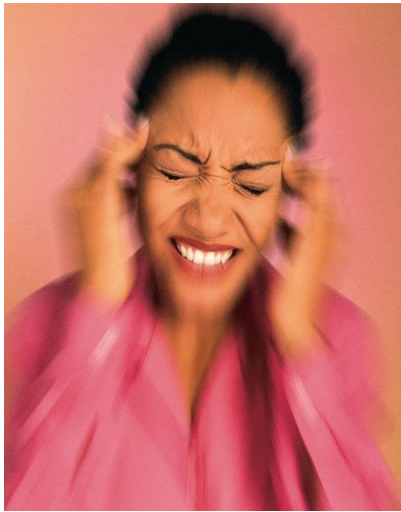


# OROFACIAL PAIN OF NON ODONTOGENIC ORIGIN

Archana Viswanath BDS, MS  
Department of Oral and Maxillofacial Surgery  
Tufts University School of Dental Medicine

# MONDAY MORNING



Doctor, it Hurts

I don't know what it is ,but  
I need to see you right away!!



No matter what our area of dentistry

.....

We are responsible for the relief  
and.....in some cases the cause of pain



The IASP definition of pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"

# ACUTE VS CHRONIC PAIN STATES

## ACUTE

## VS

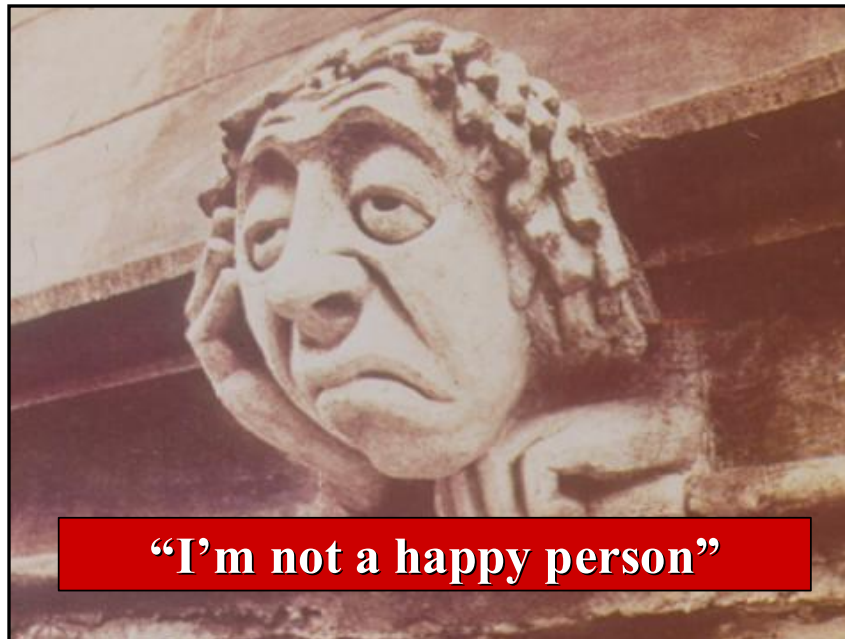
## CHRONIC

- Sudden onset
- Associated with tissue damage
- Increased autonomic nervous system activity
- Temporary (resolves once stimulus is removed)
- Serves protective function

- Persistent (usually longer than 6 months)
- Usually no obvious cause
- No protective function
- Poorly localized, difficult to quantify
- Degrades health and functioning

# ACUTE VS. CHRONIC PAIN

- Acute pain is a *symptom* of disease
- Chronic pain is a *disease* itself; it erodes all aspects of a patient's life



**“I’m not a happy person”**

# OROFACIAL PAIN

- Orofacial pain is pain perceived in the face and/or oral cavity.
- Caused by diseases or disorders of regional structures, by dysfunction of the nervous system, or through referral from distant sources.
- In the United States, 7% of the US population suffer from chronic orofacial pain and more than 3 million people annually seek treatment for chronic orofacial pain



# ACUTE OROFACIAL PAIN SOURCES

## Intra oral Pain Sources

- Dental
- Periodontal
- Mucosal

## Related Structures

- Maxillary sinus
- Salivary glands

Mostly inflammatory in origin,  
Due to: infection, trauma, malignancy



# CHRONIC OROFACIAL PAIN SOURCES

- Musculoskeletal

Masticatory muscles

Tension-type headache

TMJ disorders

- Vascular

Migraine

Cluster headache

Paroxysmal hemicrania

Vascular orofacial Pain

- Neuropathic

Paroxysmal

-Neuralgias

Continuous

-Deafferentation





# WHAT IS NEUROPATHIC PAIN?

- “Pain initiated or caused by a primary lesion or dysfunction in the nervous system”
- Manifests itself with various sensory symptoms and signs
- Represents a group of heterogeneous conditions



\* IASP, 1994.

# CHARACTERISTICS OF NEUROPATHIC PAIN

- Paroxysmal neuralgia; SUNCT, cluster-tic; CPH-tic
- Continuous deafferentation, neuritis, sympathetically maintained pain
- Burning qualities
- Electric like
- Usually related to nerve distribution
- Does not disturb sleep

# PUZZLES OF NEUROPATHIC PAIN

- Originate in one body site but felt in another
- Produced by tactile stimulus
- Associated with movement limitation as well as sensation of pain
- Experienced without any clear evidence of noxious stimulus

# OROFACIAL NEUROPATHIC PAIN

- Paroxysmal neuralgias
  - Trigeminal neuralgias
  - Primary (idiopathic)
  - Secondary (symptomatic)
  - Glossopharyngeal neuralgias
- Continuous neuralgias
  - Deafferentation pain
  - Traumatic neuromas
  - Atypical odontalgia
  - Post herpetic neuralgia

## 56-y-o male

- Very severe, short pain attacks, R maxillary for 2 years
- Patient is pain free in between attacks
- Pain is typically triggered by chewing , shaving, touching
- Pain does not wake from sleep



Picture courtesy : Dr.Eliav



15 sec



30 sec



45 sec



60 sec

Trigeminal Neuralgia:

Tic 15-60 sec after  
triggering

Picture courtesy : Dr.Eliav

# TRIGEMINAL NEURALGIA

- Intensity: Severe
- Quality: Paroxysmal  
Stabbing  
Electric
- Duration: Seconds-minutes
- Wakes from sleep: Rarely
- Laterality: Unilateral (Bi=rare 5%)
- Provoked: Trigger (50% identifiable)  
Innocuous stimuli
- Others:
  - Refractory period and demonstrable latency
  - Age of onset 50y
  - Nerve block:  
Abolishes trigger and pain
  - Aut Signs VERY RARE



# TRIGEMINAL NEURALGIA- PERIODICITY

- Refractory period
- Pain free periods may occur lasting
  - years 16%
  - months 36%
  - weeks 16%
- Location Trigeminal branches
  - Most Commonly

Mandibular	18%
Maxillary	16%
II & III	35%
I, II, & III	14%
I	2%



# TRIGEMINAL NEURALGIA - TREATMENT

- Medical
  - 70% of cases can successfully be treated
- Surgical
  - 30% of cases will need further intervention due to failed medical treatment

# MEDICAL MANAGEMENT

- 1<sup>st</sup> line
  - Carbamazepine (Tegretol)
  - Oxcarbazepine (Trileptal)
  - Baclofen (Lioresal)
  - Gabapentin (Neurontin)
- 2<sup>nd</sup> line
  - Phenytoin (Dilantin)
  - Divalproex (Depakote)
  - Clonazepam (Klonopin)

# TRIG. NEURALGIA: SURGICAL

Procedure	Advantages	Disadvantages
<b>Radiofrequency</b>	90% effective “minor” procedure. Brief hospital stay	Facial sensory loss. Facial weakness. Corneal hypesthesia
<b>Glycerol injection</b>	85% effective. No craniotomy. Minor procedure	Masseter weakness. Facial sensory loss
<b>Microvascular decompression</b>	90% long term effectiveness No sensory loss	± 4% serious complic. 1% mortality. Long hospital stay

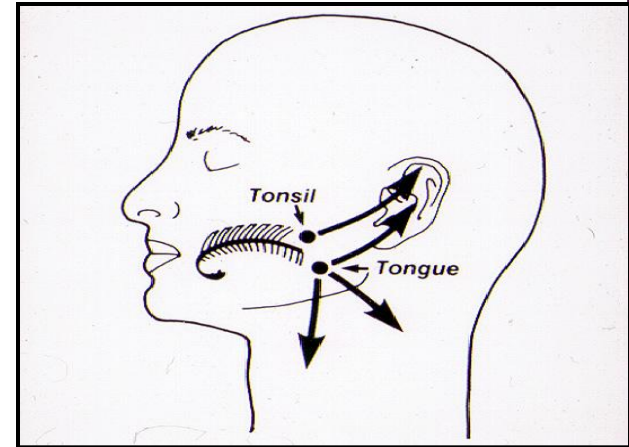
# TN-DIFFERENTIAL DIAGNOSIS

- Acute pulpitis
- TMD
- Atypical odontalgia
- Glossopharyngeal neuralgia
- Cluster headache



# GLOSSOPHARYNGEAL NEURALGIA

- Similar to TN but not as severe
- Usually triggered by swallowing or chewing
- Ear, pharynx, tonsil, posterior tongue, postmandibular area
- Management is similar to TN



# CASE : 30 YEAR OLD FEMALE PATIENT

- 4 year-history of pain
- Dull, pressure-like pain
- Pt had multiple crowns, RCT, apicoectomies - no resolution
- Additional dental treatment has worsened the symptoms
- Currently she has possible depression and high levels of anxiety because of pain

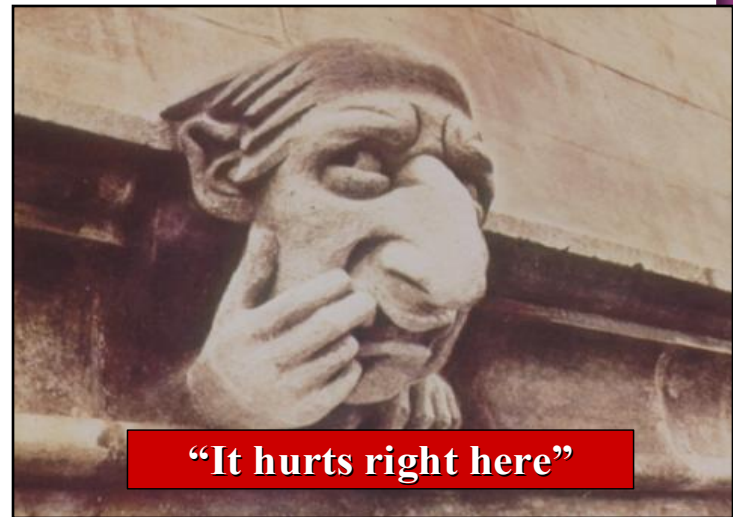


Picture courtesy Dr. Julyana Gomes



# ATYPICAL ODONTALGIA (AO)

- A poorly understood chronic pain disorder
- Persistent pain
- Apparently normal teeth
- Adjacent oral tissues
- Site of tooth extraction



# **MOST PATIENTS 40-50 YR FEMALES**

- Rare in younger age groups
- Many patients are seen by a number of clinicians before properly diagnosed
- History of many failed dental treatments
- Serve to perpetuate the pain rather than relieve it

# PRECIPITATING FACTORS

- Traumatic injury
- More likely to develop in a tooth that was painful prior to dental interventions
- Routine dental procedures
  - Endodontic therapy
  - Apicoectomy
  - Implants
  - Tooth extraction
  - Periodontal treatment or surgery

# CLINICAL CHARACTERISTICS OF AO

- Continuous or almost continuous pain in a tooth or tooth site
  - Constant, dull aching
  - Moderate to severe intensity
  - Associated hyperesthesia (tooth is tender to finger pressure)
- Pain present for more than 4 months
- No obvious local (dental causes)
  - Negative clinical examination
  - Normal radiographs

## Equivocal somatic nerve block

- No history or evidence of significant psychopathology

# PAIN OF AO

- Burning or throbbing component may be reported
- Occasionally spontaneous and sharp
- Can
  - Cross midline of the mandible or maxilla
  - May spread to the face

# MOST LIKELY MECHANISM

- Deafferentation
- Partial or total loss of an afferent nerve supply from a particular area
- Usually reversible
- Pain will persist even after healing

# AO - DIFFERENTIAL DIAGNOSIS

- Odontogenic pain
- Trigeminal neuralgia
- Myofascial TrP referred tooth pain
- Maxillary sinusitis
- Facial migraine
- TMD



# DIAGNOSIS OF AO

- Eliminate any odontogenic cause
- Clinical examination
- Diagnostic blocks
- DIAGNOSIS!!!

*Further dental treatment is contraindicated!*

(Endodontic treatment, Apicoectomy, Extraction)



## AO - MANAGEMENT

- Oral Medications:
  - Gabapentin (Neurontin)
  - Amitriptyline
  - Baclofen
- Topical medications under a neurosensory stent
- Sympathetic blockade

# TOPICAL MEDICATIONS UNDER NEUROSENSORY STENT

- Capsaicin (depletes substance P)
- Lidocaine (local anesthetic)
- Ketoprofen (NSAID)
- Ketamine (NMDA antagonist)
- Clonidine (alpha-2 adrenergic agonist)
- Carbamazepine

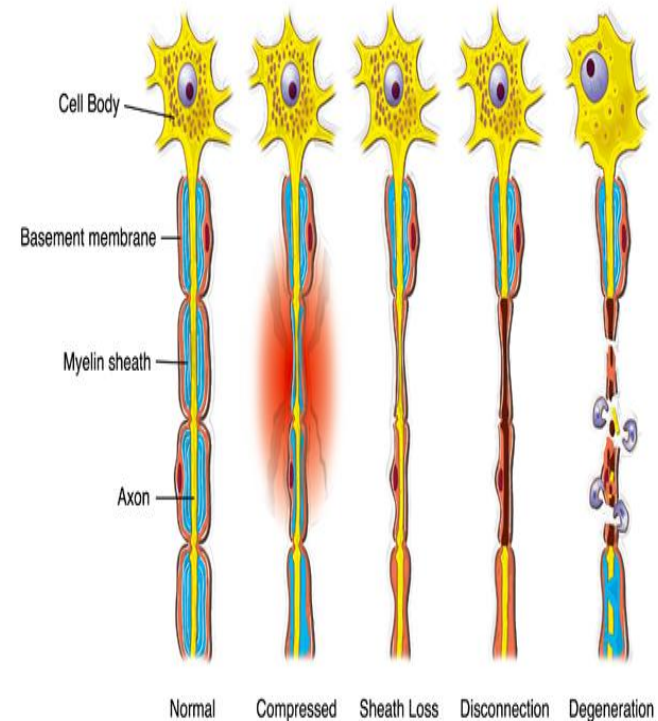


Serves as a vehicle for medications  
Prevents stimulation of area

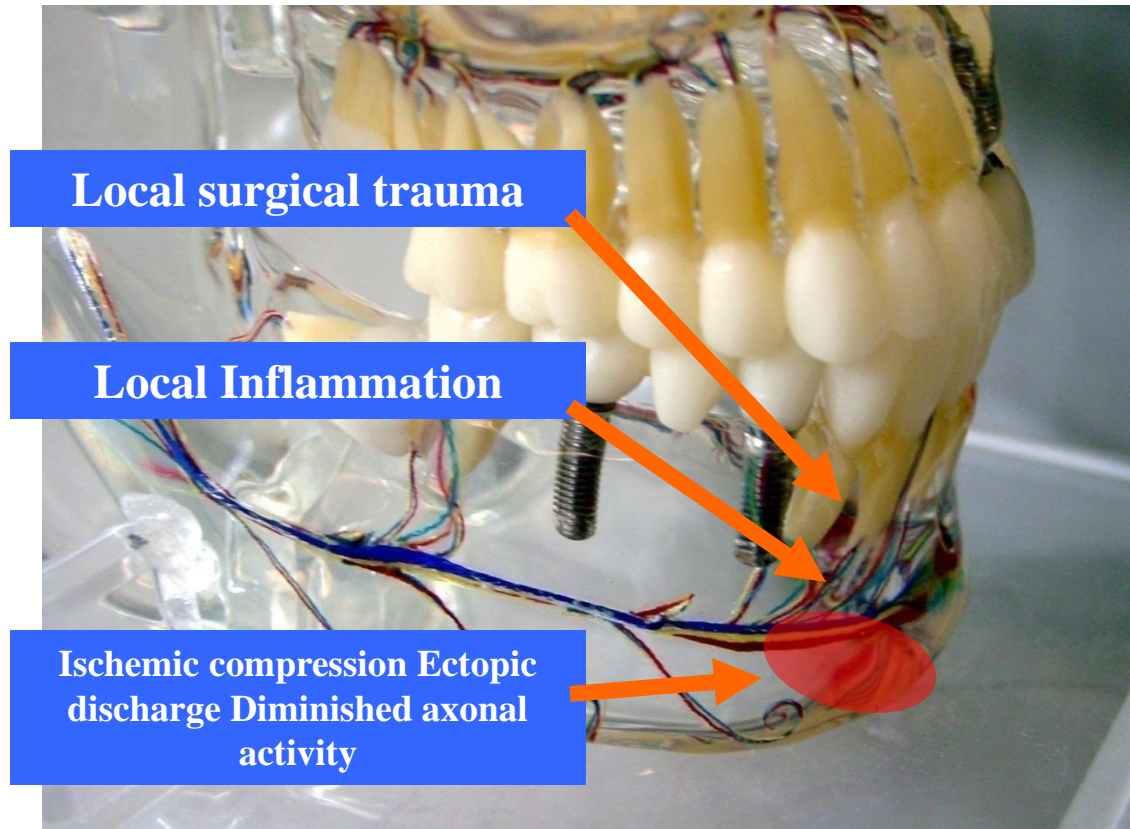
# NEUROPATHIC PAIN FOLLOWING NERVE INJURY

- Secondary to Neuronal injury
- Depends on
  - Magnitude and duration of the injury
  - Mechanical deformation
  - Ischemia
  - Vascular compression
  - Transection

Partial  
Complete



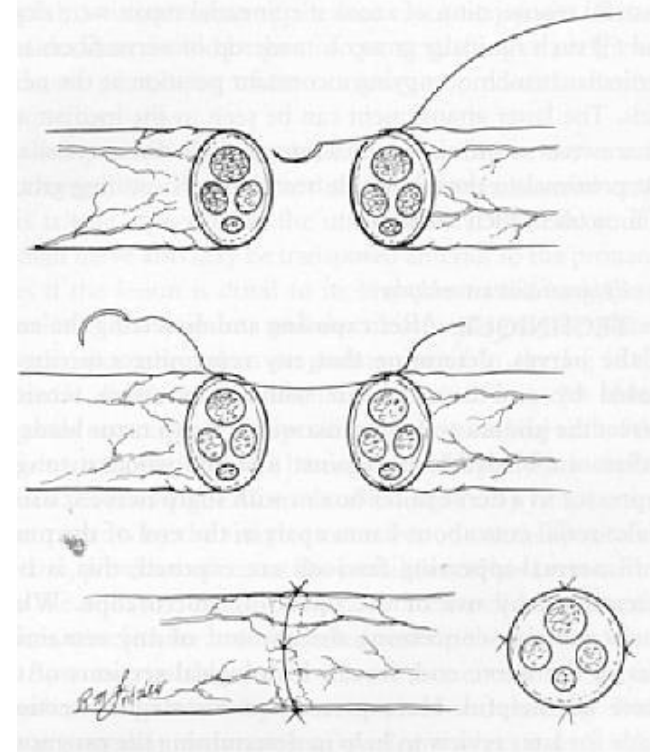
# EXAMPLE: PIN



Picture courtesy: Dr.Gary Heir

# SEVERED NERVE ATTEMPTS TO REGENERATE

- After an injury when a nerve fiber just beyond an injury and farthest from the cell body no longer receives vital proteins and enzymes it begins to degenerate
- New extensions sprout from severed nerve
- These sprouts result in a mass of tangled, disorganized tissue known as **neuroma**



# CLINICAL FEATURES OF NEUROMA

- Tinel's sign
- Light tapping of the growing tip of a regenerating peripheral nerve elicits a tingling sensation
- A neuroma is also extremely sensitive to mechanical disturbance
- Movements that stretch or compress the nerve may cause
- Paroxysmal pain in the area
- Ectopic discharge
- Impulse and spontaneous pain



# DEAFFERENTATION

Partial or total loss of an afferent (sensory) nerve supply from an area due to nerve damage

## Deafferentation Pain

Pain occurring in an area that has lost most or all of its sensory nerve supply

# DEAFFRENTATION PAIN POST TRAUMATIC DENTAL NEUROPATHY (Dental) Painful Neuropathy

- Can follow endodontic therapy (3-5%)
- Can follow traumatic injury, extraction, periodontal surgery, implants, and apicoectomy
- May also follow more routine dental procedures - crown preparations, deep restorations and deep scaling

# CLINICAL FEATURES OF DEAFFERENTATION PAIN

- Genetic predisposition
- Mild to moderate pain
- Delay in onset after injury to nerve (days to months)
- Spreads to other orofacial structures (can cross the midline)
- Resistant to treatment

# TREATING DENTAL AND OROFACIAL PAIN

- Without an accurate diagnosis, treatment may not succeed
- An accurate diagnosis is the first step in the treatment of orofacial pain
- If a dental source of the pain is not found ,no dental treatment should be initiated



# ALGORITHM FOR DENTAL PAIN OF QUESTIONABLE ODONTOGENIC ORIGIN

