

## A review of orofacial pain

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### Abstract

Orofacial pain is the big burden over the society and one of the factors which leads to high morbidity and psychological stress. Orofacial pain has different origin and etiology which makes the diagnosis challenging. It also involves disorder which overlaps and makes the diagnosis difficult, but the recent advancement and the multidisciplinary approach help in the management of the orofacial pain and may limit the negative impact of the pain. This paper primarily focused on the diagnosis and management of orofacial pain.

### Introduction

Orofacial pain is tenderness in the head, face (including oral cavity), and neck. Pain is a distressing feeling due to various stimuli and also described by the International Association for the Study of Pain. (IASP,1994). The pain experience is fundamentally protective and large numbers of people are affected.<sup>[1]</sup>

The idea of the treatment of the pain based on the diagnosis was given earlier although recent advances in the technology made the treatment easier to some extent because the orofacial region is complex and may arise from various sources.<sup>[2-4]</sup>

Orofacial pain classifies by Okeson into physical and psychological condition. Physical condition includes neuropathic pain, neurovascular disorder, and temporomandibular joint pain and psychological pain includes anxiety condition. Orofacial pain diagnosis is based on subjective signs and symptoms and the pathophysiology is explained in this classification and the other pain of head and neck region should be reviewed.<sup>[1]</sup>

### Cranial Nerves

Cranial nerve emerges from the brain and is named according to the function and structure. There are 12 pairs of the cranial nerves that leave the brain and pass through foramina within the skull. All the cranial nerves distributed in head and neck region except the vagus nerve [Table 1].<sup>[5,6]</sup>

### Trigeminal Nerve

It is the fifth and largest branch of the cranial nerve which supplies to the face. It offers the largest sensory branch to the scalp, the teeth and nasal cavities and motors to the masticatory, and extraocular muscles. It gives three major branches, ophthalmic, maxillary, and mandibular branches. It has big sensory and small motor roots which emerge from pons.<sup>[7]</sup>

These three branches leave the skull from three different foramina. The ophthalmic branch leaves from the superior orbital fissure and supplies to the upper eyelid, forehead, conjunctiva, cornea, and the part of the meninges. The maxillary branch takes exit from foramen rotundum and supplies to the lower eyelid, upper lip, teeth, and gum. The mandibular branch emerges from foramen ovale and carries the sensory fibers to the lower lip, tongue, and teeth.<sup>[7,9]</sup>

The motors branch of mandibular nerve emerges from infratemporal and supplies to all or any the muscles of mastication, conjointly the anterior belly of digastric, tensor surface, and tensor tympani.<sup>[5,9]</sup>

### Assessment and Diagnosis of Orofacial Pain

It is often confusing for the patient to rather consult the physician or the dentist for the relief from the pain due to the notorious nature of the pain. Usually, it is difficult for the patients as well as the dentist to understand the origin of the pain. Consulting the

patient requires peculiar knowledge and skills with marvelous communication skill, but it is the duty of the patient to explain

**Table 1:** Cranial nerves

S. No.	Cranial nerve	Location
I	Olfactory	Telencephalon
II	Optic	Retinal ganglion cells
III	Oculomotor	Anterior aspect of midbrain
IV	Trochlear	Dorsal aspect of midbrain
V	Trigeminal	Pons
VI	Abducens	Nuclei lying under the floor of the fourth ventricle pons
VII	Facial	Pons (cerebellopontine angle) above olive
VIII	Acoustic vestibular	Lateral to CN VII (cerebellopontine angle)
IX	Glossopharyngeal	Medulla
X	Vagus	Posterolateral sulcus of medulla
XI	Accessory	Cranial and spinal roots
XII	Hypoglossal	Medulla

about the pain rightly because either the dentist or the physician can able to diagnose it only when patient shares the detail history about the pain [Tables 2 and 3].<sup>[1,10-14]</sup>

To make a proper diagnosis, it is important to understand patient condition by recording proper history. The pain history includes

Timing → Location → Reliving and Aggravating factor → Associate factor → Other pain condition

The mindful, listening practitioner can fabricate an affinity with his/her patient rapidly, and furthermore, the succeeding trust can empower the patient to talk in certainty to the going to practitioner, giving important information in regard to the proceeding with feedback. Dealing with patient's desires is prevail, and in some cases, a fix is not possible anyway administration is, furnishing the patient with a straightforward comprehension of what is going on with sensible objectives is important.<sup>[15,16]</sup>

Patient with persistent pain may give exaggerate explanation. This is due to anxieties, fear which might increase the pain expertise. To diagnose the pain, several aspects of the pain should be assessed on the patient.<sup>[14]</sup>

**Table 2:** Type of facial pain

Facial pain		
Acute facial pain	Chronic facial pain	
	Continuous	Episodic
Dental and oral causes	Post-herpetic neuralgia	Trigeminal neuralgia classical (Type 1)
Maxillary sinusitis	Post-traumatic trigeminal pain	Trigeminal neuralgia symptomatic
Salivary gland disorders	Anesthesia dolorosa	Trigeminal neuralgia+concomitant pain (Type 2)
TMD	Persistent dentoalveolar pain (atypical odontalgia)	Glossopharyngeal neuralgia
	Referred pain	Episodic migraine
	Post-stroke pain	
	Giant cell arteritis	

TMD: Temporomandibular disorder

**Table 3:** Acute facial pain

Acute facial pain		
Cause	Location	Management
Reversible pulpitis	Local tooth	Endodontics or extraction
Irreversible pulpitis	Difficult to localize	Endodontics or extraction
Dental sensitivity	Difficult to localize	Brushing advice, varnishes, topical fluoride
Periodontal disorders	Local tooth to full mouth	Based on severity of the lesion
Pericoronitis	Partially erupted tooth most commonly wisdom	Debridement, hot salt mouthwashes, antibiotics if systemic manifestations, extraction
Premature contact	Recently restored tooth or in case of disturbed occlusion	Tooth recountouring or rehabilitation based on severity
Cracked tooth	Tooth but difficult to localize	Endodontic treatment or extraction
Alveolar osteitis	Local tooth socket	Irrigation, if persistent than antibiotic
Maxillary sinusitis	Over maxillary sinus unilateral or bilateral often intraoral upper quadrant	Medication, inhalation
Salivary stone	Submandibular area, floor of mouth or over parotid area	Surgical removal
TMDs pain	Muscles of mastication, around and in ear radiates to temple, mouth, especially retromolar area, neck	Surgical management or physiotherapy

TMDs: Temporomandibular disorders

**Table 4:** General considerations in managing orofacial pain

Physical therapy	Sensory stimulation	Cutaneous	Superficial massage Counterirritation with mustard plaster Vapocoolant therapy Mechanical vibration Hydrotherapy
		Transcutaneous	TENS EP
		Percutaneous	SCNS by electric current
Thermal therapy	Mild heat helps in increasing of the circulation and healing		
Cryotherapy	Withdraws heat from the body		
Ultrasound	Energy propagate into deep tissue		
Diathermy	Multiple waves produce heat through conversion		
Manual techniques	Massage	Mild stimulation of cutaneous sensory nerves	
	Spray and stretch technique	The muscle is stretched and the vapocoolant is applied by parallel sweeps in one direction traveling to pain reference area	
	Exercise	Forceful contraction of antagonist muscle	
	Physical activity	In patients with chronic pain	
	Psychological therapy: Counseling and behavioral modification		

EP: Electroacupuncture, SCNS: Subcutaneous nerve stimulation

For the management of the chronic facial pain, a multidisciplinary approach is required which may include a team of dentist, psychologist, neurologist, and pain management consultant. This is because to achieve an appropriate treatment for individual desires.<sup>[16]</sup>

## Investigation

The pain is the subjective symptom and accurate diagnosis is the success key for the management of the orofacial pain. There are various investigation methods such as questionnaires such as brief pain inventory, Beck depression inventory, Hospital Anxiety and Depression Scale, McGill Pain Questionnaire, and oral impacts on daily performance which all are sensitive and have been authenticated. Imaging such as periapical X-ray is a useful aid for assessing the diagnosis in dentinal caries and periodontal defects. Dental panoramic tomographs can be used in the detection of the cyst, bony defects, and temporomandibular disorders, in recent advances, cone-beam computed tomography used in the detection of the defects. Magnetic resonance imaging and computerized tomography can be used in salivary glands disorders.<sup>[17,18]</sup>

## Management of Orofacial Pain Disorders

The orofacial pain involves the region of the head, face, and neck. The management of the orofacial pain required appropriate diagnosis with multidisciplinary approach. The odontogenic

cause can be handled by the dentist but for the management of non-odontogenic pain required multidisciplinary approach [Table 4].<sup>[19]</sup>

## Conclusion

The clinician should aware of the etiology and the challenges which may mislead to the diagnosis and makes the treatment inaccurate with accurate knowledge of the trigeminal system. As concerned about the patient ought grievance of pain, if they fail, then one to explore for more uncommon condition as psychiatric analysis is additionally suggested. In future maybe new exciting discoveries may put an end to the burden of the society.

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