



INTRAORAL PERIPHERAL NEURECTOMY AS A TREATMENT OPTION FOR INFRAORBITAL NEURALGIA - A LESS INVASIVE TECHNIQUE

Dental Science

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ABSTRACT

Trigeminal neuralgia, otherwise called as 'tic douloureux' or 'Fothergill disease', is a clinical disorder recognized by brief paroxysms of unilateral lancinating facial agony. Different non-surgical and surgical treatment modalities are accessible in literature; however, most of the authors state that the management of trigeminal neuralgia should begin gradually from pharmacological treatment to very invasive. Thus, we are discussing a case of refractive infraorbital neuralgia treated with intraoral peripheral neurectomy. According to our experience, neurectomy of the peripheral branches of the trigeminal nerve is the least complex, safest and minimally invasive surgical method.

KEYWORDS

Trigeminal Neuralgia, Peripheral Neurectomy, Infraorbital Neuralgia, Trigeminal Nerve

INTRODUCTION:

Trigeminal nerve is the largest of all the cranial nerves. It transmits tactile sensation to the face, oral and nasal cavities and vast majority of the scalp and conveys motor supply to the muscles of mastication. Disease involving the nerve can cause trigeminal neuralgia or loss of sensory or motor function in the distribution of the nerve. John Fothergill gave the principal full and precise description of trigeminal neuralgia in 1773, likewise called as Fothergill's disease.¹ It can cause intense pain along its distribution; neuropathy can affect the nerve from its inception in brain stem to its peripheral branches.

Carbamazepine is the main line treatment. On the off chance that there is decline in adequacy or tolerability of medication, surgery should be thought of.^{2,3} Factors, for example, pain relief, recurrence rates, morbidity and mortality rates ought to be considered while thinking about which treatment modality to utilize.

Peripheral neurectomy is the surgery where one segment from the extracranial part of a nerve is excised so as to interfere with the conductivity of the agonizing sensation from the territory innervated by that nerve. It was first presented as a treatment in 1748 by Schlichting.⁴ This procedure can be done in outpatient setting under local anesthesia. Peripheral neurectomy is a safe and effective procedure for elderly patients and in rural and remote centers where neurosurgical facilities are not available.

CASE REPORT

The branch of nerve involved was identified and diagnosis was confirmed by giving infraorbital nerve block with 2% Lignocaine with Adrenaline 1:80,000.



Fig. 1: Exposed infraorbital nerve and vessels



Fig. 2: Avulsed nerve fibers



Fig. 3: Infraorbital foramen plugged with stainless steel screw

Surgical Procedure:

The surgical procedure was started under antibiotic coverage and under all aseptic precautions. A semilunar incision was made like in Caldwell-Luc surgery in the maxillary left vestibule extending from 23 to 26. Full thickness mucoperiosteal flap reflected superiorly with the help of Langenbeck retractor. Infraorbital foramen and vessels and nerve passing through it was identified (Fig. 1). The nerve was exposed and all the peripheral branches were held with hemostat and avulsed from the skin surface (Fig. 2). Then, the entire trunk is separated from the skin surface, is held with the hemostat at the exit point from the foramen and is removed by winding it around a hemostat and pulling it out from the foramen. Vessels were ligated using absorbable suture material. The infraorbital foramen was plugged with 2*4 mm stainless steel screw to prevent regeneration of the nerve (Fig. 3). The wound was closed with interrupted sutures. Antibiotics and anti-inflammatory therapy was prescribed post operatively after surgical procedure.

DISCUSSION:

Usually the treatment of trigeminal neuralgia is started with a traditionalist methodology including Carbamazepine; yet daily dose has to continue as the years pass with no relief. When conservative modality neglects to provide relief, then surgical treatments are advised to relieve the excruciating neuralgic pain. Various surgeries are referenced for trigeminal neuralgia.⁵

Currently available surgical options are:

(1) Non-invasive technique:

- (a) peripheral neurectomy,
- (b) Alcohol injections,
- (c) Cryotherapy,
- (d) Selective radio frequency thermocoagulation

(2) Invasive technique:

- (i) Open: microvascular decompression,
- (ii) Percutaneous:
 - (a) radiofrequency rhizotomy,
 - (b) Retrogasserian glycerol rhizotomy,
 - (c) Balloon compression of trigeminal nerve,
 - (d) Stereotactic radiosurgery—Gamma knife.

The typical time of alleviation created by peripheral neurectomy ranges from 6 months to 2 years, albeit some more extended periods have additionally been accounted for. There are no significant complications of these procedures other than some facial swelling and bruising in the early postoperative period.⁶

Surveys on neurectomies and obturation of foramen with fat,⁷ titanium screws,⁸ gold foils,⁴ silicone⁹ are being published in oral and maxillofacial surgery literature since 60 years. Sung was perhaps one of the earliest authors who reported placing gold foil to obturate the foramina.⁴ Consequently, by forestalling the nerve recovery, the odds of recurrence regarding timeframe is decreased. A comparative report,

done by Mason¹⁰ in (1972), made a success rate of 64% toward the end of a year and 26% toward the end of fourth year. In a subgroup of 11 patients who underwent infra-orbital neurectomy, followed by occlusion of the canal, ⁷ patients were pain-free at the end of 4th yr. Hong-Sai¹¹, in (1999), revealed a case series of 12 patients with peripheral neurectomies, of which in 4 cases, the infraorbital foramen and mental foramen were obturated with titanium screws with no incidence of recurrence in 4 years.

CONCLUSION:

Peripheral neurectomy is one of the oldest, minimal invasive forms of surgery, well tolerated by the patient and can be done under local anesthesia. This can be performed in patients, mainly indicated in patients with extremes of age, debility or significant systemic diseases with limited life expectancy. This procedure is more cost effective and easily affordable by patients. Loss of sensation along the branch of the trigeminal nerve is one of the disadvantages. Peripheral neurectomy is an acceptable surgical procedure which is more expeditious, economical and less morbid.

REFERENCES:

1. Fothergill, J. (1776). *Of a painful affection of the face*.
2. McQuay, H., Carroll, D., Jadad, A. R., Wiffen, P., & Moore, A. (1995). Anticonvulsant drugs for management of pain: a systematic review. *Bmj*, 311(7012), 1047-1052.
3. Fields, H. L. (1996). Treatment of trigeminal neuralgia.
4. Sung, R. R. (1951). Peripheral neurectomy as treatment for incipient trigeminal neuralgia. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*, 4(3), 296-302.
5. Cerovic, R., Juretic, M., & Gobic, M. B. (2009). Neurectomy of the trigeminal nerve branches: clinical evaluation of an "obsolete" treatment. *Journal of Cranio-Maxillofacial Surgery*, 37(7), 388-391.
6. Syed Amjad, S., Adnan, K., Faisal Ali, S., & Zahid, K. (2008). <The> role of peripheral neurectomies in the treatment of trigeminal neuralgia in modern practice. *Pakistan Oral and Dental Journal*, 28(2), 237-240.
7. Freemont, A. J., & Millac, P. A. U. L. (1981). The place of peripheral neurectomy in the management of trigeminal neuralgia. *Postgraduate medical journal*, 57(664), 75-76.
8. Mason, D. A. (1972). Peripheral neurectomy in the treatment of trigeminal neuralgia of the second and third divisions. *Journal of oral surgery (American Dental Association: 1965)*, 30(2), 113-120.
9. Cogan, M. I. C. (1968). Evaluation of silicone rubber in preventing inferior alveolar nerve regeneration. *Journal of Oral Surgery*, 26(2), 99-+.
10. Yang, J., Simonson, T. M., Ruprecht, A., Meng, D., Vincent, S. D., & Yuh, W. T. (1996). Magnetic resonance imaging used to assess patients with trigeminal neuralgia. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, 81(3), 343-350.
11. Hong Sai, L. (1999). Surgical treatment of trigeminal neuralgia. *Journal of oral rehabilitation*, 26(7), 613-617.