ri Aurobindo College of Dentistry

Indore, Madhya Pradesh

INDIA

MODULE PLAN

- TOPIC :ORO FACIAL PAIN
- SUBJECT: OMDR
- TARGET GROUP: UNDERGRADUATE DENTISTRY
- MODE: POWERPOINT – WEBINAR
- PLATFORM: INSTITUTIONAL LMS
- PRESENTER: DR VIHANG NAPHADE.

Pain

"An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage."

Measurement of Pain

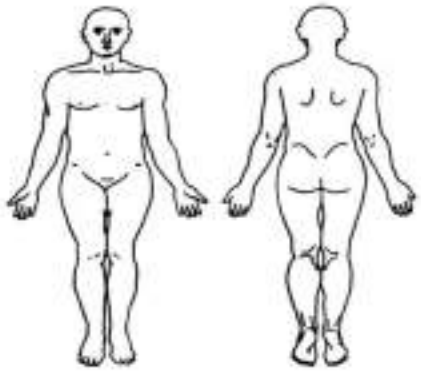
1. Visual analog scale (VAS)- it consists of a 10 cm line on which 0 cm is “no pain” and 10 cm is “pain as bad as it could be.”
2. The McGill Pain Questionnaire (MPQ): The questionnaire was designed to capture the multidimensional nature of pain and to provide quantitative measures of clinical pain that can be treated statistically.

McGill Pain Questionnaire

Patient's Name _____ Date _____ Time _____ am/pm

PRI: S _____ (1-10) A _____ (11-15) E _____ (16) M _____ (17-20) PRI(T) _____ (1-20) PPI _____

1 FLICKERING	11 TIRING	BRIEF
QUIVERING	EXHAUSTING	MOMENTARY
PULSING	12 SICKENING	TRANSIENT
THROBBING	SUFFOCATING	RHYTHMIC
BEATING	13 FEARFUL	PERIODIC
POUNDING	FRIGHTFUL	INTERMITTENT
2 JUMPING	TERRIFYING	CONTINUOUS
FLASHING	14 PUNISHING	STEADY
SHOOTING	GRUELLING	CONSTANT
3 PRICKING	CRUEL	
BORING	VICIOUS	
DRILLING	KILLING	
STABBING	15 WRETCHED	
LANCINATING	BLINDING	
4 SHARP	16 ANNOYING	
CUTTING	TROUBLESOME	
LACERATING	MISERABLE	
5 PINCHING	INTENSE	
PRESSING	UNBEARABLE	
GNAWING	17 SPREADING	
CRAMPING	RADIATING	
CRUSHING	PENETRATING	
6 TUGGING	PIERCING	
PULLING	18 TIGHT	
WRENCHING	NUMB	
7 HOT	DRAWING	
BURNING	SQUEEZING	
SCALDING	TEARING	
SEARING	19 COOL	
8 TINGLING	COLD	
ITCHY	FREEZING	
SMARTING	20 NAGGING	
STINGING	NAUSEATING	
9 DULL	AGONIZING	
SORE	DREADFUL	
HURTING	TORTURING	
ACHING		
HEAVY	PPI	
10 TENDER	0 NO PAIN	
TAUT	1 MILD	
RASPING	2 DISCOMFORTING	
SPLITTING	3 DISTRESSING	
	4 HORRIBLE	
	5 EXCRUCIATING	



E = EXTERNAL
I = INTERNAL

COMMENTS:

Other methods

- Pain diary
- Multiaxial Assessment of Pain (MAP) classification
- Dworkin, LeResche, and colleagues Research Diagnostic Criteria

CLASSIFICATION

1. **Superficial pain:**
   a. Cutaneous pain
   b. Mucogingival pain
2. **Deep pain:**
   a. Odontogenic pain
   i. Pulpal pain
   ii. Periodontal pain
   b. Musculoskeletal pain
   i. Muscle pain
   - Local muscle soreness
   - Muscle splinting pain
   - Muscle spasm pain

ii. Temporomandibular joint pain

- Disc attachment pain
- Retrodiscal pad pain
- Capsule pain

iii. Soft connective tissue pain

iv. Osseous pain

c. Vascular pain

i. Atypical facial neuralgia

ii. Cranial arteritis

d. Visceral pain

i. True visceral pain

ii. Reflex sympathetic dystrophy.

3. Neurogenous pain:

Traumatic neuroma pain:

i. Neuritis pain
- Peripheral neuritis
- Herpes zoster

ii. Neuralgia pain
- Idiopathic neuralgia
- Symptomatic neuralgia

Psychogenic pain:

i. Psychogenic intensification pain
ii. Conversion hysteria pain
iii. Delusional pain

Differential diagnosis of oro facial pain

Intracranial pain disorders	**Neoplasm, aneurysm, abscess, hemorrhage, hematoma, edema**
Primary headache disorders (neurovascular disorders)	Migraine, migraine variants, cluster headache, paroxysmal hemicrania, cranial arteritis, carotodynia, tension-type headache
Neurogenic pain disorders	Paroxysmal neuralgias (trigeminal, glossopharyngeal, nervus intermedius, superior laryngeal) Continuous pain disorders (de-afferentation, neuritis, postherpetic neuralgia, post-traumatic and postsurgical neuralgia) Sympathetically maintained pain
Temporomandibular disorders	Masticatory muscle, temporomandibular joint, associated structures
Associated structures	Ears, eyes, nose, paranasal sinuses, throat, lymph nodes, salivary glands, neck

Idiopathic Facial Pain
Atypical facial pain

- Atypical facial pain (AFP) is defined more by what it is not than by what it is.
- Condition characterized by the absence of other diagnoses and causing continuous, variable-intensity, migrating, nagging, deep, and diffuse pain.
- A continuous unilateral deep aching pain sometimes with a burning component.

ATYPICAL ODONTALGIA

- It is a chronic pain disorder characterized by pain localized to teeth or gingiva.
- Has been considered to be a variant of AFP.
- Also called “phantom tooth pain” and defined as persistent pain in endodontically treated teeth or edentate areas for which there is no explanation to be found by physical or radiographic examination.
- Severe throbbing pain in the teeth in the absence of a major pathology.

Facial Neuralgias

- The classic neuralgias that affect the craniofacial region are a unique group of neurologic disorders involving the cranial nerves.
- These are characterized by

  (a) Brief episodes of **shooting**, often **electric shock–like** pain along the course of the affected nerve branch;

  (b) **Trigger zones** on the skin or mucosa that precipitate painful attacks when touched; and

  (c) **Pain-free periods** between attacks and refractory periods immediately after an attack, during which a new episode cannot be triggered.

Neuropathic pain

- It is **constant** and has a burning quality **without** the presence of trigger zones.
- Neuropathic pain most often results from disorders that involve the **spinal nerves** whereas involvement of the cranial nerves may result in either chronic neuropathic pain or the classic brief episodes of shooting pain.
- Whether a lesion involving a cranial nerve causes constant neuropathic pain or brief episodes of shooting pain depends on both the nature of the underlying disorder and the position of the lesion along the course of the nerve.

TRIGEMINAL NEURALGIA

- Also called **tic douloureux**
- It is the most common of the cranial neuralgias
- Chiefly affects individuals **older than 50 years** of age.
- When younger individuals are involved, suspicion of a detectable underlying lesion such as a tumor, an aneurysm, or multiple sclerosis must be increased.

Etiology and Pathogenesis:

- ***The cause of the majority of cases*** of TN remains controversial, but approximately 10% of cases have detectable underlying pathology such as:
  - A tumor of the cerebellar pontine angle,
  - A demyelinating plaque of multiple sclerosis, or
  - A vascular malformation.
- The most frequent tumor is a meningioma of the posterior cranial fossa.
- The remainder of cases of TN are classified as idiopathic.

- The most widely accepted theory is that a majority of cases of TN are caused by an atherosclerotic blood vessel (usually the superior cerebellar artery) pressing on and grooving the root of the trigeminal nerve.
- This pressure results in focal de-myelinization and hyper-excitability of nerve fibers, which will then fire in response to light touch, resulting in brief episodes of intense pain.

Clinical Features

- Episodes of **intense shooting, stabbing** pain that lasts for a few seconds and then completely disappears.
- The pain characteristically has an **electric shock–like** quality
- **Unilateral** except in a small percentage of cases.

- The **maxillary branch** is the branch that is most commonly affected, followed by the mandibular branch and (rarely) the ophthalmic branch. Involvement of more than one branch occurs in some cases.

- Pain in TN is precipitated by light touch on a **“trigger zone”** present on the skin or mucosa within the distribution of the involved nerve branch.
- Common **sites** for trigger zones include the nasolabial fold and the corner of the lip.
- Shaving, showering, eating, speaking, or even exposure to wind can trigger a painful episode.
- Patients often protect the trigger zone with their hand or an article of clothing.

- Just after an attack, there is a **refractory period** when touching the trigger zone will not precipitate pain.
- The number of attacks may vary from one or two per day to several per minute.
- Patients with severe TN may be severely disabled by attacks that are triggered by speaking or other mouth movements.

- **Intraoral** trigger zones can confuse the diagnosis by suggesting a dental disorder, and TN patients often first consult a dentist for evaluation.
- The stabbing pain can **mimic the pain of a cracked tooth**, but the two disorders can be distinguished by determining whether placing food in the mouth without chewing or whether gently touching the soft tissue around the trigger zone will precipitate pain.
- **TN pain** will be triggered by **touching the soft tissue** whereas **pressure on the tooth** is required to cause pain from a cracked tooth.

Diagnosis

- ***The diagnosis of TN*** *is usually* ***based on the history*** of shooting pain along a branch of the trigeminal nerve, precipitated by touching a trigger zone.
- A routine cranial nerve examination will be normal in patients with idiopathic TN, but sensory and/or motor changes may be evident in patients with underlying tumors or other CNS pathology.
- **Local anesthetic blocks**, which temporarily eliminate the trigger zone, may also be helpful in diagnosis.
- Since approximately 10% of TN cases are caused by detectable underlying pathology, **enhanced MRI of the brain** is indicated to rule out tumors, multiple sclerosis, and vascular malformations.

Management

Medical

1. **Carbamazepine** is the most commonly used drug and is an effective therapy for greater than 85% of newly diagnosed cases of TN.

- The drug is administered in slowly increasing doses until pain relief has been achieved.
- Skin reactions, including generalized erythema multiforme, are serious **side effects.**

2. Patients who do not respond to carbamazepine alone may obtain relief from **baclofen** or by combining **carbamazepine with baclofen**

3. **Gabapentin**, a newer anticonvulsant that has fewer serious side effects than carbamazepine, is effective in some patients but does not appear to be as reliable as carbamazepine.
4. Other drugs that are effective for some patients:

   Phenytoin

   Lamotrigine

   Pimozide

- Since TN may have temporary or permanent spontaneous remissions, drug therapy should be **slowly withdrawn** if a patient remains pain free for 3 months.

Surgical treatment

1. Procedures performed on the peripheral portion of the nerve, where it exits the jaw;

- at the gasserian ganglion
- and on the brainstem,
- at the posterior cranial fossa.

2. **Peripheral surgery** includes **cryosurgery** on the trigeminal nerve branch that triggers the painful attacks. This procedure is most frequently performed at the **mental nerve** for cases involving the third division and at the **infraorbital nerve** for cases involving the second division.

At the gasserian ganglion:

- Percutaneous radiofrequency thermocoagulation
- Glycerol block at the ganglion
- Compression of the ganglion by balloon microcompression

❖ An infrequent but **severe surgical complication** is anesthesia dolorosa, which is numbness combined with severe intractable pain.

At the brainstem

- Microvascular decompression of the nerve root
- For elderly patients with high surgical risk- Gamma knife stereotactic radiosurgery

GLOSSOPHARYNGEAL NEURALGIA

- It is a rare condition that is associated with paroxysmal pain that is similar to, though **less intense than, the pain of TN.**
- The location of the trigger zone and pain sensation follows the distribution of the **glossopharyngeal nerve,** namely, the pharynx, posterior tongue, ear, and infra-auricular retromandibular area.
- Pain is **triggered by stimulating** the pharyngeal mucosa during chewing, talking, and swallowing.
- **D/D:** Geniculate neuralgia (because of the common ear symptoms) or

  TMDs (because of pain following jaw movement).

- **Diagnosis:** The application of a topical anesthetic to the pharyngeal mucosa eliminates glossopharyngeal nerve pain and can aid in distinguishing it from the pain of other neuralgias.
- The most common **causes** of glossopharyngeal neuralgia are intracranial or extracranial tumors and vascular abnormalities that compress CN IX.

- **Treatment** is similar to that for TN, with a good response to carbamazepine and baclofen.

- **Refractory cases** are treated surgically by:

a) Intracranial or extracranial section of CN IX,
b) Microvascular decompression in the posterior cranial fossa,
c) Percutaneous radiofrequency thermocoagulation of the nerve at the jugular foramen.

NERVOUS INTERMEDIUS (GENICULATE) NEURALGIA

- It is an **uncommon paroxysmal neuralgia of CN VII**, characterized by **pain in the ear** and (less frequently) the anterior tongue or soft palate.
- Pain may be provoked by the stimulation of **trigger zones within the ipsilateral distribution of the nerve.**
- The pain is **not as sharp or intense as in TN**, and there is often some degree of facial paralysis, indicating the simultaneous involvement of the motor root.

- Geniculate neuralgia commonly results from herpes zoster of the geniculate ganglion and nervus intermedius of CN VII, a condition referred to as Ramsay Hunt syndrome.

Treatment:

- **Acyclovir** significantly reduces the duration of the pain.
- Patients with geniculate neuralgia are also treated with **carbamazepine and antidepressants**.
- Patients who **do not respond** to these medications may undergo surgery to section the nervus intermedius.

OCCIPITAL NEURALGIA

- It is a rare neuralgia in the distribution of the **sensory branches of the cervical plexus** (most commonly unilateral in the neck and occipital region).

- The most common **causes** (in descending order of frequency) are trauma, neoplasms, infections, and aneurysms involving the affected nerve(s).

- **Treatment** has included corticosteroids, neurolysis, avulsion, and blocking the nerve with a local anesthetic.

POSTHERPETIC NEURALGIA

- ***Herpes zoster (shingles),*** caused by the reactivation of latent **varicella-zoster virus** infection that results in both pain and vesicular lesions along the course of the affected nerve.
- Approximately 15 to 20% of cases of herpes zoster involve the trigeminal nerve although the majority of these cases affect the ophthalmic division of the fifth nerve, resulting in pain and lesions in the region of the eyes and forehead.

- Herpes zoster of the maxillary and mandibular divisions is a cause of facial and oral pain as well as of lesions.
- In a majority of cases, the pain of herpes zoster resolves within a month after the lesions heal.
- Pain that persists longer than a month is classified as postherpetic neuralgia (PHN) although some authors do not make the diagnosis of PHN until the pain has persisted for longer than 3 or even 6 months.

- PHN may occur at any age, but the major risk factor is increasing age.
- Few individuals younger than 30 years of age experience PHN whereas more than 25% of individuals older than 55 years of age and two-thirds of patients older than over 70 years of age will suffer from PHN after an episode of herpes zoster.
- Elderly patients also have an increased risk of experiencing severe pain for an extended period of time.

- The pain and numbness of PHN results from a combination of both central and peripheral mechanisms.
- The varicella-zoster virus injures the peripheral nerve by demyelination, wallerian degeneration, and sclerosis, but changes in the CNS, including atrophy of dorsal horn cells in the spinal cord, have also been associated with PHN.
- This combination of peripheral and central injury results in the spontaneous discharge of neurons and an exaggerated painful response to nonpainful stimuli.

- ***Clinical Manifestations***

  Patients with PHN experience persistent pain, paresthesia, hyperesthesia, and allodynia months to years after the zoster lesions have healed. The pain is often accompanied by a sensory deficit, and there is a correlation between the degree of sensory deficit and the severity of pain.

Management

- Topical therapy includes the use of topical anesthetic agents, such as lidocaine, or analgesics, particularly capsaicin.
- **Lidocaine** used either topically or injected gives short-term relief from severe pain.
- **Tricyclic antidepressants** such as amitriptyline, nortriptyline, doxepin, and desiprimine reduce the chronic burning pain .
- **Gabapentin** also can be used as it reduces pain by more than 30% and also improves sleep and overall quality of life.
- Patients who undergo episodes of shooting pain may experience relief through the use of anticonvulsant drugs, such as **carbamazepine** or **phenytoin**.

- There is evidence that the use of antiviral drugs, particularly famciclovir, along with a short course of systemic corticosteroids during the acute phase of the disease may decrease the incidence and severity of PHN.

POST-TRAUMATIC NEUROPATHIC PAIN

- ***Etiology and Pathogenesis***

  Trigeminal nerve injuries may result from facial trauma or from surgical procedures, such as the removal of impacted third molars, the placement of dental implants, the removal of cysts or tumors of the jaws, genioplasties, or osteotomies.

- In some individuals, nerve injury results only in **numbness** whereas others experience **pain** that may be either spontaneous or triggered by a stimulus.

- The pain associated with nerve injury often has a **burning quality** due to spontaneous activity in nociceptor C fibers.

- Minor nerve injuries (classified as **neurapraxia**) do not result in axonal degeneration but may cause temporary symptoms of parasthesia for a few hours or days.

- More serious nerve damage (classified as **axonotmesis**) results in the degeneration of neural fibers although the nerve trunk remains intact.
- These injuries cause symptoms for several months but have a good prognosis for recovery after axonal regeneration is complete.

- Total nerve section (**neurotmesis**) frequently causes permanent nerve damage, resulting in anesthesia and/or dysesthesia.
- Central sensitization probably plays a role in the symptoms of neuropathy

Clinical Manifestations

- ***The pain associated with peripheral*** nerve injury may be persistent or may occur only in response to a stimulus such as light touch.
- Patients with nerve damage may experience **anesthesia** (loss in sensation), **paresthesia** (a feeling of "pins and needles"), **allodynia** (pain caused by a stimulus that is normally not painful), or **hyperalgesia** (an exaggerated response to a mildly painful stimulus).

Management

- Treatment of neuropathic pain may be surgical, nonsurgical, or a combination of both, depending on the nature of the injury and the severity of the pain.
- **Systemic corticosteroids** are considered helpful in decreasing the incidence and severity of traumatic neuropathies when administered within the first week after a nerve injury.
- Steroids used after this initial period are of little value.

- The most frequently used medications for the management of neuropathic pain include **tricyclic antidepressants** (TCAs- such as amitriptyline, doxepin, and nortriptyline) and **gabapentin.**
- **Topical capsaicin** may also be effective in controlling pain and is especially useful for patients who are unable to tolerate the side effects of systemic therapy.

Atypical Odontalgia (Atypical Facial Pain)

- Facial pain not fulfilling other criteria.
- “Atypical odontalgia” is used in when the pain is confined to the teeth or gingiva whereas the term “atypical facial pain” is used when other parts of the face are involved
- Etiology unknown

CLINICAL MANIFESTATIONS

- The major manifestation of AO and AFP is a constant dull aching pain without an apparent cause.
- AO occurs most frequently in **women** in the fourth and fifth decades of life.
- Constant dull ache, instead of the brief and severe attacks of pain that are characteristic of TN. There are no trigger zones, and lancinating pains are rare.

- Onset of pain coincide with a dental procedure such as oral surgery or an endodontic or restorative procedure.
- Patients also report seeking multiple dental procedures to treat the pain.
- These procedures may result in temporary relief, but the pain characteristically returns in days or weeks.
- Other patients will give a history of sinus procedures or of receiving trials of multiple medications, including antibiotics, corticosteroids, decongestants, or anticonvulsant drugs.
- The pain may remain in one area or may migrate, either spontaneously or after a surgical procedure.
- Symptoms may remain unilateral, cross the midline in some cases, or involve both the maxilla and mandible.

- A thorough history and examination including evaluation of the cranial nerves, oropharynx, and teeth must be performed to rule out dental, neurologic, or nasopharyngeal disease.
- Examination of the masticatory muscles should also be performed to eliminate pain secondary to undetected muscle dysfunction.
- Laboratory tests should be carried out when indicated by the history and examination.
- Patients with AO or AFP have completely normal radiographic and clinical laboratory studies.

Treatment

- Counseled - regarding the nature of AO and reassured that they do not have an undetected life-threatening disease .
- When indicated, consultation with other specialists such as otolaryngologists, neurologists, or psychiatrists.
- **TCA**s such as amitriptyline, nortriptyline, and doxepin, given in low to moderate doses, are often effective in reducing or (in some cases) eliminating the pain.
- Other recommended drugs include **gabapentin** and **clonazepam**.

Burning Mouth Syndrome (Glossodynia)

- Oral burning that has no detectable cause.

- The burning symptoms in patients with BMS do **not follow anatomic pathways**, there are no mucosal lesions or known neurologic disorders to explain the symptoms, and there are no characteristic laboratory abnormalities.

ETIOLOGY AND PATHOGENESIS

- Hormonal and allergic disorders
- Salivary gland hypofunction
- Chronic low-grade trauma and
- Psychiatric abnormalities.

CLINICAL MANIFESTATIONS

- Women experience symptoms of BMS seven times more frequently than men.
- The tongue is the most common site of involvement, but the lips and palate are also frequently involved.
- The burning can be either intermittent or constant, but eating, drinking, or placing candy or chewing gum in the mouth characteristically relieves the symptoms.
- This contrasts with the increased oral burning noted during eating that occurs in patients with lesions or neuralgias affecting the oral mucosa.

- Patients presenting with BMS are often apprehensive and admit to being generally anxious or “high-strung.”

- They may also have symptoms that suggest depression, such as decreased appetite, insomnia, and a loss of interest in daily activities.

Treatment

- Counseling and reassurance may be adequate management for individuals with mild burning sensations.
- Patients with symptoms that are more severe often require drug therapy.
- The drug therapies that have been found to be the most helpful are **low doses of TCAs**, such as amitriptyline and doxepin, or clonazepam (a benzodiazepine derivative).
- Burning of the tongue that results from parafunctional oral habits may be relieved with the **use of a splint** covering the teeth and/or the palate.