



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

## INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.3334181>

Available online at: <http://www.iajps.com>

Research Article

### A RETROSPECTIVE STUDY TO KNOW THE IMPORTANCE OF PERIPHERAL NEURECTOMIES IN THE MANAGEMENT OF TRIGEMINAL NEURALGIA

<sup>1</sup>Dr Laika Tahir, <sup>2</sup>Dr Rabia Roohi, <sup>3</sup>Dr Ramisha Imtiaz

<sup>1</sup>Dental Section, Punjab Medical College, Faisalabad.

Article Received: May 2019

Accepted: June 2019

Published: July 2019

**Abstract:**

**Objective:** The aim of this study was to analyze indications, advantages and complications of peripheral neurectomies.

**Study design:** A Retrospective Study.

**Location and duration:** This retrospective study was conducted in the Department of Dental and Maxillofacial Surgery Allied Hospital Faisalabad for one year duration from July 2017 to July 2018.

**Methods:** We selected patients only over 40 years of age. After neurectomies, 35 (70%) patients had very good relief of pain for 2 to 6 years without any medication; 4 (8%) patients rarely had pain but did not require medication; Drug-controlled pain in 5 (10%) patients; In 6 (12%) patients, pain recurrence in 0-2 years could not be controlled with medication. These patients were referred to a neurosurgeon for MVD (microvascular decompression).

**Results:** Both medical and surgical treatments are effective for trigeminal neuralgia. However, factors such as pain relief, relapse rates, morbidity and mortality rates should be taken into consideration when deciding which technique to use. It seems appropriate to start a patient suffering from trigeminal neuralgia with medical treatment, but if the pain control is poor or the side effects of the drugs are not tolerated, continue with early surgical treatment.

**Conclusion:** Loss of sensation and recurrence rate along the trigeminal nerve branch is associated with peripheral neurectomy. However, it is not safe and effective procedure for elders; especially short-lived ones. If there are no suitable facilities for the main neurosurgical procedures or if the patient does not comply with such procedures, neurectomy is the best option. It is possible even under local anesthesia.

**Key words:** Peripheral neurectomy, Trigeminal neuralgia, Inferior alveolar, Infra-Orbital, Long buccal neurectomy, Mental.

**Corresponding author:**

**Dr. Laika Tahir,**

Dental Section, Punjab Medical College, Faisalabad.

QR code



Please cite this article in press Laika Tahir et al., A Retrospective Study to Know the Importance of Peripheral Neurectomies in the Management of Trigeminal Neuralgia., Indo Am. J. P. Sci, 2019; 06(07).

**INTRODUCTION:**

Neurectomy is the oldest of all procedures. The procedure is famous for useful part in the treatment of trigeminal neuralgia, in many peripheral branches of the trigeminal nerve as nerve, infraorbital, mental and alveolar (ID) above the low hole. It gives up to 33 months pain relief. These methods of peripheral neurectomies are not used commonly nowadays, mostly because of recurrence rate of pain and the complete sensory loss of the area provided by this nerve. Postoperative neuroma formation is a complication of another neoplasm. Neurectomy has been replaced by more complex procedures such as radiofrequency thermocoagulation and microvascular decompression. However, these facilities are not available or the patient is not eligible for major neurosurgical procedures, or in the short centers of the patient's life (elderly patients), the neurectomy has a role in the trigeminal neuralgia treatment.

**MATERIALS AND METHODS:**

This Retrospective study was performed on fifty cases with trigeminal neuralgia features in the Department of Dental and Maxillofacial Surgery Allied Hospital Faisalabad for one year duration from July 2017 to July 2018. The diagnosis was based on a clinical examination, detailed history and control of pain with carbamazepine. Orthopentotography (OPG) was performed to exclude any local pathology for each patient. Participation was determined by locating the nerve branch epinephrine 1 confirmed by 2% lignocaine based on the location of pain and local anesthesia: 200,000 injection sites were identified and repeated 3 times on consecutive days. Early morning an appointment was given to patients. Before being considered for surgical treatment, all patients had taken gabapentin, in particular treatment with maximal medical treatment, carbamazepine. All patients done with preoperative imaging with (MRI)

magnetic resonance imaging, revealing underlying structure abnormalities such as tumors. The follow-up period of this study ranges from 0 to 5 years.

**Participation criteria**

All patients from both genders who presented trigeminal neuralgia data were informed and included in the study.

**Exclusion criteria**

Patients under 40 years old.

Two cases previously managed with neurectomy.

3 patients with contraindications for general and local anesthesia.

**SURGICAL METHOD:**

Infraorbital neurectomy was performed by intraoral incision in the labgingival sulcus. The mental nerve was cut with a triangular gingival incision in the premolar area. The transoral approach of the inferior alveolar nerve was identified by an incision similar to the triangular incision for third molar surgery, but proceeded slightly along the anterior edge of the mandibular and nerve branch. The incision was about 1-1.5 cm below the parotid canal. The main crate was then detected and separated as much as possible. The nerve was also dissected previously and the terminal branches were identified. The nerve was cauterized.

**RESULTS:**

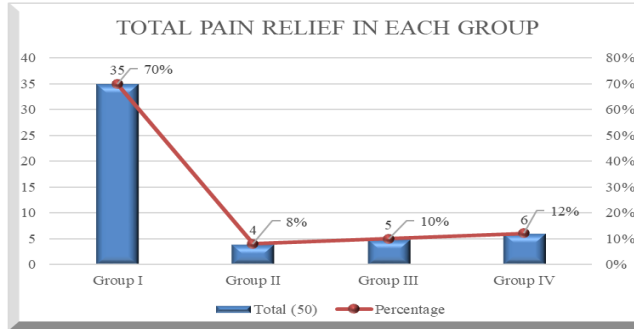
Treatment results were divided into four groups: Group 1 Excellent: Pain relief was labeled as total pain relief without need of carbamazepine cycle. Group 2 Good intentional pain; The drug is not required.

Group 3 Fair: mild to moderate pain but relieved with a modest amount of carbamazepine

Group 4: Elimination of bad pain, no significant relief even in treatment with carbamazepine  
50 patients were selected from 60 patients.

**Table 01: Duration of pain relief in each group**

Duration of pain relief	Group I	Group II	Group III	Group IV
< 01 Year	00	00	00	02
01 Year	00	00	00	02
02 Years	10	01	01	02
03 Years	11	01	02	00
04 to 05 Years	14	02	02	00
<b>Total (50)</b>	<b>35</b>	<b>04</b>	<b>05</b>	<b>06</b>
<b>Percentage</b>	<b>70%</b>	<b>08%</b>	<b>10%</b>	<b>12%</b>

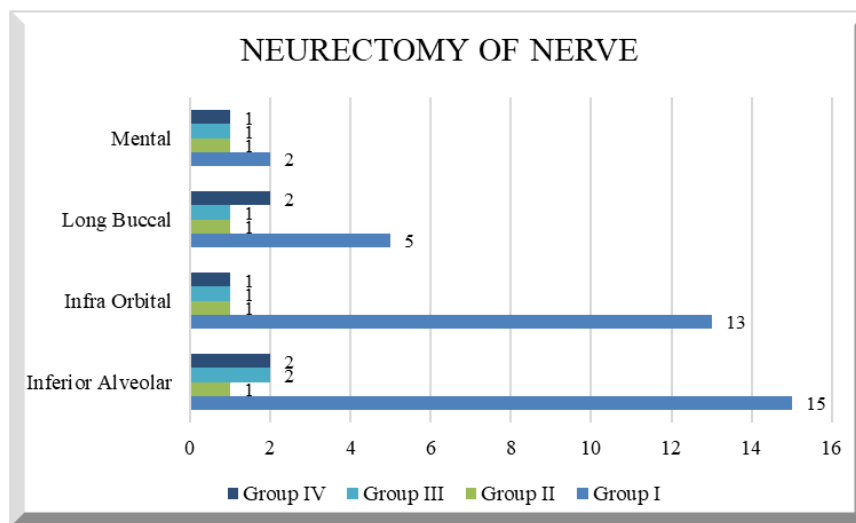


The remaining ten patients did not inform our department at different treatment stages and adequate follow-up was not completed. The mean age of the patients was 59.5 years. Twenty-eight were male and twenty-two: 1.3: 1 female. The neurotomy for many branches of the trigeminal nerve was: mental (n = 5); Lower alveolar (n = 20); Buccal length (n = 9); Infra-orbital (n = 16). In this study, cases of lingual, supraorbital and supra-trophic nerve neurectomy were not recorded. All neurectomies were performed as the primary procedure. As shown in Table 1, 35

(70%) patients had excellent pain relief for 2-5 years without medication. In 6 patients (12%), pain was observed in 0-2 years. drug control (in group IV). In these cases, second neurectomy was not performed in the same branch because conditions were not sufficient for the second operation and the patient evaluated neurosurgery better for MVD. However, two patients preferred MVD. The distribution of neural branch neurectomy in different groups is shown in Table 2.

Table 02: Distribution of neurectomy of nerve branch in each group

Neurectomy of nerve	Group I	Group II	Group III	Group IV	Total
Inferior Alveolar	15	01	02	02	20
Infra Orbital	13	01	01	01	16
Long Buccal	05	01	01	02	09
Mental	02	01	01	01	05
<b>Total</b>	<b>35</b>	<b>04</b>	<b>05</b>	<b>06</b>	<b>50</b>
<b>Percentage</b>	<b>70%</b>	<b>08%</b>	<b>10%</b>	<b>12%</b>	<b>100%</b>



**DISCUSSION:**

As the response to treatment is partially diagnosed, medical treatment is applied to all new patients. If the patient responds to medical treatment, the doctor can be sure that the correct diagnosis has been made. A new meta-analysis showed that anticonvulsants are effective in the treatment of trigeminal neuralgia. It has been discovered that carbamazepine is the drug of choice in the treatment of trigeminal neuralgia. Dosage based on efficacy and side effects can be administered clinically. When carbamazepine is not available, evidence-based alternative medical therapies are lamotrigine and bupropion. If a single drug is ineffective, a combination of two or more drugs can be used. In the treatment based on trigeminal neuralgia only lamotrigine-carbamazepine combination is prominent. Taking into account the evidence-based benefits of gabapentin in other neuropathies and postherpetic neuralgia, this relatively new drug may represent an improvement in treatment. A good understanding of the mechanism of action of these drugs will provide good pain control with minimal side effects. Some patients have hematological and biological chemical reactions. Surgical treatment of trigeminal neuralgia is associated with increased morbidity and mortality. However, the results of surgical treatments for trigeminal neuralgia have been reported to be as good as patients treated better by surgery. Most of the studies performed for neurectomy were published 20-50 years ago and Murali and Rovit have only one article in the literature. Quine reported a series of retrospective cases of 63 patients with 112 neurectomies. A follow-up period of 0 to 9 years was observed and pain relief was reported between 24 and 32 months. Grantham<sup>10</sup> also reported a case series of 55 patients with 55 neurectomies. A follow-up of 6 months to 8 years was observed and a mean pain relief of 33.2 months was achieved. Our experience with 50 neurectomies and pain relief from 2 to 5 years was observed in a follow-up period of 0 to 5 years. A recent study by Murali and Rovi has been reported in a series of patients 40 as a primary procedure and in a series of 28 cases as the second procedure for treating relapse of pain after radiofrequency thermocoagulation. The follow-up period was 2 to 10 years. 79% reported excellent pain relief (defined as total pain loss without medication) lasting for 5 years or more, and some had excellent pain relief until death. The mean age of the patients was between 72 and 50-94. Our observations are very close to this study. We found 70% of the patients who complained of excellent pain lasting 4-5 years. The mean age of our study was 59.5 (40-79). Despite the excellent results so far, if some of these patients live long enough they may experience recurrence of

pain.

**CONCLUSION:**

Trigeminal neuralgia is the most common neuralgia of facial pain. The first step is to make a correct diagnosis. Initial treatment should be low-dose carbamazepine with up-titration of the dose to alleviate pain. Surgery is recommended for patients who are resistant to pain, have a drug-side effect, or have sufficient side effects to demand discontinuation of the drug. 70% of the patients had excellent pain relief for 2 to 4 years or more without any medication. In 12% of patients, pain control occurred within 0-2 years and could not be controlled with medication. These patients were referred to a neurosurgeon for MVD. Peripheral neurectomy procedures appear to be associated with recurrence rate and loss of sensation along the trigeminal nerve branch.

**REFERENCES:**

1. Oyetola EO, Oluwadaisi AM, Adewale AA, Agho ET, Akinniyi TA, Owotade FJ. PATTERNS OF PRESENTATION OF TRIGEMINAL NEURALGIA IN PATIENTS ATTENDING THE ORAL MEDICINE CLINIC IN A NIGERIAN TERTIARY HOSPITAL. *African Journal of Oral and Maxillofacial Pathology and Medicine*. 2018 Jul 18;4(1):40-5.
2. Politis, Constantinus, Maria Piagkou, Ivo Lambrichts, and Jimoh Olubanwo Agbaje. "Wide Intraoral Surgical Access to the Inferior Alveolar Nerve During Cryotherapy at the Infratemporal Fossa: Technical Modification." *Journal of Oral and Maxillofacial Surgery* (2018).
3. Jiang, S.W., Lin, Y.W. and Hsieh, C.L., 2018. Electroacupuncture at Hua Tuo Jia Ji Acupoints Reduced Neuropathic Pain and Increased GABAA Receptors in Rat Spinal Cord. *Evidence-Based Complementary and Alternative Medicine*, 2018.
4. Liu, Jing, Ying-Ying Xu, Qi-Lin Zhang, and Wei-Feng Luo. "Efficacy and Safety of Botulinum Toxin Type A in Treating Patients of Advanced Age with Idiopathic Trigeminal Neuralgia." *Pain Research and Management* 2018 (2018).
5. Malesy, Martijn JA, Ralph de Boer, Ildefonso Muñoz Romero, Job LA Eekhof, Erik W. van Zwet, Michel Kliot, Albert Dahan, and Willem Pondaag. "Predictive value of a diagnostic block in focal nerve injury with neuropathic pain when surgery is considered." *PLoS one* 13, no. 9 (2018): e0203345.
6. Rizk, Marwan S., Samar S. Bahjah, and Chakib

- M. Ayoub. "Improving Pain Management in Maxillofacial Cosmetic Surgical Procedures." In *Complications in Maxillofacial Cosmetic Surgery*, pp. 47-58. Springer, Cham, 2018.
7. Bittman, Ross W., Gail L. Peters, Janice M. Newsome, Eric B. Friedberg, Jason W. Mitchell, Jacquelyn M. Knight, and J. David Prologo. "Percutaneous image-guided cryoneurolysis." *American Journal of Roentgenology* 210, no. 2 (2018): 454-465.
  8. Sahoo, Rajendra Kumar, Muralidhar Joshi, Sachin Dileep Joshi, and Umamaheshwara Rao. "Treatment of bilateral refractory saphenous nerve entrapment neuropathy with pulsed radiofrequency." *Anaesthesia, Pain & Intensive Care* 22, no. 1 (2018).
  9. Abd-Elseyed, A., Kreuger, L., Wheeler, S., Robillard, J., Seeger, S. and Dulli, D., 2018. Radiofrequency Ablation of Pericranial Nerves for Treating Headache Conditions: A Promising Option for Patients. *Ochsner Journal*, 18(1), pp.59-62.
  10. Chhabra, Avneesh, Gitanjali Bajaj, Vibhor Wadhwa, Rehan S. Quadri, Jonathan White, Larry L. Myers, Bardia Amirlak, and John R. Zuniga. "MR neurographic evaluation of facial and neck pain: normal and abnormal craniospinal nerves below the skull base." *RadioGraphics* 38, no. 5 (2018): 1498-1513.
  11. Amirlak, Bardia, Michael H. Chung, Ronnie A. Pezeshk, and Kyle Sanniec. "Accessory Nerves of the Forehead: A Newly Discovered Frontotemporal Neurovascular Bundle and Its Implications in the Treatment of Migraine Headache, Migraine Surgery, and Cosmetic Temple Filler Injection." *Plastic and reconstructive surgery* 141, no. 5 (2018): 1252-1259.
  12. Chen, B.S., Roberts, D.S. and Lekovic, G.P., 2018. Vestibular Neurectomy for Intractable Vertigo: Case Series and Evaluation of Role of Endoscopic Assistance in Retrolabyrinthine Craniotomy. *Journal of Neurological Surgery Part B: Skull Base*.
  13. Rajkohila, J., Priyanka Daniel, Sakunthala Ambikaipakan, and Suganthi Rabi. "Morphological and morphometric analysis of accessory mental foramen in dry human mandibles of south indian population." *Indian Journal of Dental Research* 29, no. 1 (2018): 56.
  14. Yuvaraj, V., Krishnan, B., Therese, B.A. and Balaji, T.S., Efficacy of Neurectomy of Peripheral Branches of the Trigeminal Nerve in Trigeminal Neuralgia: A Critical Review of the Literature. *Journal of Maxillofacial and Oral Surgery*, pp.1-8.
  15. Palejwala, Sheri K., Fan Zhao, Kayla C. Lanker, Walavan Sivakumar, Yuki Takasumi, Chester F. Griffiths, Garni Barkhoudarian, and Daniel F. Kelly. "Imaging-Ambiguous Lesions of Meckel's Cave—Utility of Endoscopic Endonasal Transpterygoid Biopsy." *World neurosurgery* 118 (2018): e346-e355.