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## Orofacial pain: An update on differential diagnosis

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### Abstract

Orofacial pain as a broad terminology may occur due to disease of orofacial structures, generalized musculoskeletal or rheumatic disease, peripheral or CNS or psychological abnormality or may be a referred pain from cervical muscles or intracranial pathology.<sup>[1]</sup> All these conditions represent a challenge to the clinician. Different individuals respond differently to the identical noxious stimulus. The clinician needs to have a thorough knowledge so as to make a proper diagnosis thereby providing an optimal treatment. So here in this article we discuss the differential diagnosis of Orofacial pain.

**Keywords:** Orofacial pain, Disorder, Diagnosis, Examination.

### INTRODUCTION

Orofacial pain interferes with daily life activities, impacting negatively on quality of life.<sup>[2]</sup> A thorough history of pain, clinical examination, appropriate investigations and at times response to various therapies with a logical approach guides the clinician to the most likely diagnosis. In 1936, Ryle's classic analysis of pain highlighted 11 essential questions to be included in the pain history<sup>[3,4]</sup> and these still apply today and have been further expanded and grouped in more recent years.<sup>[5]</sup>

### Differential Diagnosis:

#### Trigeminal Neuralgia

The term 'neuralgia' means pain in the nerve. Trigeminal Neuralgia also known as "tic douloureux" disorder of trigeminal nerve that causes paroxysms of unilateral, intense, stabbing, electric shock like pain along the distribution of trigeminal nerve in the orofacial region like lips, eyes, nose, scalp, forehead, upper jaw or lower jaw although there is no neurologic deficit. Pain usually last for few seconds to less than two minutes and is often elicited by momentary stimulation of "Trigger Zones".<sup>[6]</sup>

#### Questions include:

- ❖ Onset
- ❖ Frequency
- ❖ Duration
- ❖ Site
- ❖ Radiation, deep or superficial
- ❖ Triggering factors
- ❖ Aggravating or relieving factors
- ❖ Quality
- ❖ Severity
- ❖ Associated Symptoms

#### Diagnostic criteria

Strict criteria for trigeminal neuralgia as defined by the International Headache Society (IHS) (*International Classification of Headache Disorders*, 2nd ed) in 2004 are as follows:<sup>[7]</sup>

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depressed mood in the postpartum period and 25% reported depressed mood only during pregnancy in the study conducted by Costa Da D *et al.*<sup>[5]</sup> Depressed women tend to report more emotional copying and higher trait and state anxiety scores. Consistent with the literature, the best predictor of postpartum depression was depressed mood during pregnancy.

- A - Paroxysmal attacks of pain lasting from a fraction of a second to 2 minutes, affecting 1 or more divisions of the trigeminal nerve and fulfilling criteria B and C
- B - Pain has at least 1 of the following characteristics: (1) intense, sharp, superficial or stabbing; or (2) precipitated from trigger areas or by trigger factors
- C - Attacks stereotyped in the individual patient
- D - No clinically evident neurologic deficit
- E - Not attributed to another disorder

The criteria for symptomatic trigeminal neuralgia vary slightly from the strict criteria above and include the following:<sup>[7]</sup>

- A - Paroxysmal attacks of pain lasting from a fraction of a second to 2 minutes, with or without persistence of aching between paroxysms, affecting 1 or more divisions of the trigeminal nerve and fulfilling criteria B and C
- B - Pain has at least 1 of the following characteristics: (1) intense, sharp, superficial or stabbing; or (2) precipitated from trigger areas or by trigger factors
- C - Attacks stereotyped in the individual patient
- D - A causative lesion, other than vascular compression, demonstrated by special investigations and/or posterior fossa exploration.

Trigeminal neuralgia is often an intermittent disease with apparent remissions for months or years but recurrence is common and very often the pain spreads to involve a wider area over time and the intervals between episodes tends to shorten.

Trigeminal Neuralgia is classified as either Classic Trigeminal Neuralgia when is not associated with an underlying neurologic disease or Symptomatic Trigeminal Neuralgia when no neurologic disorder can be detected.<sup>[8]</sup>

### Atypical Facial Pain

The most recent definition of pain produced by the task force on taxonomy of the International Association for the Study of Pain (IASP) is "An unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage".<sup>[9,10]</sup> Atypical facial pain as defined by the International Headache Society is 'facial pain not fulfilling other criteria'.<sup>[11]</sup>

#### Patient usually presents with :

- Dull, boring or burning type of pain.
- Ill – defined location.
- 80% of patients relate to dental treatment (including LA).<sup>[12]</sup>
- Usually women in middle age or older.
- On examination :
  - a) no erythema, tenderness or swelling
  - b) no obvious odontogenic or other local cause for the pain.
  - c) total lack of objective physical signs (including neurological)

On investigation :-

- a ) all imaging studies are negative
- b) all blood investigations are negative

### Atypical Odontalgia

Atypical Odontalgia has been described by Merskey as "Severe throbbing pain in the tooth without major pathology."<sup>[9]</sup> Atypical odontalgia can have both psychological and neuropathic origin.

#### Primary symptoms:-<sup>[13,14,15]</sup>

- Pain located in a tooth or tooth site.
- May spread to involve entire maxilla or mandible.
- Continuous & persistent pain.
- Fluctuating in intensity.
- No sign of local pain or referred .
- Local provocation of the tooth (Hot , Cold , Pressure) does not relate consistently to the pain.
- No clinical or radiographic signs of pathology are present in the tooth (decay, fracture).
- Repeated dental therapies fail to resolve the pain.
- More frequent in women in their mid 40s.

### TMJ Disorders

Temporomandibular joint disorder is a collective term embracing a number of clinical problems that involves the masticatory muscles, TMJ and associated structures or both.<sup>[16]</sup>

#### These disorders are characterized by :<sup>[17,18]</sup>

- Facial pain in TMJ or facial pain in muscles of mastication.
- Limitation or deviation in mandibular movements.
- Clicking / crepitus.
- Headache, tinnitus, visual changes and other neurologic complaints may also accompany TMDs

### Migraine

Migraine typically presents as an episodic headache that interferes with normal daily activities. Clinical features are divided into two type of headache:

- a) Migraine without aura (common migraine)
- b) Migraine with aura (classic migraine)

In migraine with aura , the headache is preceded by stereotyped sensory , motor and visual symptoms. The most common premonitory symptoms in migraine include visual scotomas, Scintillating shapes, hallucinations, black spots. Approximately 1/3<sup>rd</sup> of all migrainers experience migraine attacks with aura .<sup>[19,20,21]</sup> In women, migraine is also stimulated by hormonal changes.

## Diagnostic Criteria

The diagnosis of migraine is based on the history. According to diagnostic criteria established by the International Headache Society, patients must have had at least 5 headache attacks that lasted 4-72 hours (untreated or unsuccessfully treated) and the headache must have had at least 2 of the following characteristics<sup>[7]</sup>:

- Unilateral location
- Pulsating quality
- Moderate or severe pain intensity
- Aggravation by or causing avoidance of routine physical activity (eg, walking, climbing stairs)

In addition, during the headache the patient must have had at least 1 of the following:

- Nausea and/or vomiting
- Photophobia and phonophobia

## Temporal Arteritis (Giant Cell Arteritis)

Temporal Arteritis is a rare form of chronic daily headache. The pain associated with temporal arteritis is fairly distinct from other arteritides.

### Characterized by:<sup>[22,23,24]</sup>

- Systemic inflammatory disorder of extracranial carotid circulation
- Average age of onset is 70 years (elderly)
- Classic Symptoms:-  
Unilateral headache  
Polymyalgia rheumatic

### Chest pain

- Jaw Claudication
- Visual symptoms such as diplopia and amaurosis fugax
- Fever

### Weight loss

- Pathognomonic of temporal arteritis. Pain in the temporalis and masseter muscles on chewing.
- On Examination/Investigation: Enlarged, tender temporal artery with reduced pulsatility and elevated ESR.

## Sialolithiasis:

Salivary glands with obstructive sialoliths are frequently enlarged & tender. Stasis of saliva may lead to infection, fibrosis and gland atrophy.

### Patients commonly presents with<sup>[25]</sup> :

- Acute, painful and intermittent swelling of the affected major salivary gland.

- Eating initialis swelling.
- Bidigital palpation along the pathway of the duct may confirm the presence of a stone.

Suppurations or Non –Suppuration, retrograde bacterial infections, acute sialadenitis, ductal stricture and ductal dilatation.

## Trigeminal Autonomic Cephalgias

Trigeminal Autonomic Cephalgias are a group of primary headache disorders characterized by unilateral head pain that occurs in association with generally prominent ipsilateral cranial autonomic features.<sup>[26]</sup>

The TACs include :

- Cluster headache
- Paroxysmal hemicranias
- Short – lasting unilateral neuralgiform headache with conjunctival injection & tearing (SUNCT)
- Short – lasting unilateral neuralgiform headache with cranial autonomic symptoms (SUNA).

Clinically, the syndromes can be distinguished by the frequency of attacks of pain, the length of attacks and very characteristic responses to medical therapy. This differentiation is important because the treatments are distinct.<sup>[27]</sup>

## Post – Herpetic Neuralgia

Post – herpetic neuralgia is pain in the trigeminal region that may follow an attack of Zoster. PHN is defined by the international headache society as pain developing during the acute phase of herpes zoster and persisting more than 6 months thereafter.

### Clinical Features<sup>[28,29]</sup>:

- May occur at any age
- 25% of individuals over 55 years of age & 2/3<sup>rd</sup> older over 70 years of age.
- Persistent pain
- Paresthesia
- Hyperesthesia
- Allodynia months to years after the zoster lesions have healed.
- Pain often accompanied by sensory deficit.
- Correlation between degree of sensory deficit & severity of pain.

## Glossopharyngeal Neuralgia

Glossopharyngeal Neuralgia is a rare condition associated with paroxysmal pain similar to trigeminal neuralgia but less intense with an incidence of 0.7 per 100,000.

### Clinical Features :

- More common in females

- Age : usually above 50 years<sup>[30]</sup>
- Trigger zones are present along the distribution of glossopharyngeal nerve that are pharynx, posterior tongue, ear ,infraauricularretromandibular area.
- Triggered by swallowing, coughing , talking.

### Burning mouth syndrome

Also known as Glossopyrosis, Glossodynia, Oral dysaesthesia or stomatodynia. The international association for the study of pain define it as “A distinctivenessological entity characterized by unremitting oral burning or similar pain in the absence of detectable mucosal changes.”<sup>[31]</sup>

Burning mouth syndrome has been associated with other chronic pain syndromes including other idiopathic orofacial pain, the dyneas group and family of central sensitivity syndromes.<sup>[32]</sup>

### Clinical Features :

- Burning sensation of the oral mucosa.
- No detectable local or systemic etiological factors.
- Women experience symptoms of BMS seven times more frequently than men.<sup>[33]</sup>
- Middle age
- Commonly post menopause
- Common site : Tongue , Lips , Palate.
- Altered or bad taste.
- Tingling sensation
- Dry mouth
- Headaches
- Changes in sleep patterns and mood.

Diagnosis is achieved by excluding organic cause like:

- Allergies
- Bruxism
- Candidiasis
- Geographic tongue
- Fissured tongue
- Glossitissuch as caused by haematinic deficiency
- Diabetes
- Hypothyroidism

Investigations may include psychological screening and laboratory screening.

### Sinusitis

Sinusitis is defined as an inflammation of the epithelial lining of the paranasal sinuses. It can be classified as either acute, subacute or chronic based on the duration of the inflammation and underlying infection , acute is less than 4 weeks, subacute is 4 to 12 weeks and chronic is longer than 12 weeks.<sup>[34]</sup> IASP described acute maxillary sinusitis as constant burning pain with zygomatic and dental tenderness from the inflammation of the maxillary sinus. Other symptoms include:

### CLINICAL FEATURES

#### Acute sinusitis is characterized by:

- Purulent nasal discharge
- Fever
- Malaise
- Post nasal drainage with fetid breath

#### Chronic sinusitis is characterized by :

- Chronic rhinorrhea
- Post nasal drainage
- Nasal congestion
- Sore throat
- Facial fullness
- Anosmia
- Dull, boring pain
- Heaviness in antral region which increases on bending forward
- Maxillary teeth are tender on touching

### Cracked Tooth Syndrome

Cracks on the tooth may occur in bith horizontal and vertical directions involving crown and/ or root and are usually incomplete fractures, commonly seen in the posterior teeth especially mandibular second and first molars<sup>[35]</sup>. Patient complains of severe pain that worsens on sitting and is often precipitated by hot or cold. These may be revealed by biting on rubber or tooth sloth or frac finder, by fiberoptic or blue light illumination or by staining with for eg. Disclosing solution

### Pulpal Pain

Pulpal pain is a deep, dull aching pain that is of a threshold nature and is often difficult to localize.

The hallmark of acute pulpal pain, as with all types of visceral pain, is its diffuseness and variability<sup>[36]</sup>.

Clinical features:

1. Pain is oscillating and tends to worsen or improve with time
2. Local provocation (by chemical, thermal, mechanical or electric irritant) exacerbates the pain.
3. Clinical or radiographic signs of pathology (for eg. Decay, fracture, a failing restoration) can be detected in the tooth that explain the pain<sup>[36]</sup>.
4. Tenderness on percussion absent
5. Dental therapy resolves the pain
6. Local anaesthesia resolves the pain

## Myofascial Pain

Myofascial pain is characterized by a regional dull, aching muscle pain and the presence of trigger points in muscles, tendons or fascia<sup>[37]</sup>.

The muscles of mastication are palpated bilaterally to check for pain or tenderness to palpation and pain referral.

The clinician may also palpate for myofascial trigger points which are hyperirritable sites in taut bands of muscle.

When palpated, these trigger points may produce a characteristic pattern of regional referred pain and/ or autonomic symptoms on provocation<sup>[38,39,40]</sup>.

Diagnostic criteria for myofascial pain. All of the following must be present:

1. Regional dull, aching pain at rest
2. Pain is aggravated by function of the affected muscle
3. Provocation of trigger points, which are frequently palpated within a taut band of muscle tissue or fascia, alters the pain complaint and often reveals a pattern of pain referral.
4. Greater than 50% reduction of pain with vapocoolant spray or local anesthetic injection into the trigger point, follows by stretch.

## Acute Periapical Periodontitis

### Clinical Features :

- Deep, continuous, boring pain
- Moderate to severe in intensity
- Tenderness on percussion present
- Exacerbates by biting on tooth

## Mucosal Pain

It can be localized or diffuse<sup>[31]</sup>.

Localized pain is usually associated with a detectable erosive or ulcerative lesion.

Pain characteristics include :

1. Bright stimulating quality
2. Anatomically accurate
3. Subjective localization
4. Pain site coincident with it's source
5. A provocation response faithful in incidence
6. A temporary response to topical anesthetic at the pain site<sup>[42]</sup>.

Diffuse pain may be associated with a widespread infection (bacterial, viral or fungal), a systemic disease due to underlying deficiency.

Pain characteristics:

1. Burning quality

Maybe accompanied by a change in taste, predominantly of a bitter metallic nature<sup>[42]</sup>.

## CONCLUSION

Trigeminal neuralgia is a facial pain syndrome which should be well differentiated from other facial pains of dental and non-dental origin. A dentist needs to take a proper case history and required investigations to be carried out to make a correct diagnosis and thereby providing the appropriate treatment.

## Conflict of interest

The authors declare that they have no conflict of interest.

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