. 30 patients were allocated into Group A, undergone through cryosurgery and 30 patients for peripheral neurectomy. Post-operative pain relief/recurrence of the two procedures was noted.

The overall post-operative pain relief is comparable for both cryosurgery and peripheral neurectomy, Among patients treated with cryosurgery 23(76.66%) patients were declared having excellent pain relief, 06(20%) patients had poor results and 01(3.33%) had good results. Among patients treated with neurectomy, 18(60%) patients were declared having excellent results, 10(33.33%) patients had poor results and 2(6.66%) patients had good results.

Table No.I: Type of procedure performed (n-60)

Procedure	No of patients	Percentage (%)
Cryosurgery	30	50.0
Peripheral neurectomy	30	50.0
Total	60	100.0

Table No.II: Post-operative pain (cryosurgery)-follow up (n-30)

Months	Pain relief (excellent)	Pain relief (Good)	Pain relief (Poor)	Total no of patients
1st month	29	01	00	30
2nd month	29	01	00	30
3rd month	29	01	00	30
4th month	29	01	00	30
10th month	23	01	06	30

DISCUSSION:

C arbamazepine, which was introduced in 1962, is still found to be the drug of choice in the management of trigeminal neuralgia. Response to carbamezepine treatment is, in part, diagnostic. Other drugs like gabapentine, pregabalines, dilantin sodium are also being used with good results. No patient should be considered for surgical treatment without the benefit of trying with carbamazepine for relief of pain [7].

However, long term therapy with carbamazepine can lead to serious side effects such as, (i) development of resistance and intolerance, ii) drowsiness, (iii) vertigo, (iv) nausea. Serious consequences like (i) hemopoietic depression (ii) aplastic anemia (iii) abnormalities in liver functions.

Currently available surgical options are, (1) Non-invasive technique: (a) peripheral neurectomy, (b) alcohol injections, (c) cryotherapy, (d) selective radio frequency thermocoagulation or, (2) Invasive technique: (i) open microvascular decompression, (ii) percutaneous: (a) radiofrequency rhizotomy, (b) retrogasserian glycerol rhizotomy, (c) balloon compression of trigeminal nerve, (d) stereostatic radiosurgery –gamma knife [8].

Peripheral neurectomy was done for the first time in 18th century with limited success. By dividing or avulsing a peripheral branch of the trigeminal nerve, the maxillofacial surgeon can achieve an exact, complete and long-lasting effect. Peripheral neurectomy can be done on the supraorbital and supratrochlear/ infratrochlear/lacrimal nerves, the infraorbital nerve and the inferior alveolar, lingual and mental nerves [9]. This surgery can be carried out as an outpatient procedure under local anesthesia in elderly and debilitated patients who are at an increased risk for undergoing invasive neurosurgical procedures. It is also useful in patients, reluctant for major neurosurgeries, and patients in rural places where facilities for advanced neurosurgical procedures are not available. As many patients and

maxillofacial surgeons prefer this treatment owing to an advantage of minimum risk of morbidity, peripheral neurectomy has its role in the treatment of trigeminal neuralgia [10].

CONCLUSION:

It is concluded that peripheral neurectomy and cryosurgery were equally effective in short term relief of pain. Peripheral neurectomy is a safe and effective procedure for elderly patients, for those patients living in remote and rural places that cannot avail major neurosurgical facilities, and for those patients who are reluctant or systemically contra-indicated for major neurosurgical procedures.

REFERENCES:

1. Henderson W. Anatomy of gaserion ganglion and distribution of pain in relation to injection and operations for trigeminal neuralgia. Ann R Coll Surg Eng. 1965;37:346-72.
2. Murali R, Rovit RL. Are peripheral neurectomies of value in the treatment of trigeminal neuralgia? An analysis of new cases and cases involving previous radiofrequency gasserianthermocoagulation. J Neurosurg. 1996;85:435–437.
3. Han KR, Kim C, Chae YJ, Kim DW. Efficacy and safety of high concentration lidocaine for trigeminal nerve block in patients with trigeminal neuralgia. Int J Clin Pract. 2008;62:248–54.
4. Ngeow WC, Nair R. Injection of botulinum toxin type A (Botox) into trigger zone of trigeminal neuralgia as a means to control pain. Oral Surg Oral Med Oral pathol Oral Radiol Endodtol. 2010;109:e47–50.
5. Malik N. Text Book of Oral and Maxillofacial Surgery. New Delhi, India: JP Brother Medical Publishers; 2008. pp. 685–97.
6. Wilkins RH. Historical overview of surgical techniques for trigeminal neuralgia. Tech Neurosurg. 1999;5:202–17.
7. Fowler GR. The operative treatment of facial neuralgia: A comparison of methods and results. Ann Surg. 1886;3:269–320.
8. Hong-Sai L. Surgical treatment of trigeminal Neuralgia. J Oral Rehab. 1999;26:613–7.
9. Zakrzewska JM. Facial Pain: Neurological and non-neurological. J Neurol Neurosurg Psychiatry. 2002;72(Suppl:ii):27–32.
10. Bagheri S, Farhidvash F, Perciaccante V. Diagnosis and treatment of patients with trigeminal neuralgia. J Am Dent Assoc. 2004;135:1713–7.