



## Trigeminal Neuralgia: Case Report and Treatment Modalities

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### Abstract

The International Association for the Study of Pain (IASP) definition of trigeminal neuralgia (TN) is “sudden usually unilateral severe brief stabbing recurrent pains in the distribution of one or more branches of the fifth cranial nerve” [1]. Nicolaus Andre had used the term ‘tic douloureux’ [2].

It is a well-recognized disorder that most commonly occurs in people over 50 years of age and slightly more commonly in women than in men.

It is a very peculiar disease. The pain is paralytic and very severe. It can be triggered by a light cutaneous stimulus on a very localized spot on the face (the so called “trigger zone”) [3].

**Keywords:** Trigeminal Neuralgia; Pain

### Epidemiology

Few data are available. Incidence rate of TN is about 3 to 5 cases/year/100.000 persons [4,5]. Prevalence has been estimated at 107.5 men and 200.2 women/1 million population [6]. Risk factors have been investigated: multiple sclerosis is well known but additional risk factors are not confirmed [7].

### Etiology

Trigeminal neuralgia is an idiopathic disorder, but several theories of neuropathological processes attempt to explain the symptoms. One theory is compression of the trigeminal root adjacent to the pons, causing demyelination of the nerve root. This may be caused by tortuous blood vessels in the posterior fossa, tumors or arteriovenous malformations. However, these structural lesions are not found in all patients with TN. Other theories suggest that TN is a symptom of a central nerve disease or a disease of the trigeminal vascular system involving dysfunctional interplay between a trigeminal sensory plexus and blood vessels located in the pia and durometer [8].

### Clinical features

- Clinical features of pain in TN are [9]
- Character- Shooting, stabbing, sharp, electric
- Site/radiation- Trigeminal distribution only, intraoral and extraoral,
- Severity- Moderate to severe
- Duration- 1-60 seconds refractory period
- Periodicity- Rapid onset and termination, complete periods of remission weeks to months
- Provoking factors- Light touch, washing the face, brushing teeth, shaving, applying make-up, going out in cold wind, vibrations from walking
- Relieving factors- Keeping still, drugs
- Associated factors- Local anaesthesia placed in trigger area relieves pain, severe depression and weight loss (Table 1).

Condition	Location of pain	Duration of pain or attack	Shooting pain or symptoms
Cluster head ache	Retrobulbar, cheek, chin	20 min-hours	Only superimposed on deep dull pain
SUNCT*	Forehead, retrobulbar	5 seconds to several minutes	Yes
CPH**	Forehead, retrobulbar	2 - 45 minutes	No
Cracked tooth syndrome	Upper jaw, lower jaw,	Seconds	Yes
Jabs and jolts syndrome	anywhere in head	Seconds	Yes
Post-herpetic neuralgia	Forehead, eye, check (rarely)	Continuous	Superimposed background pain
Giant cell arteritis	Forehead, neck, temple	Continuous	None

**Table 1:** \*SUNCT- Short-lasting unilateral neuralgiform headache with conjunctival injection and tearing.

\*\*CPH-Chronic paroxysmal hemicranias.

## Differential diagnosis [2]

### Investigations

Patient history is the most useful tool for diagnosing classical TN. However, recent advances in neuroimaging have improved the ability to diagnose symptomatic TN [9].

### Treatment options

As in other fields of medicine, a mechanism based treatment should be favoured. The neurosurgeon provides pain relief by alleviating an “offending contact” with the nerve.

History of TN is however characterized by many symptom-based treatments: peripheral nerve section or neurolytic blocs (alcohol), a variety of physical agents have been used to provoke a (hopefully) minimal damage to the trigeminal ganglion or root and surgical rhizotomy has also been proposed [10].

### Medical treatment

Carbamazepine (CBZ) remains the drug of first choice. Treatment begins with 100 to 200 mg two or three times daily. Doses should be increased very progressively and titrated to the severity of the patient’s pain. Serum level is a useful way of monitoring treatment (6 to 12.5µg/ml). In some cases a maintenance dosage of 200 mg or 400 mg per day is sufficient to keep the patient pain-free. With appropriate adjustments of dosage, pain can be controlled initially in about 75% of patients [11].

If paroxysms of pain still occur with therapeutic blood levels, another drug should be added: baclofen or phenytoin. Other drugs, including sodium valproate, gabapentin, lamotrigine and clonazepam, have been tried but formal conclusive studies are still lacking [11].

### Surgical treatment

If a patient does not obtain relief from pain with medical treatment, some form of surgery will be proposed. It is estimated that up to 50% of the patients will sooner or later be in that situation [12]. Historically, many operations have been proposed, more or less invasive. Among invasive procedures, we find operations aimed at lesioning nerve fibers or ganglion cells (peripheral nerve section, ganglionectomy, rhizotomy), and a non-destructive operation aimed at relieving the nerve root from an offending contact (“decompression”). In order to reduce the risk, percutaneous approaches have been developed, using chemical or physical agents to impair transmission of impulses in the trigeminal pathway while avoiding major loss of function. Among these percutaneous procedures we find differential thermal rhizotomy, glycerol rhizotomy and compression of Gasser ganglion by a balloon (so-called “microcompression”) [11].

## Case Report

A 51 year old female patient (Figure 1) reported to the department with the chief complaint of pain in respect to upper left part of face since last two and a half months.



**Figure 1**

Patient gave the history of severe and excruciating paroxysmal episodes of pain, multiple episodes per day. Duration of each episode was around two and a half minutes approximately. Pain radiated to the head (parietal region of the same side). Pain aggravated on washing face or in contact of clothes or when exposed to cold breeze. No relevant medical history was revealed.

Patient gave the dental history of extraction in relation to the upper arch 35 years back and was wearing a denture since then.

Local examination revealed non tender lymph nodes and TMJ also showed neither clicking nor deviation.

Extraoral examination did not reveal any significant findings.

Intraoral examination revealed missing teeth in relation to both upper and lower arch (Figure 2 and 3).



**Figure 2**



**Figure 3**

On the basis of history and clinical findings, the provisional diagnosis made was Trigeminal neuralgia.

### Investigations advised

Patient was having her own Panoramic radiograph (Figure 4), advised earlier by a clinician which showed no evidence of any bony pathology.



**Figure 4**

A consultation was taken with the department of Neurosurgery.

### Treatment advised was

- Tab. Tegrectol (200 mg) 1-1-1 x 3 days
- Cap. Omez (20 mg) 0-1-0 x 3 days
- Patient was recalled after 3 days for follow up.
- On follow up after 3 days, patient reported that pain was reduced and symptoms were relieved after taking medication.
- Patient got relief while taking medication for 4 - 5 months and then pain started again after some time.
- Peripheral neurectomy was done in relation to infraorbital nerve.

### Discussion

Trigeminal neuralgia is a clinical diagnosis. The key feature is a sudden and severe lancinating pain, which usually lasts from a few seconds to two minutes, within the trigeminal nerve distribution, typically the maxillary or mandibular branches. The pain is often evoked by trivial stimulation of appropriately named "trigger zones".

### Conclusion

Trigeminal neuralgia is the most common neurologic cause of facial pain. The first step is to make the correct diagnosis. Initial therapy should be low-dose carbamazepine, with upward titration of the dose to relief of pain.

Baclofen is a good choice for second-line therapy. Most patients will respond to anticonvulsant therapy, but its effectiveness decreases with time.

Newer medications have shown promise, but none has been shown to be more effective than carbamazepine and need not be

used for first line therapy. Effective surgical options are available for cases that do not respond to medical treatment.

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