Peripheral Neurectomy of Infraorbital Nerve - A Treatment Option for Trigeminal Neuralgia: A Case Report

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Trigeminal neuralgia or tic douloureux is a commonly diagnosed facial pain syndrome with a female predominance and with peak occurrence in the age group of above 50 years. Treatment options range from conservative pharmacologic therapy to invasive surgical procedures. The mode of treatment is based on patient’s systemic health, compliance and severity of the disease. Peripheral neurectomy is the safest and simplest method that can be accomplished under local anesthesia with minimum risks and excellent pain relief to the patient. However, there are incidences where this mode of treatment also fails to manage the disease, and further surgical options must be considered. In this case report, we present a case of a 50-year-old female patient who has undergone peripheral neurectomy of infraorbital nerve.

Keywords: Infraorbital nerve, Local anaesthesia, Peripheral neurectomy, Trigeminal neuralgia

INTRODUCTION

Trigeminal neuralgia is a debilitating syndrome characterized by unilateral short bursts of lancinating pain in one or more branches of the trigeminal nerve. The first detailed account of trigeminal neuralgia was given by John Fothergill in 1773. According to ICHD II criteria, it is defined as “a unilateral disorder characterized by brief electric shock-like pain, abrupt in onset and termination, limited to the distribution of one or more divisions of trigeminal nerve, pain is commonly evoked by trivial stimuli including washing, shaving, and smoking, talking or brushing the teeth (trigger factors) and frequently occurs spontaneously.” The second and third divisions of the trigeminal nerve are commonly involved with more predilection toward right side.

The etiology of trigeminal neuralgia is still a controversy. Some authors consider it as an idiopathic form while space occupying lesions within the posterior cranial fossa is also regarded as one of the causes. Most widely accepted etiology is considered to be a neurovascular conflict in which an artery, most often a loop of the superior or antero-inferior cerebellar artery, has an offending contact with the trigeminal nerve root, which results in localized demyelination and ectopic triggering of neuronal discharge.

As such there are no diagnostic tests to diagnose trigeminal neuralgia, the diagnosis depends on the clinician’s ability to recognize the distinct signs and symptoms associated with this disorder.

Treatment of trigeminal neuralgia is both through medical therapy and surgical intervention. Among the surgical procedures, neurectomy is the oldest modality of intervention. This case report presents a case of trigeminal neuralgia involving second division of the trigeminal nerve and the patient was treated by peripheral neurectomy of infraorbital nerve.

Review of Literature

• Shah et al. evaluated the role of peripheral neurectomies in the treatment of trigeminal neuralgia in modern practice by analyzing 50 patients. They reported that 70% of the patients had excellent pain relief for a period of 2-5 years and concluded that peripheral neurectomy may be done in the elderly and micro vascular
decompression should be preferred for younger patients unless there is a specific reason for neurectomy

- Grantham and Segerberg, in their study involving 55 patients who underwent neurectomy reported a pain relief of 0-5 years
- Quinn reported a retrospective case series of 63 patients with 112 neurectomies. A follow-up period of 0-9 years was noted, and the pain relief period of 24-32 months was reported
- Murali and Rovit reported on a case series of 40 patients, 12 with neurectomies performed as the primary procedure, and 28 as a second procedure to treat pain recurrence after radiofrequency thermo coagulation. The follow-up period was 2-10 years. It was reported that 79% had excellent pain relief lasting 5-years or more, and some had excellent pain relief until their deaths reported.

**CASE REPORT**

A 50-year-old female patient came to the Department of Oral and Maxillofacial Surgery with a chief complaint of acute bouts of pain on right side of face, which is lancinating and electric shock type lasting for few minutes, triggered on washing face, talking and eating food since 1½ year.

A detailed history was taken and comprehensive trigeminal nerve examination and cranial nerves examination was carried out. Patient gave the history of being operated for a cataract operation in both the eyes 2 years back and her intra and post-operative periods were uneventful.

Intra-oral examination revealed generalized periodontitis and missing teeth 12, 13, 14, 15, 16, 22, 25 and 27 with poor oral hygiene. After thorough examination, trigger zones were identified at naso labial fold, maxillary anterior teeth. Diagnostic block in infraorbital nerve region with 2% lignocaine with 1:80,000 adrenaline was given, which has relieved the symptoms for 90 min. There was recurrence of the symptoms on touching the trigger zones when once the anesthetic effect wore off. This confirmed the involvement of infraorbital nerve and was suggestive of trigeminal neuralgia involving infraorbital nerve.

All the hematological parameters were within normal limits. The peripheral neurectomy was planned under local anesthesia. Intra oral vestibular incision was given from 13 to 16 region, mucoperiosteal flap was raised to expose the infraorbital foramen and all the three branches of infraorbital nerve inferior palpebral, lateral nasal and supra labial were identified (Figure 1).

The nerve was carefully separated from surrounding tissues and held with an artery forceps, the nerve was avulsed by winding around the artery forceps (Figures 2 and 3) The remaining nerve remnants were cauterized deeply into the infraorbital foramen using cautery (Figures 4 and 5). The infraorbital foramen was occluded using bone wax (Figure 6). Wound closure was done in two layers using 3-0 vicryl (Figure 7).
Post-operative Care

The patient was explained about the paraesthesia that will develop following this procedure. The patient was prescribed amoxicillin 500 mg 8th h and diclofenac sodium 50 mg thrice daily. Recall was scheduled on 3rd day post-operatively, and follow-up for every week initially and then after every 1 month. The patient is symptom free from the time of surgery, and it has been 7 months without any recurrence of the disease and she is not on any medication.

DISCUSSION

Trigeminal neuralgia is a well-recognized disorder characterized by lancinating attacks of severe facial pain.

Trigeminal neuralgia is the most frequently diagnosed form of neuralgia with mean incidence of 4 per 100,000 populations and mean age of 50 years at the time of examination. There is a female predominance ranging from 1:2 to 2:3. It is usually unilateral affecting the maxillary (35%), mandibular (30%), both (20%), opthalmic and maxillary (10%) and opthalmic (4%) branches and all branches of the trigeminal nerve (1%). The diagnosis of trigeminal neuralgia is based primarily on a history of characteristic pain attacks that are consistent with specific, widely accepted research and clinical criteria for the diagnosis. Sweet’s criteria to diagnose trigeminal neuralgia are:
1. The pain is paroxysmal
2. The pain may be provoked by light touch to the face (trigger zone)
3. The pain is confined to trigeminal distribution
4. The pain is unilateral
5. The clinical sensory examination is normal.

The disorders which may be considered under differential diagnosis bursts of headaches, dental pain, giant cell arteritis, glossopharyngeal nerve neuralgia, intracranial tumor, migraine, multiple sclerosis, otitis media, paroxysmal hemicrania, post herpetic neuralgia, sinusitis, short-lasting, unilateral, neuralgiform pain
with conjunctival injection and tearing headache, and temporomandibular joint syndrome. Treatment options include pharmacologic, and surgical modes of treatment. Pharmacotherapy of trigeminal neuralgia includes the following drugs carbamazepine, oxcarbazepine, lamotrigine, gabapentin, topiramate and combination of one or more drugs. Interventional procedures such as microvascular decompression, radiofrequency gangliolysis, glycerol gangliolysis, balloon decompression, stereotactic radiosurgery, peripheral neurectomy, cryotherapy, alcohol block, local laser irradiation and laser puncture, electroacupuncture.

Several factors determine the mode of treatment which includes the patient’s age, life expectancy, associated medical and psychiatric conditions, compliance with medical therapy and tolerability of adverse effects of drugs, liver functioning, general economic status. Invasive procedures (peripheral neurectomy, radiofrequency thermo coagulation at gasserian ganglion, retrogasserian rhizotomy, medullary tractotomy, midbrain tractotomy and intracranial nerve decompression are indicated in patients who are unable to obtain relief from pharmacologic treatment. Peripheral neurectomy is the oldest and simplest method of treatment of trigeminal neuralgia. Few of the advantages of this procedure include ease of performing surgery and well tolerance by elderly and debilitated patients.

CONCLUSION

The treatment option for trigeminal neuralgia should be selected on individual merits. Peripheral neurectomy is indicated in elderly patients and those patients who are not indicated for invasive surgical procedures.

REFERENCES


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