Table 1 Woda et al 2005classification for chronic orofacial pain adapted from [20]

Neurovascular and tension	**Neuralgia**	**Persistent idiopathic**
Tension headache Migraine Cluster headache	*Primary* Trigeminal neuralgia (Classical and Non classical) *Secondary neuropathy* Post herpetic neuralgia Diabetes mellitus Multiple sclerosis HIV Post traumatic neuropathy Lingual Inferior alveolar nerve injuries	Stomatodynia/Burning mouth syndrome BMS Persistent idiopathic PIFP (e.g. atypical facial pain) TMD/ Arthromyalgia did not cluster

Table 29.

Systemic Diseases Associated with Headache and Orofacial Pain
• Paget's disease • Metastatic disease • Hyperthyroidism • Multiple myeloma • Hyperparathyroidism • Vitamin B deficiencies • Systemic lupus erythematosus • Vincristine and other chemotherapy for cancer • Folic acid and iron deficiency anaemias

Table 38

Red Flags - Orofacial Pain Symptoms that may indicate serious or malignant disease [52]
• Spontaneously occurring focal neuropathy with pain and or altered sensation confirmed by physical examination may indicate tumor invasion of nerve • Pain at the angle of the mandible, brought on by exertion, relieved by rest may indicate cardiac ischemia • patient over 50 years with known history of carcinoma localized progressive headache; superficial temporal artery swelling, tenderness, and lack of pulse • Jaw claudication, visual symptoms, palpably tender superficial temporal arteries – Temporal arteries • Systemic symptoms of fever, weight loss, anorexia, malaise, myalgia, chills, sweating - unlikely to be associated with OFP • New onset headache in adult life of increasing severity with: nausea, and vomiting without evidence of migraine or systemic illness; nocturnal occurrence; precipitation or exacerbationthrough changes in posture; confusion, seizures, or weakness; any abnormal neurologic sign – suggests a mass effect in cranial cavity (through intracranial tumour). • Earache, trismus, altered sensation in the mandibular branch distribution – suggests infratemporal fossa or acoustic nerve impingement eg by tumour. • Trigeminal neuralgia in a person less than 50 years of age may be suggestive of

multiple sclerosis

Table 4~~9~~

Orofacial Disorders That May Be Confused with Toothache
• Trigeminal neuralgia • Trigeminal neuropathy (due to trauma or tumor invasion of nerves) • Atypical facial pain and atypical odontalgia (PDAP) • Cluster headache • Acute and chronic maxillary sinusitis • TMDs

~~Time taken in eliciting a thorough pain history may often clarify the diagnosis as in any other pain condition. Multidisciplinary OFP assessment ideally also includes psychometrics, pain profiling, quantitative sensory testing, haematology (Table 11) and imaging (Table 11) where indicated.~~

Table 5~~11~~

Haematology investigations:	**Imaging** [53]
The most frequently employed haematological investigations for OFP include: • Full blood count – predominately looking for anaemias • Haematinics: Ferritin,B12, Folate – looking for deficiency states causing secondary burning mouth syndrome • Zinc levels • Hypothyroidism – causing headache • Diabetes (HBA1c) • Antibody screen ENAs ANAs • ESR or CRP if inflammatory condition suspected.	• Plain dental radiography (Dental pantomogram DPT) to identify caries, infection, bone loss etc • MRI exclude space occupying lesions, demyelination and vascular compromise of theTrigeminal nerve

Table 62: Differential diagnoses of Acute inflammatory Orofacial pain [54]

Condition	**Prev M:F age**	**Location & radiation**	**Frequency and duration**	**Character/severity**	**Provoking factors**	**Associated factors autonomic**
Acute inflammatory Dental structures conditions				Responds to NSAIDS and paracetamol	Responds to antibiotics if infection related	**Caries = tooth decay**
Dentine sensitivity	Common 1:1 >30yr	Well localised to a tooth at dento-enamel defect	Elicited less than seconds/minutes	Sharp pain 'neuralgic' seconds	Stimulus usually cold or touching the region les commonly. heat.	Defects at dento-enamel junction usually in association with abrasive lesions caused by inappropriate tooth brushing technique
Cracked cusp	Fairly common 1:1 >25yr	Localized to a tooth but can be very difficult to identify	Few seconds to a minute intermittent dependant on vector of fracture	Sharp pain that may mimic neuralgia. and duration depends on pulpal involvement	Biting on the tooth. Biting on a cotton wool roll on the affect tooth will induce pain and is a good diagnostic modality	Crack within the tooth. If extending to pulp the tooth has poor prognosis. This diagnosis must be eliminated before considering neuralgia.
Pulpal (reversible pulpitis)–exposed dentine due to caries, defective restoration and dental trauma	Very common 1:1	Well localised to a tooth	Elicited and can last for seconds to minutes	Sharp, stabbing, throbbing seconds	Cold or sweet foods provoke, it is rarely spontaneous.	Immediate relief on removal of stimulus Cold foods/drinks or Caries in tooth
Pulpal (irreversible)–chronic pulpitis	Common 1:1	Well -poorly localized intraorally	Elicited lasts minutes – hours	dull, throbbing moderate to severe minutes-hours	Heat and sugary foods rarely spontaneous	Often large restoration or caries. Tooth is tender to percussion in later stages.
Periodontal – chronic apical periodontitis =dental abscess	Common 1:1 >kids or adults	Poorly localised, intraoral Except on biting on affected tooth	Elicited by biting on tooth and spontaneous Intermittent minutes to hours	Mild-severe, dull, throbbing hours	Large carious lesions, restorations, recent trauma	Affected tooth is tender to bite on or induced percussion. Late stages a gum swelling and or sinus may be visible with bad taste related to discharge of pus
Gingivitis and periodontal	Common	Generalized or			Associated with poor	Inflammation of gums

disease are not painful	1:1 adult	localised, intraoral			oral hygeine	Periodontitis (gum disease) does not occur in children uless related to systemic disease
Dry socket Alveolar osteitis Approx 5% post dental extractions Does not occur in children	Fairly common 1:1 adults	Well localized to extraction socket. Risk factors Increased in smokers Steroids Surgical mandibular extractions	Post surgical extraction 3-10 days Dull Continuous	Constant Throbbing, severe Does not respond to antibiotics	Touching or pressure on extraction socket	No localized signs of inflammation (no redness, swelling or lymphadenopathy Observe unhealed socket with exposure of bone.
Pericoronitis 20-25 years coinciding with the eruption of mandibular third molar teeth Associated with poor oral hygiene	Common 1:1 adults	Pain localized to a partially erupted tooth most commonly wisdom teeth.	Continuous but resolves with good oral hygiene thus providing remission	Dull ache, which becomes throbbing as condition worsens.	Eating chewing around affected tooth and Mouth opening.	With local spreading infection trismus may occur. Local signs include soft tissue erythema, presence of operculum around affected tooth.
Local orofacial structures inflammatory pain						
Mucosal lesions						
Recurrent Herpes labialis	Common 1:1 adults	Usually crusted or ulcerated lesion on upper or lower lip. May have vesicles in the mouth.	Continuous lasts for about 2 weeks	Tingling initially then sharp, annoying and tender	Stress, sunlight, menstruation.	Tendency to get cold sores due to previous infection by herpes simplex virus.
Recurrent oral ulceration	common1:1 adults	Localized to areas of ulceration	Intermittent , may last for hours,	Sharp, stabbing or throbbing	Catching ulcer when eating	Difficulty in mouth movement and eating. Crops of ulcers intra-orally
Lichen planus Secondary to drugs? If	Fairly common	Pain localized to areas of lesion	Intermittentmay last for	Sharp, stabbing or throbbing,	Spicy food or eating and chewing when	Difficulty eating certain foods.

primary check haematinics autoantibodies	1:8 adults	usually biltaerak can be unilateral Gums and cheek mucosa	hours. Sometimes no pain for months	burning	severe.	
Other local structures						
Temporomandibular disorder RDC TMD criteria [19] I Arthritides Rare OA, Rheumatoid, Stills, Gout and Reactive arthritisP II Arthromyalgia Muscle pain with no joint pathology or dysfunction III TMJ dysfunction with associated crepitus and or clicking inidicative of joint distruction and meniscal ericoronitis displacement during movement	Fairly common 1:1 20-38yrs risk factors include clenching, bruxism, gum chewing and hyperflexia	Unilateral. TMJ, intra-auricular, temporal, occipital, masseteric, Pain localized to a partially erupted tooth most commonly wisdom teeth.	Intermittent , may last for hours, may have severe exacerbations Continuous Worse in morning if associated with nocturnal clenching / bruxism, Worse at night if associated with gum chewing or daily clenching habit	Usually dull aching.affecting unilateral or bilateral temporal region Dull ache, which becomes throbbing as condition worsens.	Clenching and grinding, opening wide, chewing E Some occlusal factors for example interference or lack of dental support may be contributory ating, or chewing around affected tooth. Mouth opening.	Signs may include Joint tenderness on palpation (I,II and III) Limitation/ deviation on opening (I,II and III) Tenderness in muscles of mastication. (II) Clicking (III) (disc displacement) on rotational and or translational movements (III) Open or closed locking with/ without reduction in severe cases requiring hospital admission for sedation for reduction Crepitation suggests arthritis in TMJ. (I) Trismus, soft tissue erythema, presence of operculum around affected tooth.
Maxillary sinusitis	Common 1:1 adults	Pain or discomfort over the midfacial region with tenderness of maxillary teeth) unilaterally or bilaterally	Continuous Linked to upper respiratory infections or allergic reactions	Dull ache, with a sense of fullness and tenderness in the overlying cheek.	Worse on bending forwards	Purulent secretions from nose, recent history of cold that cleared up and returned, rhinorrhoea, foreign body in antrum.
Salivary gland disease Sialadenitis may be associated with	Rare 1:1 adults	Parotid glands Or submandibular	Intermittent Meal time syndrome	Can be dull constant or intermittent	If obstructive disease pain is worse on salivation at meal	Facial asymmetry Palpable masses of parotid or submandibular glands

obstructive disease (calculi and or infection) Or viral disease		glands (bi or unilateral) Neoplasia may be blocking duct	swelling and pain at meal times	with intense short episodes on salivation	times	Palpable calculi in Stensons or Whartons ducts or blockage or discharge from ducts Exclude Sjogrens disease
Tonsillar	Rare 8-34 yrs	Mouth / throat	Spontaneous lasting weeks	Intermittent episodes	Immune suppression	
Ear infections Otitis media	Most occur in infants aged 6-18 months	Auricular May spread to mastoid	Spontaneous lasting weeks	Intermittent episodes	Usually associated with influenza	May have auricular discharge and loss of hearing
Referred pain Cervicogenic C2 C3 Cardiac	Older patients	Lateral face Left face	Intermittent	Dull constant Intense	Head move stress	Headaches Previous MI, angina

Table 73 Chronic Orofacial pain differential diagnosis [55]

Chronic OFP Neurological Conditions	Prev.	Major location & radiation	Timing	Character/severity	Provoking factors	Associated factors
Primary neuropathy Due to Neoplasia benign or malignant Central or peripheral lesions	Very rare 1:1 >50 yrs	Demonstrable neuropathy	Spontaneous Constant worsening	Sudden onset may be pain dysaesthesia. Paraesthesia, anaesthesia or a combination	Mechanical / thermal allodynia and or hyperalgesia	Previous Ca Older age Smoking history Alcoholism Weight loss Night sweats
Secondary neuropathy Many conditions can cause peripheral sensory neuropathies that may present with pain,[14] these include;	1:1 >50 yrs	Diabetes Viruses (HIV, herpes) Chemotherapy Multiple Sclerosis Parkinson's Malignancy Drugs - Growth Hormone injections Nutritional	After onset of disease or post trauma/infection	Can be of 2 types Constant dull moderate pain Intermittent elicited neuralgic pain	Stress, tiredness If elicited mechanical and or cold allodynia	Functional difficulties Psychological impact
Post traumatic neuropathy [54, 56, 57] usually iatrogenic 70% have neuropathic pain Mostly caused by third molar surgery, local anaesthetics, implants and root canal therapy	Fairly common 1:1 >50 yrs	Any area related to previous surgery Demonstrable neuropathy	Post surgical intervention or LA injection Continuous variable intensity paraesthesia, dysthaesthesia	Burning and or neuralgic (mechanical /thermal allodynia and hyperalgesia)	Stimuli of wide variety of functional related pain (touch, cold air, certain foods, kissing, eating, application makeup, shaving, tooth brushing.	History of extraction of impacted teeth, LA, implants, endodontics, facial fractures, orthognathic surgery
Postherpetic neuralgia [58] If treated acutely with high dose antiviral, steroids and tricyclic antidepressants PHN will be reduced	Rare >50 years increased prev	Commonly first division of trigeminal (ophthalmic). unilateral	Continuous pain	Burning, tearing, itching dysaesthesias. Moderate.	Tactile allodynia	More than 6/12 after acute herpes zoster. Cutaneous scarring Exclude immune suppression
Trigeminal neuralgia [59-61] Primary no known cause Secondary associated with	Rare patient>50 yrs	Intra or extraoral in trigeminal	Each episode of pain lasts for a seconds	Sharp shooting, stabbing, electric shock	Light touch provoked e.g. eating, washing, talking	Discrete trigger zones, relief of pain at night. Mild flushing may be noted during paroxysms.

vascular compromise,MS [62] (classical/typical refers to clinical features) * [2]	2:1	region. Usually unilateral and V1 or V2	to minutes refractory periods and long periods of no pain	like pain which is moderate to very severe	Avoidance behavior sleep unaffected	If patient <50 yrs exclude MS MRI scan exclude central lesions, demyelination and vascular compromise of Vth cranial nerve
Non classical /Atypical clinical features trigeminal neuralgia * [60]	Rare > 50yrs	Intraoral or extraoral in trigeminal region	Sharp attacks for seconds to minutes, may have persistent or constant background pain with little remission	Sharp, shooting moderate to severe but also dull, burning continuous mild background pain	Light touch provoked but continuous type pain not so clearly provoked	May have small or no trigger areas, variable pattern MRI see above
Glossopharyngeal neuralgia [63]	Very rare	Intraoral in distribution of glossopharyngeal. May radiate to ear.	Each episode last for seconds to 2 mins,	Sharp, stabbing, severe	Swallowing or ingestion of cold or acid fliuds	Cardiac arrythmias or syncope may occur in some cases.
Burning mouth syndrome [55,64]	5-11% > 60yr Females	Tip and lateral borders of tongue. Also other mucosa may be involved	Continuous May fluctuate	Burning, tender, annoying, tiring nagging pain. Varies in intensity.	Dry mouth, spicy foods.hot foods	Altered taste, denture intolerance
Chronic OFP NeurovascularConditions						
Giant cell arteritis [65]	Rare >50 4:1	May be bilateral mostly over temporal areas scalp tenderness	Continuous, new sudden onset	Aching, throbbing, boring, sharp, moderate/ severe	Chewing	Jaw claudication, neck pain, anorexia, visual symptoms, age systemic symptoms, decreased pulse in temporal artery
Chronic tension headache [66]	Common 1:2 >30 yrs	Usually bilateral over frontal, orbital, fronto-	Continuous. Daily for at least 15 days	Dull aching head pain symmetrical and	Muscle tension and stress. Anxiety, depression	Mild ache which becomes more intense and chronic. Fluctuates during the day. Little nausea or

		occipital, occipital or whole scalp area.	a month	frequently global.		vomiting. Tight band like pain, pressing, mild/moderate
Migraine with and without aura.[67-68]	Common 1:3 10-50	Unilateral with pain beginning in fronto-temporal area within 60 mins of aura	Continuous from 2 hours to one or two days. Less frequent	Throbbing, pulsating pain in attacks. Moderate/ severe	Stress, anxiety, dietary (cheese, chocolates), flashing lights, weather changes physical activity.	Aura - visual disturbance. Nausea vomiting, photophobia, better on lying down, numbness or weakness in mouth and hands.
Trigeminal autonomic cephalgias [69]						
Cluster headache [69] Episodic pain free periods Chronic no remissions	Rare 5:1 20-40 yrs	Ocular, frontal and temporal areas.	15 –180 minutes to several hours, from 1 every other day to 8/day	Hot, searing, punctate, very severe	Vasodilators e.g. alcohol during the bout. Stress. GTN, Exercise Relieved drinking water and	Conjunctival injection, lacrimation, nasal congestion, rhinorrhoea, sweating, miosis, ptosis, eyelid oedema,. No nausea Seasonal spring / autumn (weeks to months) Remissions last 6-18 months.
Chronic paroxysmal hemicrania [70]	Very rare 1:2 30yrs	Ocular, frontal and temporal areas. Unilateral	Pain lasts 2-30 mins, 5-10 daily	Stabbing, throbbing, boring	Head movements Responds to indomethecin	Autonomic symptoms as for SUNCT
SUNCT [70] Short lasting,unilateral neuralgiform , conjuntival injection and tearing	Very rare 2:1 40-70 V1 and V2	Ocular, periocular but may radiate to frontotemporal area, upper jaw and palate	Each episode last up to 2mins. Intermittent, several attacks a day and then may remit.	Burning, electrical, stabbing, severe	Neck movements Cutaneous stim mechanical allodynia	Conjunctival injection, lacrimation, nasal stuffiness, rhinorhea and facial flushing
SUNA [70] Short-lasting, unilateral neuralgiform headache attacks with autonomic symptoms	Very rare 2:1 40-70	See above	See above	See above	See above	Conjunctival injection, lacrimation, nasal stuffiness, rhinorhea and facial flushing with scalp sensitivity

	V1 and V2					
Chronic OFP **Idiopathic**						
Chronic idiopathic oro-facial pain [71-73] ➢ 40 years ➢ Female ➢ +/- precipitative event	Fairly common 1:8 >40 yrs	Poorly localized and presents both intra and extra-orally and variants like atypical odontalgia may be localized to specific teeth/ tooth	Continuous > 2 years No fluctuation No response to multiple medication Or multiple interventions	Nagging, aching Non compliant with neurological boundaries	Stress, fatigue Associated pan chronic pain conditions Fibro myalgia	Multiple unilateral and or bilateral areas affected generally non compliant with specific dermatomes Often associated with other idiopathic pain disorders and somatic symptoms e.g. chronic widespread pain, irritable bowel syndrome, chronic fatigue. Psychosocial factors – anxiety, depression, adverse life events.
Atypical odontalgia [74,75] Persistent dentoalveolar pain (PDAP) Increasing belief that this is post traumatic neuropathic pain	Rare 1:2 >40 yrs	Precisely localized in tooth socket	Continuous > 2 years No fluctuation No response to multiple medication	Nagging, aching No neuropathic zone Neuralgic or burning	Stress and tiredness	Previous surgical or dental event Multiple interventions may have provided temporary relief for weeks months then the pain returns