

## The Signs and Causes of Trigeminal Neuralgia

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### Abstract:

**Aim:** The aim of this review is to analysis the chronic pain condition that affect Trigeminal Nerve.

**Objective:** The objective of this will be to study the chronic facial pain which usually Immediate obvious to a person.

**Background:** Trigeminal Neuralgia, a neuropathic disorder of the trigeminal nerves, occurs most often in people over age 50. It has been described as among the most Painful conditions to human kind. The basic symptoms and causes will be reviewed The extreme, sporadic, sudden burning or shock like face pain in common activities greatly lowers quality of life. The precise cause of primary Trigeminal Neuralgia remains unknown, but it may be caused by vascular pressing on trigeminal nerves in its root entry zone (REZ), demyelination of trigeminal sensory fibres, or jawbone cavity

**Reason:** this topic because was chosen because i found it gives a killing pain to the patients and I would like to learn more about it.

**Keyword:** Trigeminal Neuralgia, Trigeminal nerve, neuralgia review.

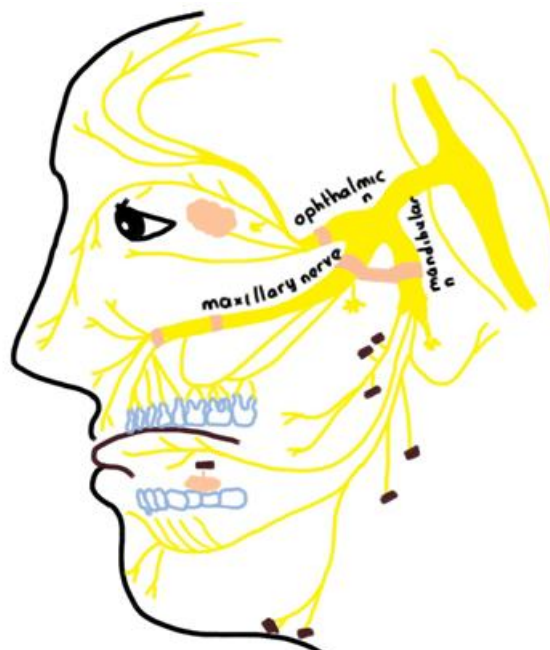
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### I. Introduction

According to definition provided by Wikipedia, pain is an unpleasant feeling often caused by intense or damaging stimuli<sup>1</sup> The International Association for the study of pain's widely used definition States : pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. The traits of pain associated with its location, type of malfunction of the particular region, and stage of the disease.<sup>2</sup>

Trigeminal neuralgia is a chronic pain condition in that affects the trigeminal nerve, which carries sensation from your face to your brain. If you have trigeminal neuralgia even mild stimulation of your face, such as brushing your teeth or putting on make up, may trigger a jolt of extreme pain.

### Trigeminal Nerve



This sensation or pain is related to the trigeminal nerve. It is the fifth cranial nerve, or simply known as CN V is a nerve and responsible for sensation in the face and motor functions such as butting and chewing. The largest of the cranial nerves, its name derives from the fact that each trigeminal nerve has three major branches, the ophthalmic nerve (v1), the maxillary nerve (v2), and the mandibular nerve(v3). The ophthalmic and maxillary nerves are purely sensory and the Mandibular nerve has sensory and motor functions<sup>3</sup>. The motor division of the trigeminal nerve derives from the basal plate of embryonic pons, and the sensory division originates in the cranial neural crest. The three major branches of trigeminal nerve meet on the trigeminal ganglion which is also called as semilunar ganglion or Gasserian ganglion. It is located within the Meckel's cave and containing the cell bodies of incoming sensory-nerve fibres.

The ophthalmic nerve(v1) which leaves the skull through superior orbital fissure, which gives sensory information from the scalp and forehead, the upper eyelid, the conjunctive and cornea of the eye, the nose, the nasal mucosa, the frontal sinuses and parts of the meninges; the dura and blood vessels.

The maxillary nerve (v2) carries sensory information from the lower eyelid and cheek, the nose and upper lip, the upper teeth and gums, the nasal mucosa, the palate and roof of pharynx, the maxillary, ethmoid and sphenoid sinuses and parts of meninges.

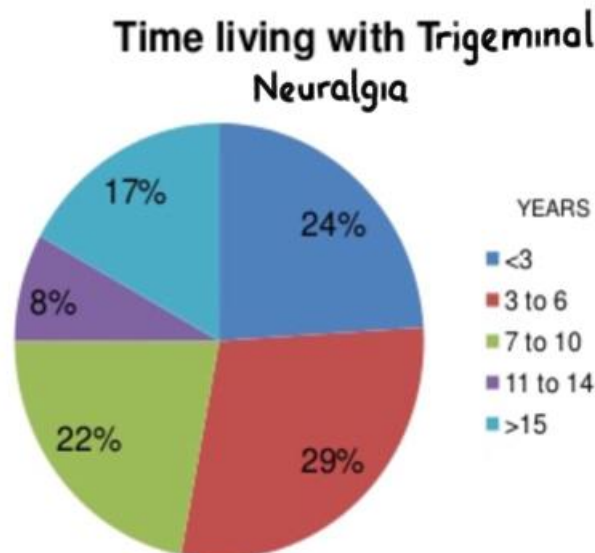
The mandibular nerve (v3) carries the information from the lower lip, the lower teeth and gums, the chin and jaw; except the angle of the jaw which is supplied by c2-c3, parts of external ear and part of meninges<sup>4</sup>. It also carries touch – position and pain- temperature sensation from the mouth excluding taste sensation. One of its branches, the lingual nerve carries this sensation from tongue

The trigeminal neuralgia affects women more often than men, and it's more likely to occur in people who are older than 50. The trigeminal neuralgia can be either primary trigeminal neuralgia or secondary trigeminal neuralgia, which is associated with some other diseases, with symptoms such as extreme sporadic sudden burning or shock-like face pain triggered by common activities such as eating, talking, shaving and tooth brushing. Although trigeminal neuralgia is not a fatal disorder, it can greatly worsen patient quality of life.

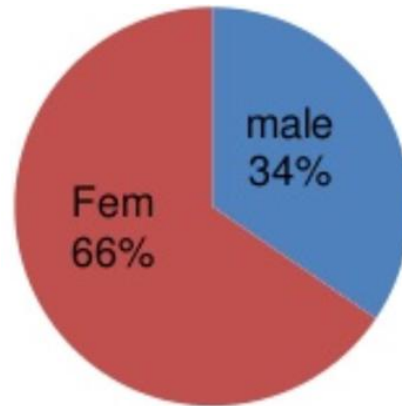
#### Trigeminal neuralgia natural course

- Pharmacological phase- less than 6 yearly
- Non- Pharmacological phase – more than 6 years
- Recurrence
- Sequelae

Time living with trigeminal neuralgia



Based on an analysis conducted in Mexico during July 2010 to June 2013 it is found that: Of 257 patients 66% of them are females while the rest are males.



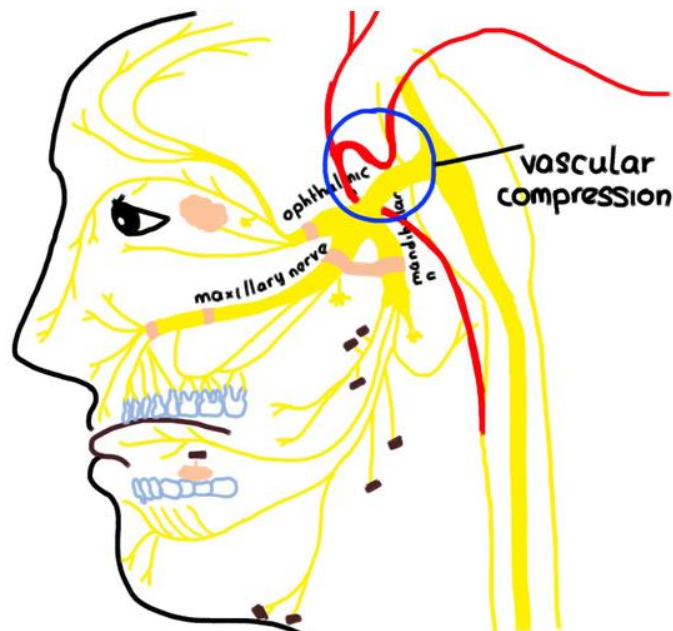
### Signs And Symptoms

This condition is characterised by sudden, severe, electric shock – like, or stabbing pain that lasts several seconds or sometimes for a few minutes. The pain is largely on the face but may be localised around the lips, eyes, nose, scalp, and forehead. It can also cause a person’s voice to become hoarse. usually the pain is brought on while performing simple functions like, while brushing one’s teeth, putting on make up, touching the face, swallowing, or even talking. Studies have shown even a slight breeze can aggregate the condition<sup>5</sup>.

**Causes:** The American association of Neurological Surgeons(AANS) says that multiple sclerosis usually the cause of trigeminal neuralgia in teenagers<sup>6</sup>. Trigeminal neuralgia occurs more often in women than man, which is also the case with multiple sclerosis.

It is hard to diagnose trigeminal neuralgia which occur concurrently with multiple sclerosis<sup>7</sup>.

This multiple sclerosis causes damage to the myelin, the protective coating around nerve cells. Trigeminal neuralgia may be caused by myelin deterioration or the formation of lesions around the trigeminal nerve<sup>8</sup>. In addition to multiple sclerosis, trigeminal neuralgia may be caused by demyelination of trigeminal sensory fibres mostly owing to an arterial neurovascular compression on the root entry zone (REZ) of the trigeminal nerve. Veins, on the other hand, can be regarded as the only offending vessels in up to 13% of the patients. Although vein compression is usually accepted in trigeminal neuralgia’s pathogenesis, either alone or in combination to arterial compression, developmental venous anomalies(DVA) causing trigeminal neuralgia<sup>9</sup>.



Stems from injury to a branch of trigeminal nerve, such as the result of a fall, a car accident or being hit by an object also can cause trigeminal neuralgia. The nerve can also be damaged during oral surgery, tooth removal, root canal filling or a dental implant. It can cause numbness instead of pain but can also be a burning pain. The condition is difficult to treat.

Rigeminalneuralgia can also be caused by dental pains. Dental pain can vary from very sharp and severe to dull and throbbing or aching. It can be difficult to locate a particular tooth. This pain is often related to eating and drinking hot, cold or sweet things. It can be made worse when eating or when there is pressure on the teeth. X-Rays may be needed to locate the cause.<sup>10</sup>

Trigeminal neuralgia is rather rare as presenting symptoms with intracranial tumours. Dermoid tumours comprise 1% of all intracranial tumours. The majority of dermoid tumours are located at the pontocerebellar angle, the third ventricle, and the suprasellar region.

Symptomatology is not different from other tumours located at some sites. Trigeminal neuralgia may be caused by tumour compressing the nerve itself, an inflammatory response to the dermoid tumour vs vascular compression of the nerve. This incidence is not influenced by age, sex, or size of tumour<sup>11</sup>.

On the other hand, infratentorial arteriovenous malformations (AVM) associated with the trigeminal root entry zone is also a cause of secondary trigeminal neuralgia. The treatment planning of both trigeminal neuralgia and AVM can be difficult, especially if the AVM is embedded within the trigeminal nerve.

The trigeminal neuralgia can also be caused by intracranial tumours. The tumours present in the middle fossa may cause trigeminal neuralgia, but it usually causes severe pain of atypical nature and a progressive neurological deficit. But, the posterior fossa tumours are more likely to cause trigeminal neuralgia<sup>12</sup>.

## II. Summary

Trigeminal neuralgia is a chronic pain condition that affects the trigeminal nerve, fifth cranial nerve. Even a mild stimulation of the face may trigger a jolt of extreme pain in trigeminal neuralgia. The pain can be felt largely on the face but may be localised around the lips, eyes, nose, scalp and forehead. It can also damage a person's voice. It is mainly caused by vascular compression other than multiple sclerosis. It can also be caused by skull injury during accidents or trauma. Intracranial tumours also being a cause of trigeminal neuralgia. Moreover, the infratentorial arteriovenous malformations also could lead to this condition. Trigeminal neuralgia can also be caused by dental pains. Many treatments are available in current days for this killing pain as to reduce it.

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