NON-ODONTOGENIC TOOTHACHE

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DENT5310

Orofacial Pain and Dental Sleep Medicine Module

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DISCLOSURES

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Neither I nor my immediate family have any financial interests that would create a conflict of interest or restrict my independent judgment with regard to the content of this presentation.

OUTLINE

- ODONTOGENIC PAINS
- SITE VS SOURCE OF OROFACIAL PAIN
- NON-ODONTOGENIC PAINS
- TAKE HOME MESSAGE

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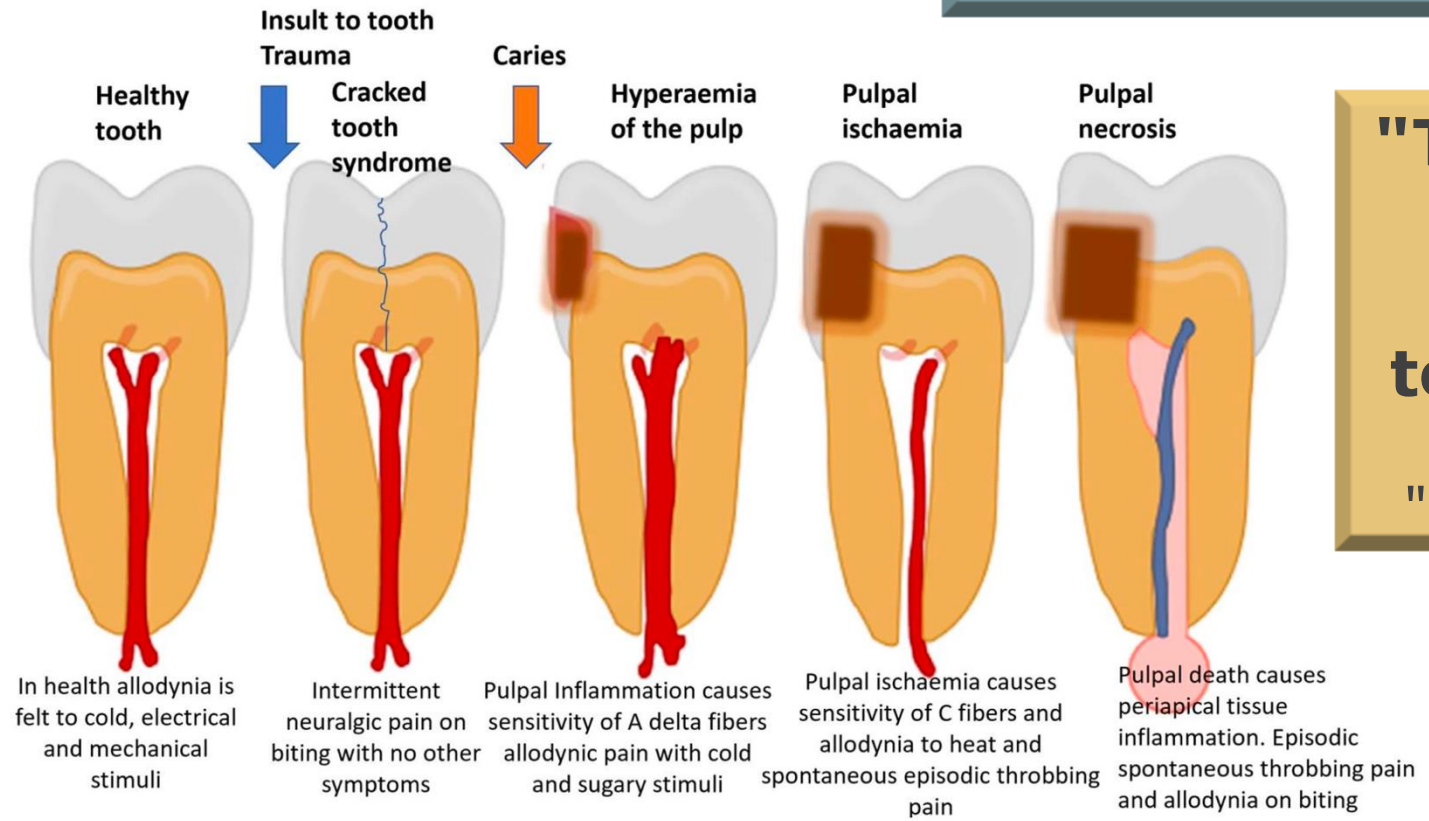
ODONTOGENIC PAINS

Odontogenic pain originates from the teeth, dental pulp, periodontal ligaments, or surrounding structures like the alveolar bone.

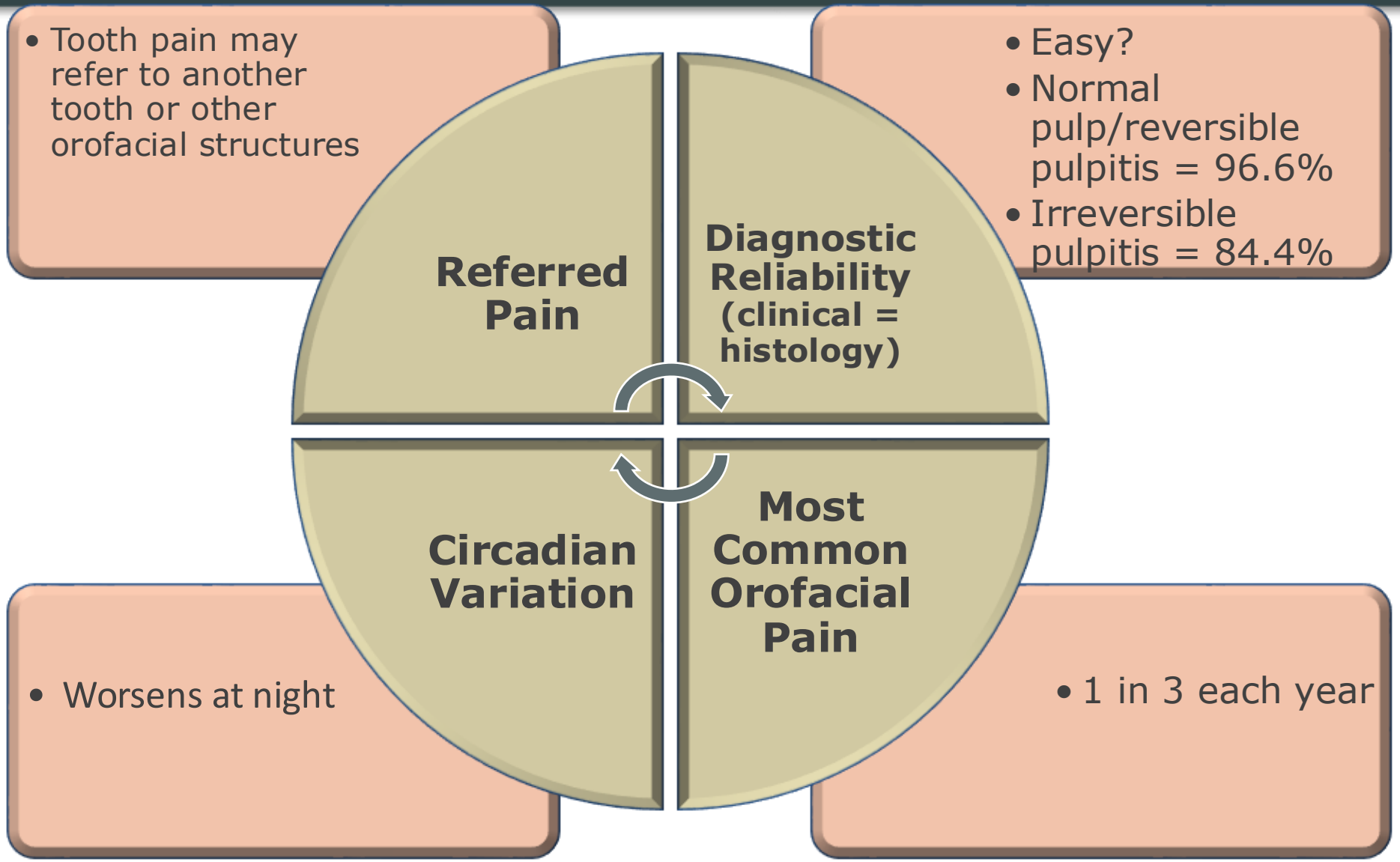
The multiple ‘faces’ of toothache



"There was never yet philosopher that could endure the toothache patiently”
William Shakespeare - "Much Ado About Nothing"

Renton T. Tooth-Related Pain or Not?. *Headache*. 2020;60(1):235-246.

ODONTOGENIC PAINS FACTS



Annino & Goguen Otolaryngol Clin Noth Am 2003;36:1127-35.
Nixdorf DR et al. OOOOE 2010;36:1494-1498.

Lipton et al. JADA 1993;124:115-121.
Balasubramaniam R et al. OJS 2011;1:92-102.

OUTLINE

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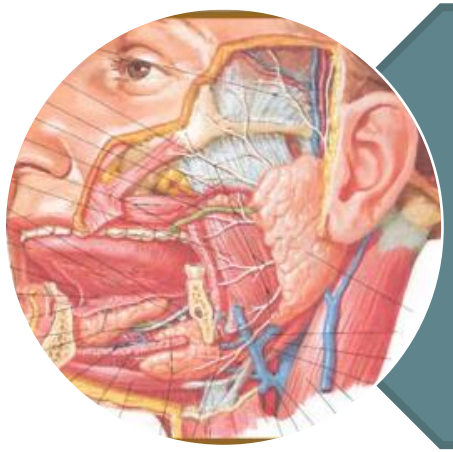
SITE VS SOURCE OF PAIN

Site of Pain

- The location where the patient feels the pain



Source of Pain

- That tissue from which the pain actually originates

Balasubramaniam R et al. OJS 2011;1:92-102.
Thomas DC et al. Dent Clin North Am. In press.

SITE VS SOURCE OF PAIN

Primary Pain

- Site (where it hurts) = Source (where it originates)

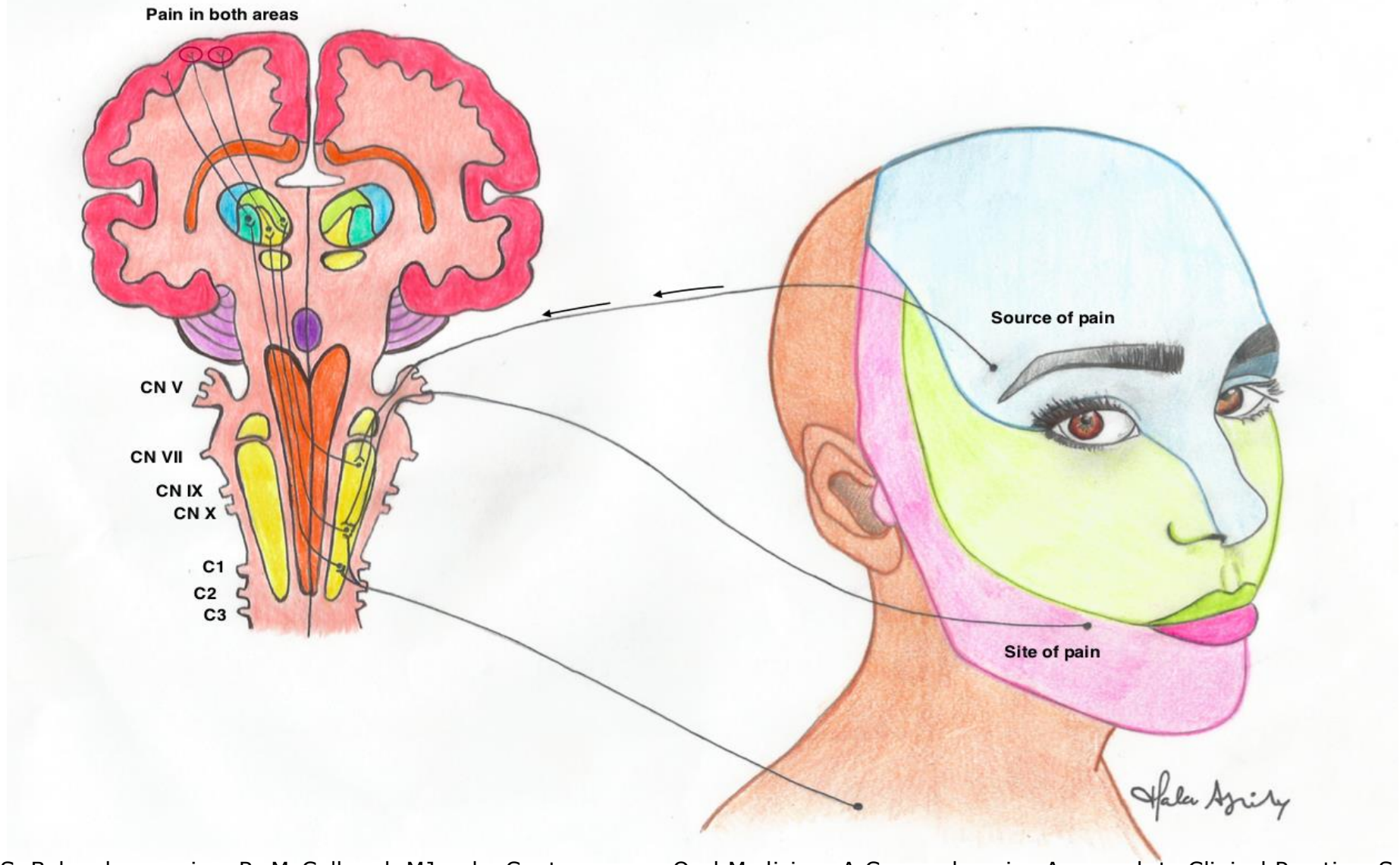
Heterotopic Pain

- Site ≠ Source
- Projected Pain or Referred Pain

Treatment Success is achieved by treating the Source of Pain, NOT the Site of Pain

Balasubramaniam R et al. OJS 2011;1:92-102.
Thomas DC et al. Dent Clin North Am. In press.

SITE VS SOURCE OF PAIN



Farah CS, Balasubramaniam R, McCullough MJ, eds. Contemporary Oral Medicine: A Comprehensive Approach to Clinical Practice. Springer; 2019.

OUTLINE

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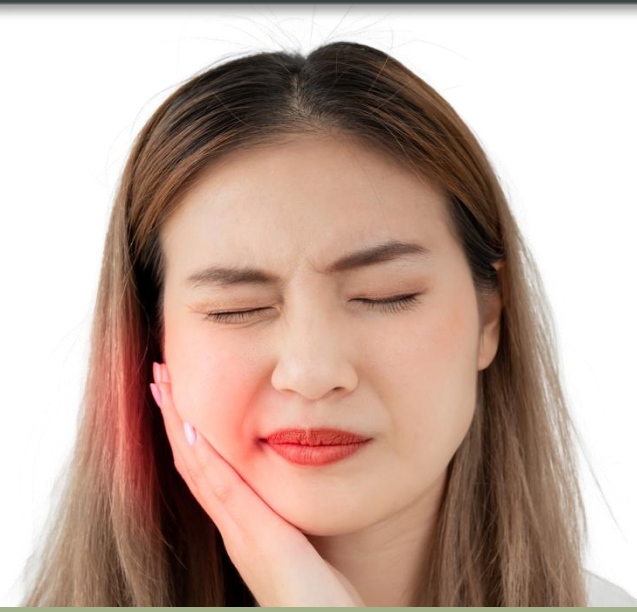
NON-ODONTOGENIC PAINS

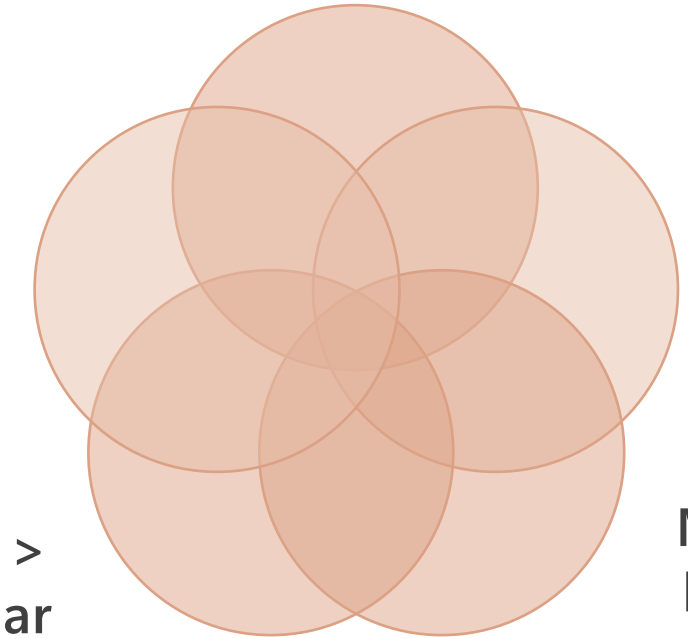


Non-odontogenic pain refers to pain in the orofacial region (mouth, teeth, jaw, and face) that originates from sources other than the teeth or their supporting structures.

2.5-4%: dental visits for "toothache"

Greater incidence molars > premolars > incisors

10%: concomitant odontogenic causes



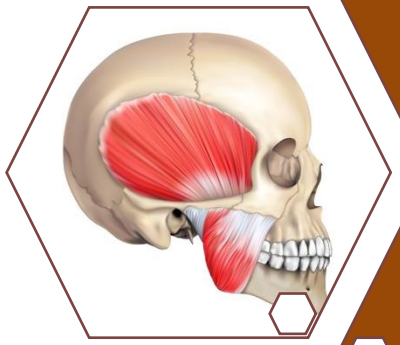
Maxillary > Mandibular Teeth

Most prevalent between 2nd & 6th decade

Yatani H et al. J Oral Rehabil. 2014 Nov;41(11):843-52.
Spencer CJ, Gremillion HA. Dent Clin North Am. 2007 Jan;51(1):209-24.

NON-ODONTOGENIC PAINS

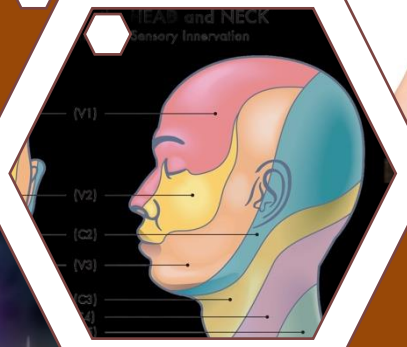
Myofascial Origin



Neuropathic Origin

Sinus Origin

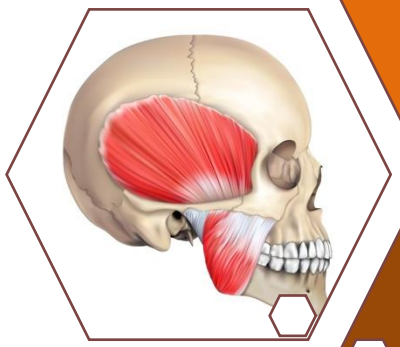
Neurovascular Origin



Cardiac Origin

Psychogenic Origin

NON-ODONTOGENIC PAINS

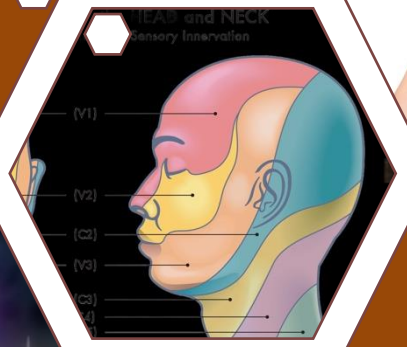


Myofascial Origin

Neuropathic Origin

Sinus Origin

Neurovascular Origin



Cardiac Origin

Psychogenic Origin

MYOFASCIAL ORIGIN

Non-Odontogenic Pain of Myofascial Origin refers to pain originating from muscles and fascia that present as tooth pain

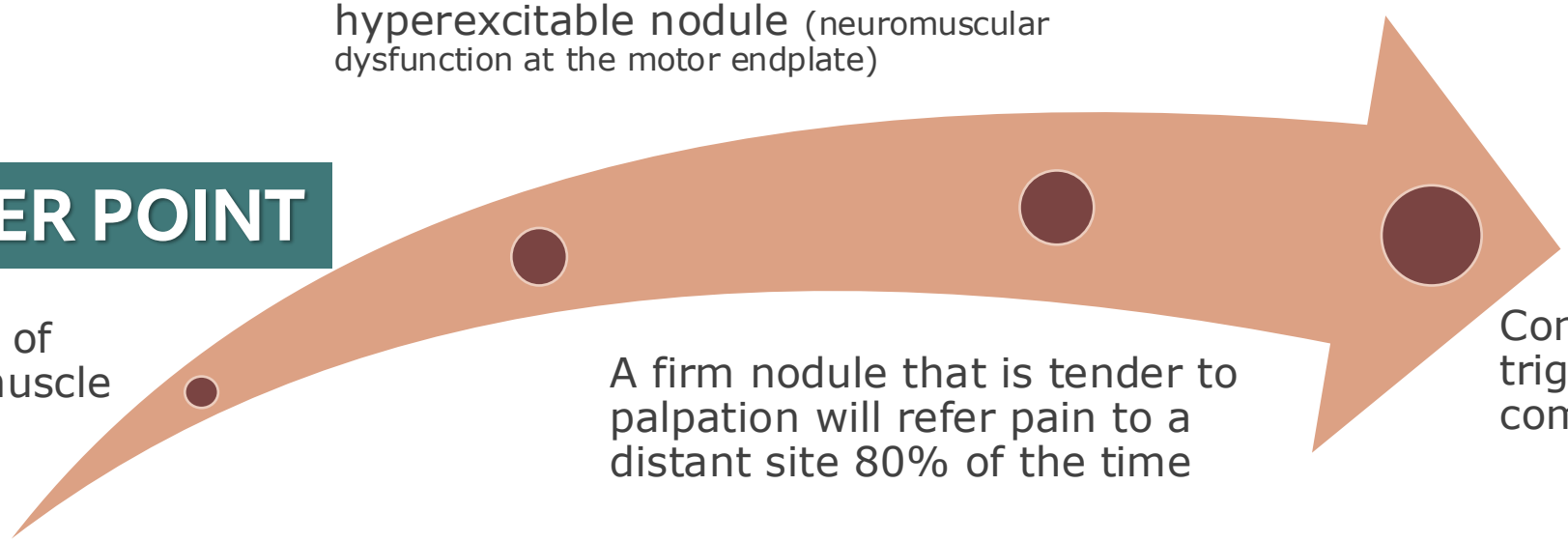
TRIGGER POINT

Taut band of skeletal muscle

Active trigger point: localised hyperexcitable nodule (neuromuscular dysfunction at the motor endplate)

A firm nodule that is tender to palpation will refer pain to a distant site 80% of the time

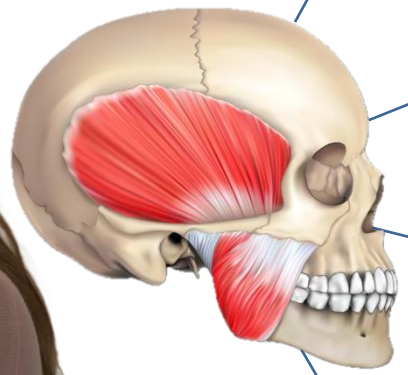
Convergence Theory: trigeminal sensory complex



Hong et al. Arch Phys Med Rehabil 1997;78:957-60.
Travell and Simons' Myofascial Pain and Dysfunction: the trigger point manual 1999

Wright JADA 2000;131:1307-15.
Sessle et al. Pain 1986;27:219-35.

MYOFASCIAL ORIGIN: CLINICAL PRESENTATION



Quality
- Dull, ache
- Constant

No obvious dental signs of pathology
- Negative pulp test
- No clinical pathology
- No radiographic pathology

Muscle Provocation
- Palpation & Function of <u>Source of Pain</u>: Increases tooth pain

Trigger Point Injection
- Reduces / Relieves tooth pain
- Local anaesthetic of the tooth: no change to pain

MYOFASCIAL ORIGIN: CLINICAL PRESENTATION

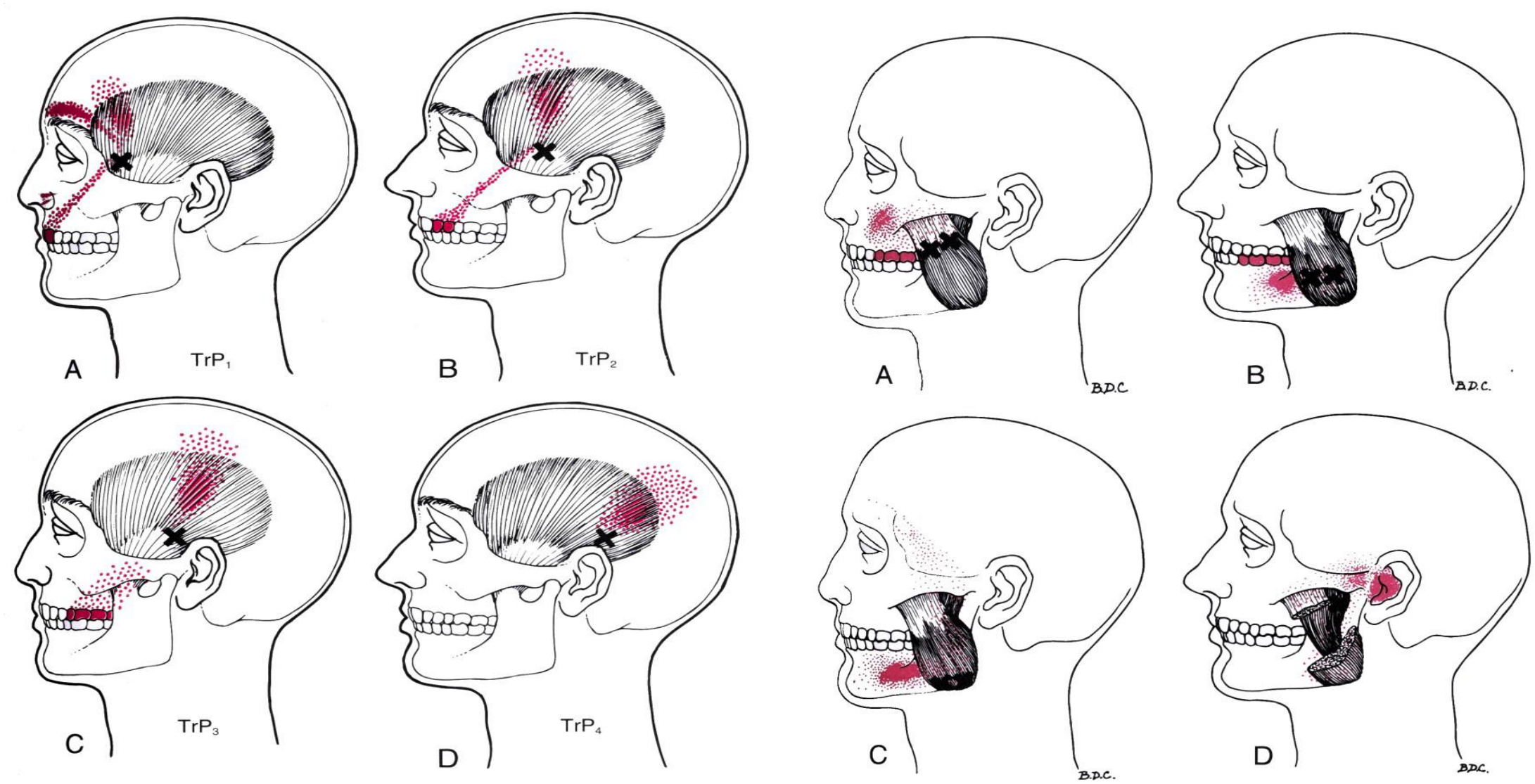
NOT FUN FACTS!

11% of masticatory myofascial pain patients presented with non-odontogenic pain.

7% of "masticatory myofascial tooth pain" had unnecessary endodontic treatment.

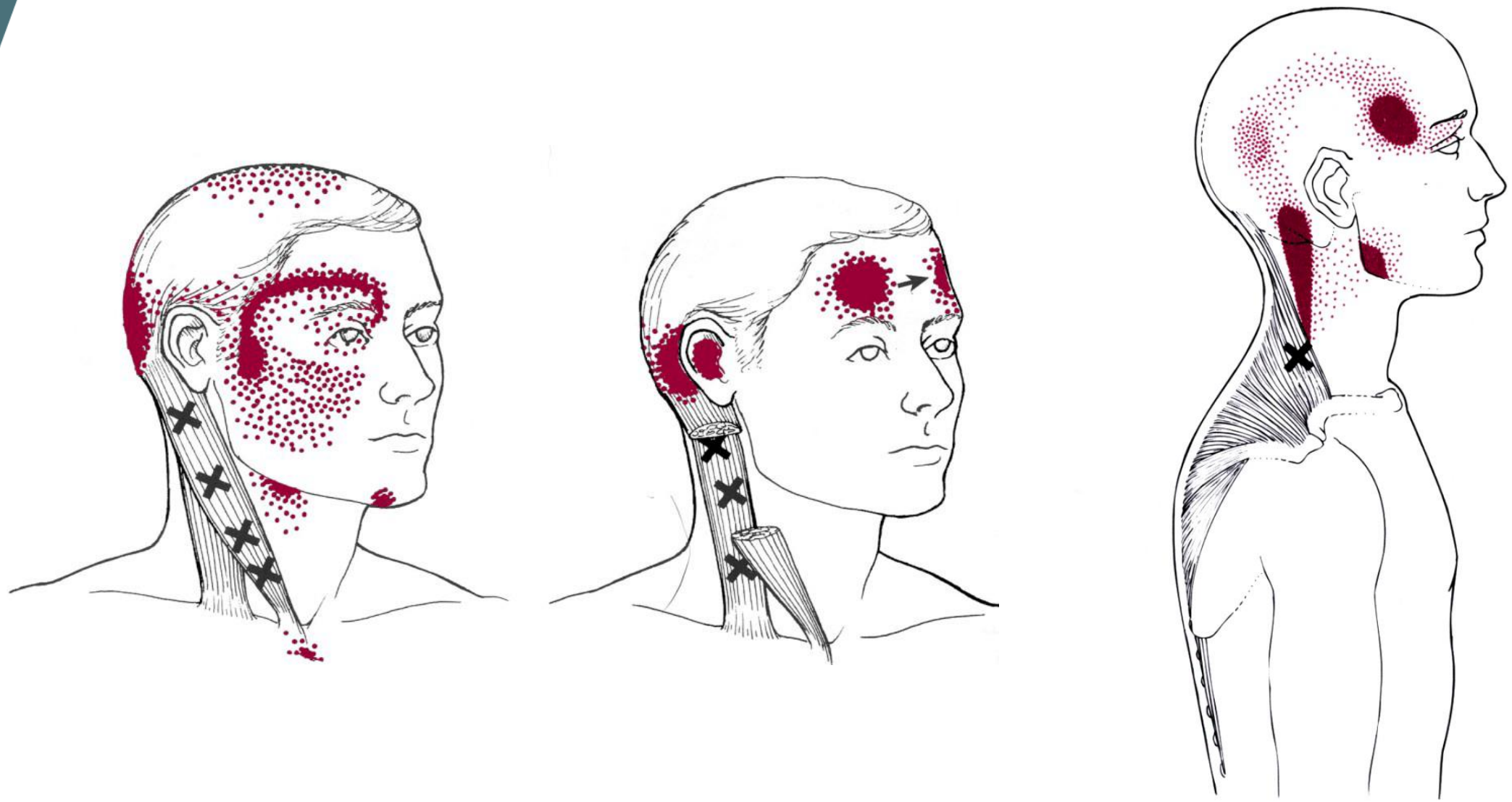
Nixdorf DR et al. J Endod. 2010;36(9):1494-1498.
Wright EF. J Am Dent Assoc. 2000 Sep;131(9):1307-15.

MYOFASCIAL ORIGIN: TRIGGER POINT



Travell JG, Simons DG. Myofascial pain and dysfunction: the trigger point manual. Vol. 1. Upper half of body. 2nd ed. Baltimore: Williams & Wilkins; 1999.

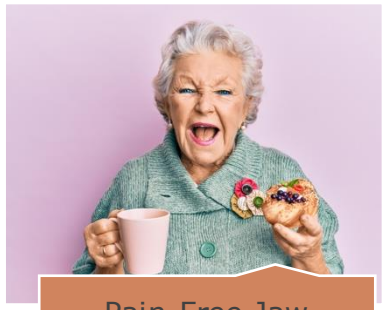
MYOFASCIAL ORIGIN: TRIGGER POINT



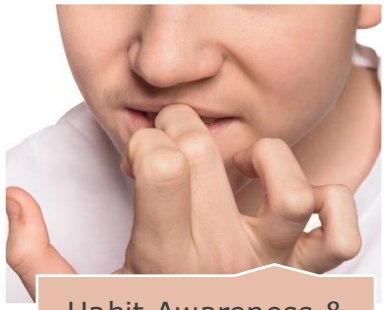
Travell JG, Simons DG. Myofascial pain and dysfunction: the trigger point manual. Vol. 1. Upper half of body. 2nd ed. Baltimore: Williams & Wilkins; 1999.

MYOFASCIAL ORIGIN: MANAGEMENT

Education & Reassurance

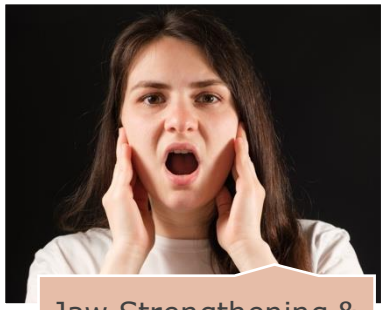


Pain-Free Jaw Function



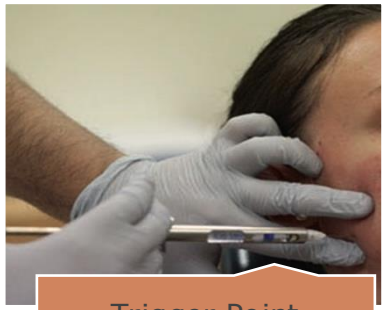
Habit Awareness & Reversal

Spray & Stretch



Jaw Strengthening & Stretching Exercises

Physical Therapy

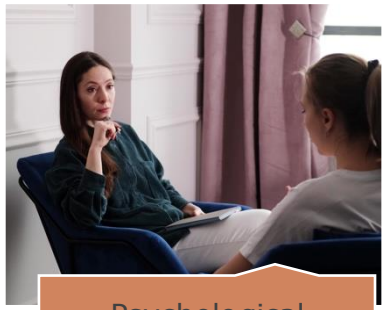


Trigger Point Injections

Oral Appliance Therapy

Pharmacotherapy

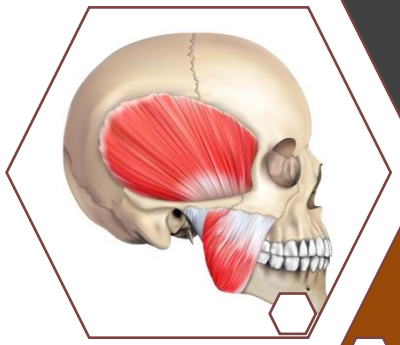
Botulinum Toxin Injections



Psychological Therapy

NON-ODONTOGENIC PAINS

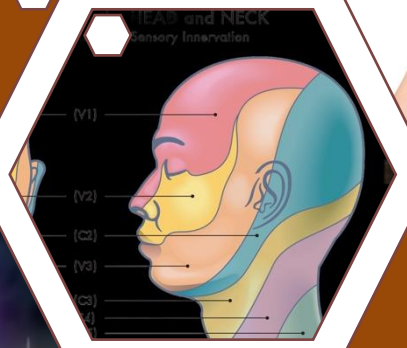
Myofascial Origin



Neurovascular Origin

Neuropathic Origin

Sinus Origin

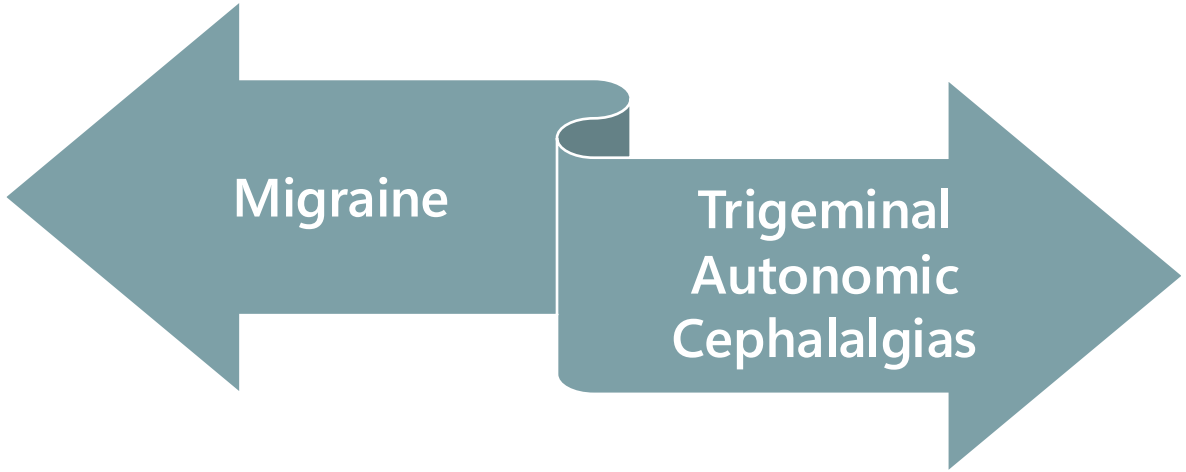


Cardiac Origin

Psychogenic Origin

PAIN OF NEUROVASCULAR ORIGIN

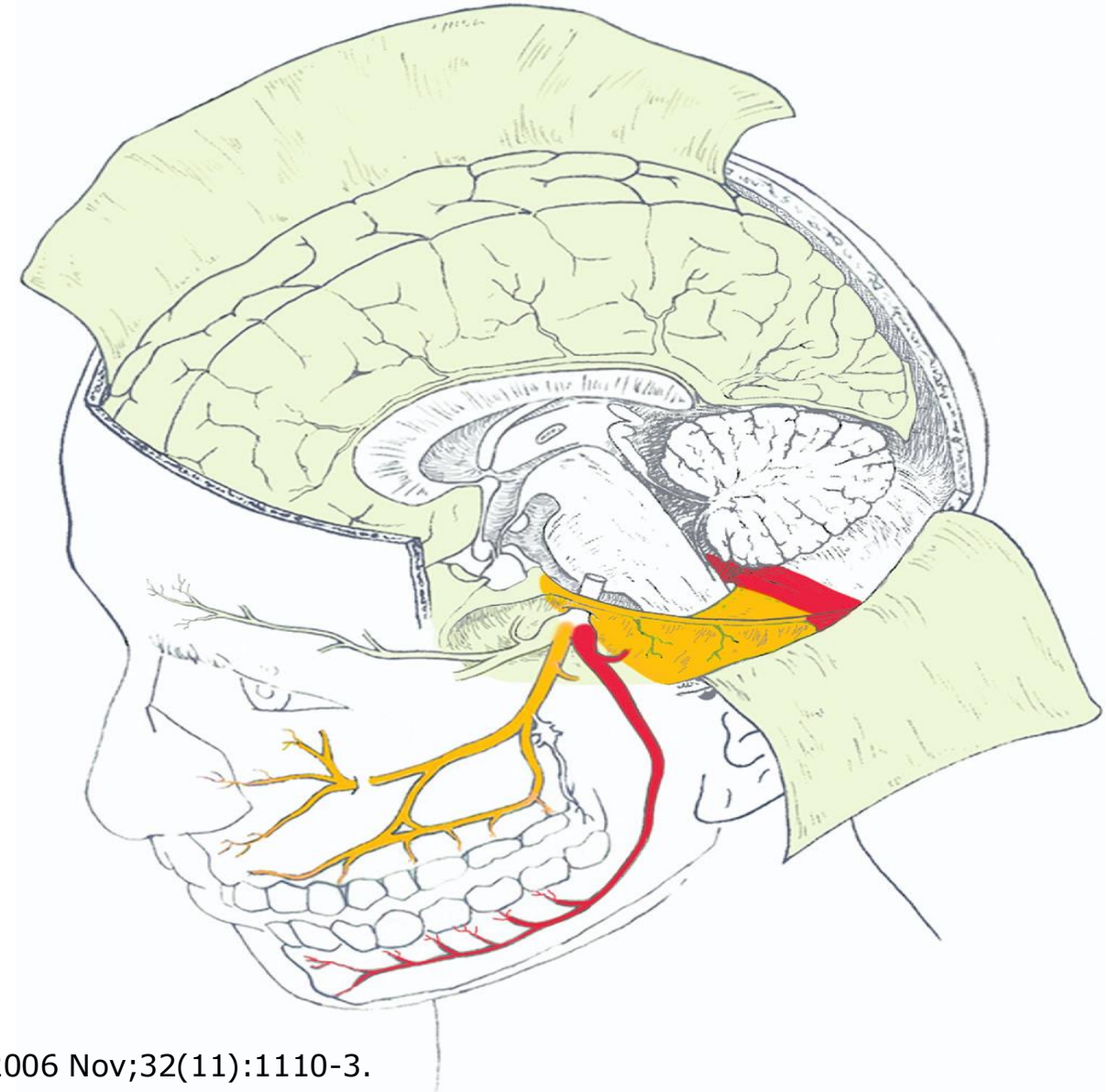
"Headache" may present as variant in the orofacial region mimicking toothache.



NEUROVASCULAR OROFACIAL PAIN

Klasser & Balasubramaniam 2007; Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 104:640-646.
Balasubramaniam & Klassser 2007; Oral Surg Oral Med Oral Pathol Oral Radiol Endod 104:345-358.
Klasser & Balasubramaniam 2007; Oral Surg Oral Med Oral Pathol Oral Radiol Endod 104:763-171.
Balasubramaniam et al. 2008; JADA 139(12): 1616-1624.

PAIN OF NEUROVASCULAR ORIGIN



Alonso AA, Nixdorf DR. J Endod. 2006 Nov;32(11):1110-3.

PAIN OF NEUROVASCULAR ORIGIN: CLINICAL PRESENTATION

Haviv Y. et al. J Oral Facial Pain Headache 2020;34(2):121–8.

Duration: < 1 week

- 1/3 chronic pain

70% Unilateral

- 62% alveolar process
- 32% mucosal sites

Moderate – Severe Pulsating Pain

- 35% woke patient

F:M = 3.2:1

- Age of onset:40 years

Autonomic Features:

tearing

nasal congestion

rhinorrhoea

fullness

nausea

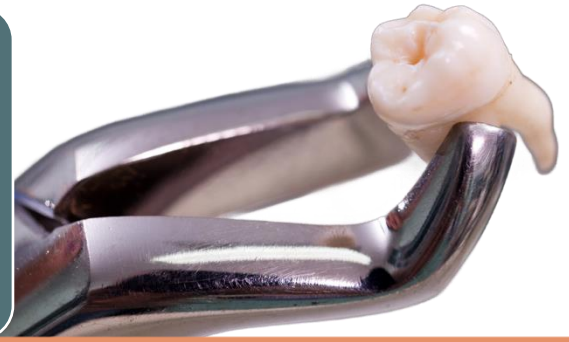
photophobia

phonophobia

- DENTAL HYPERSENSITIVITY

PAIN OF NEUROVASCULAR ORIGIN: CLINICAL PRESENTATION

11 “lower-half facial migraine”



NOT SO FUN FACTS!

4: history of migraine

45%: endodontic treatment

Time to diagnosis

101 months

(6 to 528 months)

36%: teeth extracted

Peñarrocha M et al. J Oral Maxillofac Surg. 2004 Dec;62(12):1453-6.

PAIN OF NEUROVASCULAR ORIGIN: CLINICAL PRESENTATION

X DONT NEED TO KNOW

Diagnostic Criteria for Neurovascular Orofacial Pain

Description: Attacks of variable duration of moderate or severe intraoral pain, without head pain, often accompanied by toothache-like symptoms, with mild autonomic and/or migrainous symptoms. Two subforms are represented by patients with relatively short attacks (1-4 hours) and those with longer attacks (>4 hours)

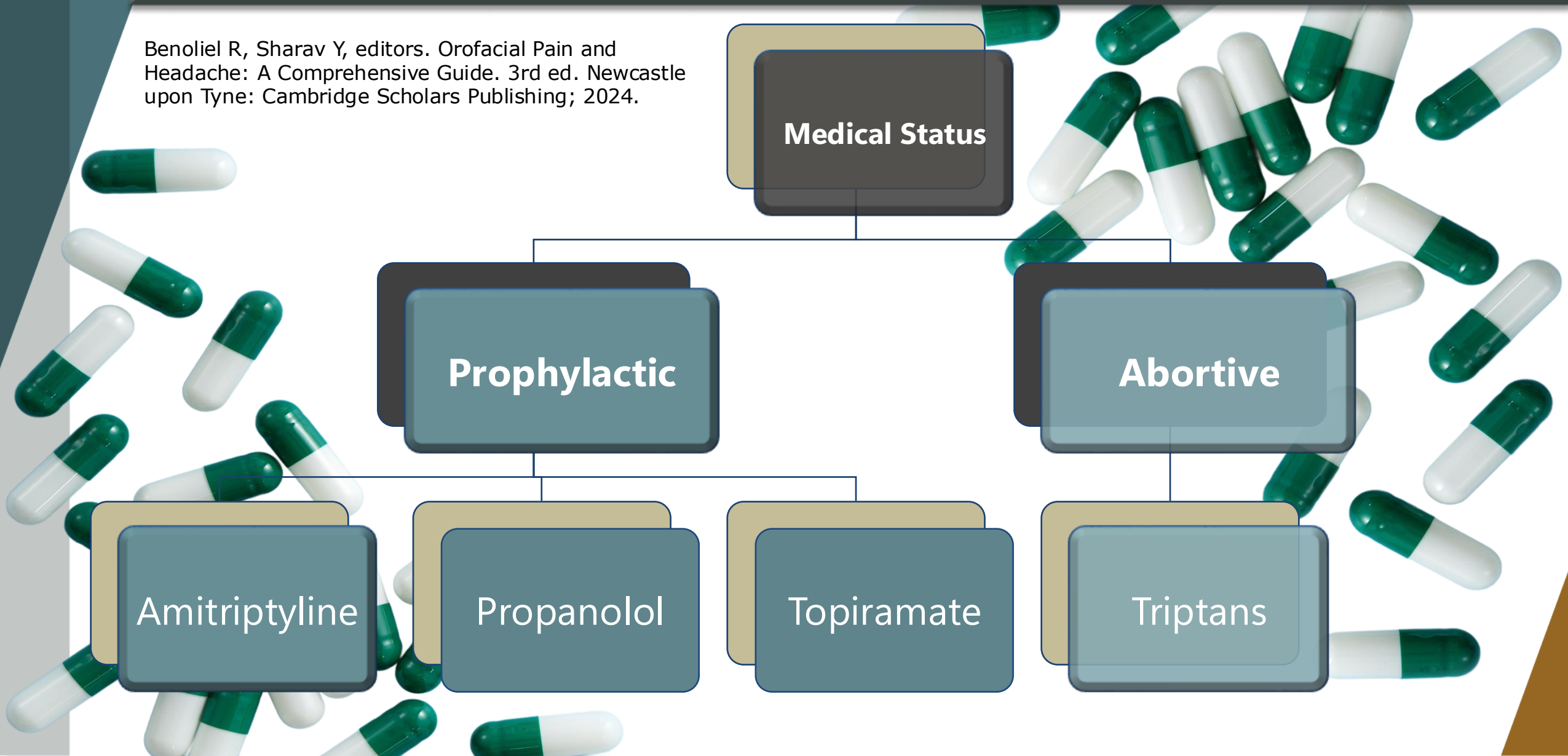
Diagnostic criteria

A	• At least five attacks of unilateral pain[1] of variable duration, without head pain, fulfilling criteria B-D • Recurrent paroxysms of the unilateral facial pain in the distribution(s) of one or more divisions of the trigeminal nerve, with no radiation beyond, and fulfilling criteria B and C
B	Pain has all of the following characteristics: 1. Lasting from a fraction of a second to 2 minutes 2. Moderate or severe intensity 3. Electric shock-like, shooting, stabbing or sharp in quality 4. Either or both of the following qualities: a) Toothache-like b) Pulsating
C	1. Precipitated by innocuous stimuli within the affected trigeminal distribution 2. Pain is accompanied by at least one of the following: • ipsilateral lacrimation and/or conjunctival injection • ipsilateral rhinorrhoea and/or nasal congestion • ipsilateral cheek swelling • photophobia and/or phonophobia • nausea and/or vomiting
D	Pain is unexplained by any local cause, and clinical and radiographic examinations are normal
E	Not better accounted by another ICOP or ICHD-3 diagnosis

International Classification of Orofacial Pain, 1st edition (ICOP). Cephalalgia. 2020 Feb;40(2):129-221.

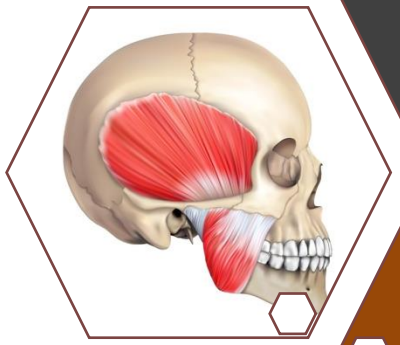
PAIN OF NEUROVASCULAR ORIGIN: MANAGEMENT

Benoliel R, Sharav Y, editors. Orofacial Pain and Headache: A Comprehensive Guide. 3rd ed. Newcastle upon Tyne: Cambridge Scholars Publishing; 2024.



NON-ODONTOGENIC PAINS

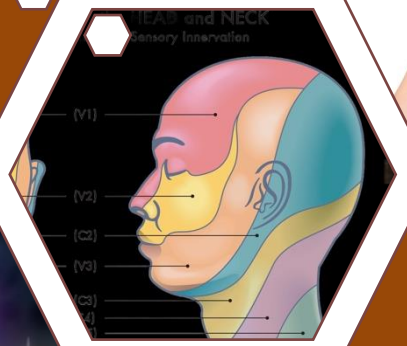
Myofascial Origin



Neurovascular Origin

Neuropathic Origin

Sinus Origin

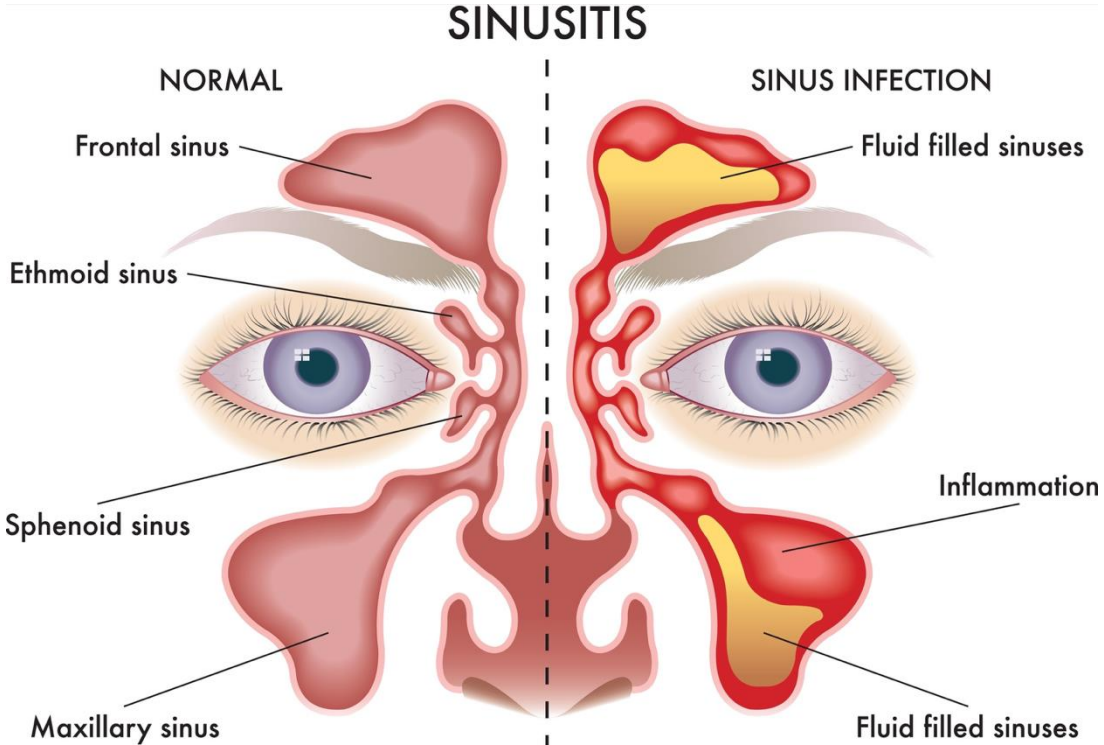


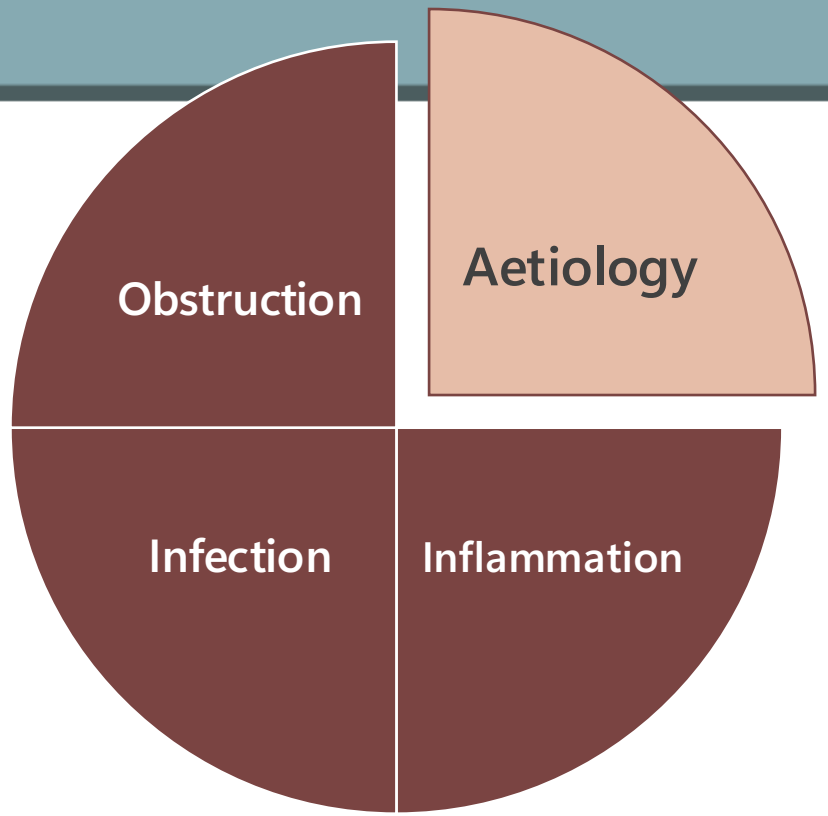
Cardiac Origin

Psychogenic Origin

PAIN OF SINUS ORIGIN

Orofacial pain of sinus origin refers to pain perceived in the face, jaws, or teeth that arises primarily from inflammatory, infectious, or obstructive pathology within the paranasal sinuses.





Ferguson M. Aust Dent J. 2014 Sep;59(3):289-95.

PAIN OF SINUS ORIGIN
CLINICAL PRESENTATION

Pressure or pain around the eyes, headache, halitosis, fatigue, cough, ear pain

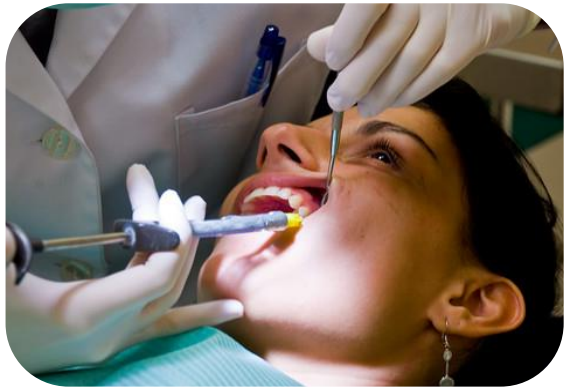
- Nasal congestion, rhinorrhoea, purulent discharge, hyposmia/anosmia, fever, tenderness over sinus

Continuous dull ache of maxillary teeth

- Teeth sensitive to percussion, mastication, temperature (hyperalgesia)
- Maxillary posterior tooth pain: 9-11% of maxillary sinus infections

Toothache increased with lowering head

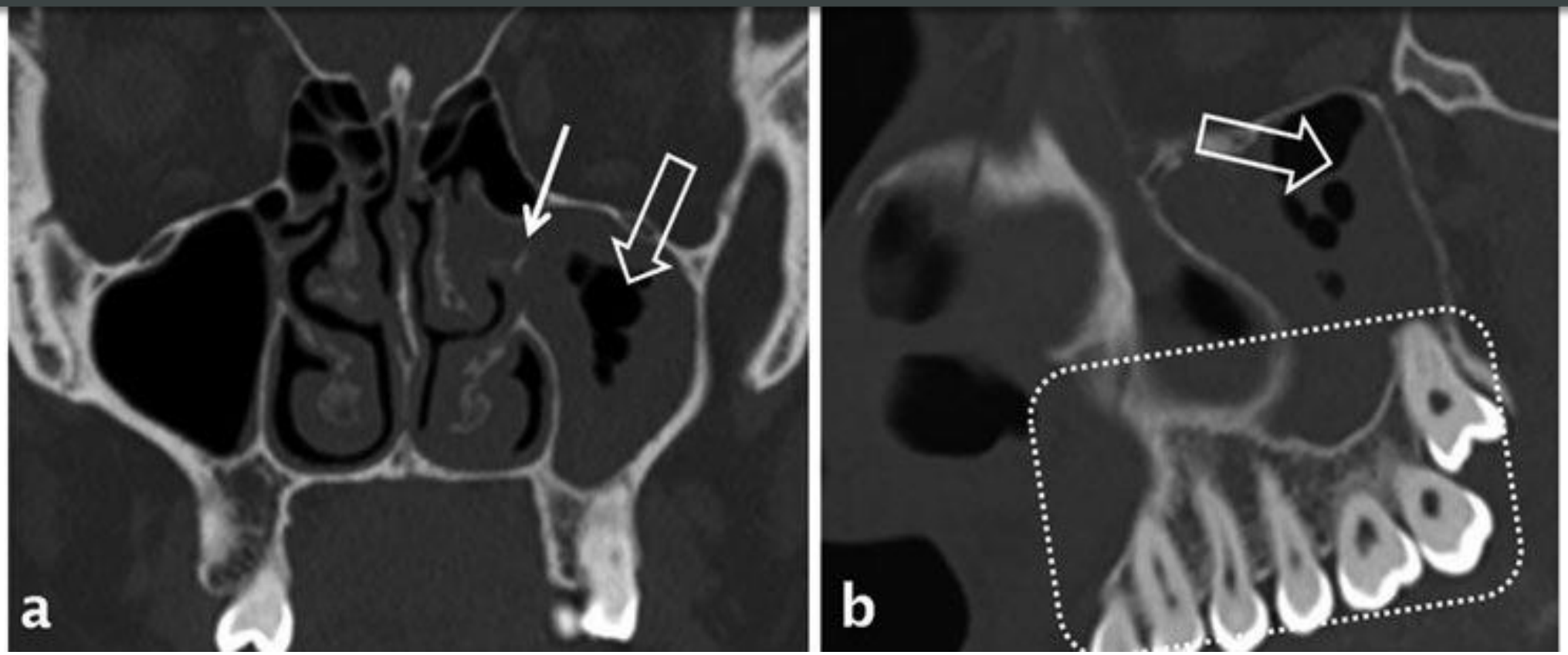
- Toothache increases with pressure applied over the sinus



Local anaesthesia of tooth does not eliminate the pain

PATHOGENESIS:
Pain signals from diseased sinus mucosa are transmitted via the maxillary branch of trigeminal nerve (convergence), leading to pain that mimics odontogenic pain

PAIN OF SINUS ORIGIN
CLINICAL PRESENTATION



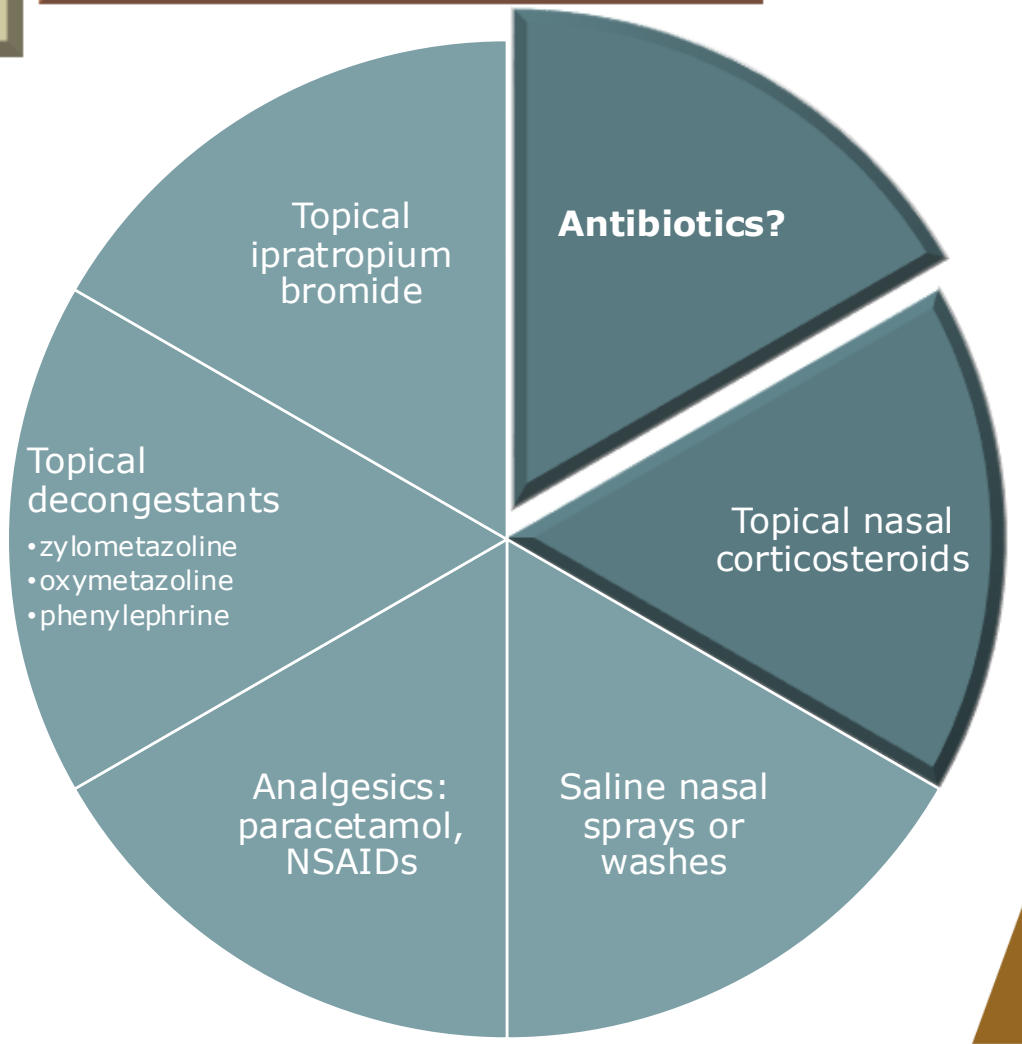
Acute left maxillary sinusitis manifesting as left-sided facial pain, left maxillary odontalgia, and purulent left-sided nasal discharge. Case 1 (a, b) – No odontogenic cause: the left maxillary sinus ostium and infundibulum of the ostiomeatal unit (common anterior sinus drainage channel) are occluded (white arrows in a) with dependent fluid, pneumatized secretions, and mucosal thickening in the sinus (open white arrow). No periapical or periodontal abnormality is seen (white dotted rectangle in b).

(Images courtesy of Clinical Associate Professor Andy Whyte, Perth Radiological Clinic, Perth WA, Australia)

PAIN OF SINUS ORIGIN
MANAGEMENT

90-98% of acute sinusitis cases are viral, with only 2-10% being bacterial

NOT FUN FACTS!



Sande MA, Gwaltney JM. Clin Infect Dis. 2004 Sep 1;39 Suppl 3:S151-8.
Anon JB et al. Otolaryngol Head Neck Surg. 2004 Jan;130(1 Suppl):1-45.

PAIN OF SINUS ORIGIN
MANAGEMENT

Intranasal corticosteroid formulations for allergic rhinitis

Drug	Dose per spray	Initial dose for 4 weeks (into each nostril)	Maintenance dose
Beclometasone	50mcg	Adults: 2 sprays, twice daily Children 6 years and older: 1 to 2 sprays twice daily	1 spray twice daily
Budesonide	32mcg	Adults and children 6 years and older: 2 sprays twice daily, or 4 sprays once daily	1 to 2 sprays once daily
	64mcg	Adults and children 6 years and older: 1 spray twice daily, or 2 sprays once daily	1 spray once daily
Ciclesonide	50mcg	Adults and children 6 years and older: 2 sprays once daily	2 sprays once daily
Fluticasone furoate	27.5mcg	Adults: 2 sprays once daily Children 2 to 11 years: 1 to 2 sprays once daily	1 spray once daily
Fluticasone propionate	50mcg	Adults and children 12 years and older: 2 sprays once daily	1 spray once daily
Mometasone	50mcg	Adults: 2 sprays once daily Children 3 to 11 years: 1 spray once daily	1 spray once daily

*Maintenance dose is the same for adults and children

PAIN OF SINUS ORIGIN
MANAGEMENT

Consider antibiotic therapy in addition to intranasal corticosteroids for patients who have any of the following indicators of bacterial infection:
• Symptoms of rhinosinusitis lasting longer than 7 days, with purulent nasal discharge, sinus tenderness (particularly unilateral) or maxillary toothache
• Severe symptoms and high fever (39°C or higher) at the onset of illness and lasting longer than 3 days
• Worsening symptoms after initial improvement ('double sickening')

Chow AW et al. Clin Infect Dis 2012;54(8):e72-e112.

PAIN OF SINUS ORIGIN
MANAGEMENT

- amoxycillin 500 mg (child: 15 mg/kg up to 500 mg) orally, 8-hourly for 5 days
- amoxycillin + clavulanate 500+125 mg (child: 22.5+3.2 mg/kg up to 500+125 mg) orally, 8-hourly for 7 to 14 days

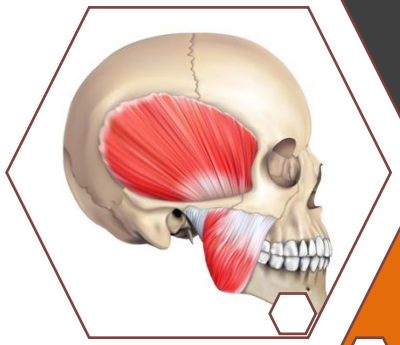
For Patients hypersensitive to Penicillins:

- cefuroxime 500 mg (child 3 months to 2 years: 10 mg/kg up to 125 mg; 2 years or older: 15 mg/kg up to 500 mg) orally, 12-hourly for 5 days
- doxycycline 100 mg (child 8 years or older: 2 mg/kg up to 100 mg) orally, 12-hourly for 5 days

Chow AW et al. Clin Infect Dis 2012;54(8):e72-e112.

NON-ODONTOGENIC PAINS

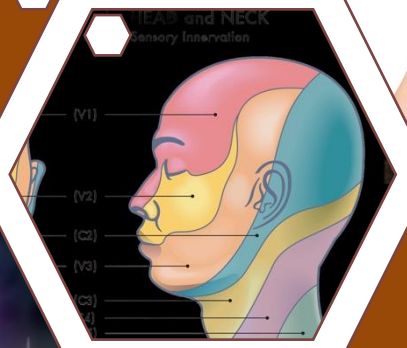
Myofascial Origin



Neurovascular Origin

Neuropathic Origin

Sinus Origin



Cardiac Origin

Psychogenic Origin

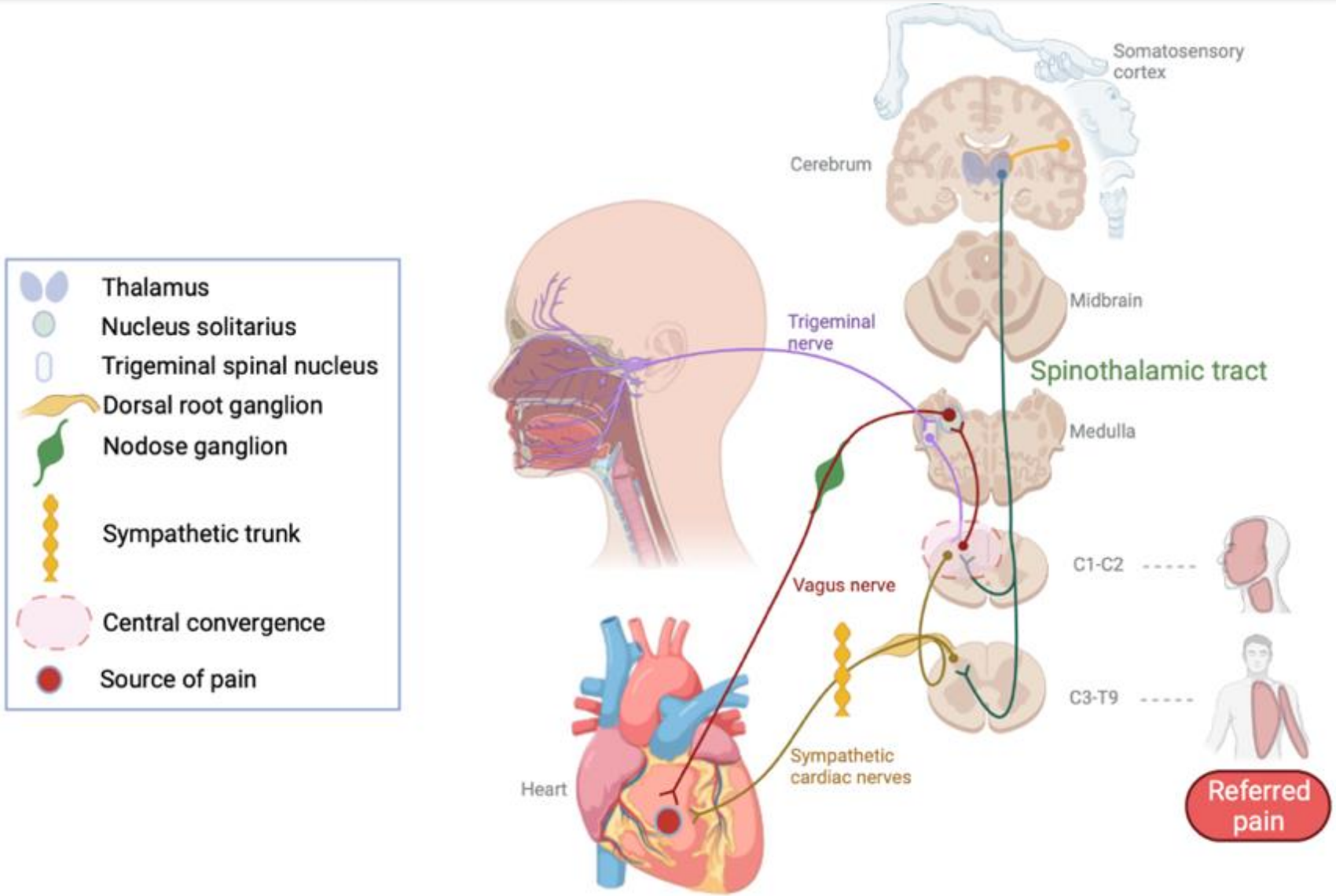
PAIN OF CARDIAC ORIGIN

Myocardial ischemia: insufficient blood flow and oxygen supply to the myocardium, usually due to narrowing or blockage of the coronary arteries from atherosclerosis.

- Imbalance between oxygen supply and myocardial demand leads to reversible cellular dysfunction and chest pain.

Jalali N et al. J Emerg Med. 2014 Jun;46(6):865-72.

PAIN OF CARDIAC ORIGIN



Balasubramaniam, Yeoh, Yap, Prabhu (Eds) Oral Medicine: A Clinical Guide. Springer 2024

PAIN OF CARDIAC ORIGIN
CLINICAL PRESENTATION

Kreiner et al. J Oral Facial Pain Headache. 2014 Fall;28(4):317-21.

38% have orofacial pain
Tooth (4%); mandible (45%); ear/TMJ (18%)

32% with coronary symptoms have pain in other areas

6% solely in orofacial region

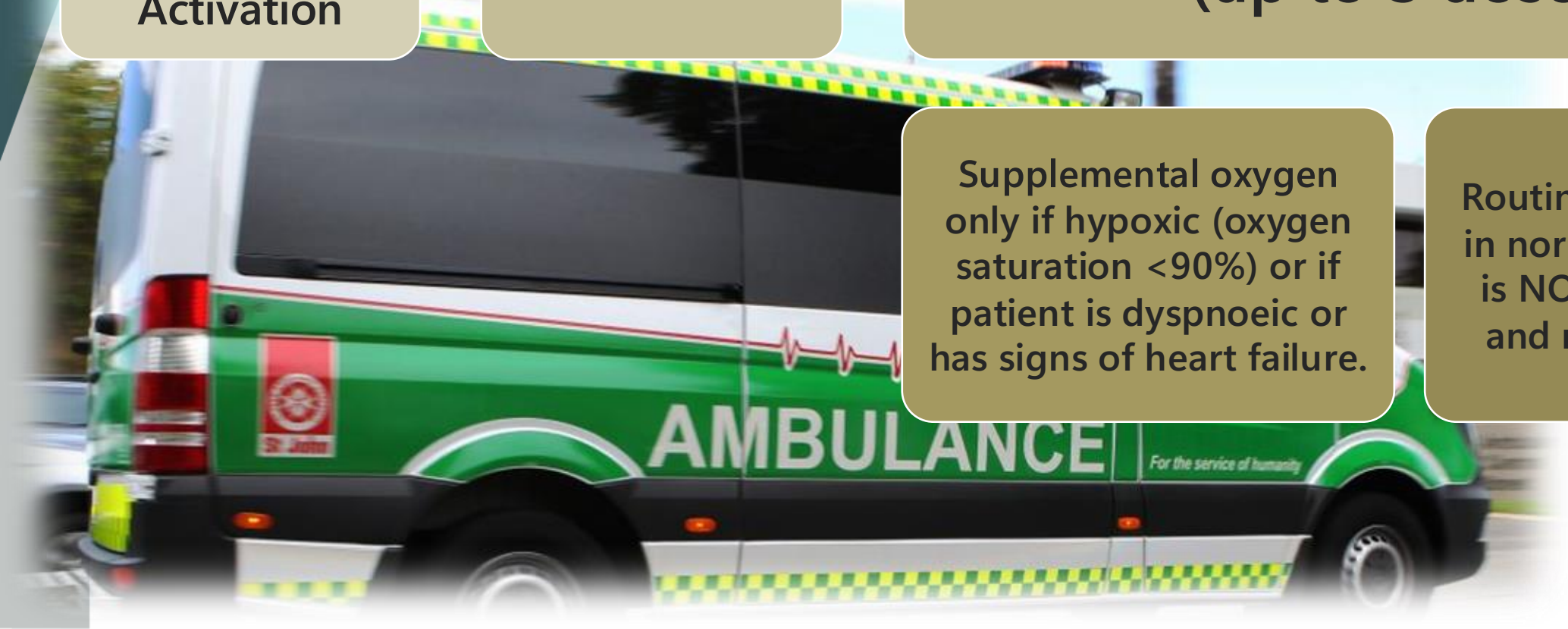
Diagnostic local anaesthetic site of the painful tooth will not eliminate the pain

PAIN OF CARDIAC ORIGIN
MANAGEMENT

Immediate Emergency Medical Services Activation

Aspirin 300 mg chewed immediately

Sublingual nitro-glycerine 0.4 mg every 5 minutes (up to 3 doses)

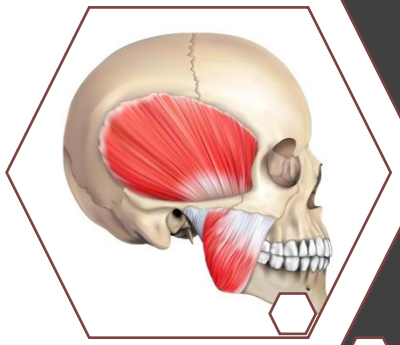


Supplemental oxygen only if hypoxic (oxygen saturation <90%) or if patient is dyspnoeic or has signs of heart failure.

Routine oxygen therapy in normoxemic patients is NOT recommended and may cause harm.

NON-ODONTOGENIC PAINS

Myofascial Origin

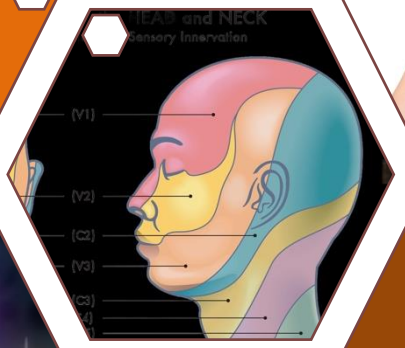


Neurovascular Origin

Cardiac Origin

Neuropathic Origin

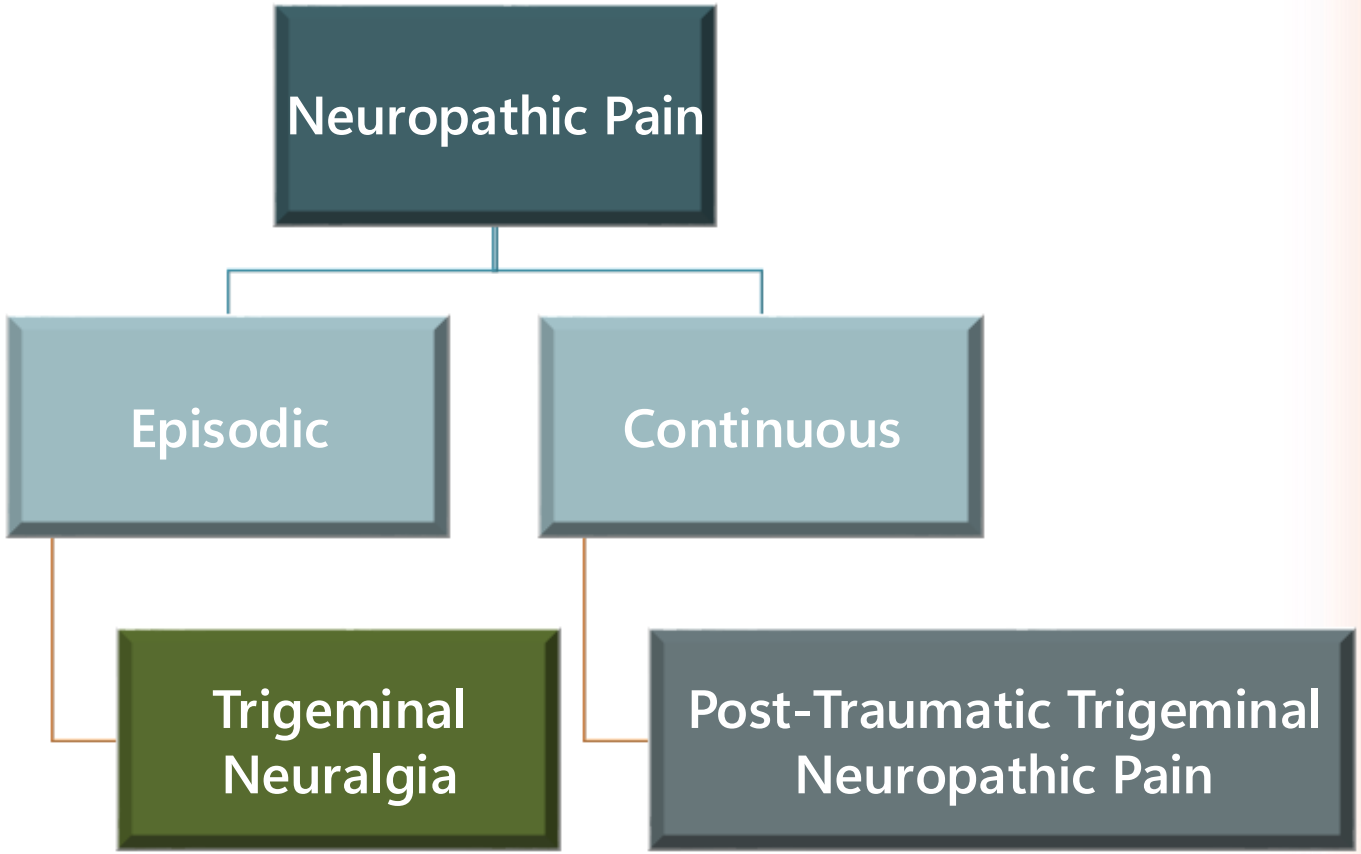
Sinus Origin

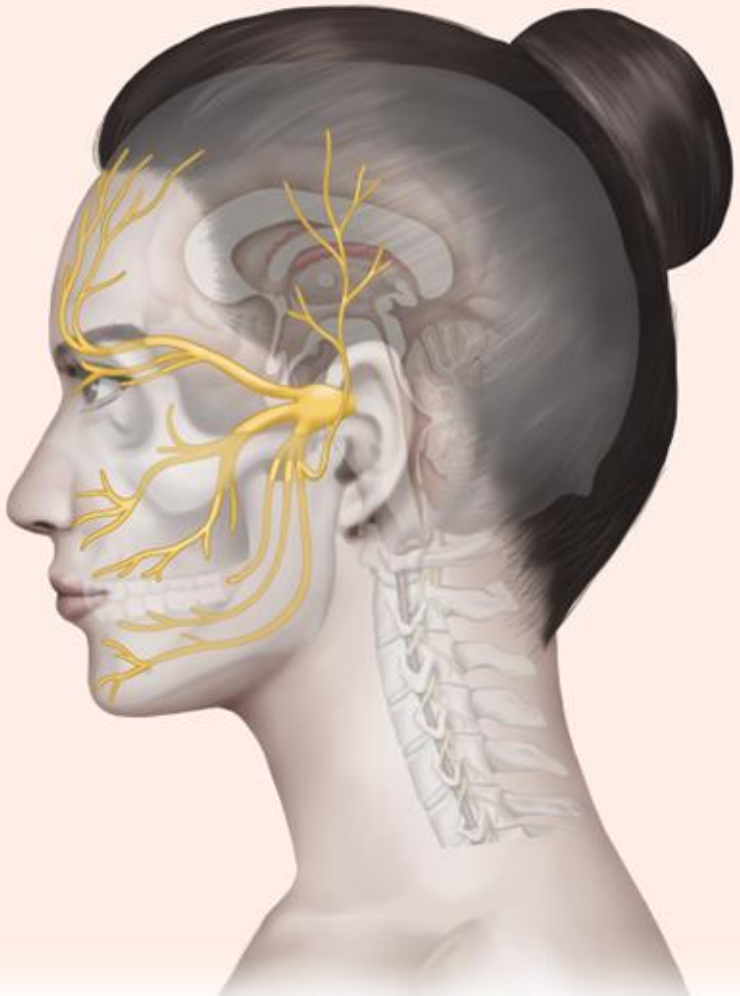


Somatoform Pain

PAIN OF NEUROPATHIC ORIGIN

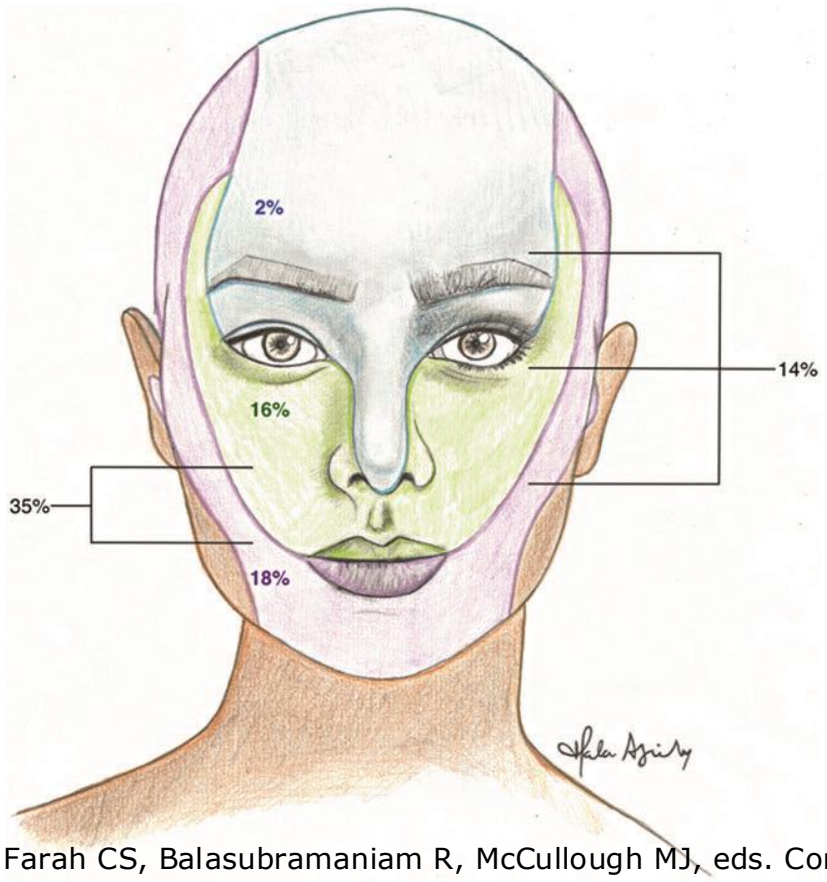
Neuropathic pain is pain that arises as a direct consequence of a lesion or diseases affecting the somatosensory system" IASP 2025





TRIGEMINAL NEURALGIA

Brief, electric shock-like, lancinating pains that affects the face unilaterally affecting one or more divisions of the trigeminal nerve.



- **Trigeminal Neuralgia**
  - **Classical**
    - Developing without apparent cause other than neurovascular compression: Superior cerebellar artery: V_2 & V_3; Anterior inferior cerebellar artery: V_1
    - purely paroxysmal
    - with concomitant persistent facial pain
  - **Secondary**
    - Acoustic neuroma, cholesteatomas, osteomas, basilar artery aneurysms, angiomas & plaques of multiple sclerosis
    - caused by an underlying disease

Farah CS, Balasubramaniam R, McCullough MJ, eds. Contemporary Oral Medicine: A Comprehensive Approach to Clinical Practice. Springer; 2019.

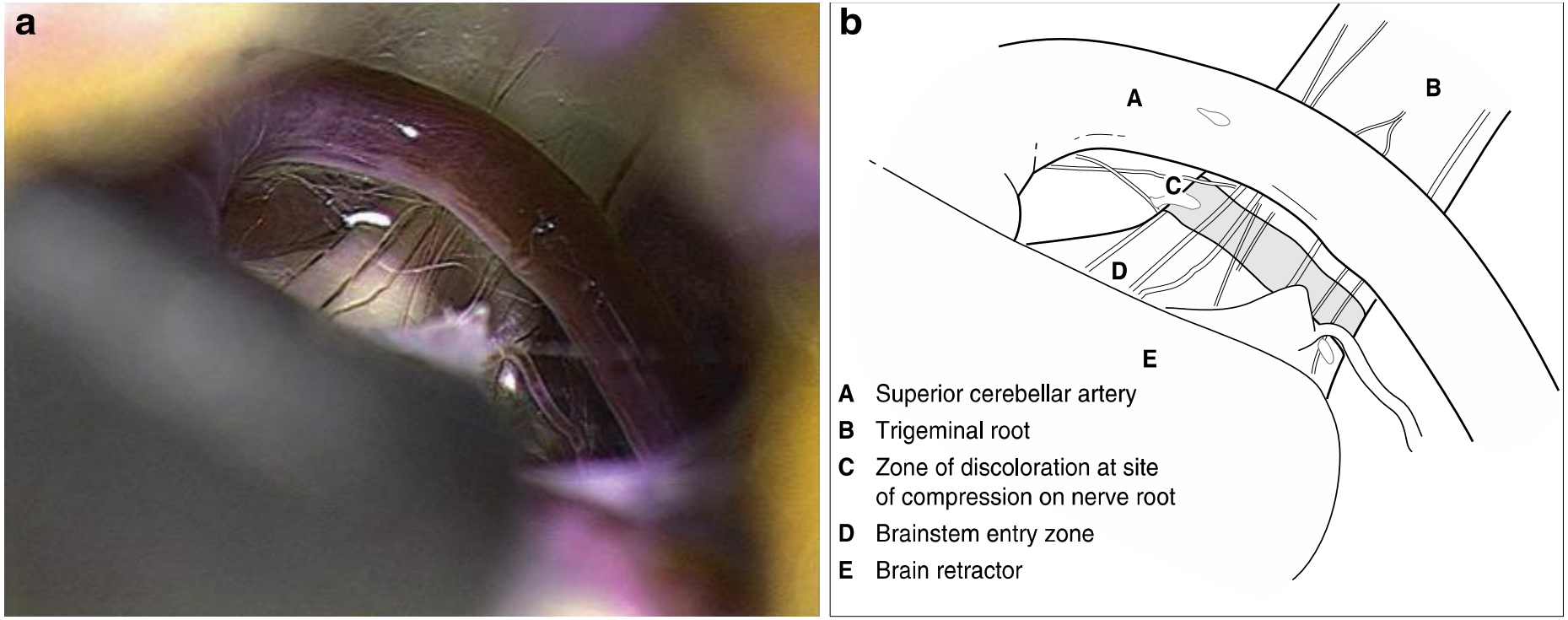
TRIGEMINAL NEURALGIA
CLINICAL PRESENTATION

Diagnostic Criteria for Trigeminal Neuralgia

Diagnostic criteria	
A	Recurrent paroxysms of the unilateral facial pain in the distribution(s) of one or more divisions of the trigeminal nerve, with no radiation beyond, and fulfilling criteria B and C
B	Pain has all of the following characteristics: 1. Lasting from a fraction of a second to 2 minutes 2. Severe intensity 3. Electric shock-like, shooting, stabbing or sharp in quality
C	1. Precipitated by innocuous stimuli within the affected trigeminal distribution
D	Not better accounted by another ICHD-3 diagnosis

International Classification of Orofacial Pain, 1st edition (ICOP). Cephalalgia. 2020 Feb;40(2):129-221.

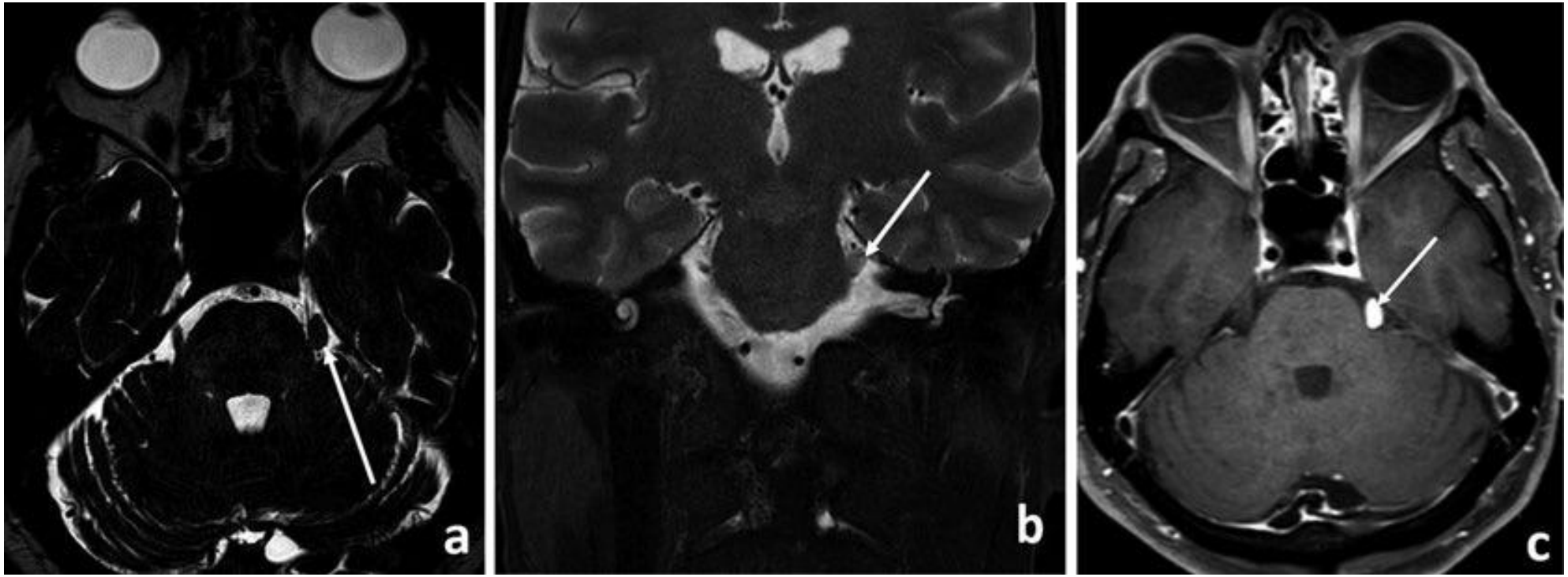
TRIGEMINAL NEURALGIA
CLINICAL PRESENTATION



Targeting the neurovascular contact: panel (a) is view of the right trigeminal root through the operating microscope. An arterial loop of the superior cerebellar artery has been lifted off the root. There is a band-like grayish discoloration of the root where it had been compressed close to its entrance to the brainstem. In panel (b), the picture is represented in diagrammatic form with the anatomical landmarks identified. (With permission from: Rappaport 2015)

Farah CS, Balasubramaniam R, McCullough MJ, eds. Contemporary Oral Medicine: A Comprehensive Approach to Clinical Practice. Springer; 2019.

TRIGEMINAL NEURALGIA
CLINICAL PRESENTATION



Secondary trigeminal neuralgia related to a schwannoma: heavily T2-weighted high-resolution axial (a) and T2-weighted fat-saturated coronal (b) MR images show a well-circumscribed ovoid nodule (arrow) in the left side of the prepontine cistern, inseparable from the cisternal segment of the left trigeminal nerve. Post-gadolinium T1 fat-saturated axial (c) image shows strong homogeneous enhancement of the mass (arrow). (Images courtesy of Dr Rudolf Boeddinghaus, Perth Radiological Clinic, Perth WA, Australia)

Farah CS, Balasubramaniam R, McCullough MJ, eds. Contemporary Oral Medicine: A Comprehensive Approach to Clinical Practice. Springer; 2019.

TRIGEMINAL NEURALGIA MANAGEMENT

DRUGS COMMONLY USED IN THE TREATMENT OF TRIGEMINAL NEURALGIA

Drug	Initial dose (mg)	Target dose (mg)*	Dose increase (titration)*	Schedule	Evidence†
Carbamazepine	100 to 200	1200	100 to 200 mg every 2 days	Three or four times per day	A
Carbamazepine controlled release	200 to 400	1200	Transferred from regular format at equivalent dose	Two times per day	A
Oxcarbazepine	300	1200 to 2400	300 to 600 mg/week	Three times per day	B
Baclofen	5 to 15	30 to 60	5 mg every 3 days	Three times per day	A
Gabapentin	300	900 to 2400	300 mg every 1 or 2 days	Three times per day	B
Pregabalin	150	300 to 600	50 mg every 2 or 3 days	Two or three times per day	
Lamotrigine	25	400 to 600	25 to 50 mg/week	One or two times per day	A‡

*Titrate according to response and side effects.
†Evidence for efficacy rated A (best) or B (moderate).
‡Evidence for efficacy based on study using lamotrigine as add-in therapy.

Chong MS, Bahra A, Zakrzewska JM. Cleve Clin J Med. 2023 Jun 1;90(6):355-362.

TRIGEMINAL NEURALGIA MANAGEMENT

(Just know there's surgical options)

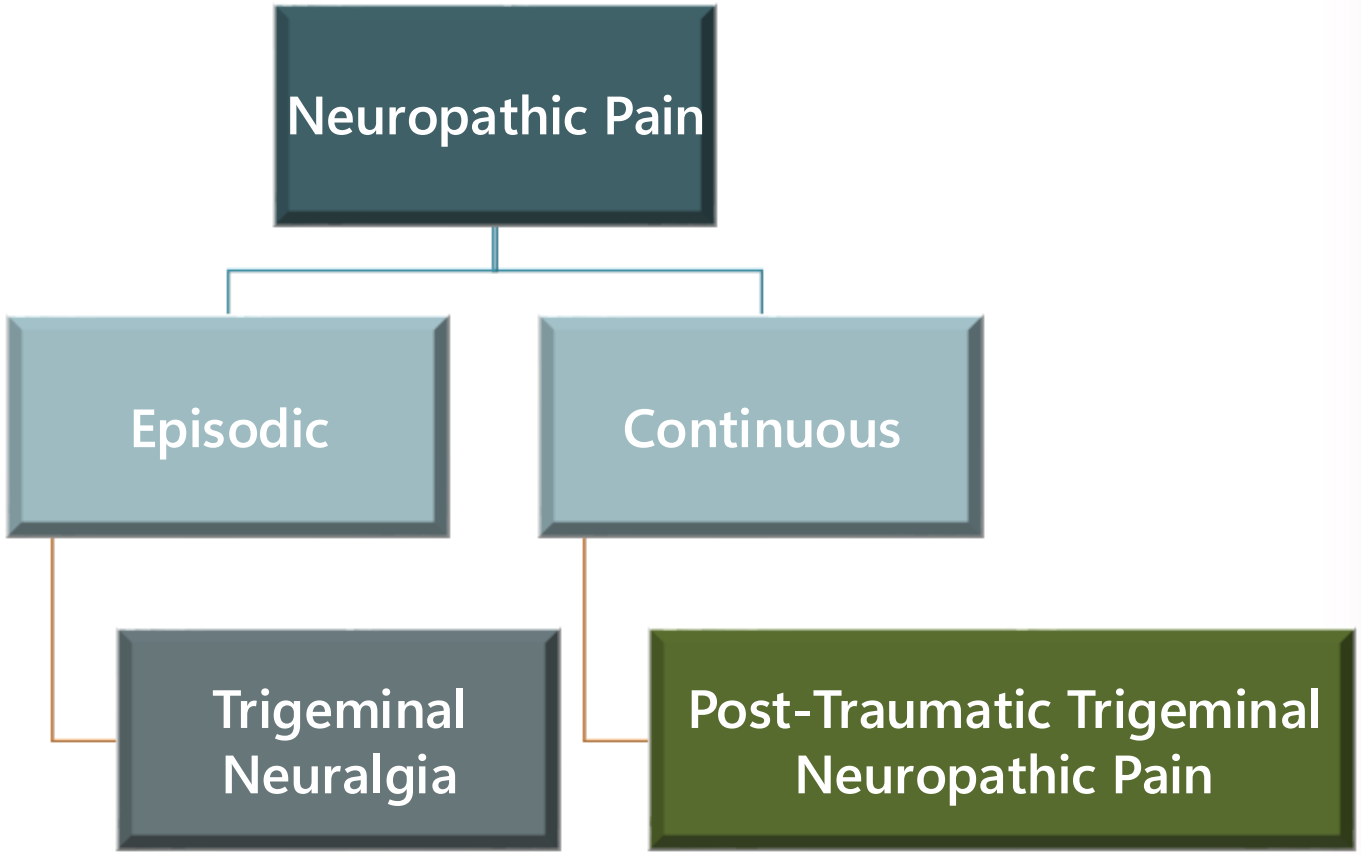
ACUTE EPISODES OF TRIGEMINAL NEURALGIA	
Lignocaine	10mg spray, 5% ointment, 2% 1:80,000 adrenaline LA
Sumatriptan	6mg SC, 50mg twice daily (1 week)
Botulinum toxin A	Injection
Intravenous Infusions	Lignocaine, Phenytoin, Fosphenytoin

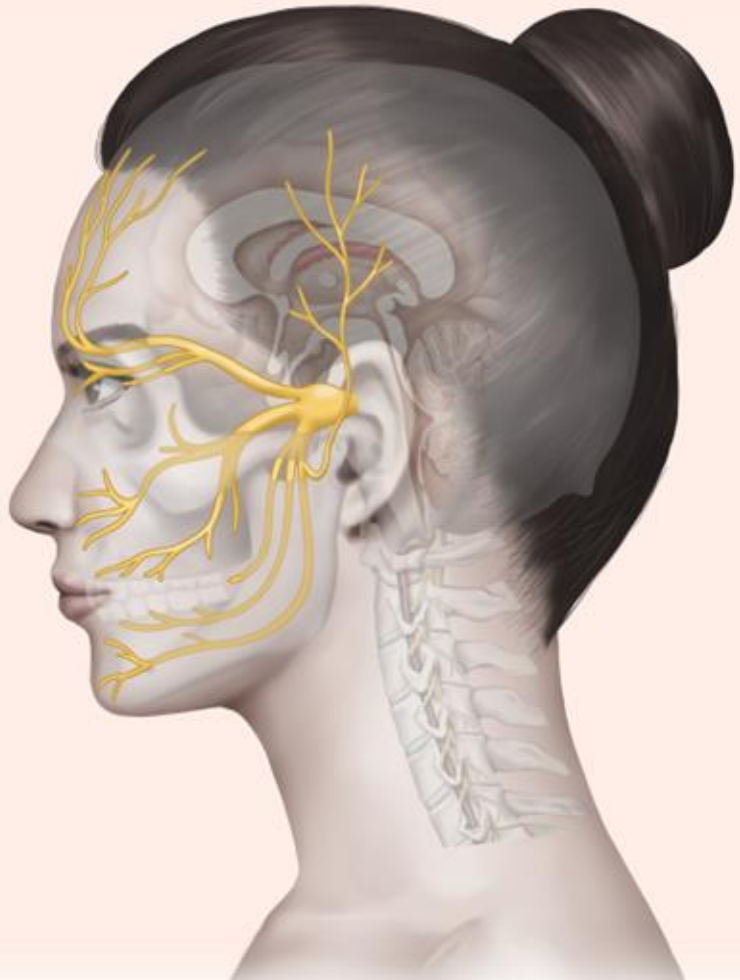
- Glycerol trigeminal rhizotomy
- Percutaneous balloon compression
- Radiofrequency thermocoagulation
- Microvascular decompression
- Extracranial peripheral denervation
- Gamma knife radiosurgery

SURGERY

PAIN OF NEUROPATHIC ORIGIN

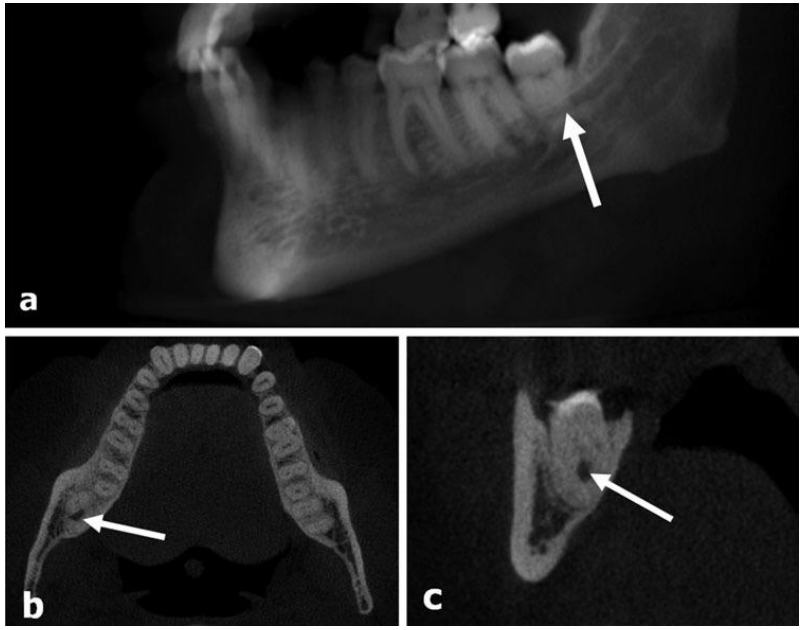
Neuropathic pain is pain that arises as a direct consequence of a lesion or diseases affecting the somatosensory system”

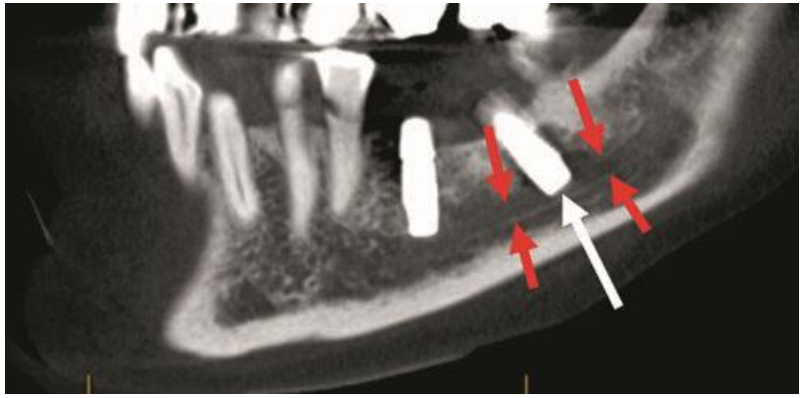


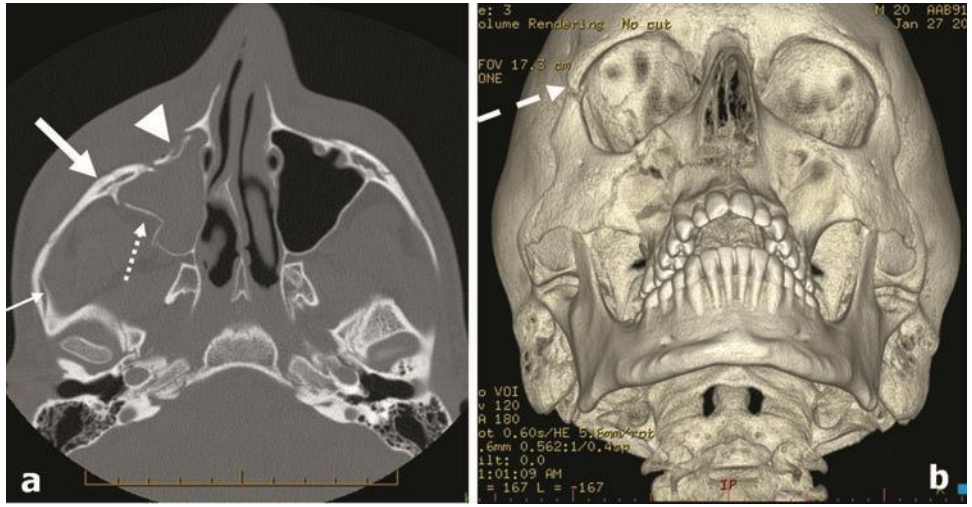


POST-TRAUMATIC TRIGEMINAL NEUROPATHIC PAIN

Farah CS, Balasubramaniam R, McCullough MJ, eds. Contemporary Oral Medicine: A Comprehensive Approach to Clinical Practice. Springer; 2019.







Risk Factors

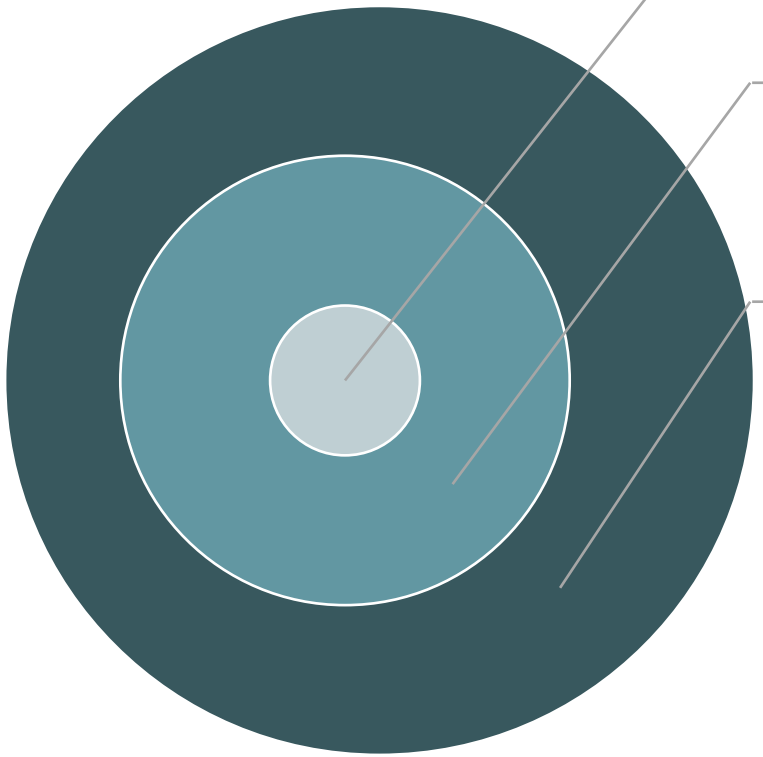
- Macrotrauma
- Mandibular Third Molars
- Root Canal Treatment
- Local Anaesthetic Injections
- Blunt Macrotrauma
- “History of Trauma”

POST-TRAUMATIC TRIGEMINAL NEUROPATHIC PAIN: CLINICAL PRESENTATION

DIAGNOSTIC CRITERIA FOR POST-TRAUMATIC TRIGEMINAL NEUROPATHIC PAIN	
Criteria	
A	Facial and/or oral pain in the distribution(s) of one or both trigeminal nerve(s) and fulfilling criterion C
B	History of an identifiable traumatic event to the trigeminal nerve(s), with clinically evident positive (hyperalgesia, allodynia) and/or negative (hypoesthesia, hypoalgesia) signs of trigeminal nerve dysfunction
C	Evidence of causation demonstrated by both of the following: 1. Pain is localized to the distribution(s) of the trigeminal nerve(s) affected by the traumatic event 2. Pain has developed <6 months after the traumatic event
D	Not better accounted by another ICHD-3 diagnosis

International Classification of Orofacial Pain, 1st edition (ICOP). Cephalalgia. 2020 Feb;40(2):129-221.

POST-TRAUMATIC TRIGEMINAL NEUROPATHIC PAIN: MANAGEMENT



PHARMACOTHERAPY

- Topical
- Systemic

PSYCHOSOCIAL SUPPORT

- Cognitive Behavioural Therapy

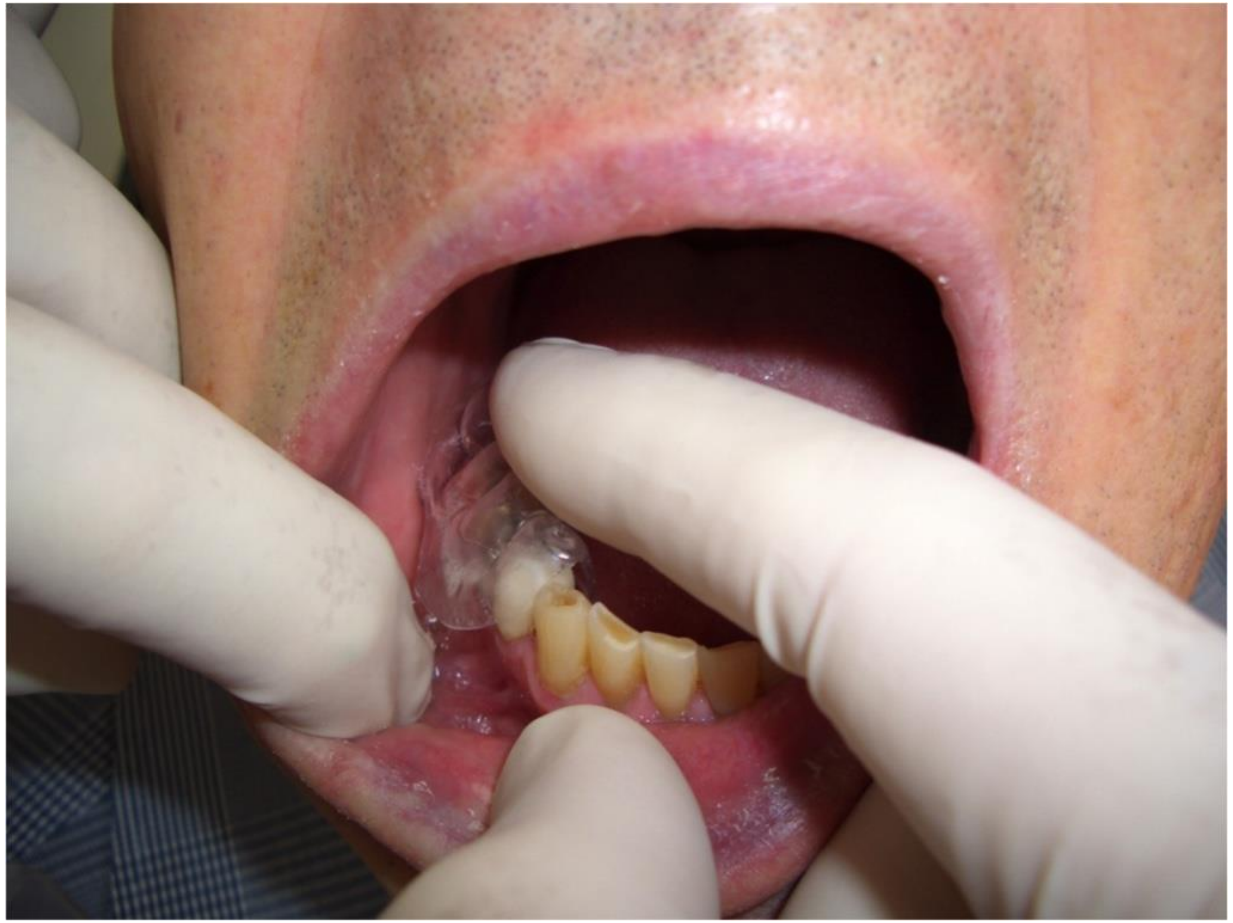
SURGERY

- CT-guided percutaneous trigeminal tractotomy-nucleotomy
- DREZ Surgery

Farah CS, Balasubramaniam R, McCullough MJ, eds. Contemporary Oral Medicine: A Comprehensive Approach to Clinical Practice. Springer; 2019.

POST-TRAUMATIC TRIGEMINAL NEUROPATHIC PAIN: MANAGEMENT

NEUROSENSORY STENT FOR TOPICAL MEDICATIONS



POST-TRAUMATIC TRIGEMINAL NEUROPATHIC PAIN: MANAGEMENT

SYSTEMIC MEDICATIONS

Medical Status

- Tricyclic antidepressants
  - Amitriptyline
  - Nortriptyline
- Antiepileptic drugs
  - Gabapentin
  - Pregabalin

→ Combine Tricyclic Antidepressant & Antiepileptic drugs

→ Combine Serotonin and Noradrenaline Reuptake Inhibitors & Gabapentin

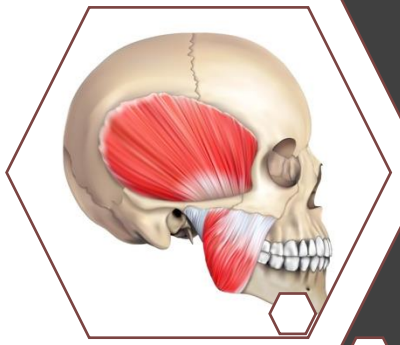
→ Combine Opioid & Gabapentin

→
- Tramadol
- Opioids
- Naltrexone
- Botulinum Toxin
- Topical Applications (local anaesthetic, capsaicin, etc)

Ananthan S et al. Quintessence Int. 2025 Sep 18;56(8):682-690.
Park HJ et al. Biomedicines. 2024 Sep 10;12(9):2058.
Benoliel R, Sharav Y, editors. Orofacial Pain and Headache: A Comprehensive Guide. 3rd ed. Newcastle upon Tyne: Cambridge Scholars Publishing; 2024.

NON-ODONTOGENIC PAINS

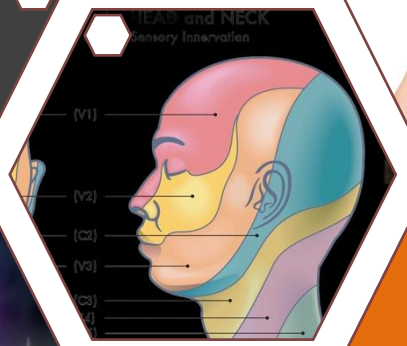
Myofascial Origin



Neurovascular Origin

Neuropathic Origin

Sinus Origin



Cardiac Origin

Psychogenic Origin

SOMATIC SYMPTOM DISORDER

~~PSYCHOGENIC PAIN~~

Somatic Symptom Disorder: presence of one or more somatic symptoms that cause distress or significant disruption to daily life, characterised by excessive thoughts, behaviour, or feelings related to the symptoms or health concerns.

- "~~Functional Somatic Syndrome~~"

• **Caution:** A failure on the part of the clinician to diagnose, should not lead to a "default" diagnosis of somatoform pain disorder.

SOMATIC SYMPTOM DISORDER

History of psychological trauma

Female gender

Chronic physical or psychiatric illness

Risk Factors

SOMATIC SYMPTOM DISORDER

Diagnostic criteria:

A. One or more somatic symptoms that are distressing or result in significant disruption of daily life.

B. Excessive thoughts, feelings, or behaviors related to the somatic symptoms or associated health concerns as manifested by at least one of the following:
   1. Disproportionate and persistent thoughts about the seriousness of one's symptoms.
   2. Persistently high level of anxiety about health or symptoms.
   3. Excessive time and energy devoted to these symptoms or health concerns.

C. Although any one somatic symptom may not be continuously present, the state of being symptomatic is persistent (typically more than 6 months).

Specify if:

With predominant pain (previously pain disorder): This specifier is for individuals whose somatic symptoms predominantly involve pain.

Specify if:

Persistent: A persistent course is characterized by severe symptoms, marked impairment, and long duration (more than 6 months).

Specify current severity:

Mild: Only one of the symptoms specified in Criterion B is fulfilled.

Moderate: Two or more of the symptoms specified in Criterion B are fulfilled.

Severe: Two or more of the symptoms specified in Criterion B are fulfilled, plus there are multiple somatic complaints (or one very severe somatic symptom).

Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Washington, DC: American Psychiatric Association; 2013:311.

SOMATIC SYMPTOM DISORDER
CLINICAL PRESENTATION

- Pain descriptors often diffuse, vague and difficult to localise
- Multiple teeth often involved, with frequent change in character and location
- Inconsistent with physiological pain and present without any identifiable pathological cause
- Chronic pain behaviour
- Lack of response to reasonable dental treatment
- Unusual or unexpected response to therapy

Balasubramaniam R et al. OJS 2011;1:92-102.
Thomas DC et al. Dent Clin North Am. In press.

SOMATIC SYMPTOM DISORDER MANAGEMENT

Regular Consultations

- Schedule short-interval follow-up to stop overuse of medical care
- stress coping rather than cure

Empathy

- Spend most of the time listening to the patient and acknowledge that what he or she is feeling is real

Mind-Body Interface

- Emphasize the mind-body connection; avoid comments such as “there is nothing medically wrong with you”

REFER TO PSYCHIATRIST

- 90% have persistent symptoms at 5 years follow-up

Kurlansik SL, Maffei MS. Am Fam Physician. 2016 Jan 1;93(1):49-54.

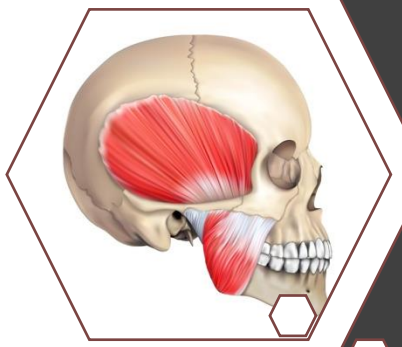
SOMATIC SYMPTOM DISORDER MANAGEMENT

REFER TO A PSYCHIATRIST (Kurlansik SL, Maffei MS. Am Fam Physician. 2016 Jan 1;93(1):49-54.)

Modality	Evidence	Findings
Cognitive Behavioural Therapy	Multicenter randomised controlled trial, reviews of controlled clinical trials	Effective for treatment of somatic symptom disorder and medically unexplained symptoms "Health anxious" patients had sustained symptomatic benefit over two years, with no significant effect on total costs. Reduced physical symptoms, psychological distress, and disability.
Mindfulness-Based Therapy	Meta-analysis of randomised controlled trials	May be effective in treating some aspects of somatic symptom disorder. Significant and sustained improvements in clinical outcomes (overall symptom severity, depression, and anxiety) compared with control groups.
Pharmacotherapy	Systematic reviews of controlled trials	Amitriptyline shows benefit for one or more of the following outcomes: fatigue, functional symptoms, global improvement, morning stiffness, pain, sleep, and tender points. Fluoxetine shows benefit for functional status, global well-being, morning stiffness, pain, sleep, and tender points. Monoamine oxidase inhibitors, bupropion, antiepileptics, and antipsychotics showed no benefit and should not be used.
St. John's Wort	Randomised, double-blind, placebo-controlled trials (lower-quality studies)	More effective than placebo for improvement in self-reported somatic symptoms; well-tolerated and safe

NON-ODONTOGENIC PAINS

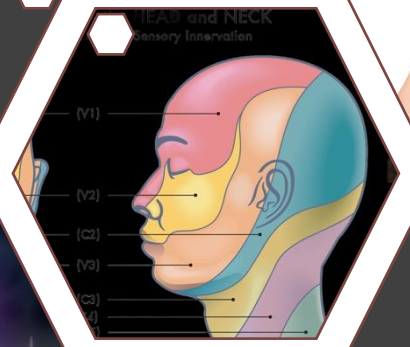
Miscellaneous



Myofascial Origin

Neuropathic Origin

Sinus Origin



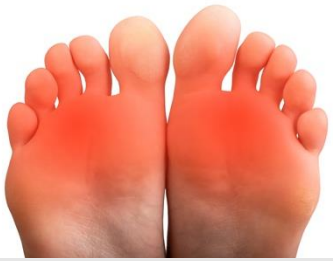
Neurovascular Origin

Cardiac Origin

Psychogenic Origin

NON-ODONTOGENIC TOOTHACHES: MISCELLANEOUS

rs12411980 SNP related to *PRTFDC1* expression



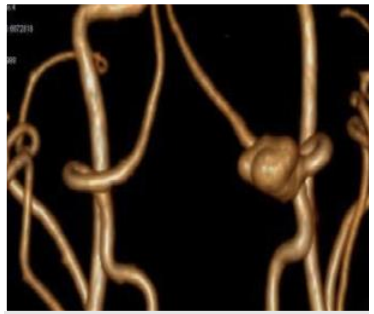
Diabetes

Sickle Cell Disease

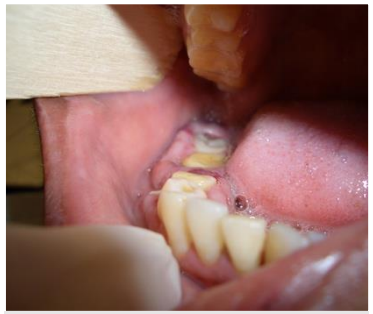
Menstrual Cycle

Chemotherapy-Induced Toxicity

Infections

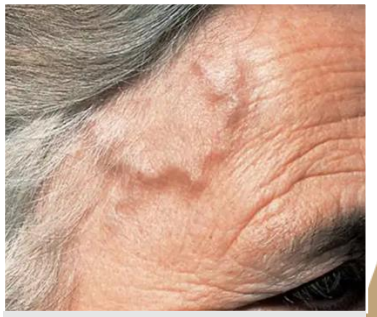


Vertebral Artery Pseudoaneursym



Burkitt's Lymphoma

Barodontalgia



Giant Cell Arteritis

Thomas DC et al. Dent Clin North Am. In press.

OUTLINE

- ODONTOGENIC PAINS
- SITE VS SOURCE OF OROFACIAL PAIN
- NON-ODONTOGENIC PAINS
- TAKE HOME MESSAGE

TAKE HOME MESSAGE

- Toothache ≠ Odontogenic Pain
- Site of Pain ≠ Source of Pain
- Appreciate the various aetiologies of non-odontogenic toothaches
- Early diagnosis of non-odontogenic toothache avoids unnecessary dental treatments

THANK YOU

Ramesh Balasubramaniam OAM

THE UNIVERSITY OF WESTERN AUSTRALIA
PERTH ORAL MEDICINE & DENTAL SLEEP CENTRE
Perth Children's Hospital
PERIOGOLD® Helps Improve Oral Health
OMAA Oral Medicine Academy of Australasia
DSSWA
ADA AUSTRALIAN DENTAL ASSOCIATION
AUSTRALASIAN sleep ASSOCIATION