Clinical Oro-Facial Pain and TMJD

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Disclosures

FULL TIME FACULTY,
UNIVERSITY OF IOWA

NAKAO FOUNDATION FOR
GLOBAL HEALTH

SCIENTIFIC ADVISORY
BOARD, DENTSPLY-SIRONA

How I think about this topic

https://cartoonstockgifts.com/products/alex-gregory-youve-cured-my-backpain-cartoon-print

There is no disease, there is a patient

-Hippocrates

Overview

- Types of orofacial pain
- Types of TMDs (TMJDs)
- Diagnostic steps
- Calibrated Exam and Diagnostic Algorithm

University of Iowa
site for course materials

Comments

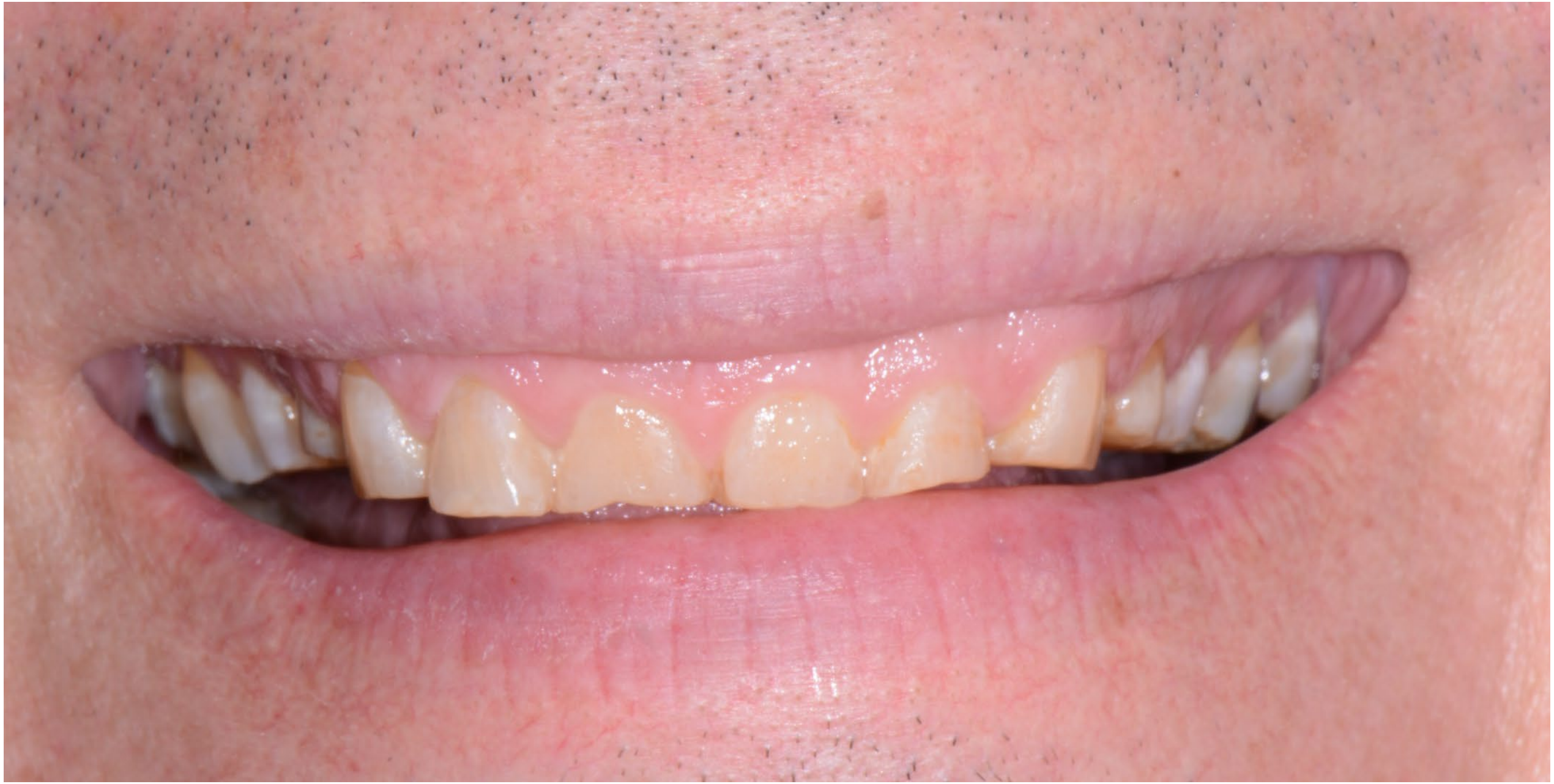
- “Simple” vs. “Complex” TMD
- Misdiagnosis is common (e.g., 50% of TGN is dx as odontogenic)
- DC-TMD framework
- Noise ≠ Pathology
- Pain = Investigation
- My comment(s) about TMD Management

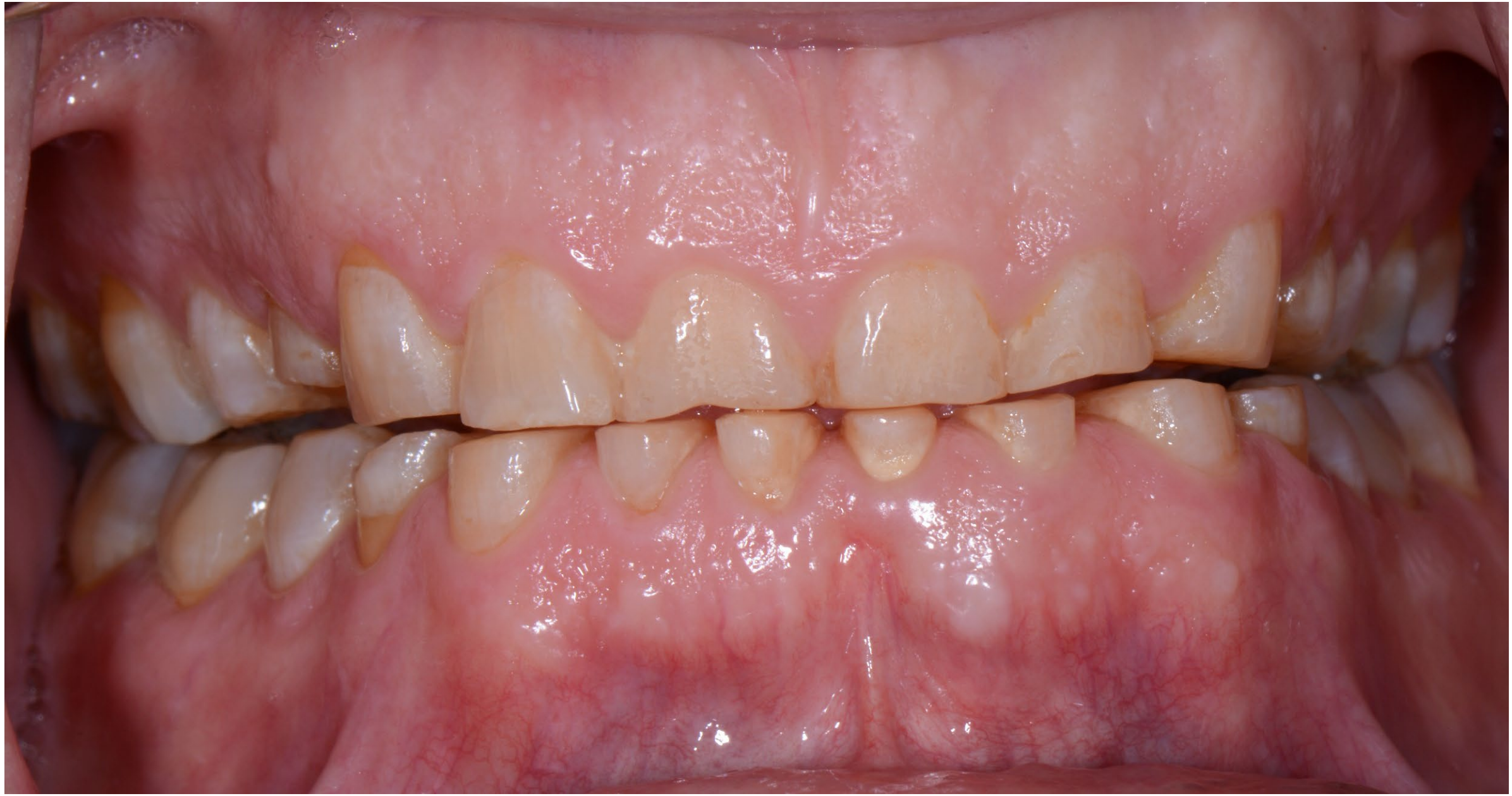
- ***Diagnosis*** before ***Treatment***

So, I get a text message on my phone …

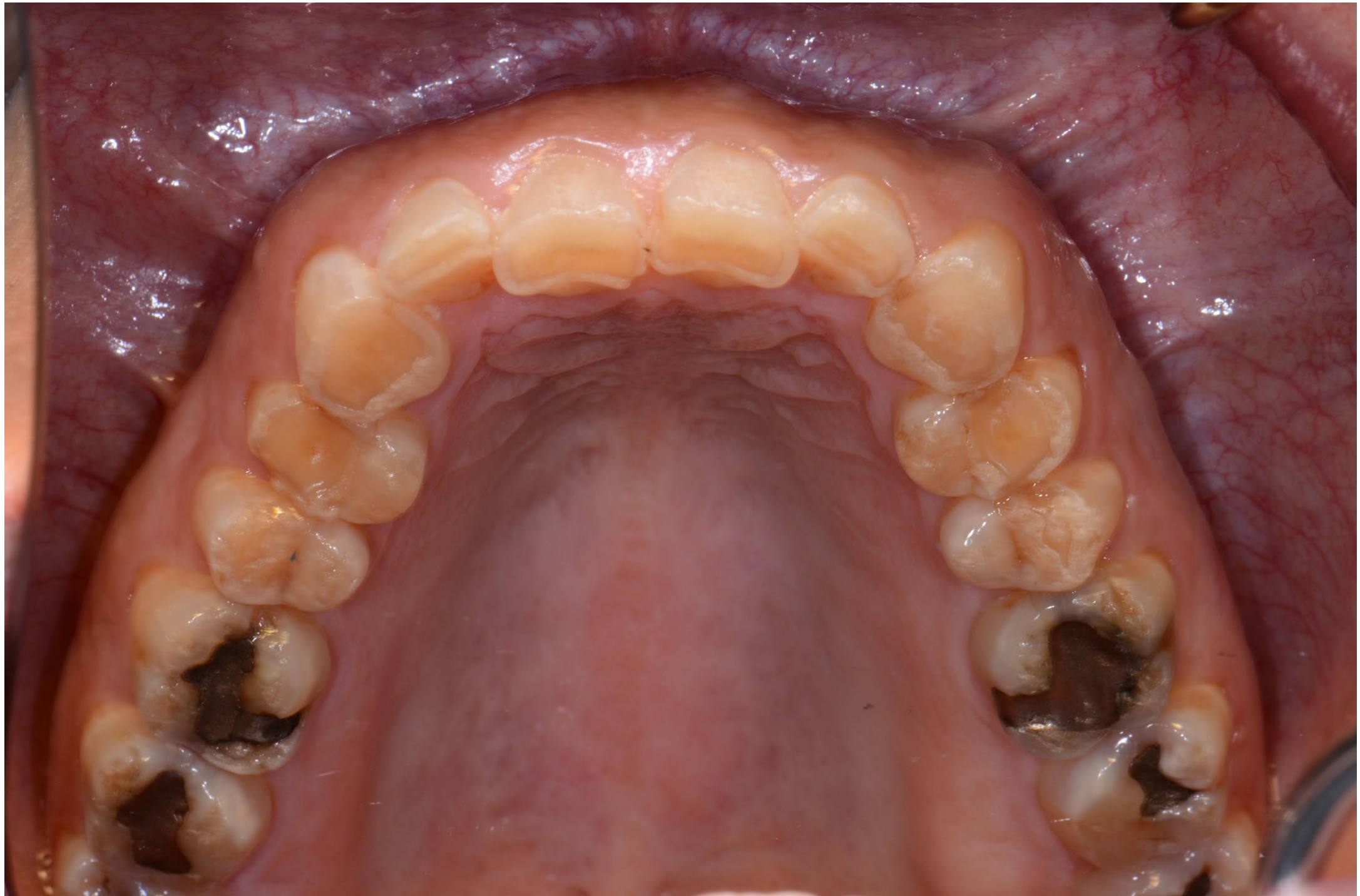
57-year-old, white male, Commercial real-estate

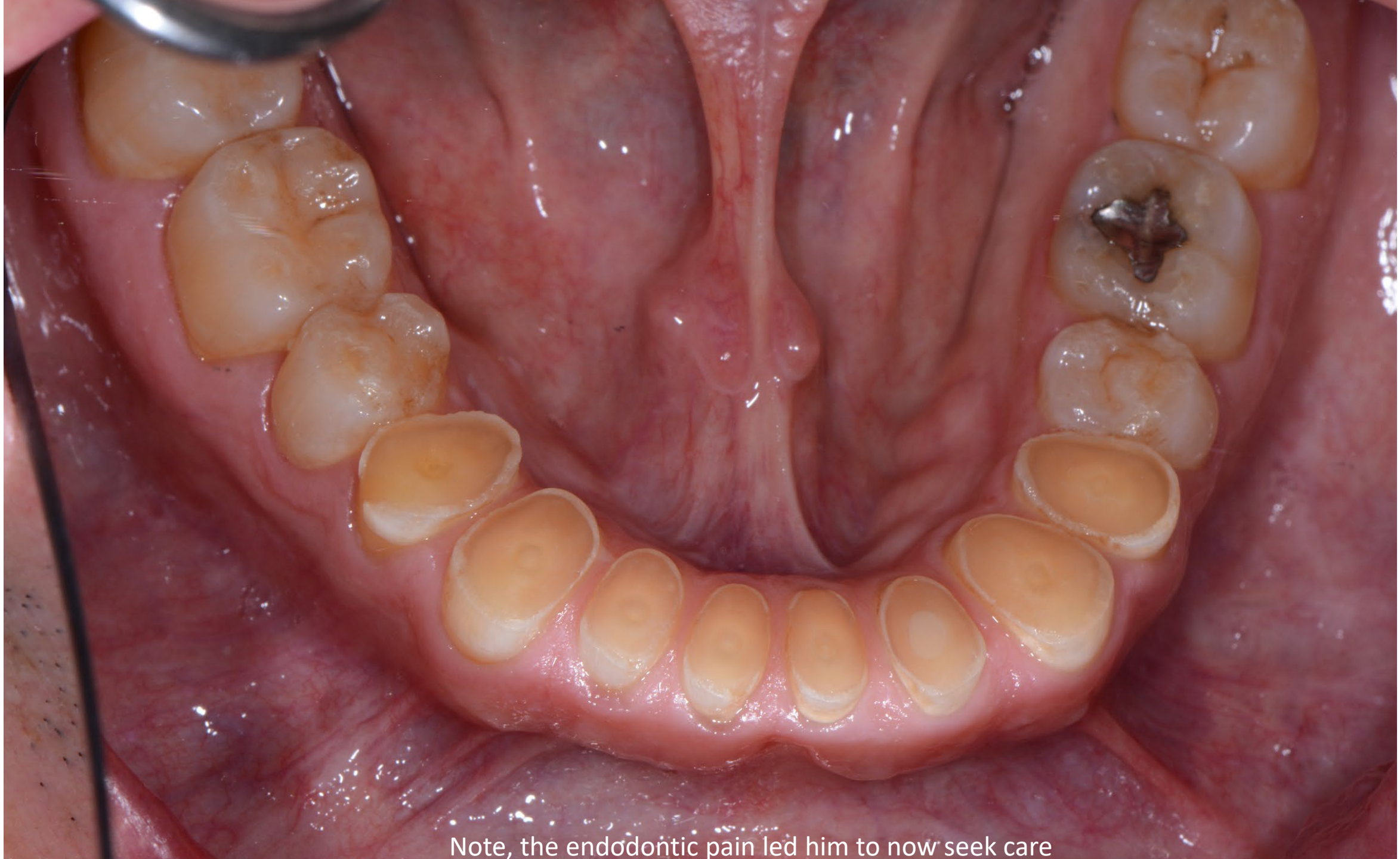
- CC-Second opinion, recommended multiple crowns
- RCT #23 due to wear was recently needed
- PMH: GERD (10-year duration), controlled but indicated heartburn if recumbent. Patient denied all other CNS, CVS, MSK, GI, GU disease or abnormality.
- Rx: Pantoprazole 40mg/d (a Proton Pump Inhibitor)



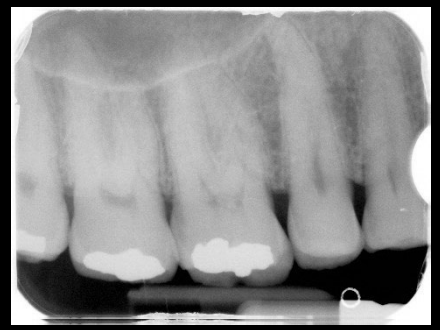
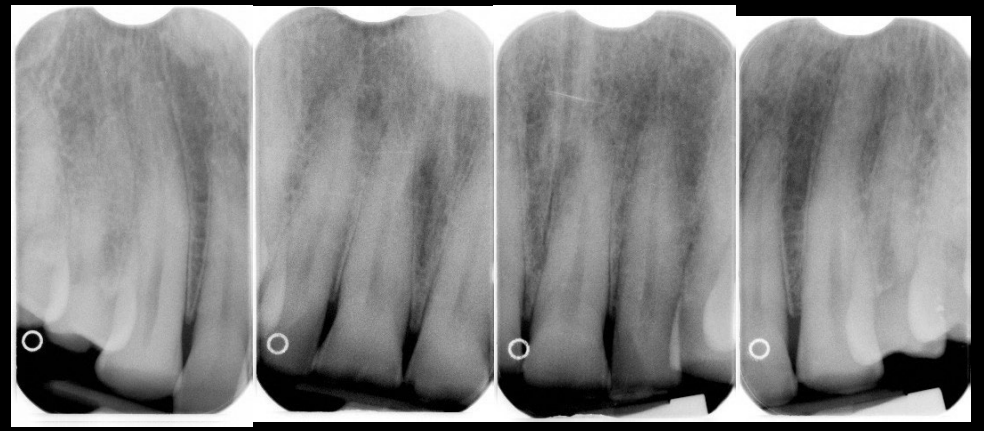
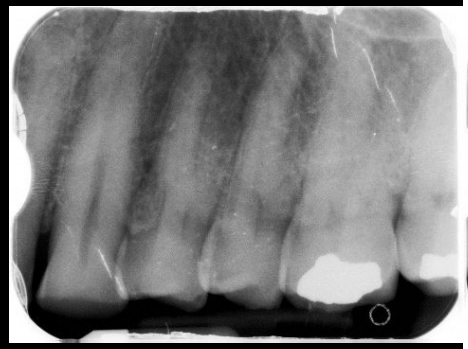
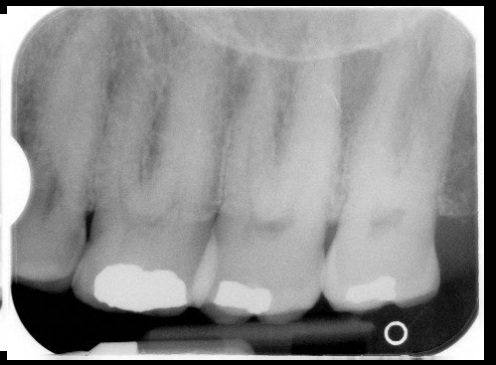
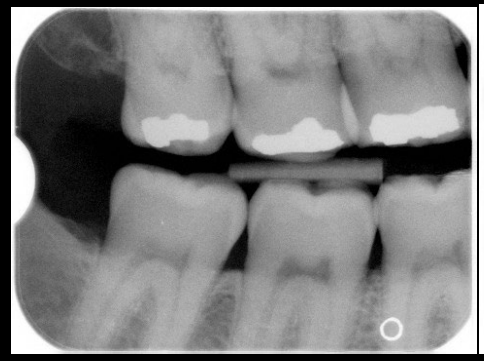
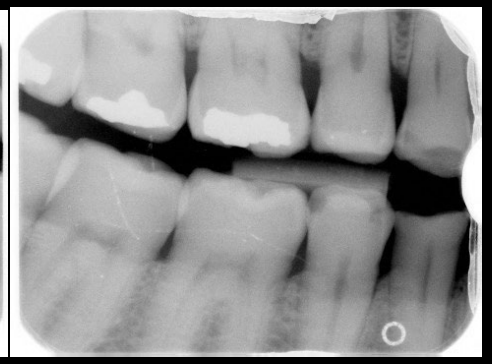
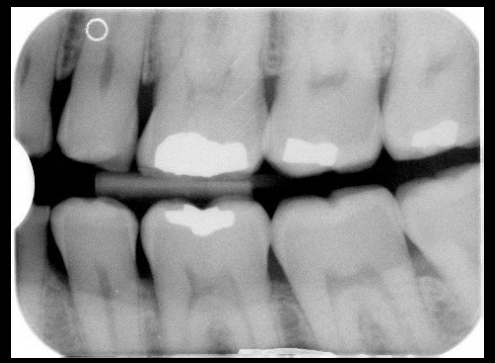
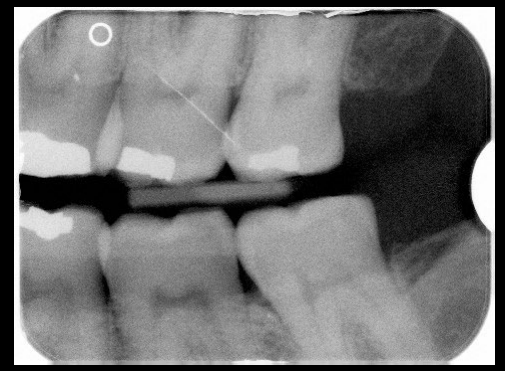
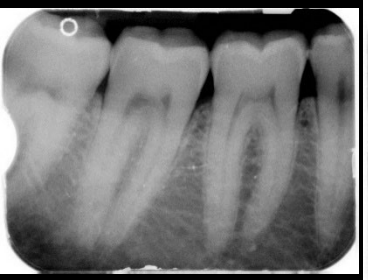
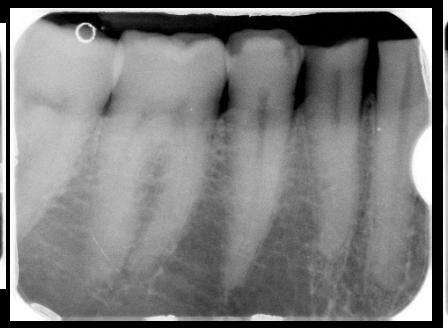
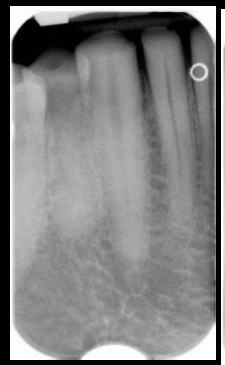
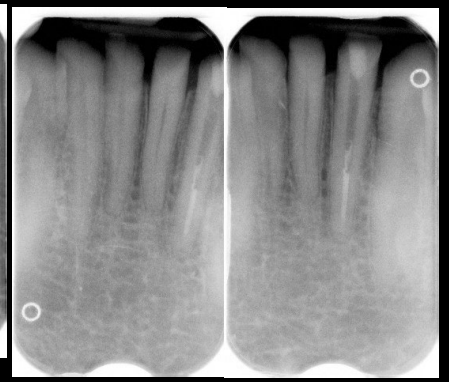
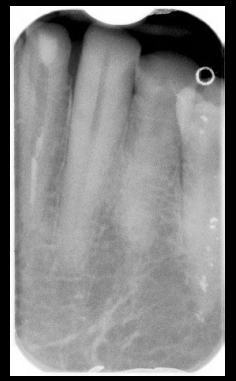
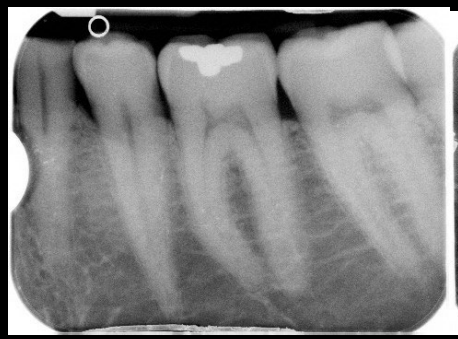
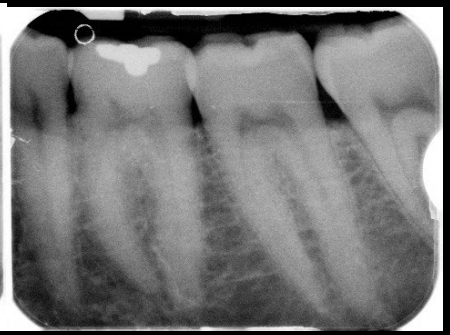


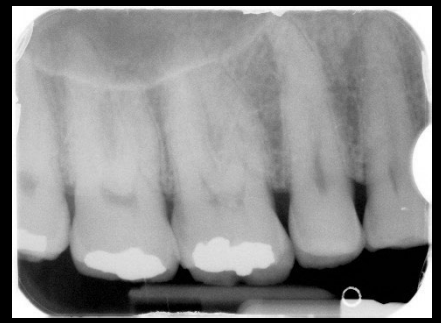
- Sleep? Mallampati Class IV, sleeps 6-8 hr/night, easily falls asleep, Snores.
- TMD: bilateral “click,” no pain, RD-TMD exam Axis-I, 50mm Max opening, straight line closure, Dawson slide CR-MI (3mm), IOD 5mm (nose/chin), neuromuscular release recorded.
- Perio: <3mm, no BOP, no mobility, no pain on percussion or palpation.
- High smile line.
- Turner Wear Class II (with Class III properties-intact posterior teeth)
- Diagnosis: Anterior GERD associated multifactorial wear (attrition/erosion), potentially associated with sleep bruxism.
- VDO maintained by passive eruption of posterior teeth.
- Care Plan: Provision plan, Perio and Ortho consults. Endo referral to local endodontist for RCT #22-27.

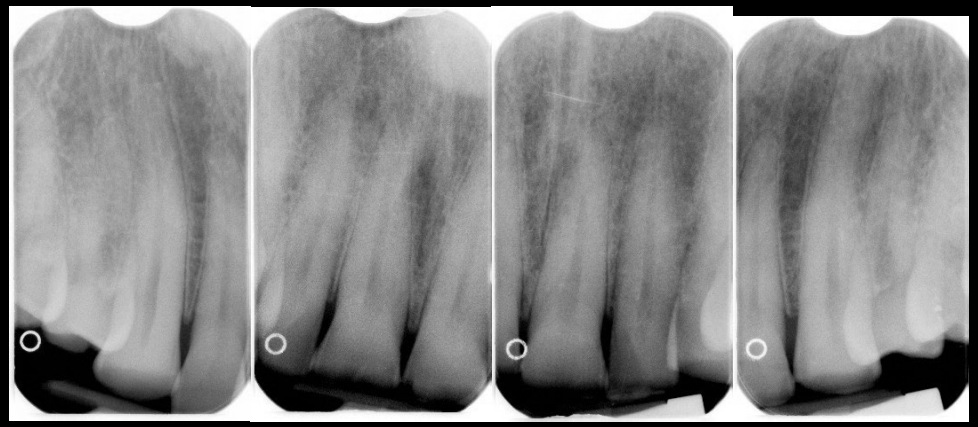


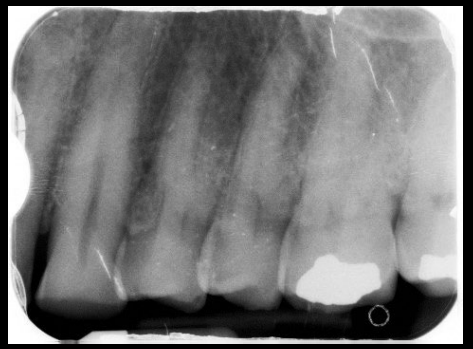


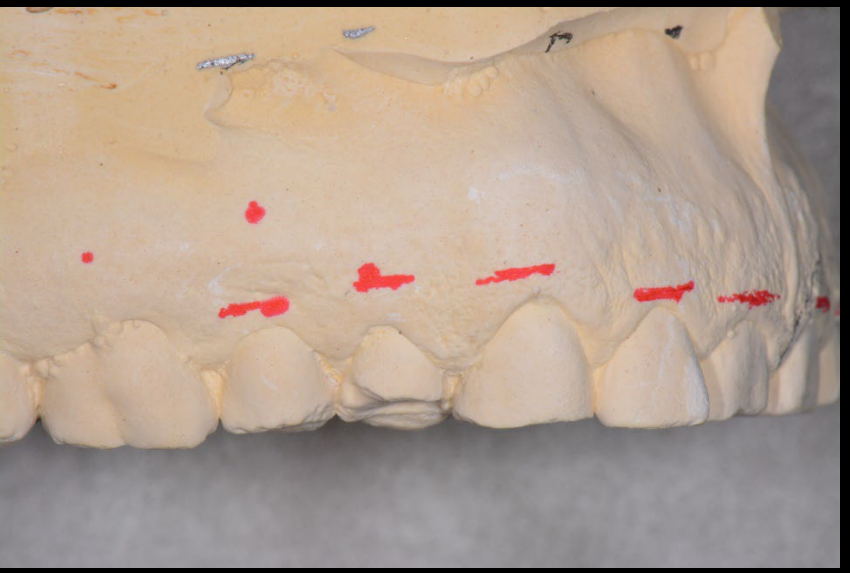
Note, the endodontic pain led him to now seek care

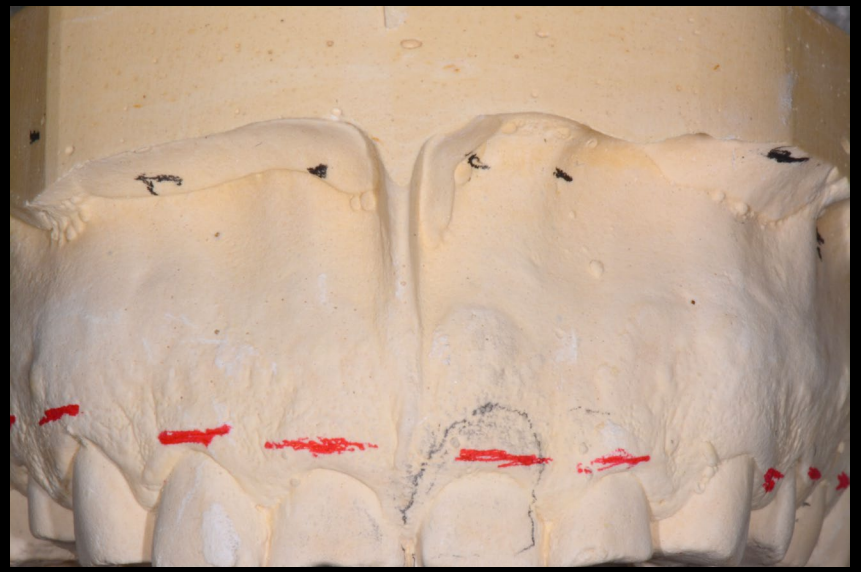
















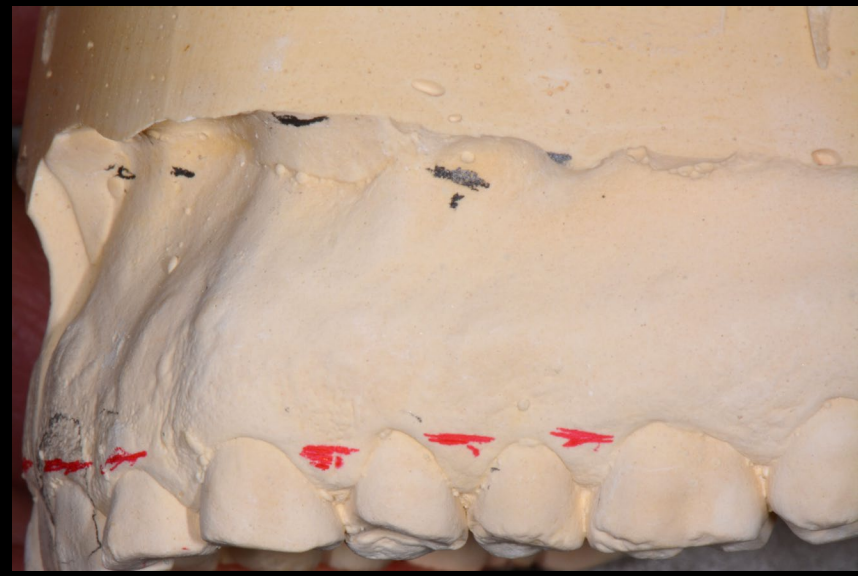


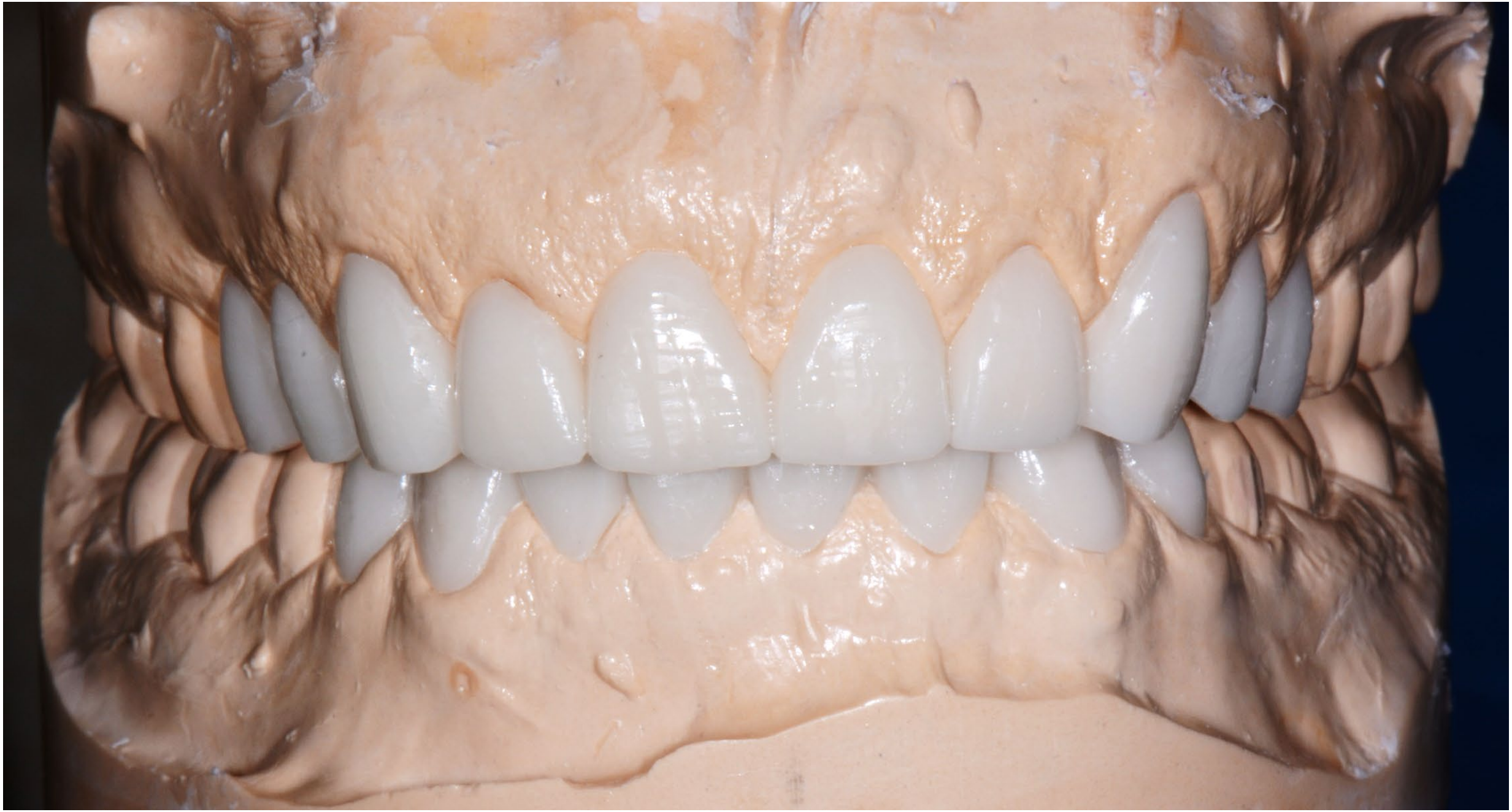


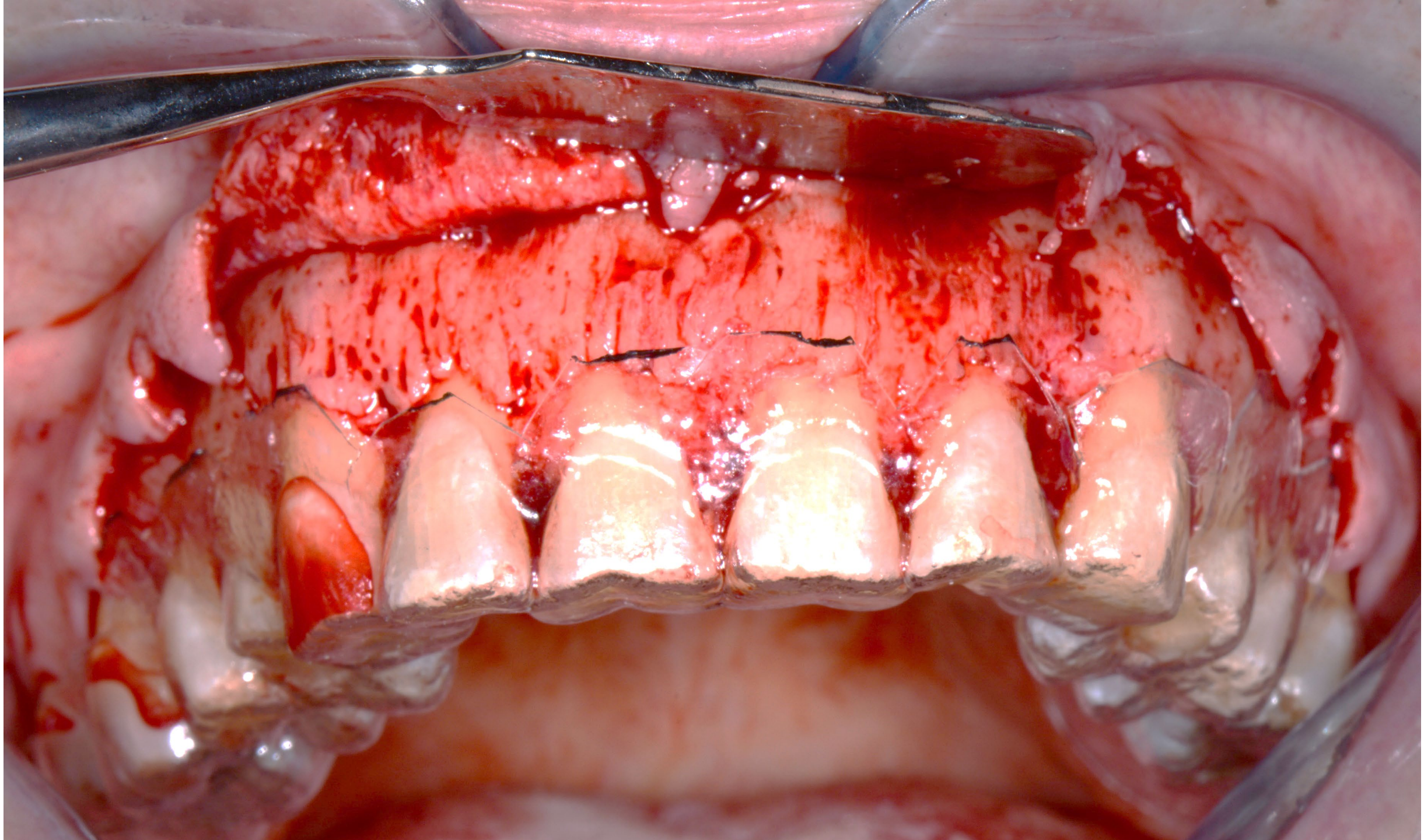


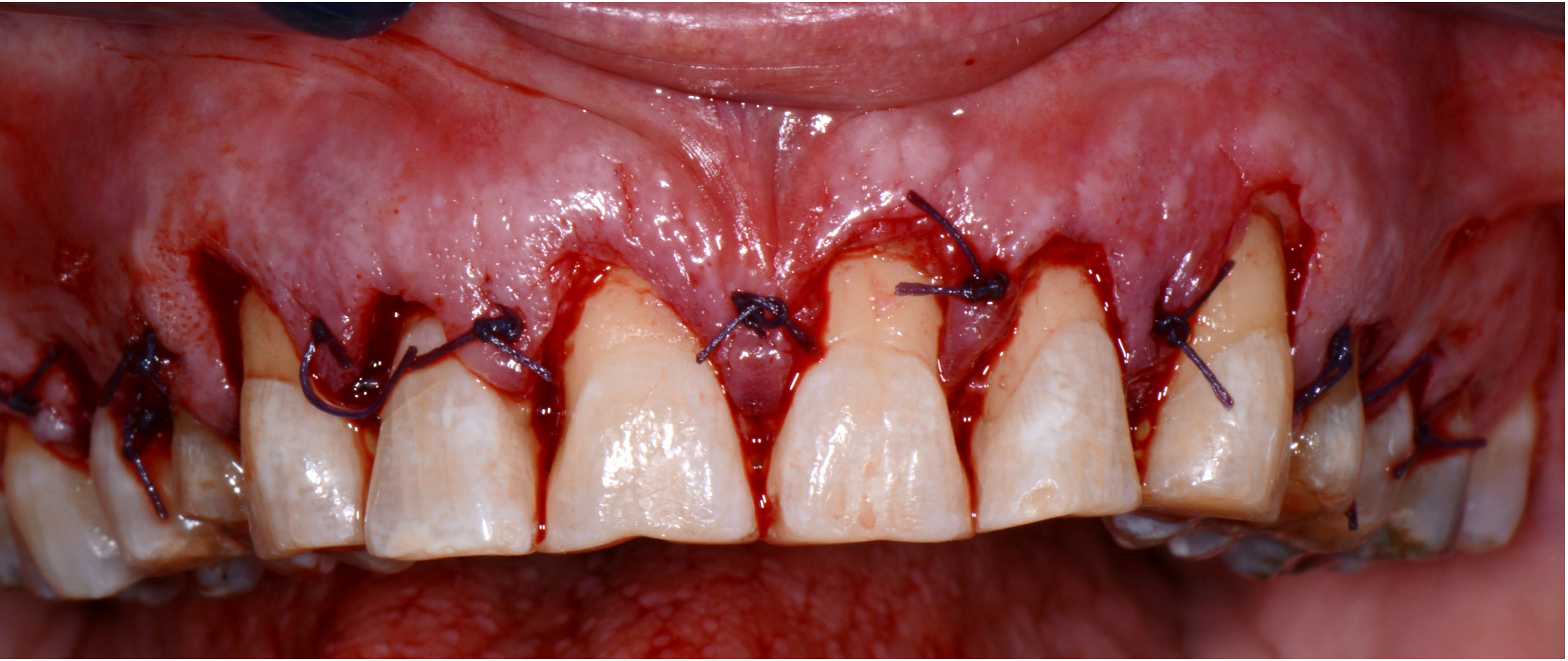


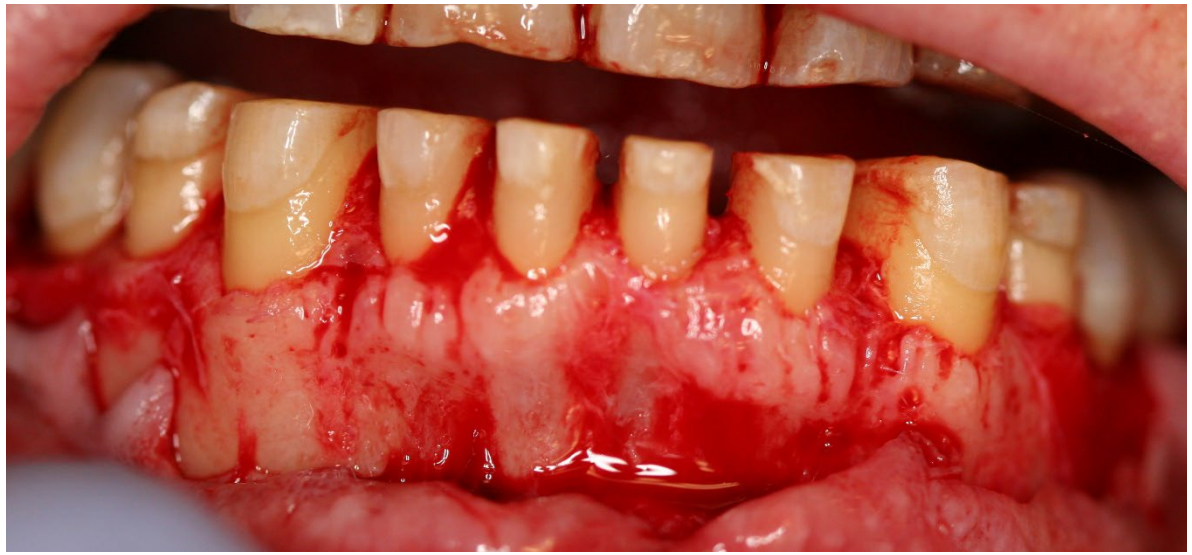


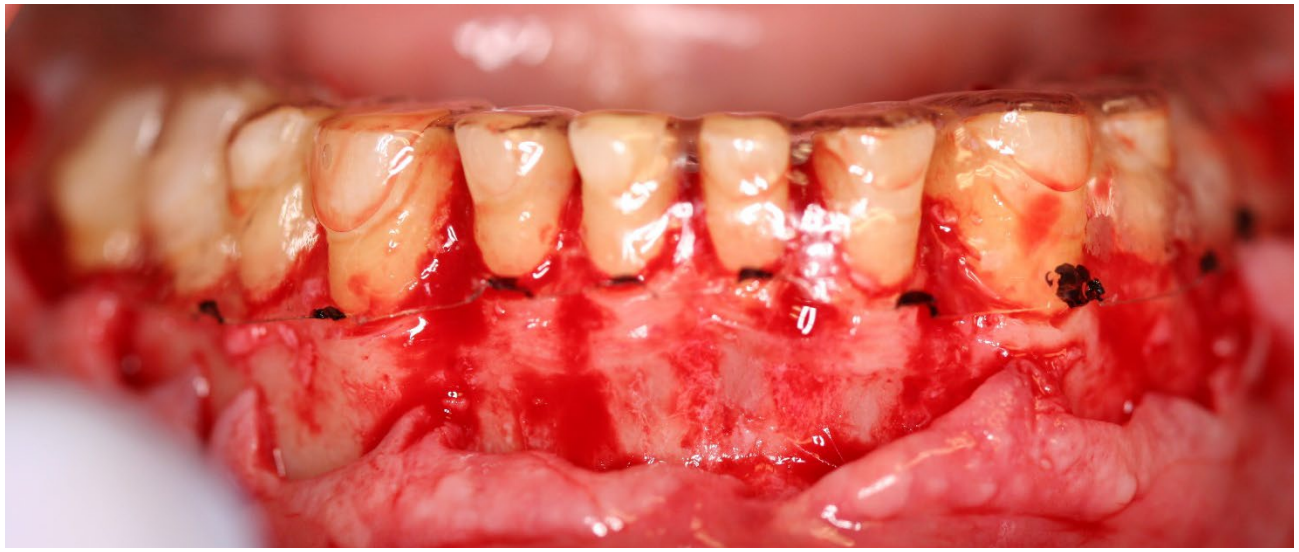


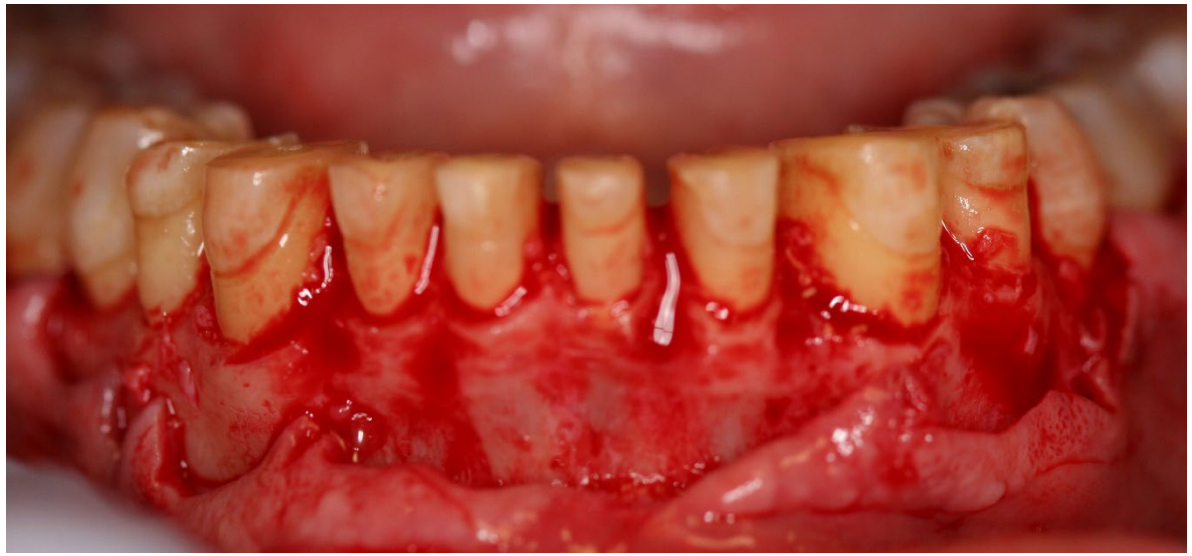


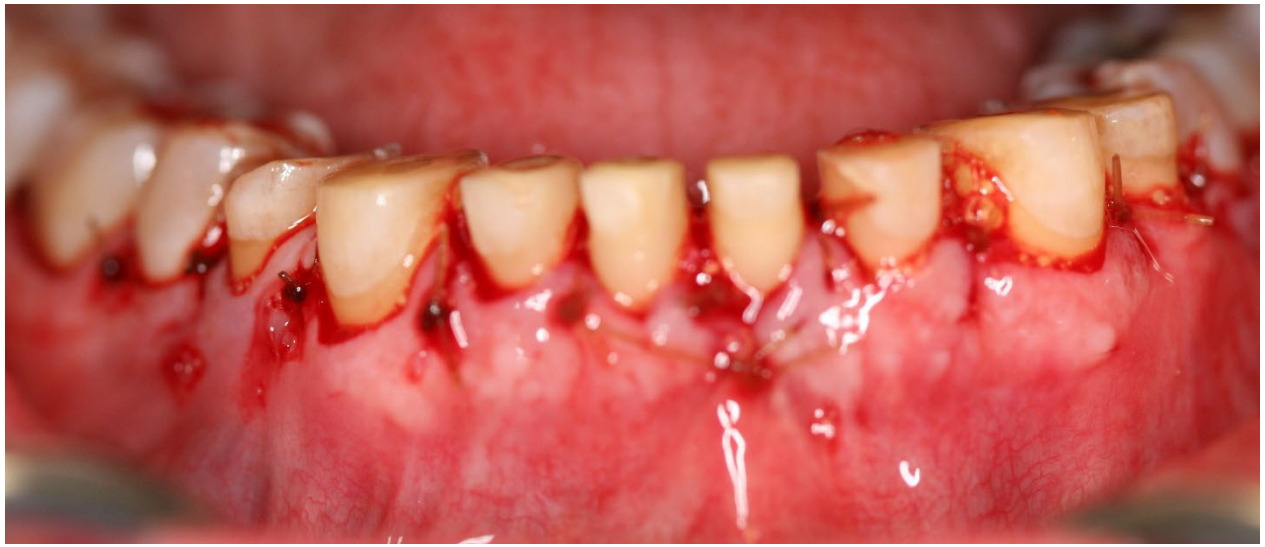


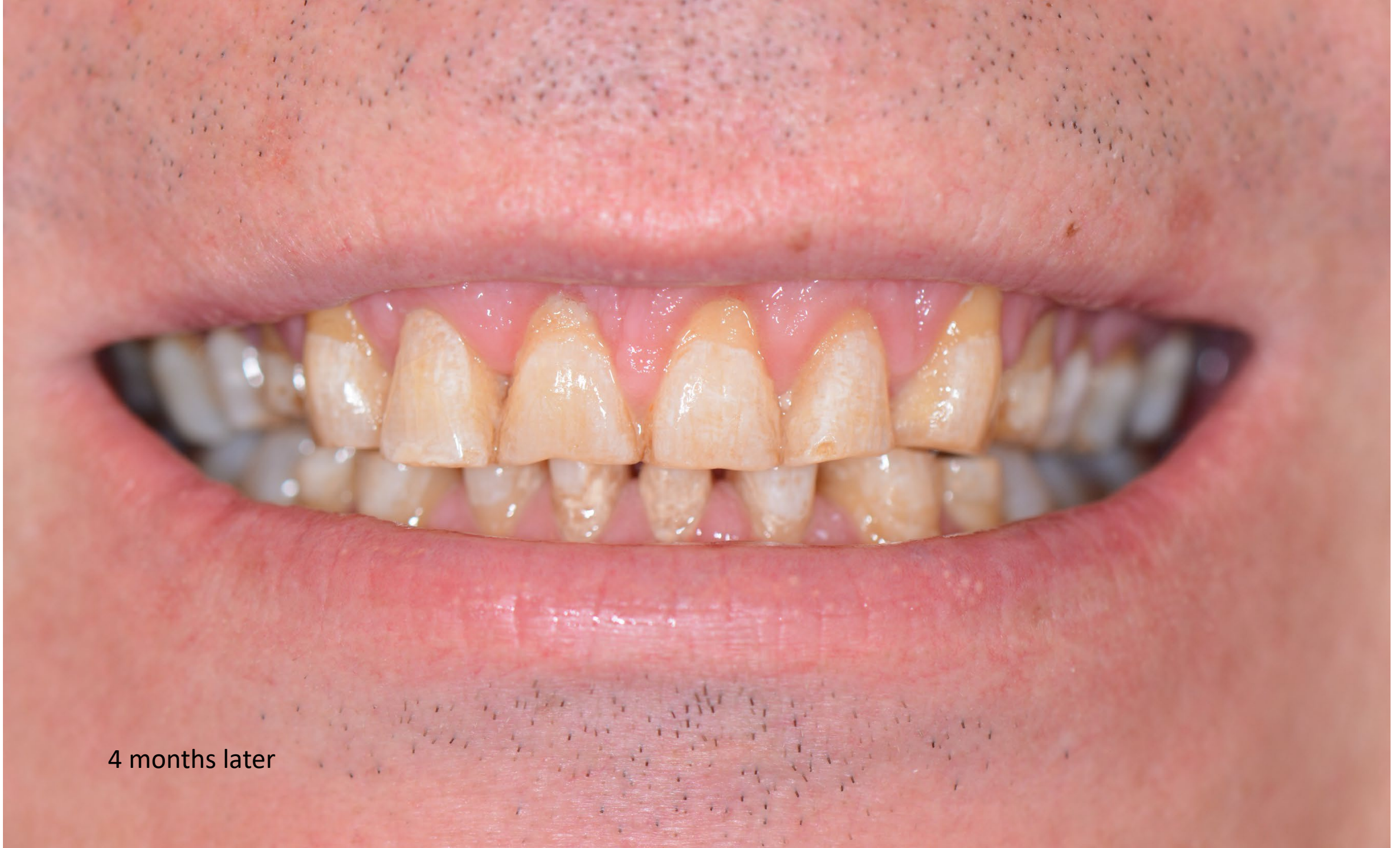


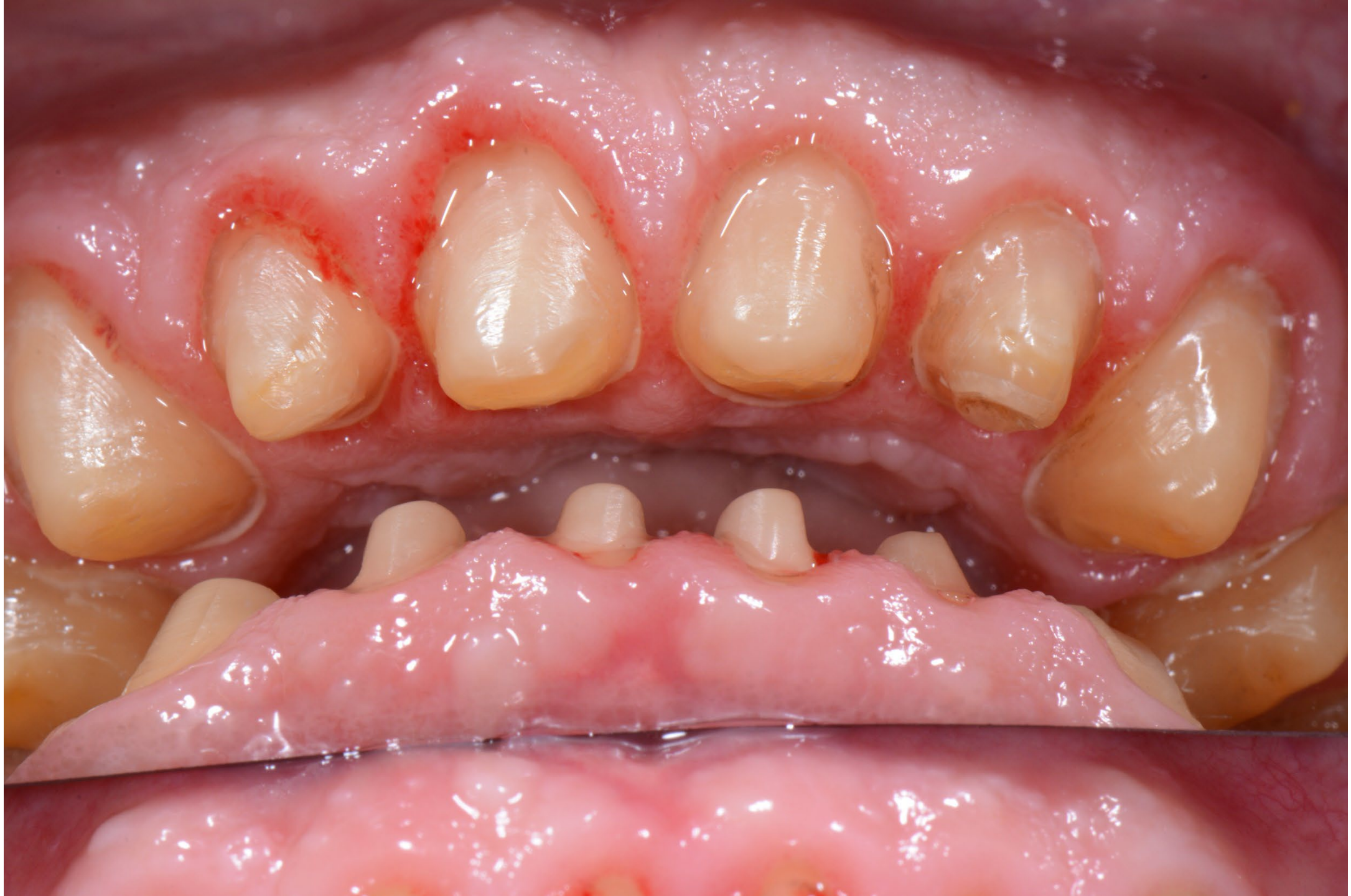




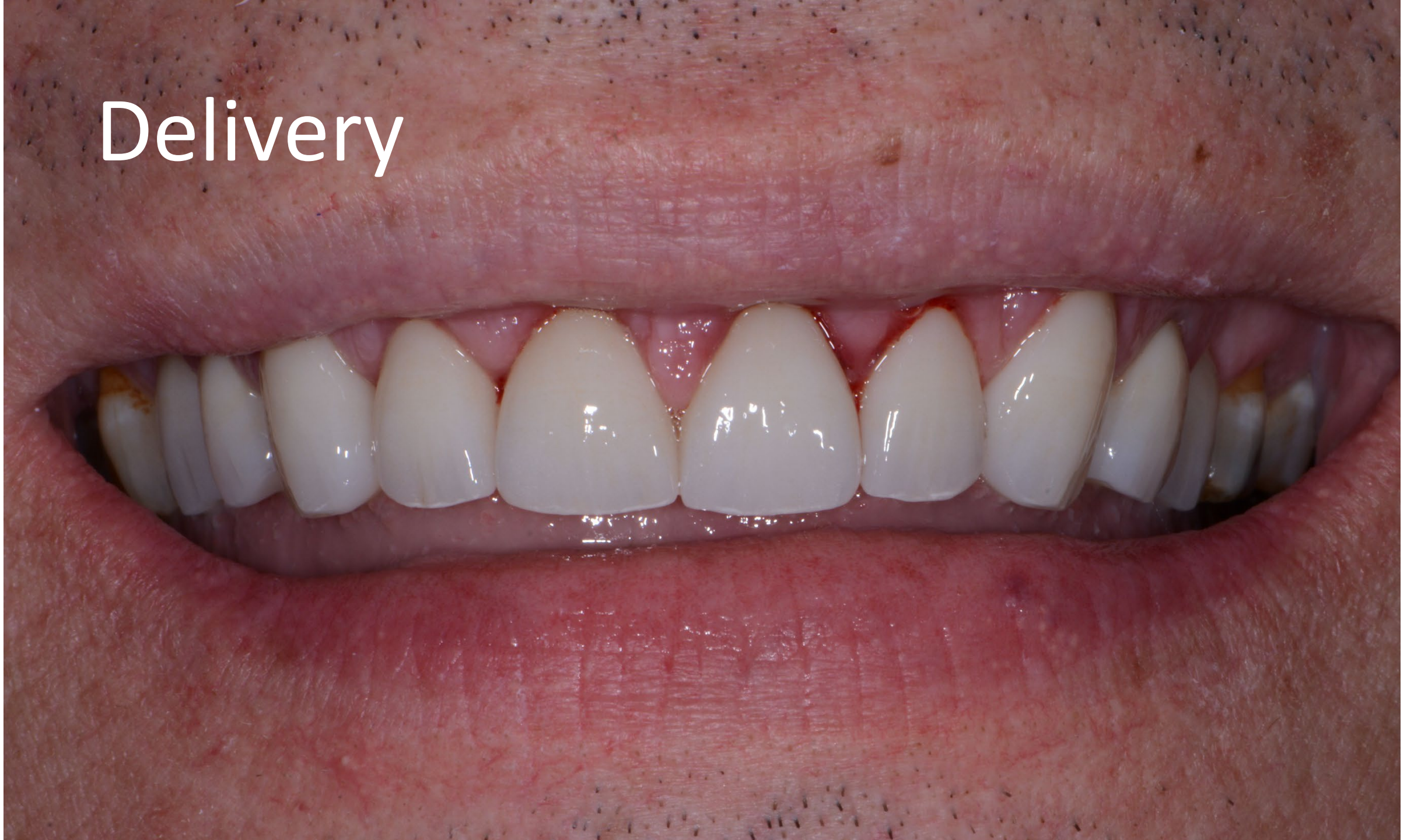




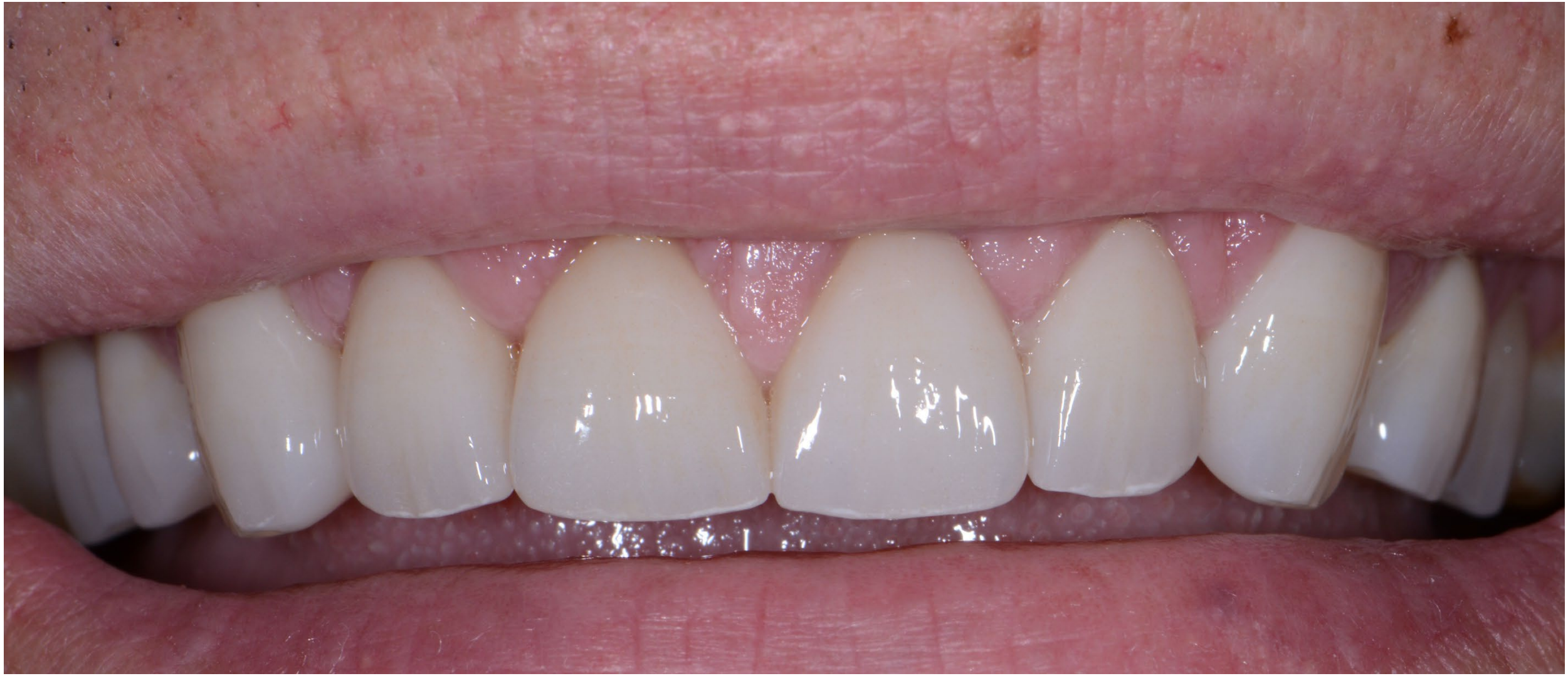

4 months later

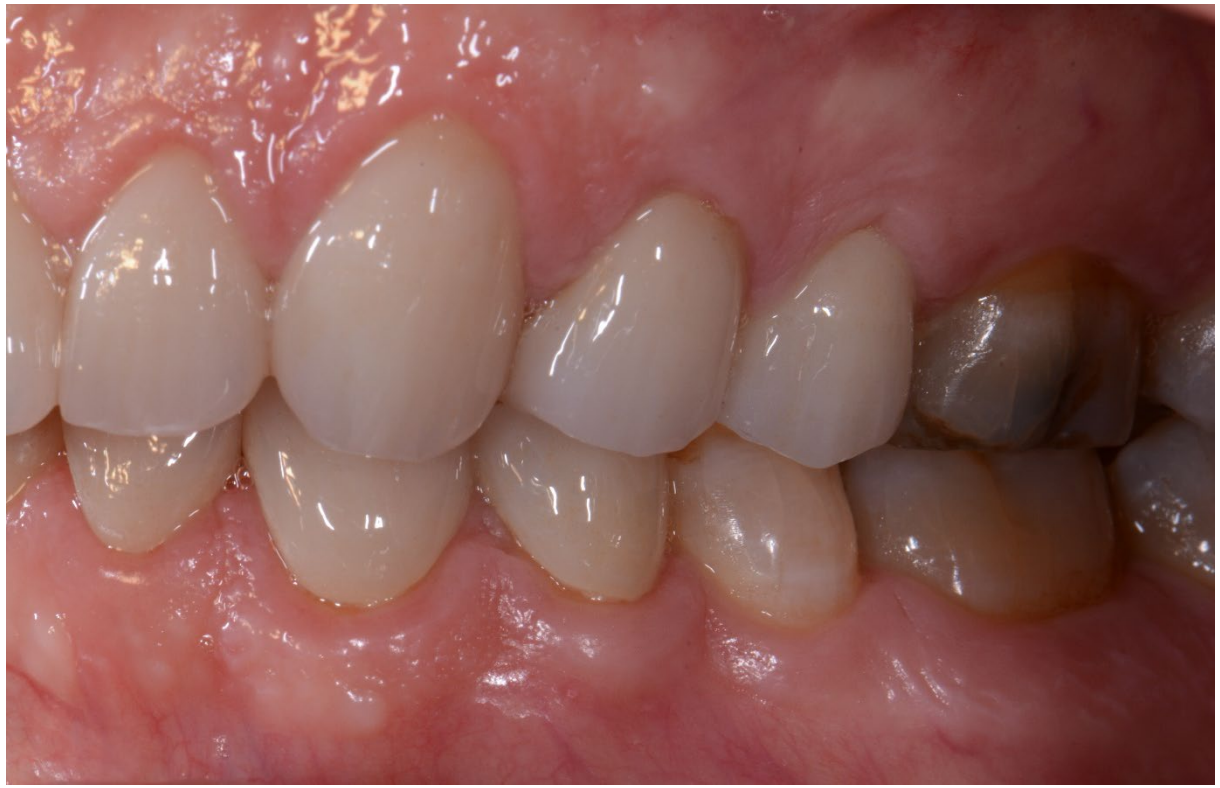


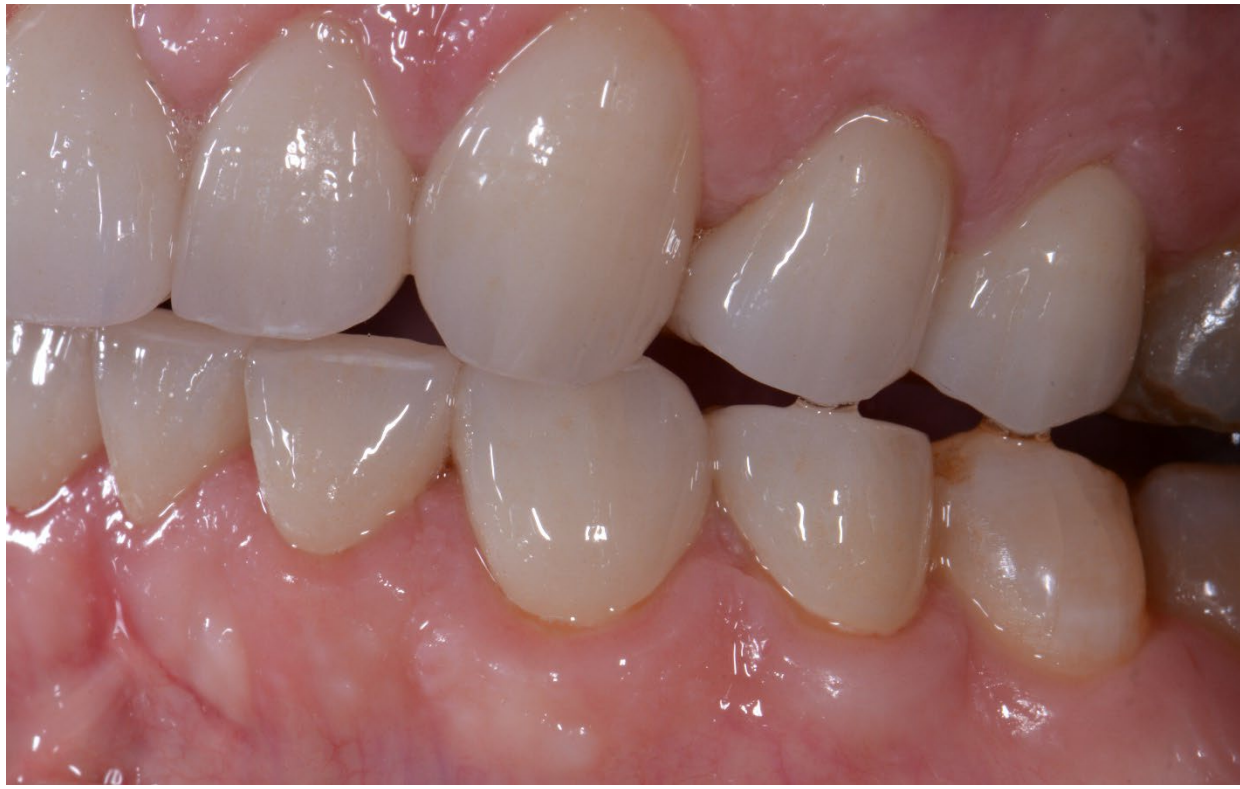
Delivery

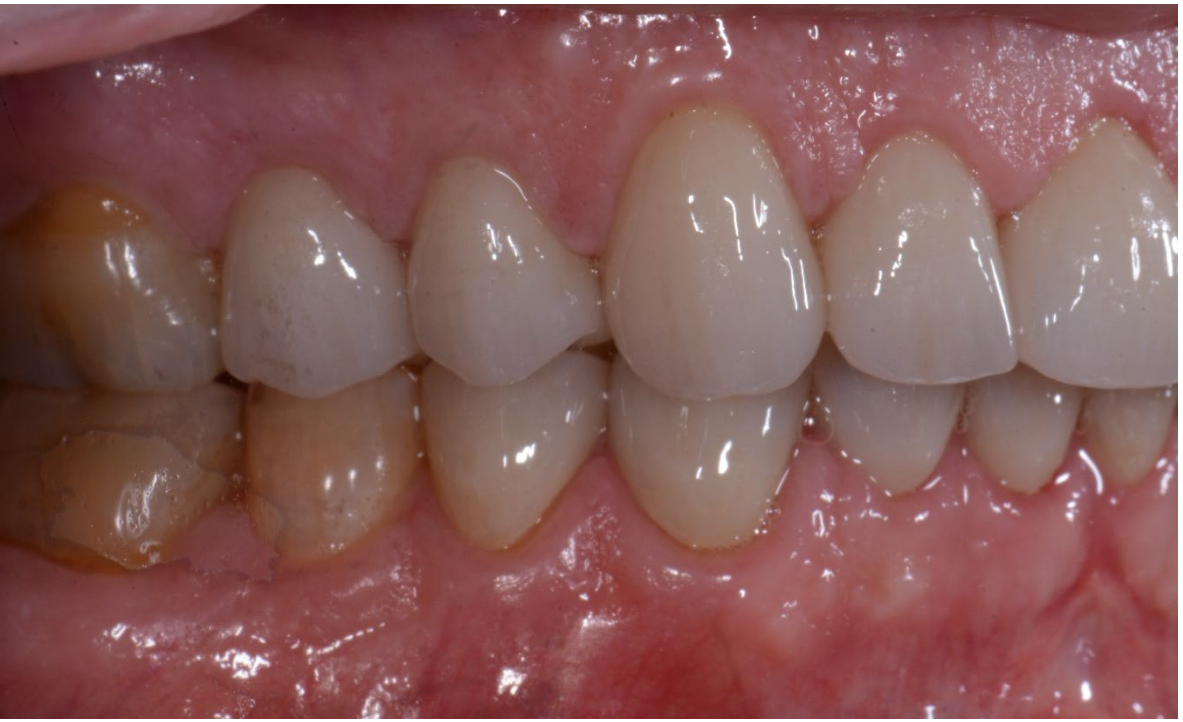


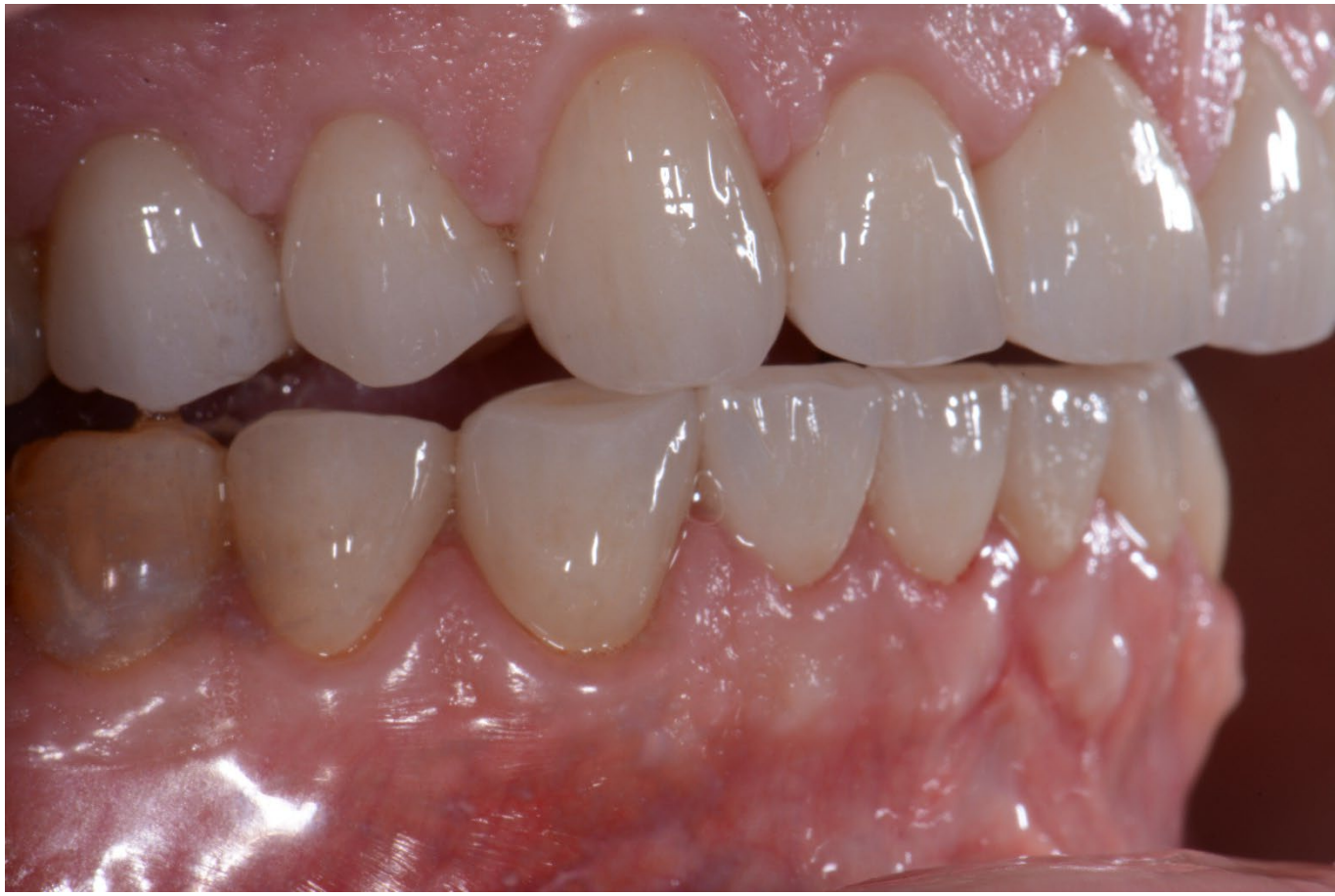
3 year recall (3/2020)









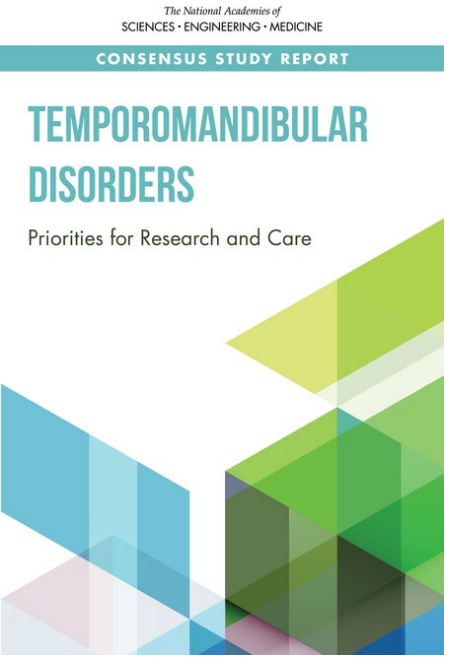


But did I cause a change in his TMD/TMJD sign and symptoms?

Implications of complex rehabilitative care ? What if he developed muscle pain in his masseters and temporalis?

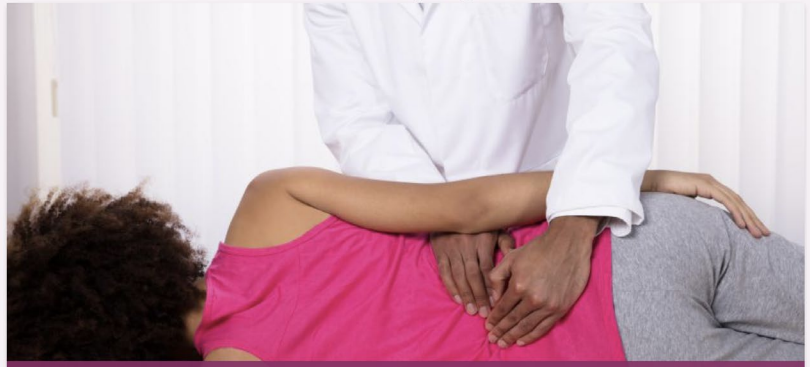
What would you do if the TMD/TMJD signs and symptoms got worse … post care?

TMJD Pain



Back Pain Consortium Research Program

Research Spotlights



Can Treating Pain and Mood Together Improve Outcomes for People With Chronic Low Back Pain?

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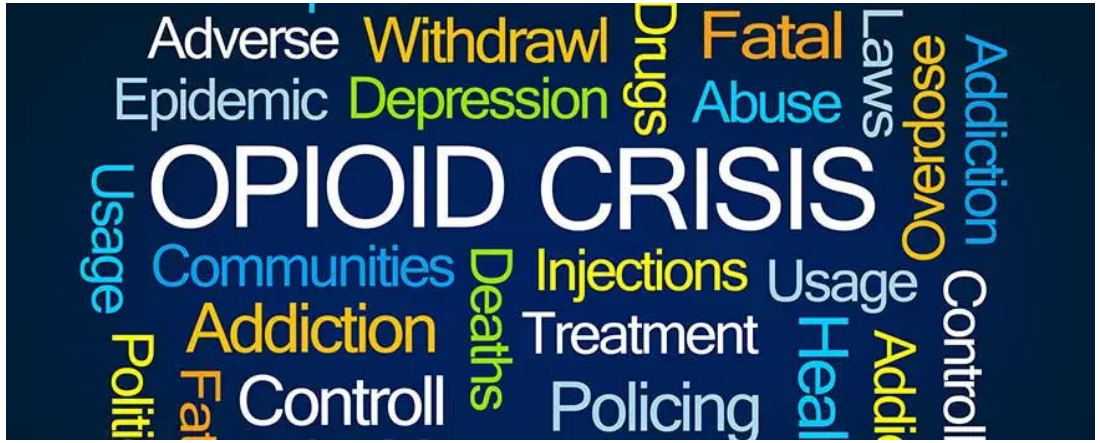
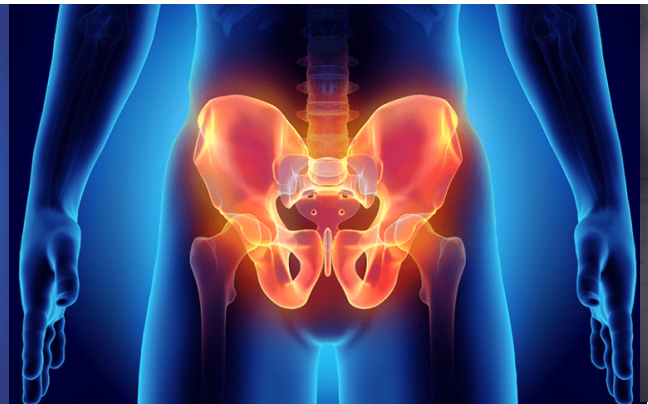
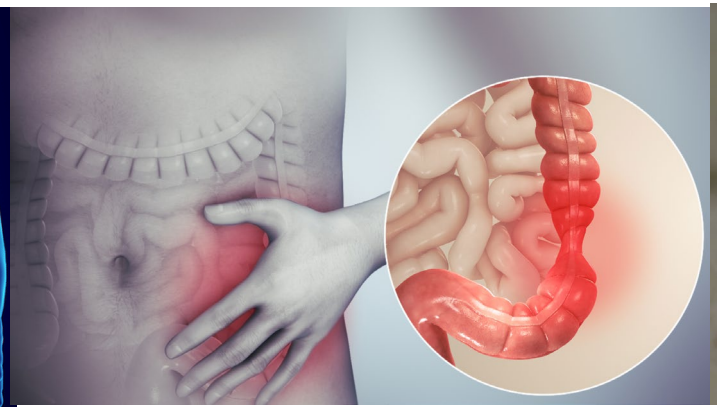
Why HEAL?

The opioid crisis in America continues to evolve rapidly and overlaps with other significant public health challenges, including mental illness. Millions of lives are at stake: these are our family members, friends, neighbors, and coworkers. Damage from the opioid crisis reaches across every domain of family and community life:

- Lost productivity and economic opportunity
- Intergenerational and childhood trauma
- Extreme strain on community resources, including first responders, emergency departments, hospitals, and treatment centers







Basic Overview - Oral Facial Pain

Acute v. Chronic Pain

"Management" v. "Treatment" of Chronic Pain

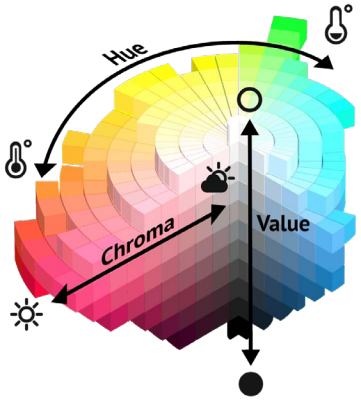
Pain is an "experience" not a "sensation" and some argue not a "cognitive perception" but a lived experience

Sensation: to see light

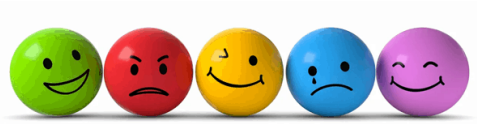
Perception: to determine its color (hue/value/chroma) (e.g., shade match)

Experience: to overlay with memory, emotions and desires (e.g., "darn this is the third time the shade is off, what am I doing?")

Sensation



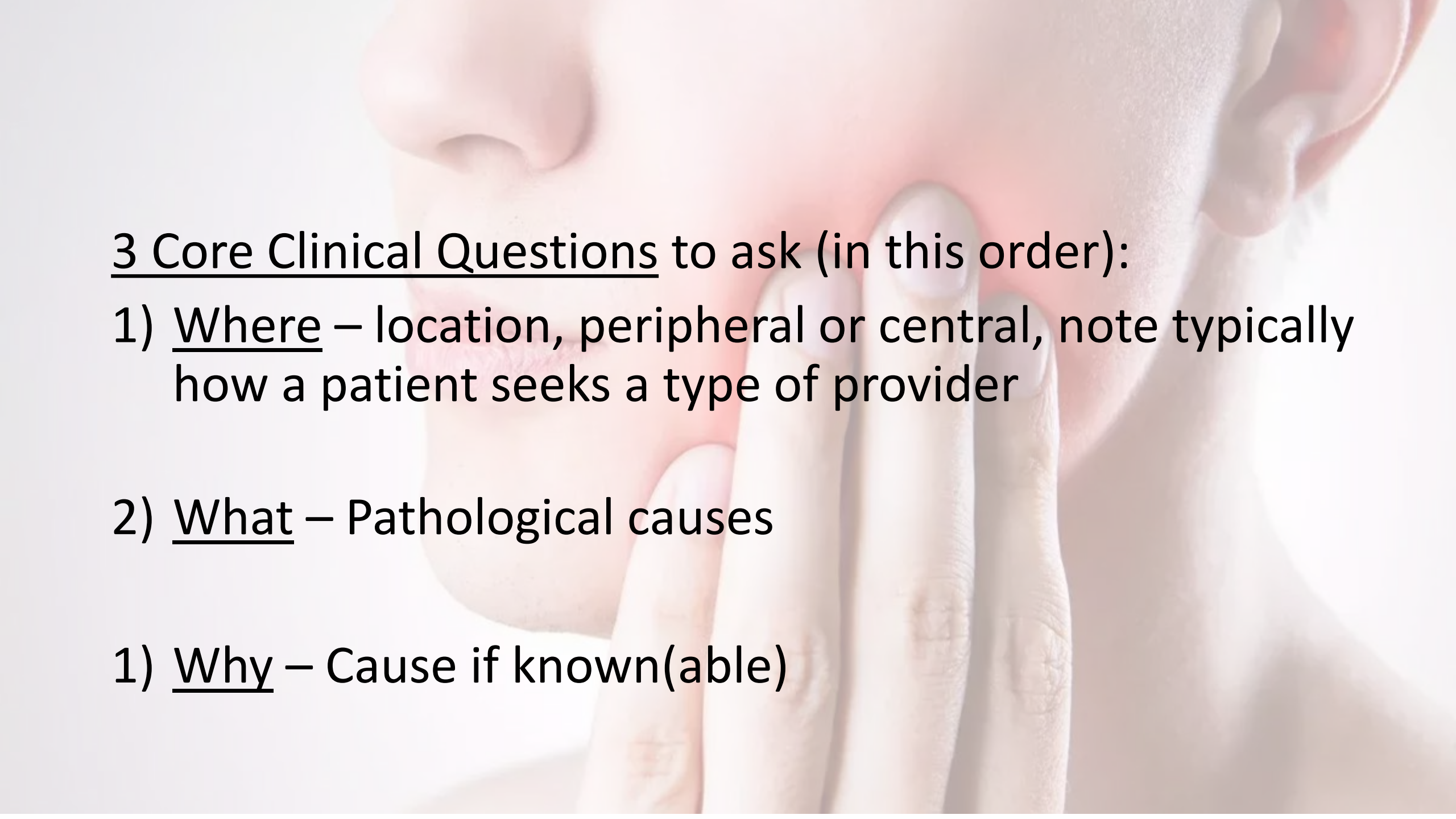
Perception



Experience

My experience with Sensation, Perception and Experience of pain (well, one of them)

- My first week of residency …
- Bunsen burner falls over …
- What did I do … ?
- Was not a good idea …



3 Core Clinical Questions to ask (in this order):

1) Where – location, peripheral or central, note typically how a patient seeks a type of provider

2) What – Pathological causes

1) Why – Cause if known(able)

OLDCART Patient History

Taking a patient history with

Oldcarts

O — Onset
Is the issue acute, chronic, or in between?

L — Location
Where is the sensation felt?

D — Duration
How long has this lasted?

C — Character
Categorizing pain: burning, dull, ...

AR — Aggravating/Relieving
What makes it worse or better?

T — Timing
Does it occur e.g. after certain situations?

S — Severity
1–10 scale or subjective grading

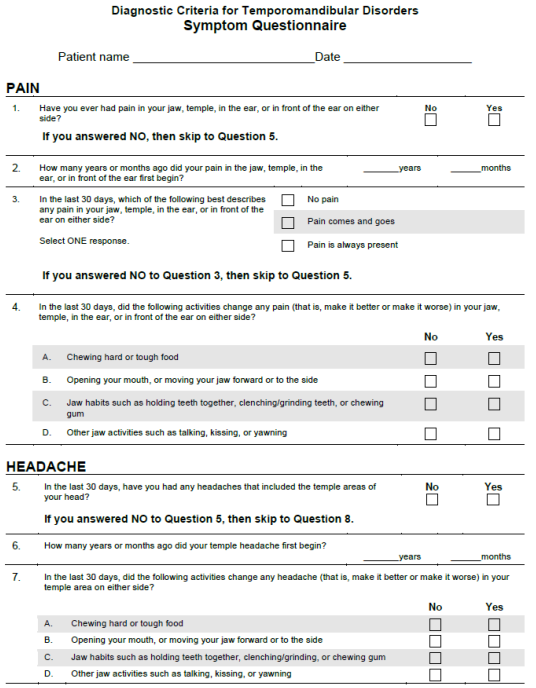
Examples of OLD CARTS Mnemonic Questions

OLD CARTS QUESTIONS

O – Onset • When did you first notice this symptom? • Did it appear suddenly, or did it develop gradually over time?	**A– Aggravating factors** • Are there any specific activities or circumstances that make this symptom worse? • Have you noticed any triggers that seem to exacerbate the symptom?
L – Location • Can you point to or describe where you're feeling this symptom? • Does the symptom radiate or spread to other areas?	**R – Relieving factors:** • Have you found anything that provides relief or lessens the intensity of the symptom? • Are there specific positions, medications, or actions that alleviate the symptom?
D – Duration • How long does each episode of this symptom typically last? • Is it constant, or does it come and go?	**T – Timing** • Does the symptom have a particular pattern throughout the day or night? • Are there any specific situations when the symptom tends to occur more frequently?
C – Character • Could you describe the nature of this symptom? (e.g., sharp, dull, burning, throbbing) • Does it feel like pressure, stabbing, tingling, or any other specific sensation?	**S – Severity** • On a scale of 0 to 10, with 0 being no pain/symptom and 10 being the worst imaginable pain/symptom, how would you rate the severity? • How does the severity of this symptom compare to other instances you've experienced?

Pain History

- Core to understanding if the pain is odontogenic (tooth-based) or not
- Questionnaires (e.g., McGill Questionnaire)
- Patient can describe the pain by physical location or by “quality” or experience (flashing, most intense ever, sharp, electric, burning, throbbing, etc.)
- <u>Structured</u> Physical Exam – A key part of your approach !
  - Location ?
  - Intensity ?
  - Temporal (time) nature ?
  - Stimuli ?
  - Sensory affects ?



Diagnostic Criteria for Temporomandibular Disorders
Symptom Questionnaire

Patient name _____ Date _____

PAIN

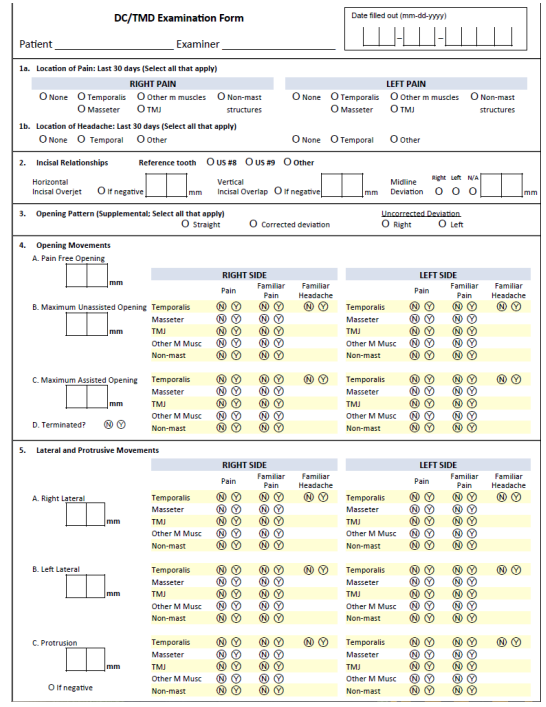
1. Have you ever had pain in your jaw, temple, in the ear, or in front of the ear on either side? — No ☐ Yes ☐
   If you answered NO, then skip to Question 5.
2. How many years or months ago did your pain in the jaw, temple, in the ear, or in front of the ear first begin? _____years _____months
3. In the last 30 days, which of the following best describes any pain in your jaw, temple, in the ear, or in front of the ear on either side? Select ONE response.
   ☐ No pain
   ☐ Pain comes and goes
   ☐ Pain is always present
   If you answered NO to Question 3, then skip to Question 5.
4. In the last 30 days, did the following activities change any pain (that is, make it better or make it worse) in your jaw, temple, in the ear, or in front of the ear on either side?

		No	Yes
A.	Chewing hard or tough food	☐	☐
B.	Opening your mouth, or moving your jaw forward or to the side	☐	☐
C.	Jaw habits such as holding teeth together, clenching/grinding teeth, or chewing gum	☐	☐
D.	Other jaw activities such as talking, kissing, or yawning	☐	☐

HEADACHE

5. In the last 30 days, have you had any headaches that included the temple areas of your head? — No ☐ Yes ☐
   If you answered NO to Question 5, then skip to Question 8.
6. How many years or months ago did your temple headache first begin? _____years _____months
7. In the last 30 days, did the following activities change any headache (that is, make it better or make it worse) in your temple area on either side?

		No	Yes
A.	Chewing hard or tough food	☐	☐
B.	Opening your mouth, or moving your jaw forward or to the side	☐	☐
C.	Jaw habits such as holding teeth together, clenching/grinding, or chewing gum	☐	☐
D.	Other jaw activities such as talking, kissing, or yawning	☐	☐



DC/TMD Examination Form

Patient _____ Examiner _____ Date filled out (mm-dd-yyyy)

1a. Location of Pain: Last 30 days (Select all that apply)
RIGHT PAIN: O None O Temporalis O Other m muscles O Non-mast O Masseter O TMJ O structures
LEFT PAIN: O None O Temporalis O Other m muscles O Non-mast O Masseter O TMJ O structures

1b. Location of Headache: Last 30 days (Select all that apply)
O None O Temporal O Other O None O Temporal O Other

2. Incisal Relationships — Reference tooth O US #8 O US #9 O Other
Horizontal Incisal Overjet O If negative ___ mm; Vertical Incisal Overlap O If negative ___ mm; Midline Deviation Right O Left O N/A O ___ mm

3. Opening Pattern (Supplemental; Select all that apply) O Straight O Corrected deviation — Uncorrected Deviation O Right O Left

4. Opening Movements

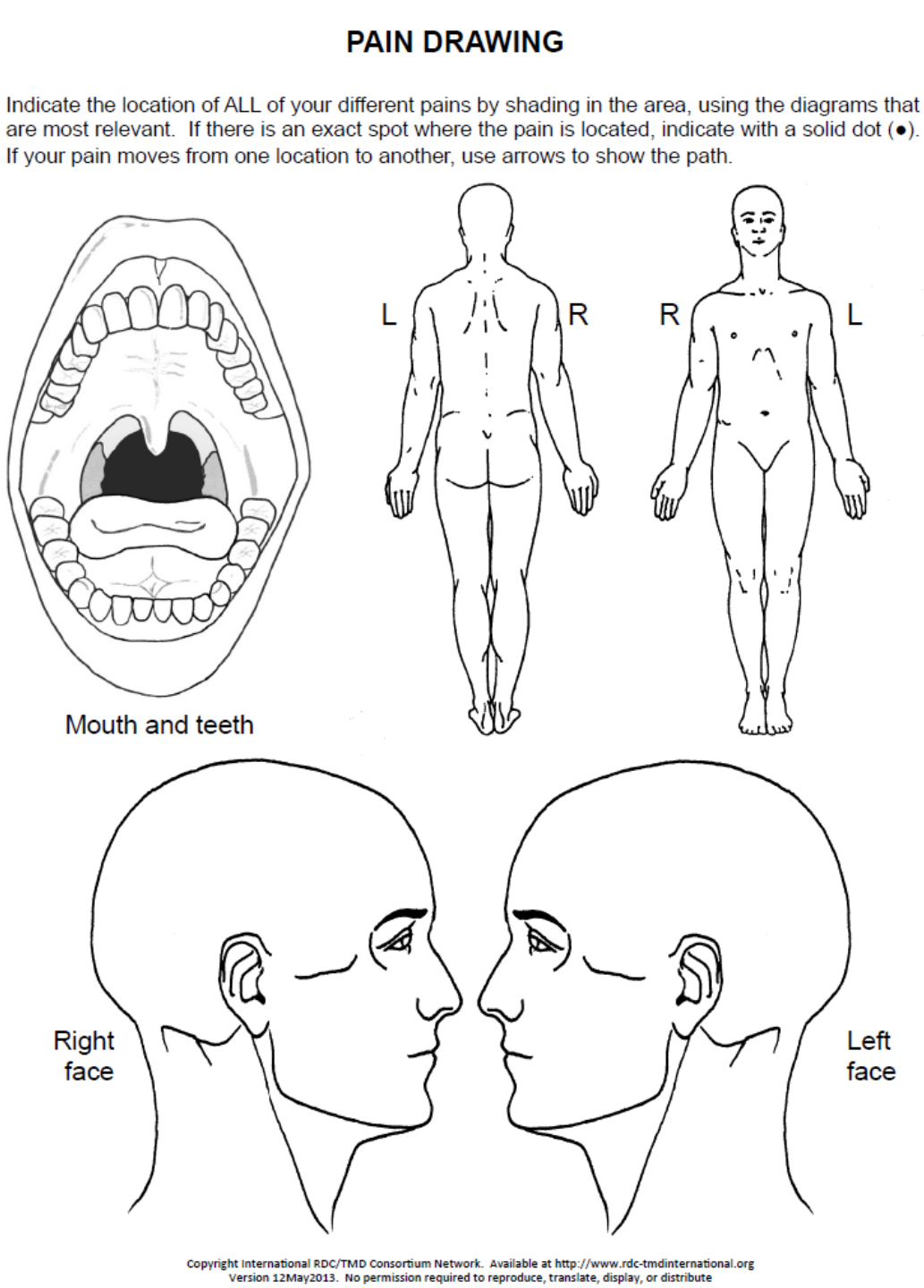
		RIGHT SIDE Pain	RIGHT SIDE Familiar Pain	RIGHT SIDE Familiar Headache	LEFT SIDE Pain	LEFT SIDE Familiar Pain	LEFT SIDE Familiar Headache
A. Pain Free Opening ___ mm							
B. Maximum Unassisted Opening ___ mm	Temporalis	N Y	N Y	N Y	N Y	N Y	N Y
	Masseter	N Y	N Y		N Y	N Y	
	TMJ	N Y	N Y		N Y	N Y	
	Other M Musc	N Y	N Y		N Y	N Y	
	Non-mast	N Y	N Y		N Y	N Y	
C. Maximum Assisted Opening ___ mm	Temporalis	N Y	N Y	N Y	N Y	N Y	N Y
	Masseter	N Y	N Y		N Y	N Y	
	TMJ	N Y	N Y		N Y	N Y	
	Other M Musc	N Y	N Y		N Y	N Y	
	Non-mast	N Y	N Y		N Y	N Y	
D. Terminated? N Y							

5. Lateral and Protrusive Movements

		RIGHT SIDE Pain	RIGHT SIDE Familiar Pain	RIGHT SIDE Familiar Headache	LEFT SIDE Pain	LEFT SIDE Familiar Pain	LEFT SIDE Familiar Headache
A. Right Lateral ___ mm	Temporalis	N Y	N Y	N Y	N Y	N Y	N Y
	Masseter	N Y	N Y		N Y	N Y	
	TMJ	N Y	N Y		N Y	N Y	
	Other M Musc	N Y	N Y		N Y	N Y	
	Non-mast	N Y	N Y		N Y	N Y	
B. Left Lateral ___ mm	Temporalis	N Y	N Y	N Y	N Y	N Y	N Y
	Masseter	N Y	N Y		N Y	N Y	
	TMJ	N Y	N Y		N Y	N Y	
	Other M Musc	N Y	N Y		N Y	N Y	
	Non-mast	N Y	N Y		N Y	N Y	
C. Protrusion ___ mm O If negative	Temporalis	N Y	N Y	N Y	N Y	N Y	N Y
	Masseter	N Y	N Y		N Y	N Y	
	TMJ	N Y	N Y		N Y	N Y	
	Other M Musc	N Y	N Y		N Y	N Y	
	Non-mast	N Y	N Y		N Y	N Y	

Location - Patterns ?

- Have the patient point to the area
- Patient drawn, pain maps
- Unilateral or bilateral ?
- Does is move, spread or change ?
- Radiate ?
- Referred ?



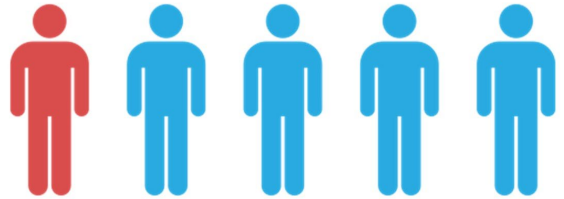
Temporal (Time) – Patterns ?

- Patient age of onset?
- Diurnal Patterns?
- Periodic or continuous?
- Duration? (e.g., Myofascial can last hours v. a flashing pain)
- “Paroxysmal” pain (e.g., pulpitis of trigeminal neuralgia): rapid onset & aggressive

Factors that alter(s) the pain experience?

- Chewing, jaw motion, hot/cold,
- Avoidance behaviors?
- Sleep patterns? Sleep disruptions are a major part of chronic pain syndromes including migraine, TG autonomic cephalgia's and fibromyalgia.
- STOP/BANG Screening form

Acute v. Chronic Pain

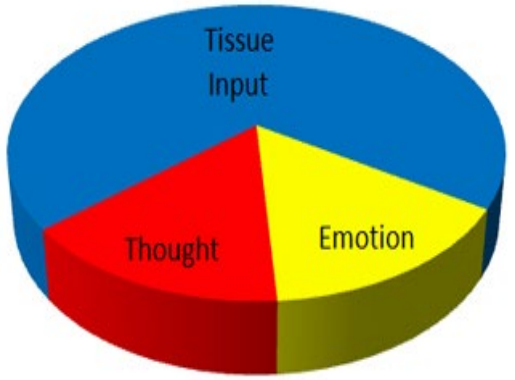


- Acute – A response to prevent tissue damage (*Nociceptive* pain)
- Chronic – A health condition by itself (not a symptom of another disease)
- Prevalence: USA ~ 20% (>6months)
- 8% of USA population – chronic pain limits or prevents employment
- Associated: irritability, depression, anxiety, sleep disturbances, cognitive dysfunction (attention, learning, memory, etc.)
- Chronic Pain - highest associated economic burden, globally
  - in USA costing ~ $635B per year [or 2x CVD ($309B), CA ($243B) or DM ($188B)] (Gaskin & Richards, J Pain 13: 7115-724; 2012)

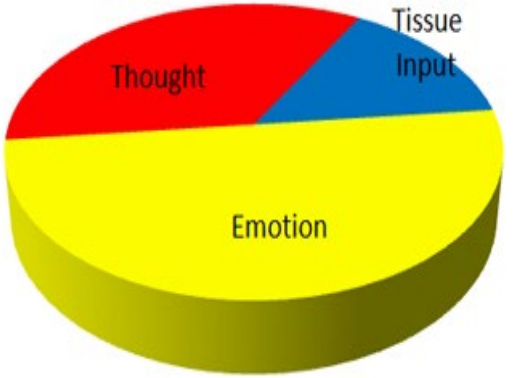
Acute v. Chronic Pain

- Chronic typically 3 months of duration or more

Acute

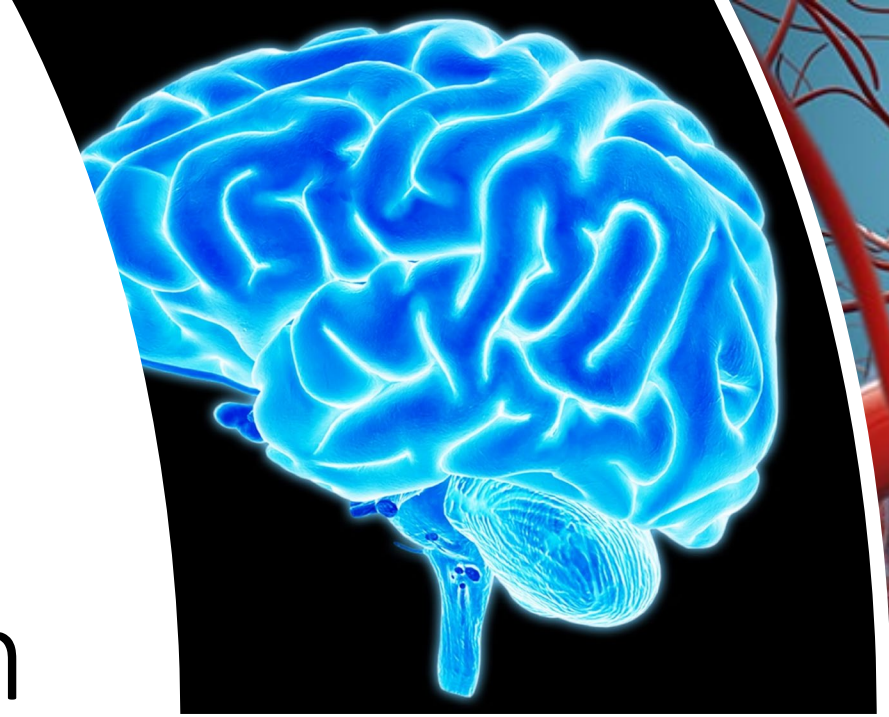


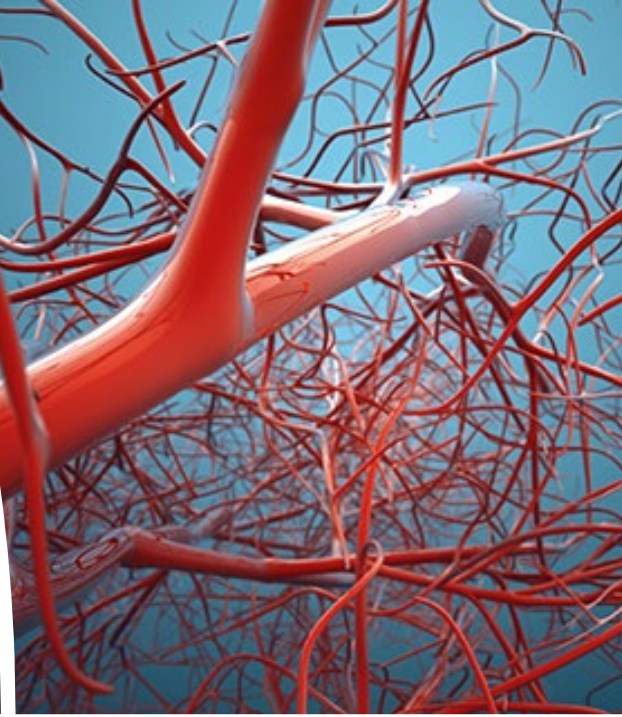
Chronic

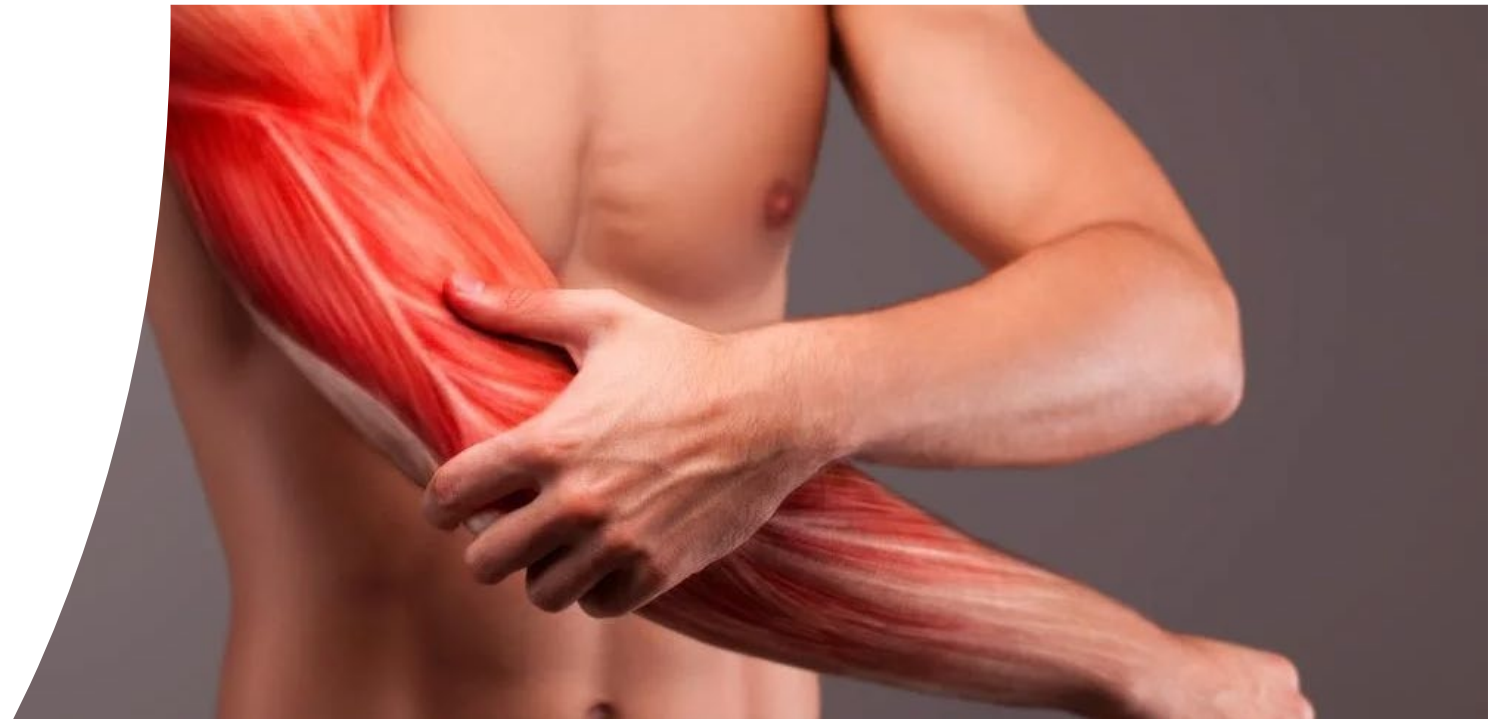


3 Buckets of Pain

…







Basic way to think about types of pain are based on symptoms

Craniofacial Pain — Primary?

Neurovascular

Throbbing?

Wakes the Patient?

Autonomic And Systemic Signs

Musculoskeletal

Deep

Pressure

Muscle Tenderness

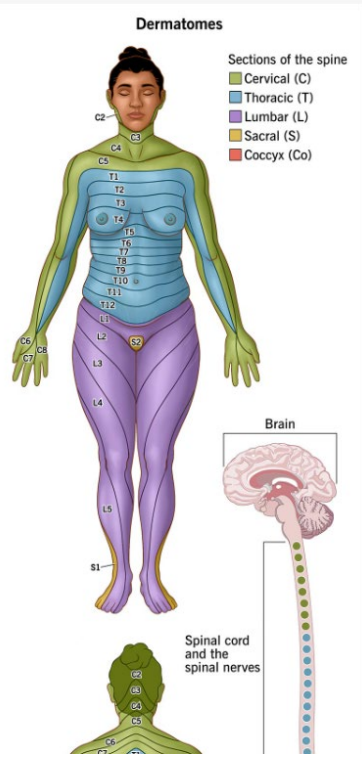
Dysfunction

Neuropathic

Maps to regions of the body (e.g., dermatomes)

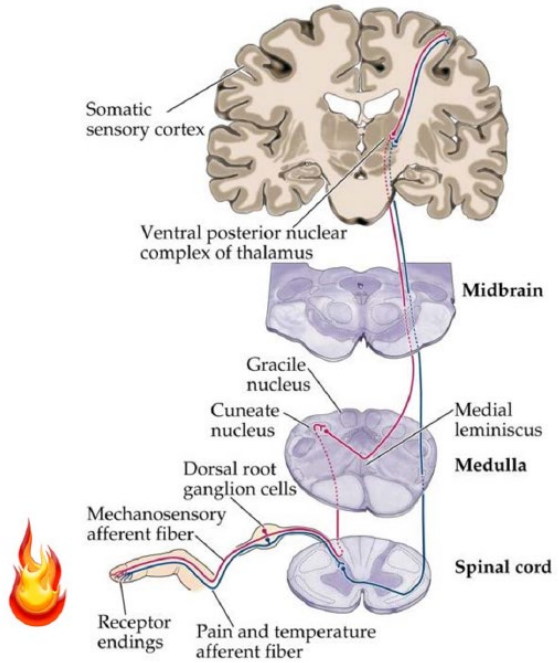
Burning or electrical

Sensory Dysfunction

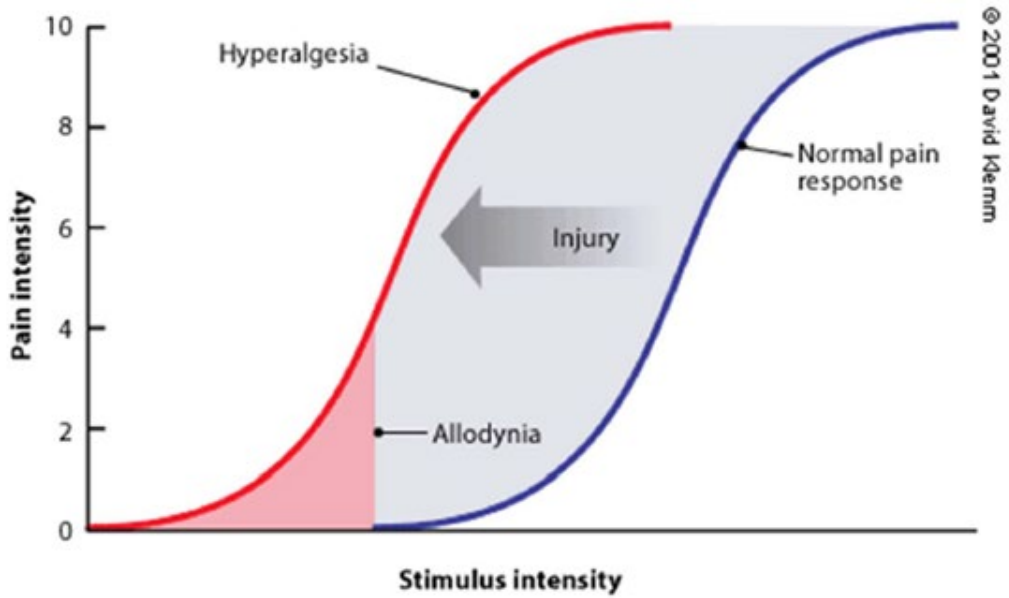


Nociceptive (normal) pain – terms to understand

- Protective reflex to prevent tissue damage
- Allodynia – pain response to what is not usually a painful stimulus
- Hyperalgesia - > Pain response in acuity (intensity) for what is normally a nociceptive stimulus. Rationale – peripheral sensitization @ pain receptors – **MSK & thermal** hyperalgesia is most common peripheral sensation.
- **Tactile** Hyperalgesia is very different. Signal amplification in CNS due to central sensitization (Neuroplasticity) – often, due to trauma
- Hyperesthesia – increased sensitivity (allodynia + hyperalgesia)- typically Neuropathic (CNS)
- Hypoalgesia – reduced pain sensation (intensity) to what is normally painful (can be induced centrally as an adaptive pain reflex - through the somatosensory cortical inhibition)
- Analgesia – Absence of pain to what is normally painful – but note, not a loss of proprioception or central awareness of the structure
- Paresthesia – abnormal sensation (spontaneous or evoked) – common with neuropathic pain (e.g., burning)
- Dysesthesia – unpleasant, abnormal sensation (spontaneous or evoked) – includes hyperalgesia and allodynia



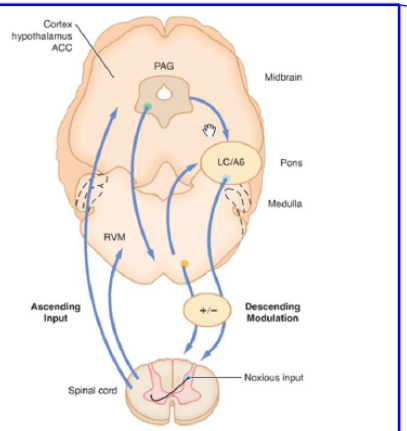
Abnormal Transmission of Pain

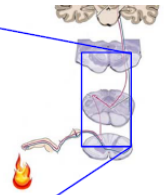


Modulation: Inhibition vs amplification o

Excitatory:
EAA
Ach
Glycine
sP
Oxytocin
CRH

Inhibitory:
Serotonin
NE
GABA

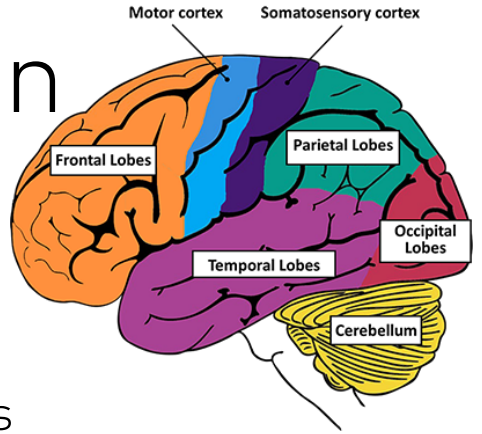


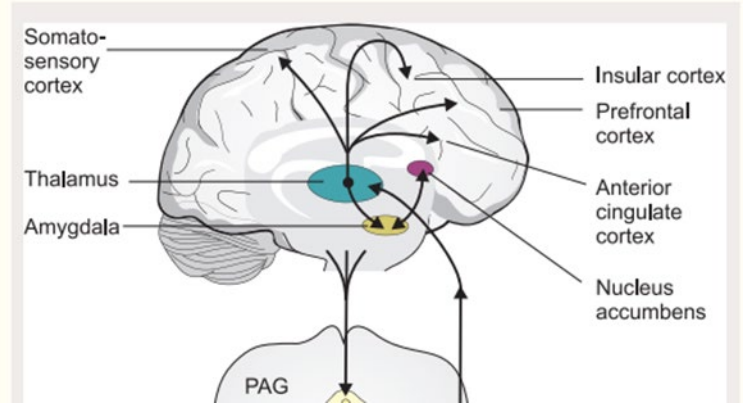


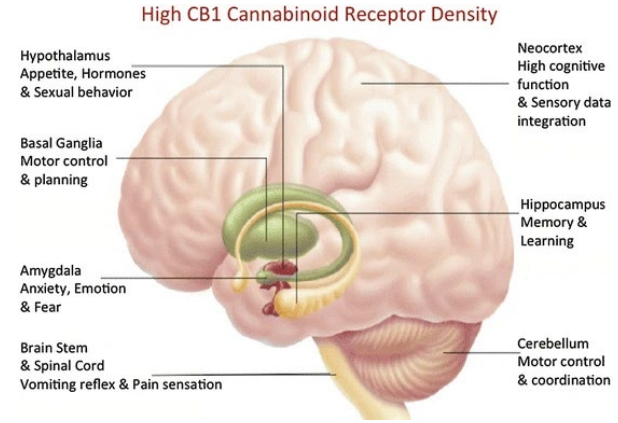
Gottschalk et al 2001

EAA: excitatory amino acids,
l-Glutamate, l-Aspartate; CNS Neurotransmitters
CRH: Corticotropin releasing Hormone (hypothalamic-pituitary-adrenal axis)

Central Pain Sensitization







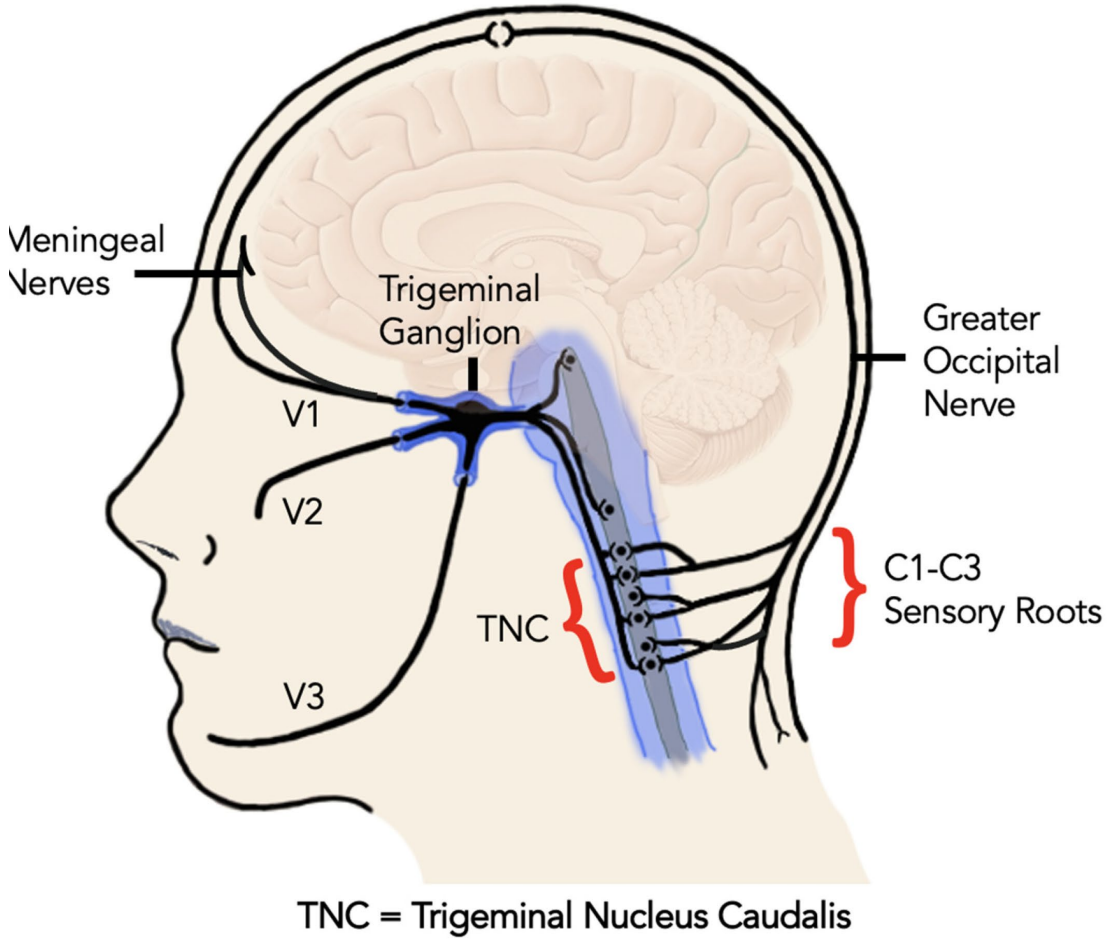
- ACC: richest in opioid and dopamine receptors
- Trauma – natural release of endogenous opioids (enkephalins & endorphins), (e.g., Naloxone wisdom tooth extraction model)
- Dopamine projections (reward, motivational behavior), in nucleus accumbens/ACC/prefrontal cortex
- Descending: Serotonin (5HT) and noradrenalin (NA)
- Chronic Pain (Neuroplasticity) – can start with the 2nd cell body in trigeminal ganglia (subnucleus caudalis)-normal nociceptive signals (Aδ) are overlaid on normal tactile (touch) leading to intense pain (allodynia).
- Hyperalgesia then occurs with multiple inputs to the same region and can lead to referred pain in unaffected regional peripheral areas. Central Sensitization therefore is an amplification of input signals
- Role for Glial Cells? Satellite glial cells (microglial and astrocytes) activated in TG by inflammatory macrophages, leading to release of substance P, cytokines, etc., modulating the cell bodies in the TG

Reported Pain location –

- Unilateral?
- Frontotemporal?
  - Questions: Duration? Pattern of occurrence? Photo or phonal-phobias
- Orbital or peri-orbital?
  - Questions: Duration?, #attacks/day? Frequency? Tearing? Runny nose
- Preauricular, mandibular angle
  - Questions: Chewing aggravates it?, limited opening? TMJ tenderness? Clicking, etc.
- Midface/Perioral or intraoral
  - Neurovascular Orofacial Pain
  - Questions: Attack Duration? Trigger points? Evoked by hot/cold, tearing, runny nose

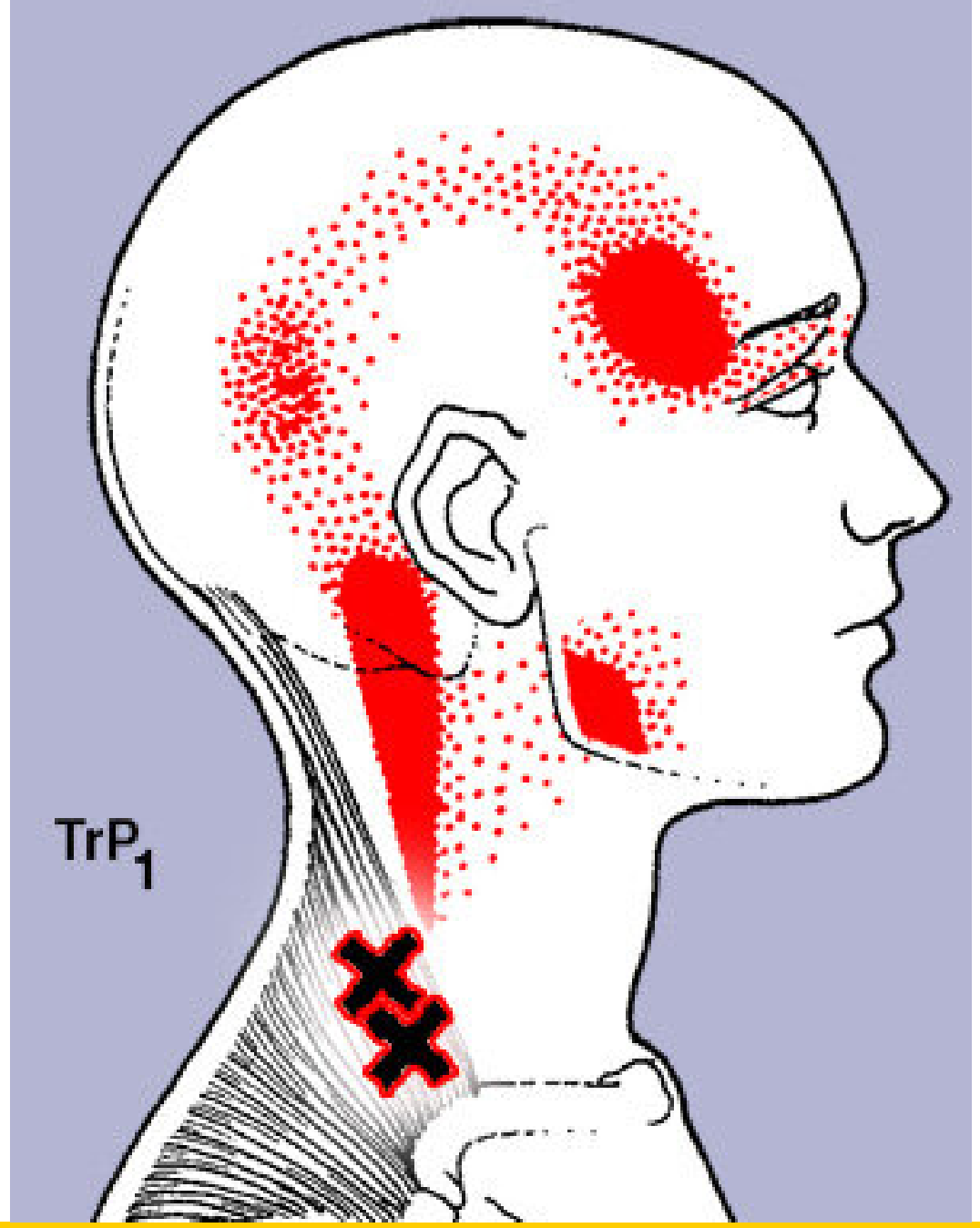
A lot of pain is “referred” to areas we work with - Trigeminocervical Nucleus

Area of the brain stem that receives sensory information from the trigeminal nerve , the upper three cervical nerves and sensorimotor fibers of the spinal accessory nerve (CN XI)

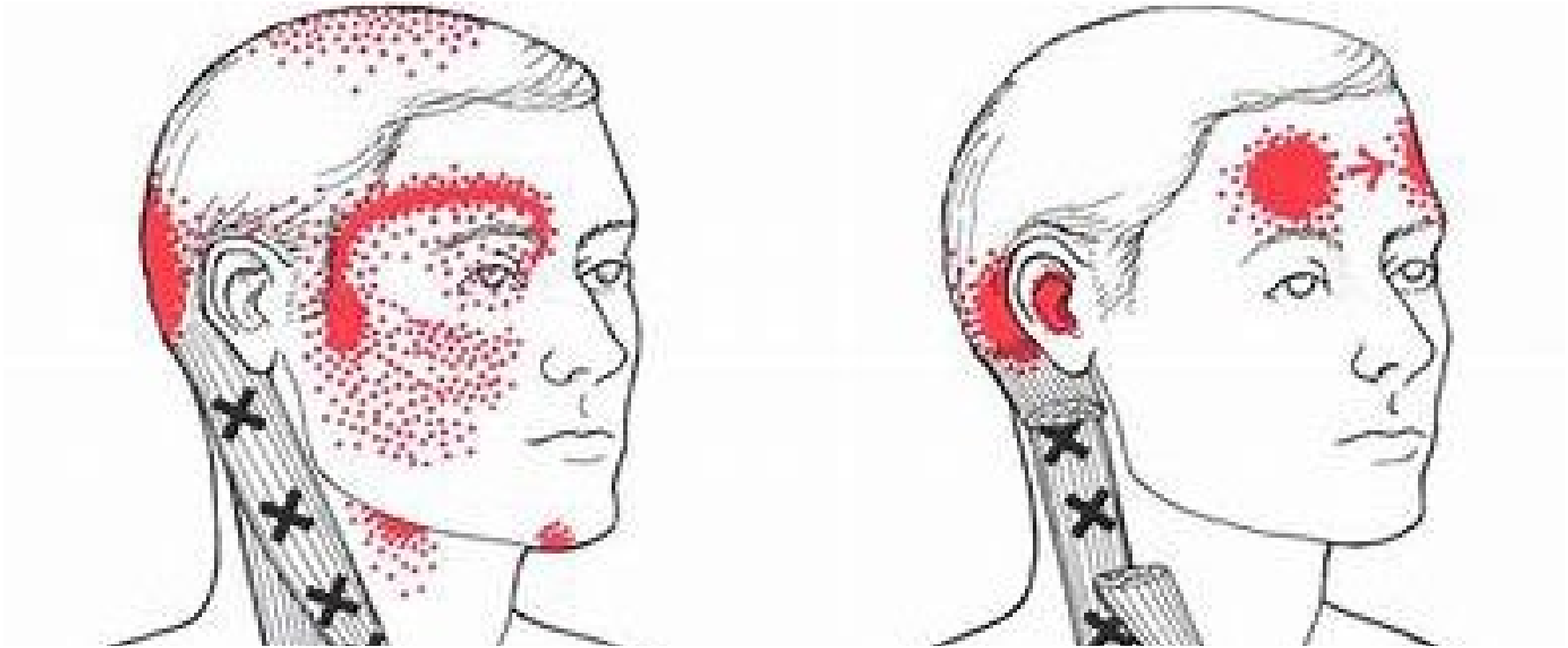


Upper Trapezius

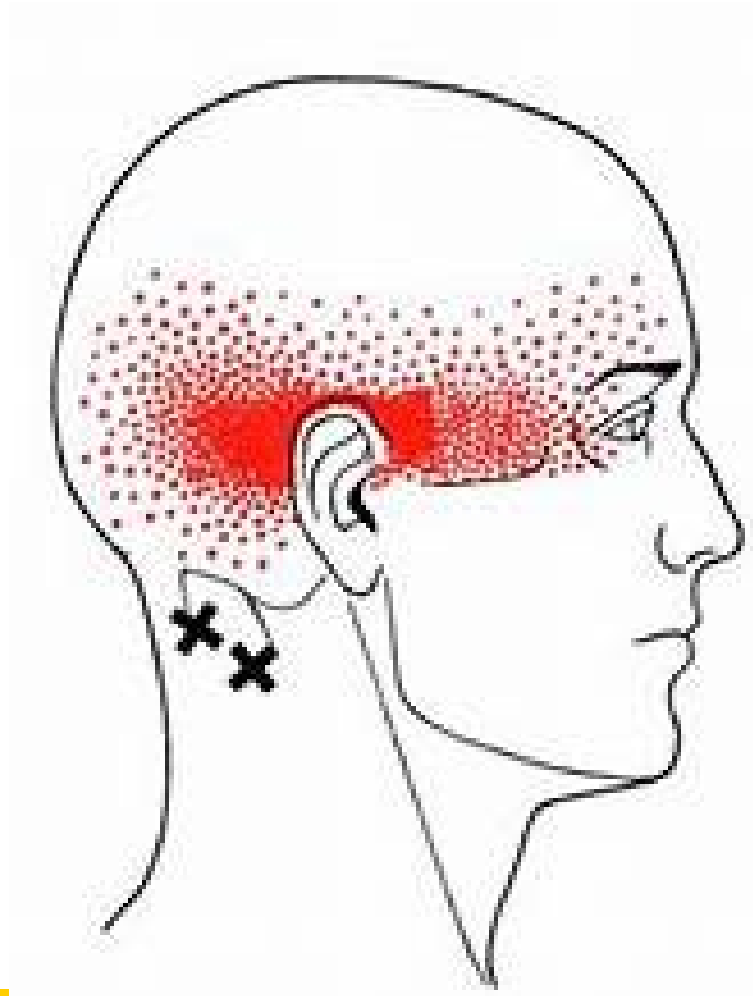
Referred pain pattern

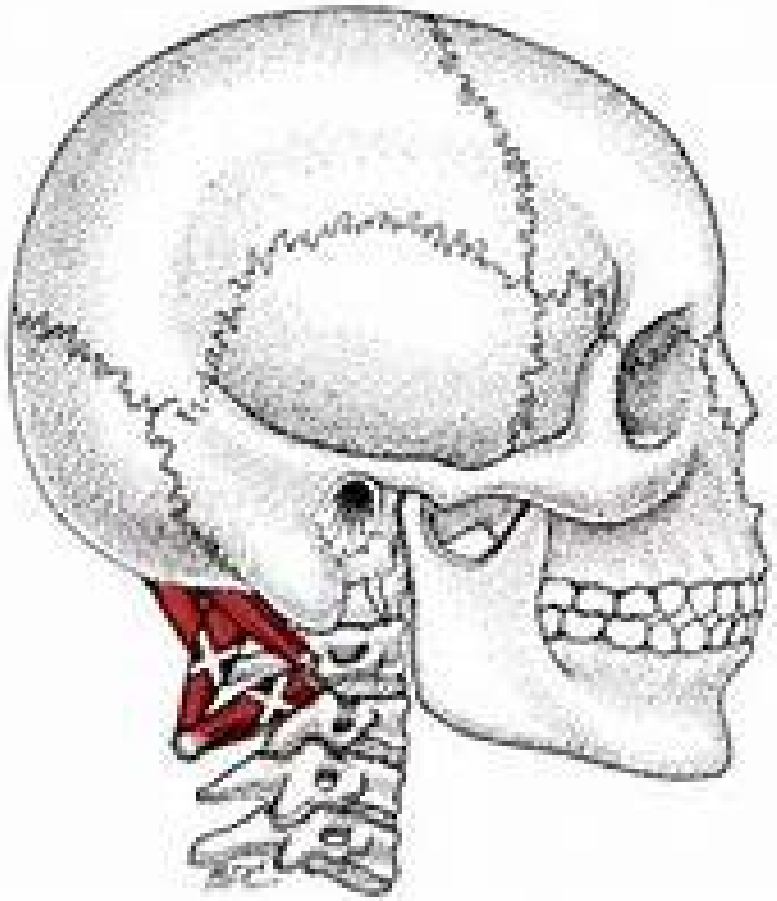


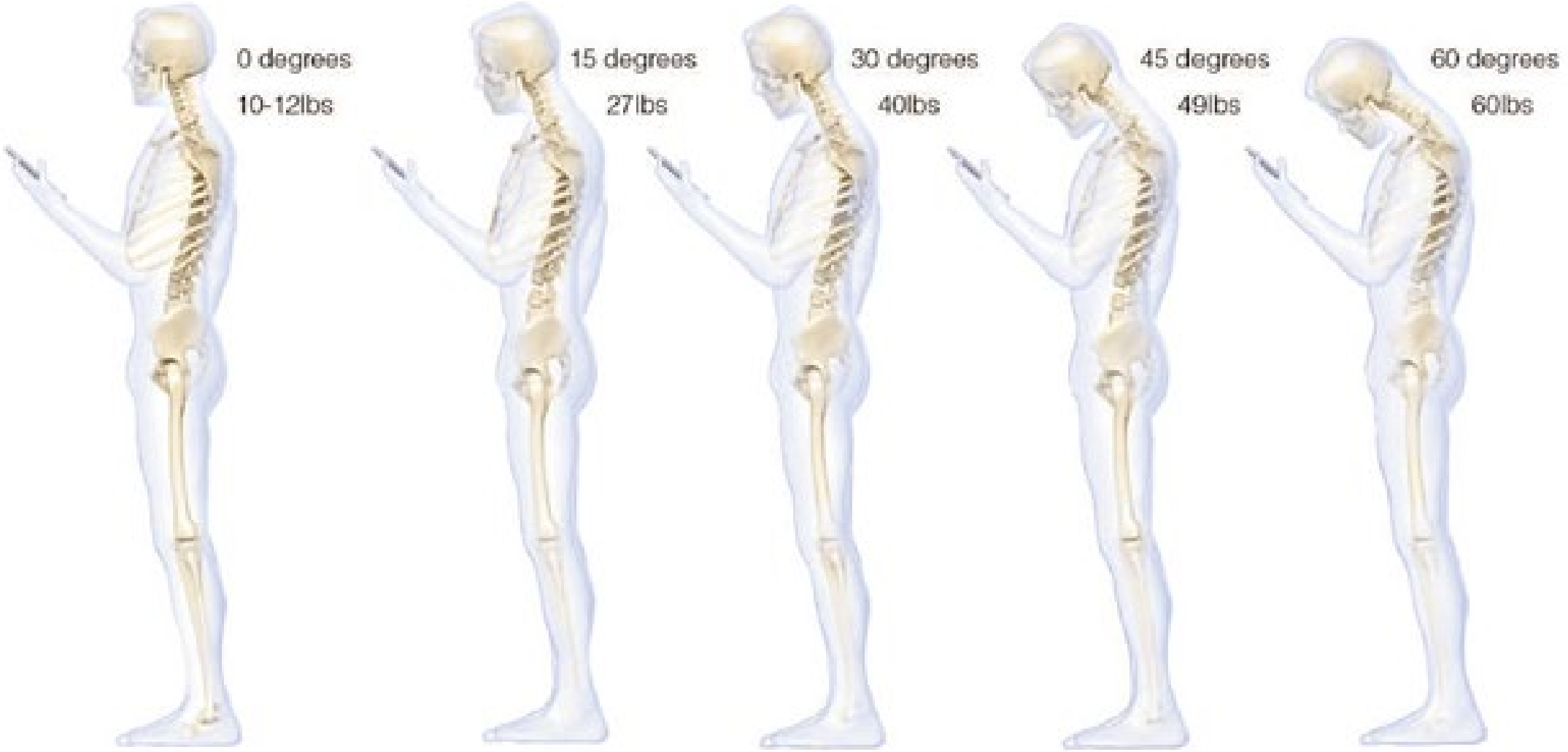
Sternocleidomastoid referred pain pattern



Suboccipital Muscles referred pain pattern






0 degrees
10-12lbs
15 degrees
27lbs
30 degrees
40lbs
45 degrees
49lbs
60 degrees
60lbs

Pain Behavior - diagnostic thinking …

- Short and Paroxysmal?
  - Trigeminal Neuralgia,
  - Paroxysmal hemicrania
  - Questions?: Location?, Duration?, Triggers?, Autonomic signs?, waked from sleep?
- Periodic and Throbbing?
  - Migraine,
  - Cluster
  - Neurovascular orofacial pain
  - Questions?: Location?, Duration, Periodicity? Autonomic signs?, Nausea?
- Continuous and "pressing"
  - Tension-Type Headache
  - TMJD
  - Masticatory Muscle pain
  - Complex Regional Pain Syndrome
  - Questions?: Location?, unilateral?, chewing response?, Limited opening? TMJ tenderness?, Masticatory Muscle pain?, Trauma (e.g., MVA), sensory changes?

Types of Headaches (in adults)

Orofacial Pain Neuroscience

JADA 2025:156(9):750-761
https://doi.org/10.1016/j.adaj.2025.06.010

Check for updates

ADA CE

Headaches in dental practice

A narrative review of primary, secondary, and facial presentations

Nicole Renner, DDS; Shuting Yang, DDS; Yuri M. Costa, DDS, MSc, PhD; Peter Svensson, DDS, PhD, Dr odont; Fernando G. Exposto, DDS, MSc, PhD

https://ichd-3.org/

ICHD-3 and ICOP Classifications
Significant overlap of headaches and TMJDs
Primary and Secondary Headaches

Trigeminal Autonomic Cephalgia's (TAC)

Table 1. Primary headaches.

PRIMARY HEADACHE	LOCATION	PAIN QUALITY OR INTENSITY	MODIFIERS	ASSOCIATED SYMPTOMS	DURATION OR FREQUENCY	DIFFERENTIAL DIAGNOSIS
Migraine	Unilateral head pain†	Pulsating pain† Moderate or severe intensity†	Aggravated by means of routine physical activity (eg, walking or climbing stairs)†	A least 2 of the following: Nausea or vomiting Photophobia Phonophobia With aura only, 1 or more of the following: Visual, sensory, or verbal disturbances Motor weakness	4-72 h Chronic: ≥ 15 d/mo, for >3 mo	Tension-type headache Cluster headache Acute glaucoma Sinus pathology Carotid artery dissection Temporal arteritis Other pathologies causing raised intracranial pressure
Tension-Type Headache	Bilateral head pain‡	Pressing or tightening pain (nonpulsating)‡ Mild or moderate intensity‡	Not aggravated by means of routine physical activity (eg, walking or climbing stairs)‡	Usually not accompanied by migrainelike symptoms	30 min-7 d Chronic: ≥ 15 d/mo, for >3 mo	Migraine without aura Myalgia of the temporalis muscle Referred pain from masticatory and cervical or trigeminal areas (eg, musde, joint, and teeth)
TAC*						
Cluster headache	Unilateral head pain Typically in the orbital, supraorbital, or temporal regions	Sharp and stabbing pain Severe intensity	Not applicable	At least 1 ipsilateral of the following: Conjunctival injection Lacrimation Nasal congestion Ptosis, miosis Rhinorrhea Forehead and facial sweating Eyelid edema	15-180 min 1 every 2 d-8 times/d	Other TAC Migraine without aura Pituitary adenoma (and other secondary causes of TAC)

Migraine Diagnostic Criteria

Leah Zhorne, MD

5 **Headaches** (a pattern)

4 **Hours** (not brief or self resolving)

3 **Days**

2 **Characteristics:**

- Moderate to Severe
- Throbbing
- Unilateral
- Worsened by or causes avoidance of activity

1 **Associated Symptom Set:**

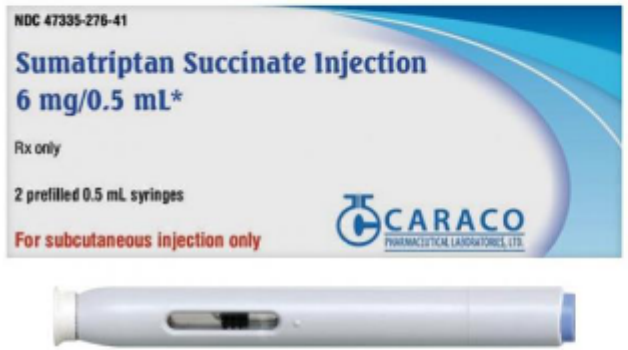
- Nausea
- Vomiting
- Photophobia AND Phonophobia

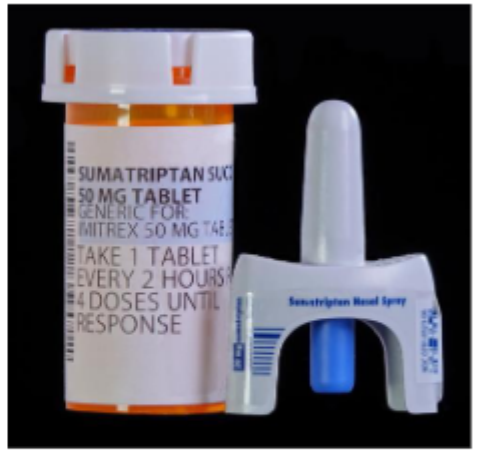
Aura vs Other

Aura	? stroke
Fully reversible	persistent
5-60 min in duration	> 60 minutes
Troubles speaking	same
+ or – sensory or visual sxs	Only – sxs (weakness)
Develop gradually or in succession	All deficits occur at once, max at onset

Triptan Options for Acute Treatment

1. Sumatriptan (Imitrex)
2. Zolmitriptan (Zomig)
3. Naratriptan (Amerge)
4. Rizatriptan (Maxalt)
5. Almotriptan (Axert)
6. Frovatriptan (Frova)
7. Eletriptan (Relpax)





IOWA

Anti-CGRP Treatment Options for Migraine

Injection

Erenumab (Aimovig)

Fremanezumab (Ajovy)

Galcanezumab (Emgality)

Infusion

Eptinezumab (Vyepti)

Oral

Rimegepant (Nurtec ODT)

Ubrogepant* (Ubrelvy)

**acute treatment only*

IOWA

all are monoclonal antibodies targeting either the calcitonin gene related protein receptor (CGRP) or ligand

Trigeminal Autonomic Cephalgias

- unilateral vasomotor symptoms:
  - Conjunctival injection
  - Lacrimation
  - Rhinorrhea or nasal congestion
  - Eyelid edema
  - Miosis, ptosis
- Broken down by frequency & attack length:
- Cluster > paroxysmal hemicrania > SUNCT

TAC*						
Cluster headache	Unilateral head pain Typically in the orbital, supraorbital, or temporal regions	Sharp and stabbing pain Severe intensity	Not applicable	At least 1 ipsilateral of the following: Conjunctival injection Lacrimation Nasal congestion Ptosis, miosis Rhinorrhea Forehead and facial sweating Eyelid edema	15-180 min 1 every 2 d-8 times/d	Other TAC Migraine without aura Pituitary adenoma (and other secondary causes of TAC)
Paroxysmal hemicrania	Unilateral head pain Typically in the orbital, supraorbital, or temporal regions	Sharp and stabbing pain Severe intensity	Absolutely responds to indomethacin	At least 1 ipsilateral of the following: Conjunctival injection Lacrimation Nasal congestion Ptosis, miosis Rhinorrhea Forehead and facial sweating Eyelid edema	2-30 min >5 times/d	Other TAC Migraine without aura Pituitary adenoma (and other secondary causes of TAC)
Short-lasting unilateral neuralgiform headache attacks	Unilateral head pain Typically in the orbital, supraorbital, or temporal regions	Sharp and stabbing pain Severe intensity	Not applicable	At least 1 ipsilateral of the following: Conjunctival injection Lacrimation Nasal congestion Ptosis, miosis Rhinorrhea Forehead and facial sweating Eyelid edema	1-600 s At least once per day	Other TAC Migraine without aura Trigeminal neuralgia Pituitary adenoma (and other secondary causes of TAC)
Hemicrania continua	Unilateral head pain Typically in the orbital, supraorbital, or temporal regions	Sharp and stabbing pain Moderate or severe intensity	Absolutely responds to indomethacin	At least 1 ipsilateral of the following: Conjunctival injection Lacrimation Nasal congestion Ptosis, miosis Rhinorrhea Forehead and facial sweating Eyelid edema	Present for ≥ 3 mo, with exacerbations in intensity	Other TAC Migraine without aura Pituitary adenoma (and other secondary causes of TAC)

* TAC: Trigeminal autonomic cephalalgias. † Main characteristic of migraine, with at least 2 of 4 required for diagnosis. ‡ Main characteristic of tension-type headache, with at least 2 of 4 required for diagnosis.

Table 2. Secondary headaches.

SECONDARY HEADACHE	LOCATION	PAIN QUALITY OR INTENSITY	MODIFIERS	SECONDARY OR CONDITIONED TO	DURATION OR FREQUENCY	DIFFERENTIAL DIAGNOSIS
Headache Attributed to Temporomandibular Disorder or Myalgia of the Temporalis	Bilateral head pain	Pressing pain	Aggravated by means of jaw motion, jaw function (eg, chewing), or jaw parafunction (eg, bruxism)*	Developed in temporal relation to the onset of the temporomandibular disorder or led to its discovery* Provoked by means of palpation of temporalis muscle or passive movement of the jaw (headache affects mastication structures on 1 or both sides)*	Pain can be both constant or fluctuating	Tension-type headache Migraine Myalgia of the temporalis muscle Referred pain from other masticatory structures
Medication-Overuse Headache	Not applicable	Quality related to primary headache May worsen underlying headache intensity	Typically resolves after overuse is stopped	With a preexisting primary headache disorder Regular overuse of ≥ 1 drug taken $\geq$ 10-15 d/mo for acute or symptomatic treatment of headache $>$ 3 mo of regular overuse of analgesic drugs	$\geq$ 15 d/mo	Chronic tension-type headache Chronic migraine Idiopathic intracranial hypertension Overuse of substances not used to symptomatically treat headaches

* Main characteristic of headache attributed to TMD, with at least 2 of 3 required for diagnosis.

Acute Dental Pain (ADA 2023 Guidelines)

Table 1. Efficacy data from high-quality studies for analgesic agents available in the United States in order of effectiveness (most to least) according to NNTB*.[22,24]

NNTB: Number Needed to Treat for Benefit

DRUG OR DRUG COMBINATION, DOSE	NNTB	95% CONFIDENCE INTERVAL	AT LEAST 50% MAXIMUM PAIN RELIEF OVER 4-6 HOURS, %		MEAN OR MEDIAN TIME TO REMEDICATION, HOURS	
			Active	Placebo	Active	Placebo
Ibuprofen Plus Acetaminophen, 400 Milligrams/1,000 mg	1.5	1.4 to 1.7	72	6	8.3	1.7
Ibuprofen Plus Acetaminophen, 200 mg/500 mg	1.6	1.5 to 1.8	69	6	7.6	1.7
Acetaminophen Plus Oxycodone, 1,000 mg/10 mg	1.8	1.6 to 2.2	68	13	9.8	1.5
Diclofenac (Potassium), 100 mg	1.9	1.7 to 2.3	65	13	6.3	2.0
Ketoprofen, 25 mg	2.0	1.8 to 2.3	62	12	46†	79†
Diclofenac (Potassium), 50 mg	2.1	1.9 to 2.5	64	17	4.5	1.7
Diflunisal, 1,000 mg	2.1	1.8 to 2.6	62	15	10.9	3.2
Ibuprofen (Fast-Acting), 200 mg	2.1	1.9 to 2.4	57	10	43†	78†
Ibuprofen (Fast-Acting), 400 mg	2.1	1.9 to 2.3	65	18	32†	82†
Ibuprofen Plus Caffeine, 100 mg/200 mg	2.1	1.9 to 3.1	59	10	26‡	60‡
Ketoprofen, 100 mg	2.1	1.7 to 2.6	66	18	43†	85†
Acetaminophen Plus Codeine, 800-1,000 mg/60 mg	2.2	1.8 to 2.9	53	7	5.0	2.3
Ibuprofen Plus Codeine, 400 mg/26-60 mg	2.2	1.8 to 2.6	64	18	NA§	
Fenoprofen, 200 mg	2.3	1.9 to 3.0	57	13	NA	
Ibuprofen Plus Oxycodone, 400 mg/10 mg	2.3	2.0 to 2.8	60	17	NA	
Aspirin, 1,200 mg	2.4	1.9 to 3.2	62	19	NA	

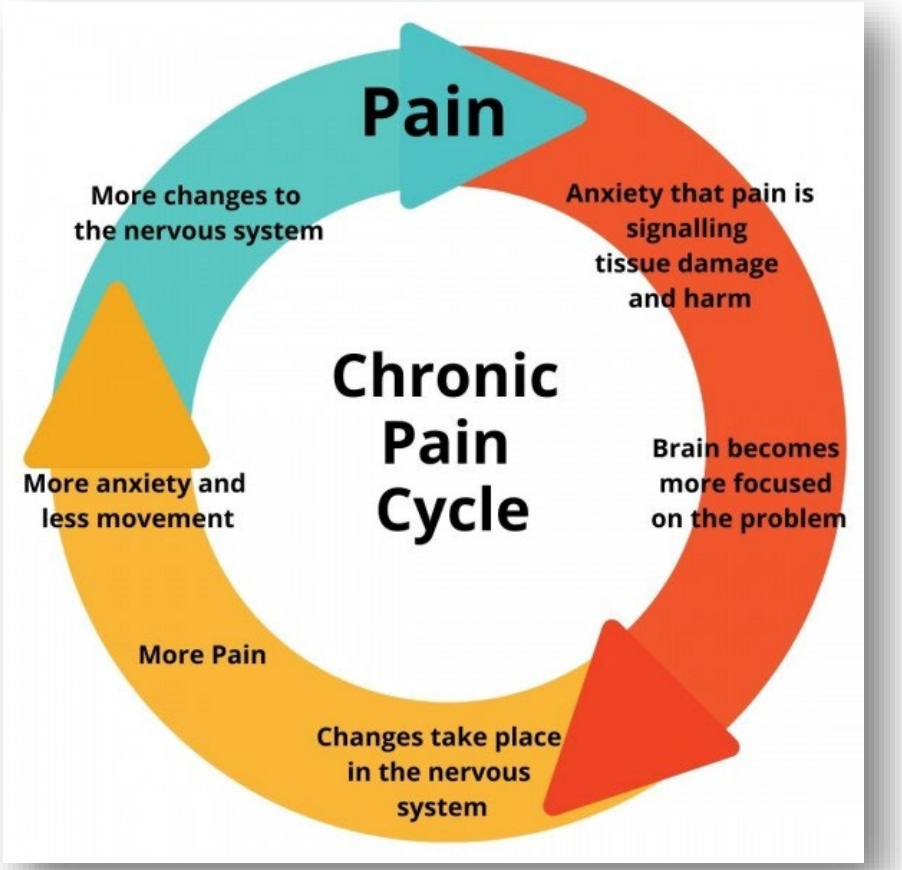
Benefits and harms associated with analgesic medications used in the management of acute dental pain

An overview of systematic reviews

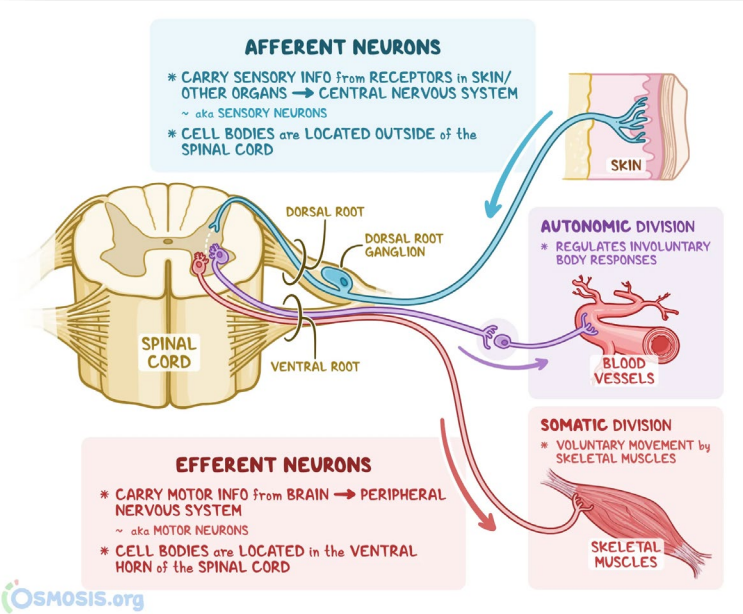
Paul A. Moore, DMD, PhD, MPH; Kathleen M. Ziegler, PharmD; Ruth D. Lipman, PhD; Anita Aminoshariae, DDS, MS; Alonso Carrasco-Labra, DDS, MSc; Angelo Mariotti, DDS, PhD

Chronic Pain (Central Sensitization)

- Pharmacologic management is only one part of a multi-disciplinary pain management approach
- Patient
- Neurology
- Anesthesia
- Pharmacists
- OT/PT
- Dentists
- Sleep Care
- Social Workers
- Councilors and MH support systems
- Social Support Systems, friends, etc.



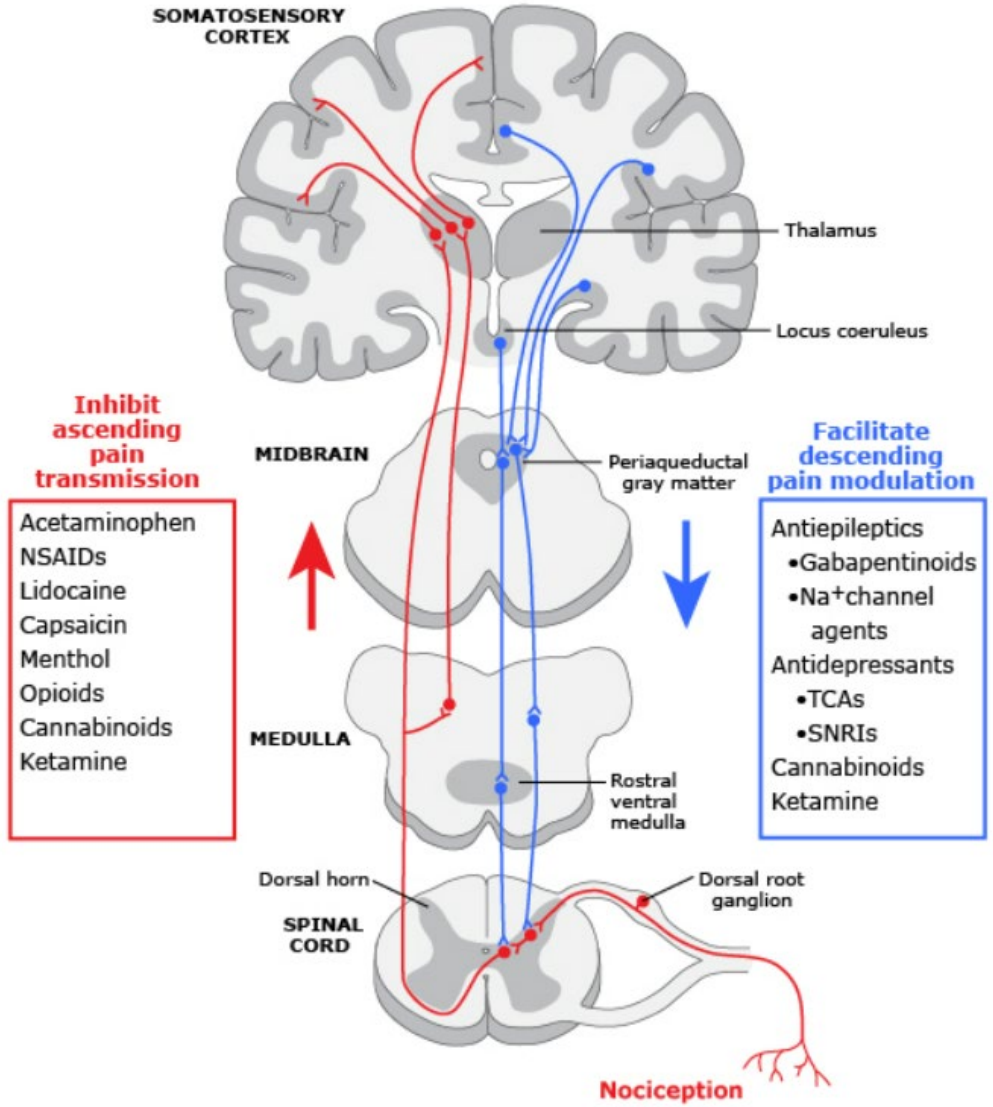
Chronic Pain *Pharmacologic* Management



Pharmacologic management of chronic non-cancer pain in adults

AUTHORS: David Tauben, MD, Brett R Stacey, MD
SECTION EDITOR: Scott Fishman, MD
DEPUTY EDITOR: Marianna Crowley, MD
Contributor Disclosures

All topics are updated as new evidence becomes available and our peer review process is complete.
Literature review current through: **Jan 2024**.
This topic last updated: **Jul 27, 2023**.



NSAIDs: nonsteroidal antiinflammatory drugs; TCAs: tricyclic antidepressants; SNRIs: serotonin-norepinephrine reuptake inhibitors.

References:

1. Martyn J, Mao J, Bittner EA. Opioid Tolerance in Critical Illness. N Engl J Med 2019; 380:365.

https://www.uptodate.com/contents/pharmacologic-management-of-chronic-non-cancer-pain-in-adults

Neuropathic Pain 1st line medications

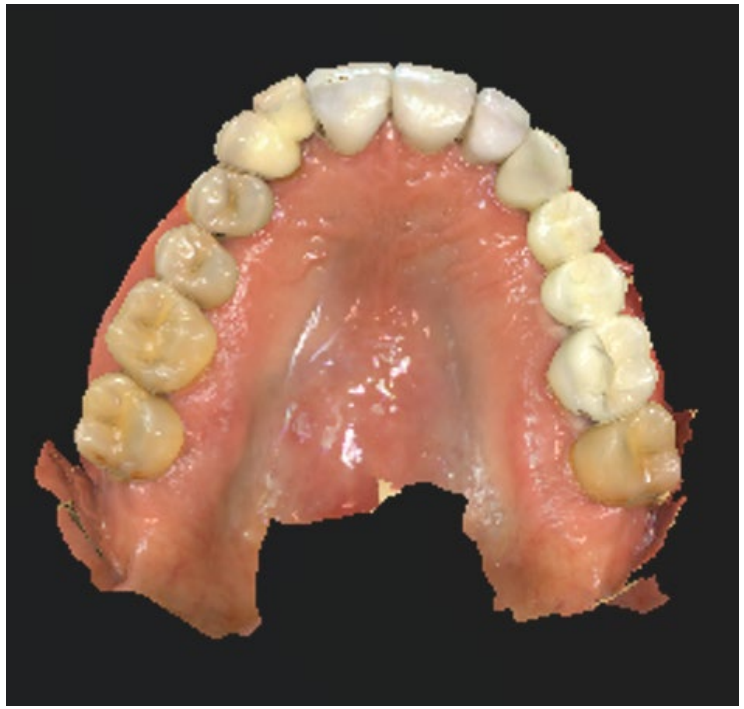
Recommended drug classes for treatment of neuropathic pain

Drug	Effective dose	Comments
First-line therapy		
Antiseizure medications		▪ Can cause dizziness and sedation; minimize with slow titration ▪ Use lower doses for older patients ▪ Avoid concomitant use with opioids; can cause respiratory depression
Gabapentin	▪ IR: 300 to 1200 mg orally three times daily ▪ ER: 600 to 1800 mg orally twice daily	▪ Initiate treatment at a low dose (typically 300 mg orally at night), increasing gradually until pain relief or limiting side effects occur
Pregabalin	▪ 150 to 300 mg orally twice daily	▪ Initiate treatment at low dose (typically 150 mg orally at night)
Antidepressants		
Serotonin-noradrenaline reuptake inhibitors		
Duloxetine	▪ IR: 60 to 120 mg orally once daily	
Venlafaxine	▪ ER:75 to 225 mg orally once daily	
Tricyclic antidepressants (TCAs)		▪ Initiate treatment at low dose, increase slowly at weekly intervals ▪ May take 6 to 8 weeks, including 2 weeks at highest tolerated dose, for adequate trial
Nortriptyline	▪ 25 to 75 mg orally once daily	▪ Preferred among TCAs due to less sedation and fewer anticholinergic effects
Amitriptyline	▪ 25 to 125 mg orally once daily	▪ Most sedating TCA

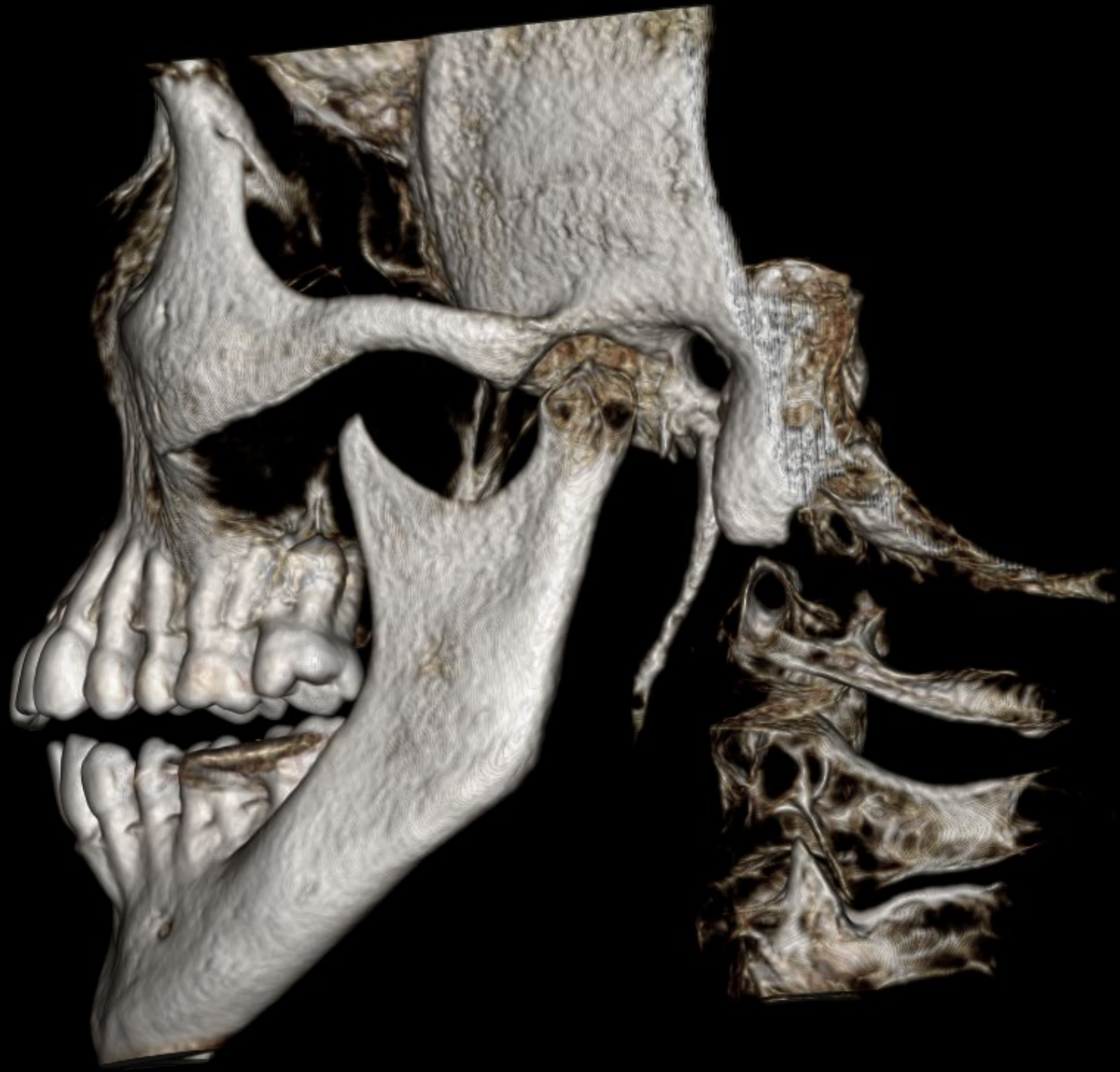
TCA have both analgesic properties that are separate from the anti-depressive properties

https://www.uptodate.com/contents/pharmacologic-management-of-chronic-non-cancer-pain-in-adults

Mix of throbbing and electrical in nature, still feels is refers up to the zygomatic process from #11 region.
Distinctive in pain starts at the facial of #11, she pointed to the mid-root region.
No swelling or purulence.



Patient presented with sharp, distinct pain distal to the ramus, greater on left side.



Prospective Evaluation and Risk Assessment OPPERA I and II

- Orofacial Pain: Prospective Evaluation and Risk Assessment (OPPERA)
- OPPERA-I (2006-2013)
  Compared "Control" sample of subjects (18-44 year olds) without TMD (n=3258) followed for 5 years
- Compared to subjects presenting with signs and verified symptoms of TMD (n=1088) in a case-control study.
- OPERA-II (2014-2016), (re)recruiting 655 of the original cohort. Clinical exam, sensory testing, CVS evaluation, blood draws, questionnaires.
- Purpose: Compare risk factors and clinical outcomes of five **chronic overlapping pain conditions** (COPC's) that appeared to be inter-related.
  1) TMD
  2) Headache
  3) Back Pain
  4) Irritable Bowel Syndrome
  5) Fibromyalgia

Note, a calibrated assessment was used for each chronic pain condition

Dr. William (Bill) Maixner was from Ottumwa, Iowa. His BA, PhD, and DDS were from the University of Iowa,

Associations made between TMD, Headaches, IBS, Fibromyalgia and Back Pain

Table 4 Associations Between Pairs of COPCs

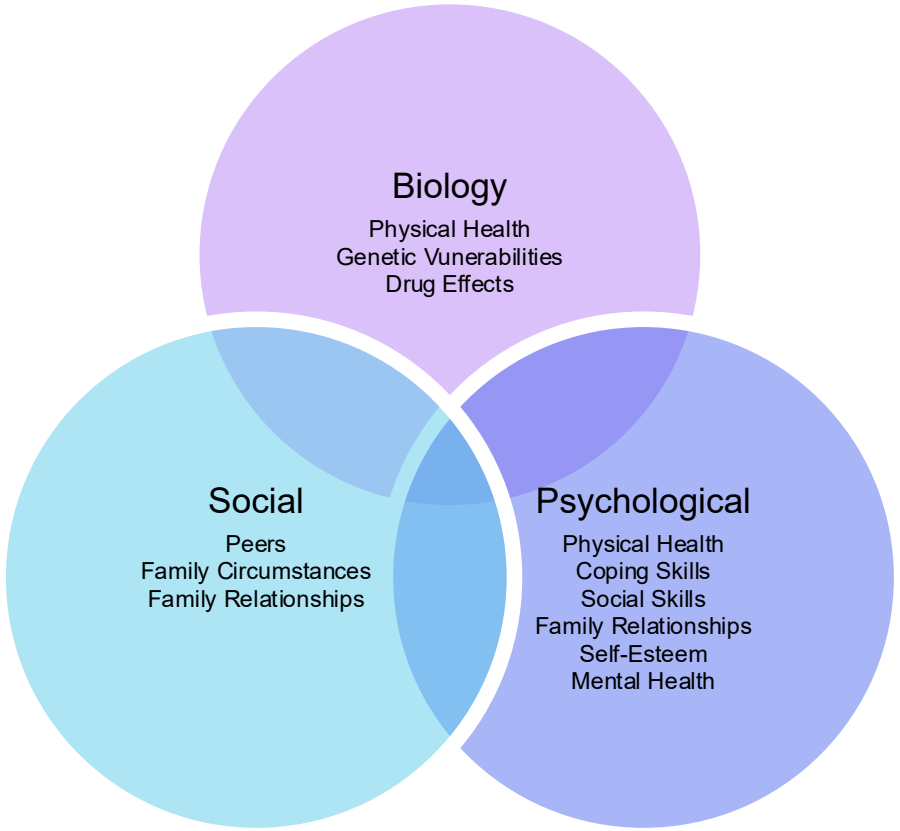
	TMD	Headache	IBS	LBP	Fibromyalgia
TMD		2.6 (1.4, 4.8)	2.2 (1.1, 4.4)	1.9 (1.0, 3.8)	12.8 (2.9, 57.1)
Headache	3.4 (1.9, 6.0)		1.4 (0.8, 2.5)	1.6 (0.9, 2.8)	1.9 (0.7, 5.2)
IBS	2.9 (1.6, 5.3)	1.9 (1.1, 3.2)		2.6 (1.4, 4.8)	1.0 (0.4, 2.8)
LBP	3.6 (1.9, 6.6)	2.3 (1.3, 4.0)	3.2 (1.7, 6.0)		5.5 (2.2, 13.4)
Fibromyalgia	19.7 (6.3, 61.5)	4.3 (1.6, 11.5)	2.9 (1.1, 7.4)	10.2 (3.9, 26.7)	

Data are reported as odds ratios (95% confidence limits). Unadjusted values are below the diagonal line, and values adjusted for other COPCs are above the diagonal line.

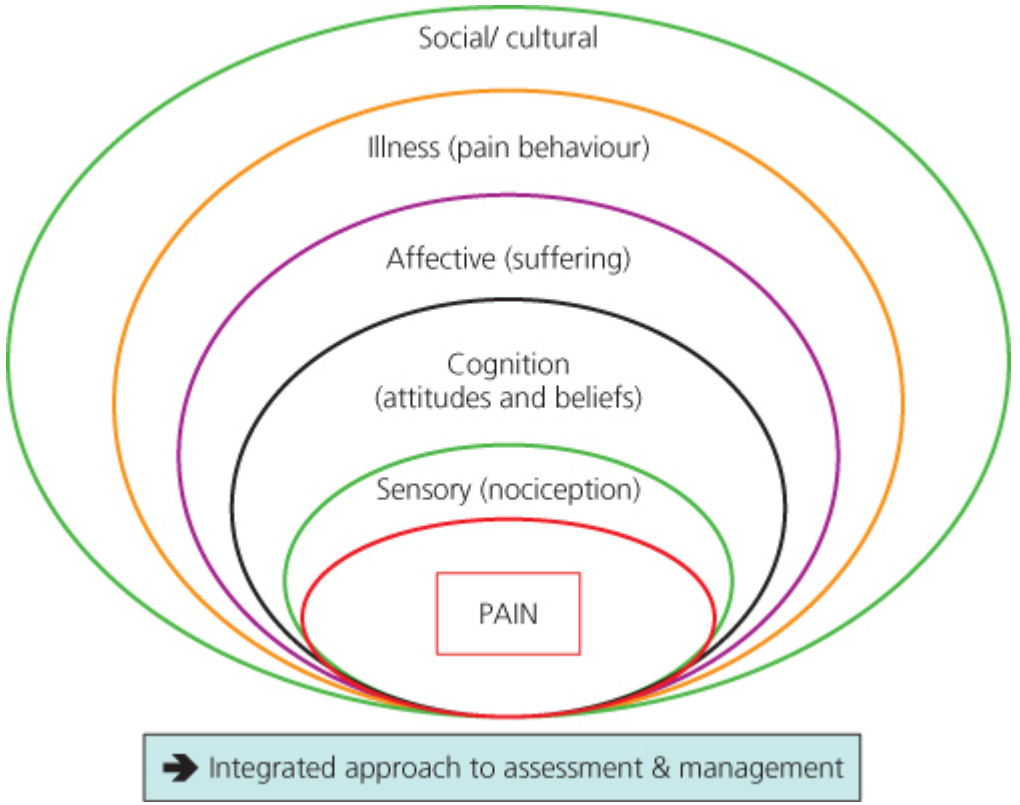
Overlap of Five Chronic Pain Conditions: Temporomandibular Disorders, Headache, Back Pain, Irritable Bowel Syndrome, and Fibromyalgia

Slade G *et al.*, J Oral Fac Pain Headache 2020; 34(suppl): s-15-s28

Bio-psycho-social Model v. reductionist biomedical Models of Pain



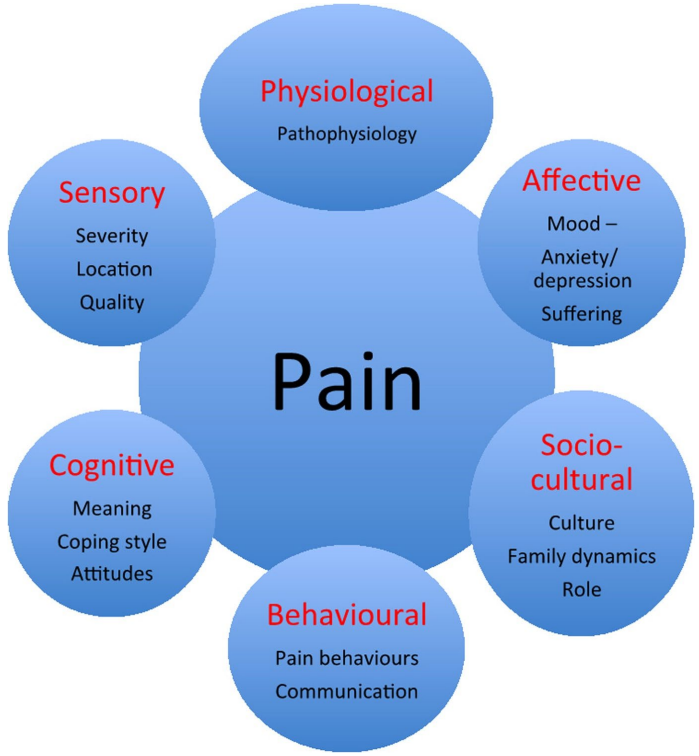
George Engel, Jon Romano, Rochester (1977)



Biopsychosocial Model's Application to Chronic Pain Management

Seven established principles.

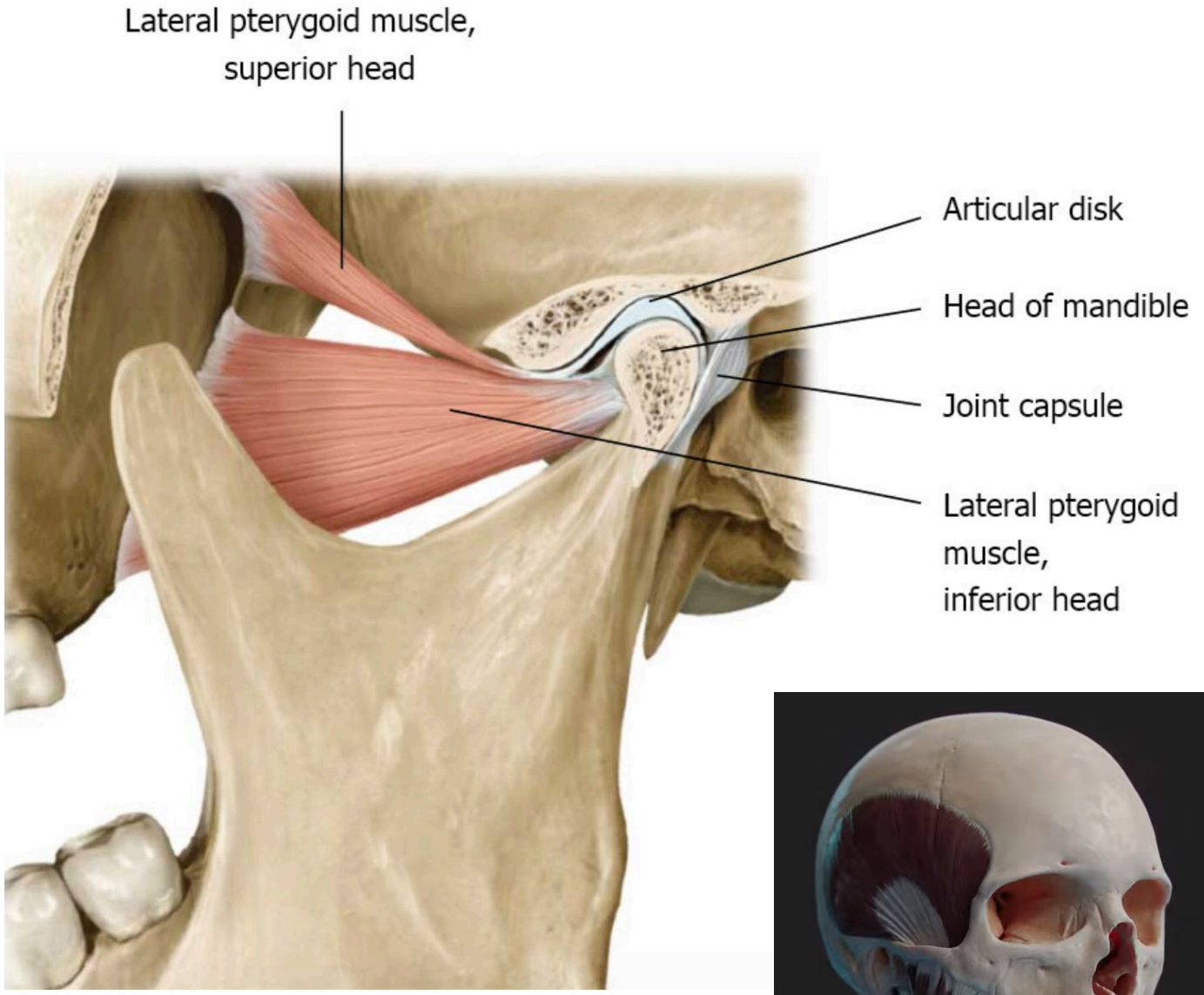
1.) Self-awareness.
2.) Active cultivation of trust.
3.) An emotional style characterized by empathic curiosity.
4.) Self-calibration as a way to reduce bias.
5.) Educating the emotions to assist with diagnosis and forming therapeutic relationships.
6.) Using informed intuition.
7.) Communicating clinical evidence to foster dialogue, not just the mechanical application of a protocol.

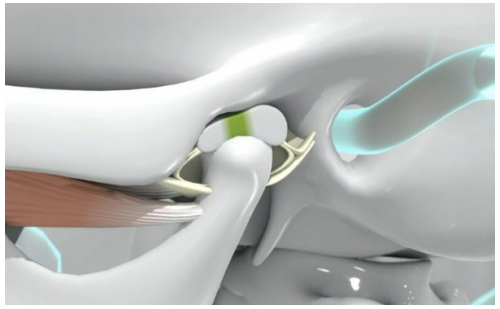


Borrell-Carrió F, Suchman AL, Epstein RM (Nov 2004). "The biopsychosocial model 25 years later: principles, practice, and scientific inquiry". Annals of Family Medici
Gatchel RJ, Peng YB, Peters ML, Fuchs PN, Turk DC (July 2007). "The biopsychosocial approach to chronic pain: scientific advances and future directions" (PDF). Psych

TMJ Anatomy

- A starting place to understand TMJDs
- Two combined capabilities:
- Hinge-like rotation and translation
- Synovial fluid baths the upper and lower chambers
- Unique: Fibrocartilage disc with fibrocartilage on the bony surfaces
- More resistant to tensile/shear forces, rich with aggrecan PG & collagen fibrils
- Anterior band/thin intermediary/thicker posterior band





https://www.youtube.com/watch?v=utKvFD6a_6o

Keep in Mind

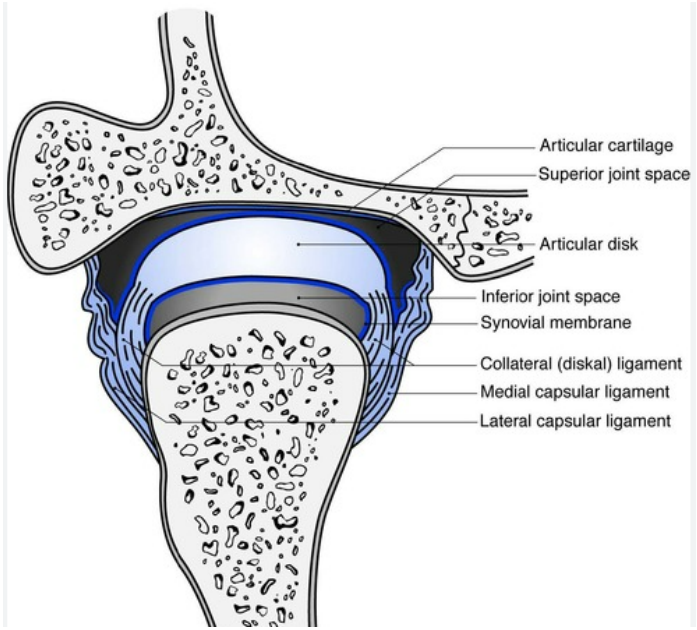
Muscle pain (Myalgia) is considered very separately

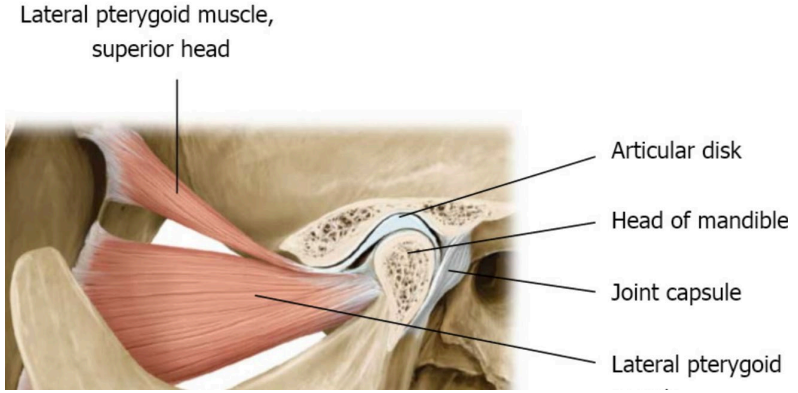
from

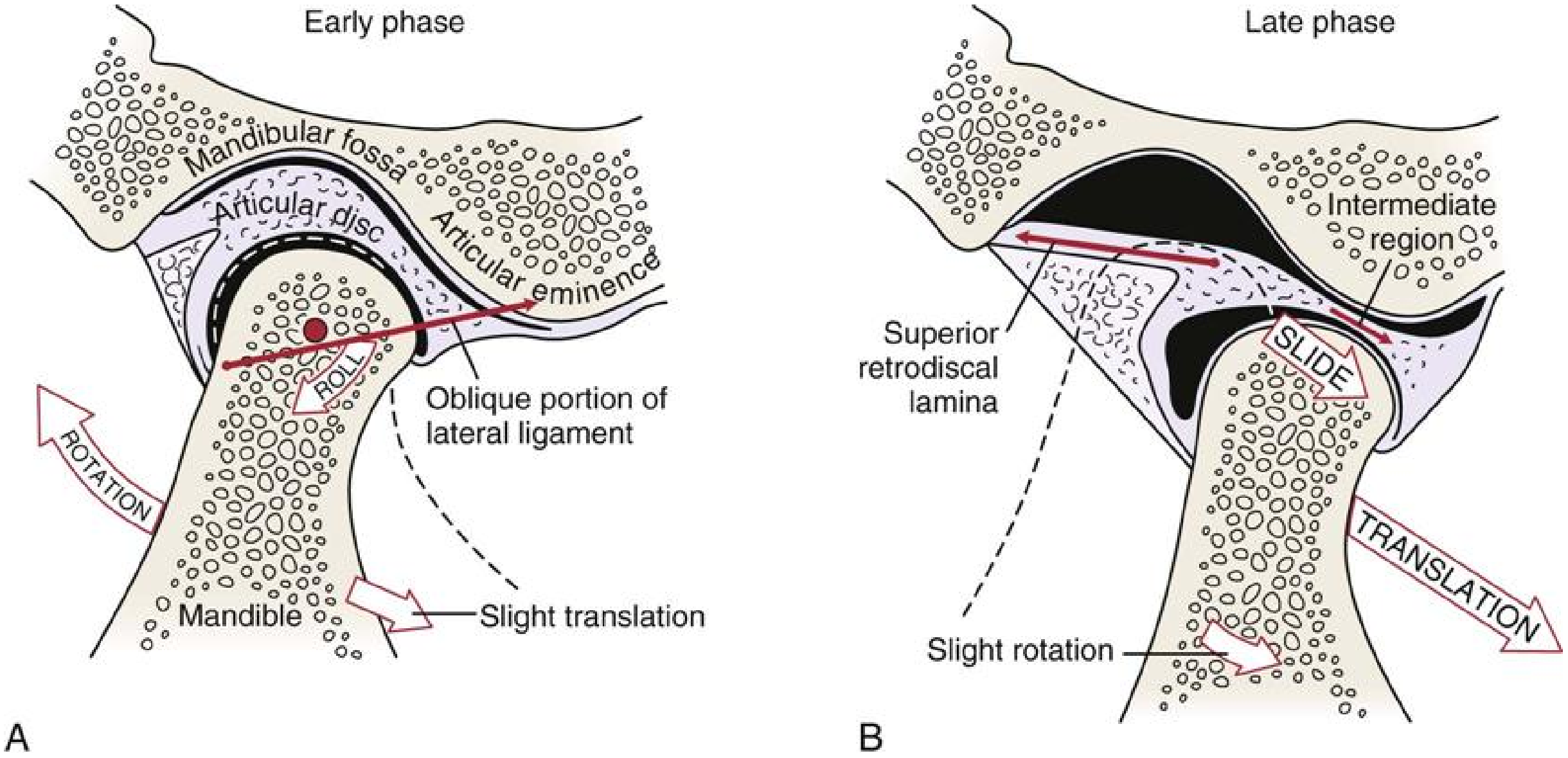
Anomalies in the joint space (Disc Derangements)

Disc Coordination

- Medial & lateral ligaments attach to the disc to condyle
- Upper compartment of the disc slides along the posterior surface of the articular eminence.
- Limited sliding (side-to-side) movements
- Posterior ligament (“retro-discal tissues”) coordinates and stretches the disc as the superior head of the lateral Pterygoid coordinates positioning of the disc as the condyle moves forward.
- Posterior ligament Inferior head Lateral Pterygoid translates the condyle

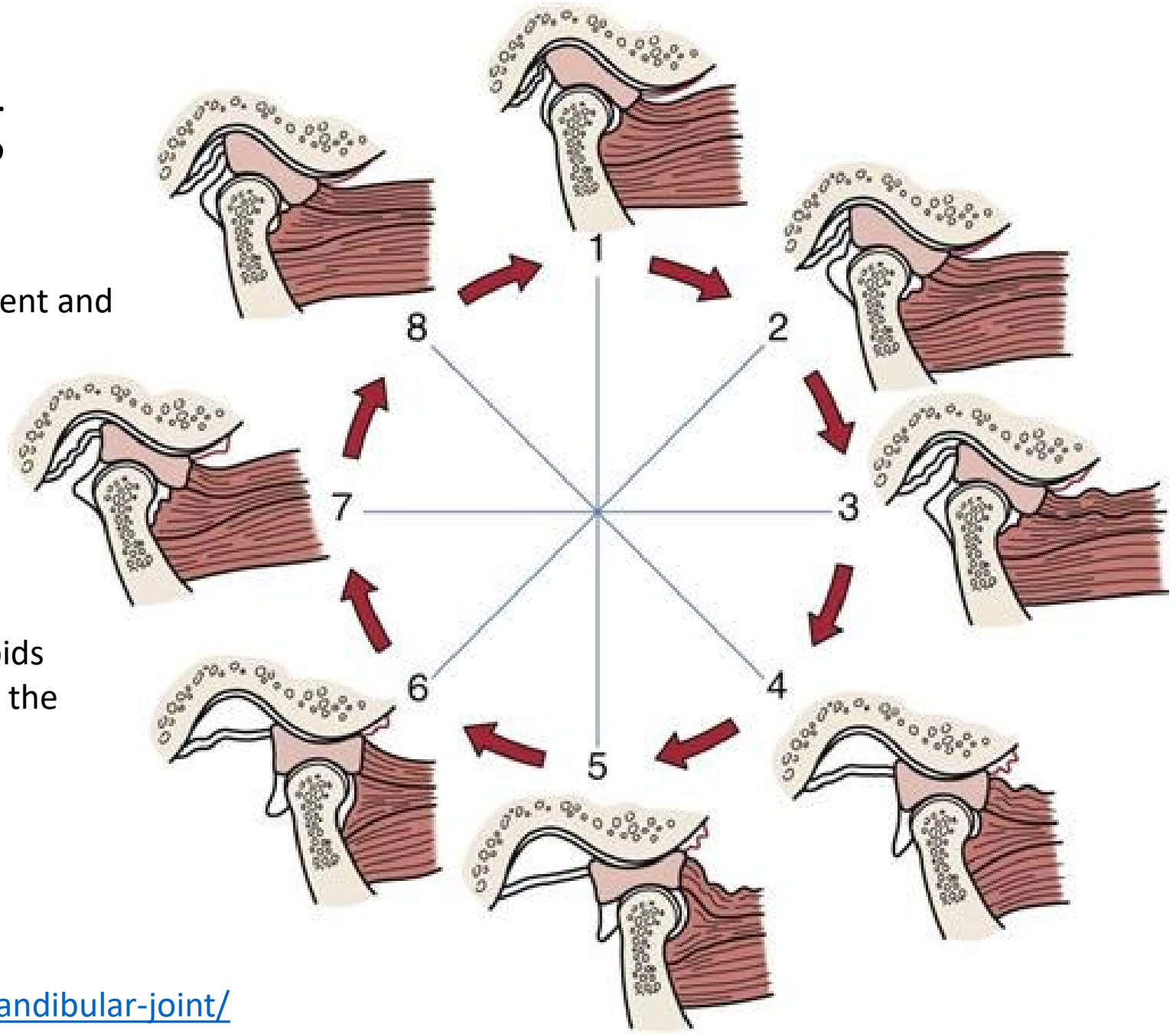





Early phase
Mandibular fossa
Articular disc
Articular eminence
ROLL
ROTATION
Oblique portion of lateral ligament
Mandible
Slight translation
A
Late phase
Intermediate region
Superior retrodiscal lamina
SLIDE
TRANSLATION
Slight rotation
B

Normal full range of opening & closing

Explanation:
Condyle starts rotation in the lower compartment and by ~15mm opening, translation starts with the condyle staying on the intermediate zone till max opening (coordination between lateral pterygoids, supra and infra hyoid muscles on opening with relaxation of masseters & temporalis); then on closing, bilateral contraction of masseters/temporalis, partial-relaxation of lateral and medial pterygoids during chewing and positional coordination by the infra- and suprahyoid muscles and ligaments.



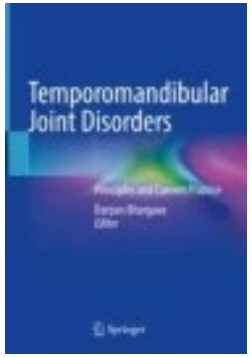
https://musculoskeletalkey.com/temporomandibular-joint/

Types of Disc Displacement

- Usually, a progressive disease process with the disc displaced anterior, medial, lateral or posterior to its desired anatomic location in relation to the condylar head and the glenoid fossa at a resting closed mouth position.
- Initially, during the early course of this disease the intervening disc reduces to its functional position while opening the mouth. Gradually the disc loses its elasticity and is deformed or degenerates leading to secondary articular bone changes.

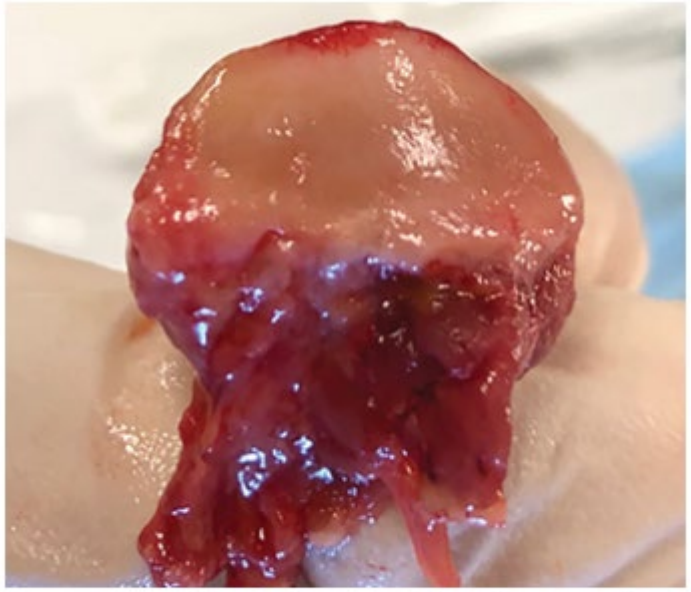
The incidence of various types of disc displacement are:

1) Anterior disc displacement (80–90%), being most common
2) Medial/Lateral displacement (5%)
3) Posterior displacement (1%), least common
4) Stuck disc (4%)



Moturi K., Springer 2021

“Reduction”

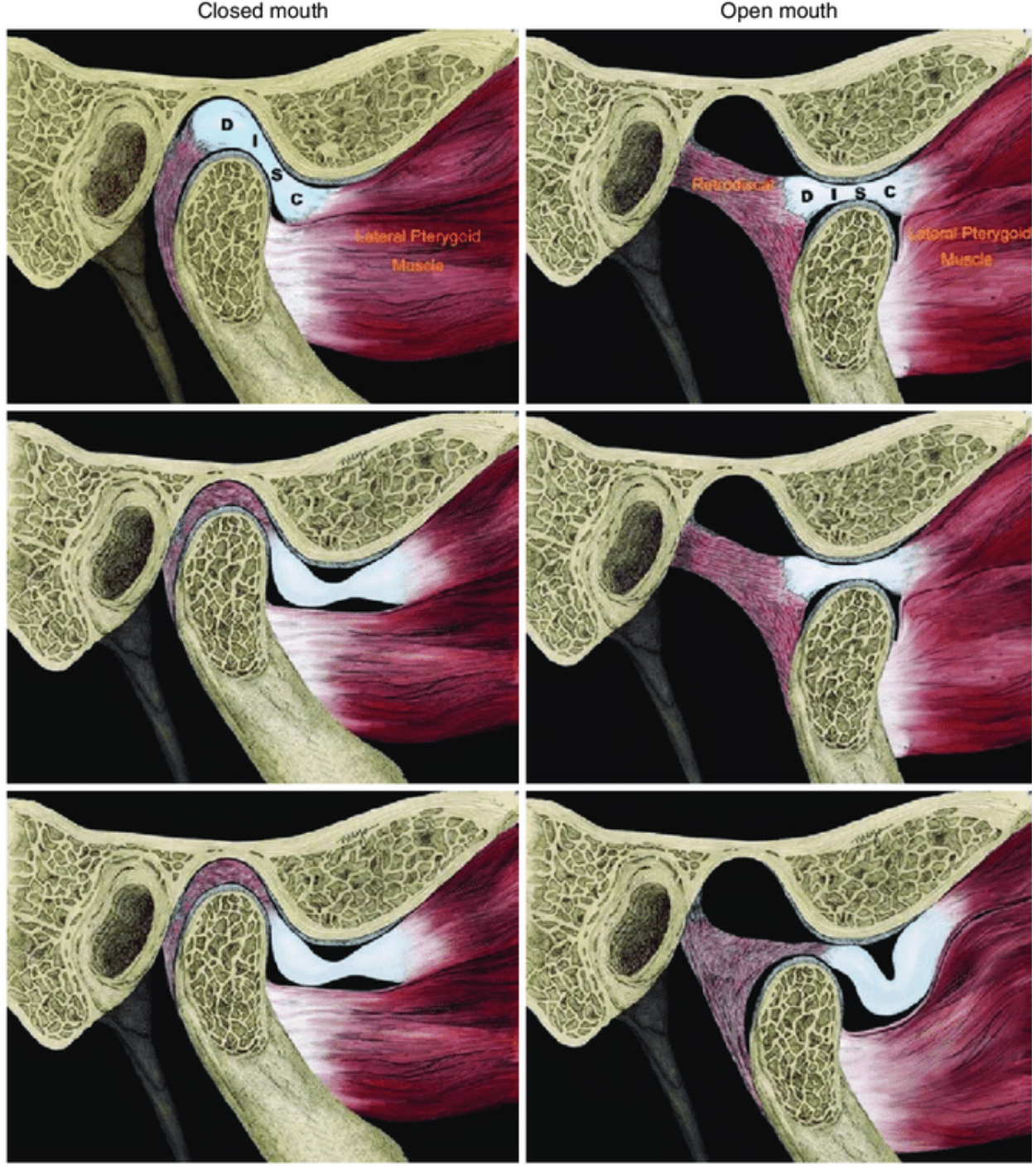


Superior view of disc with section of lateral pterygoid on the anterior aspect[6].

Normal disc position

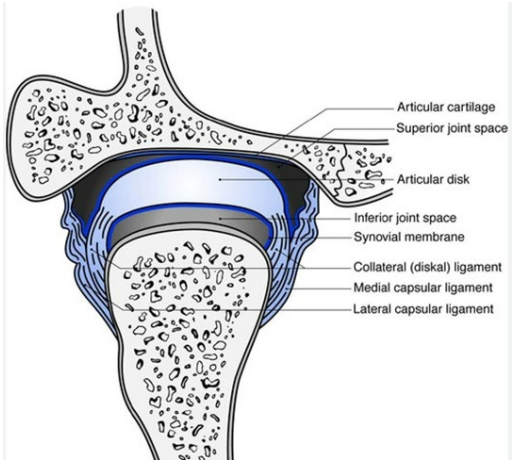
Anterior disc displacement with reduction

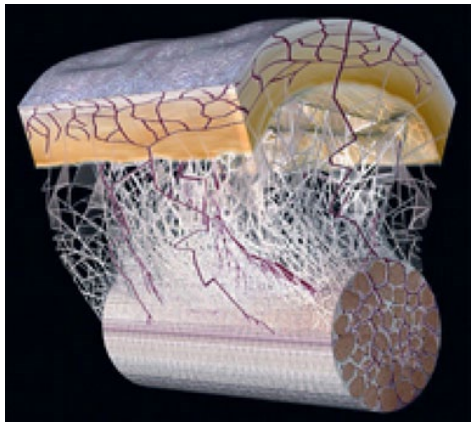
Anterior disc displacement without reduction



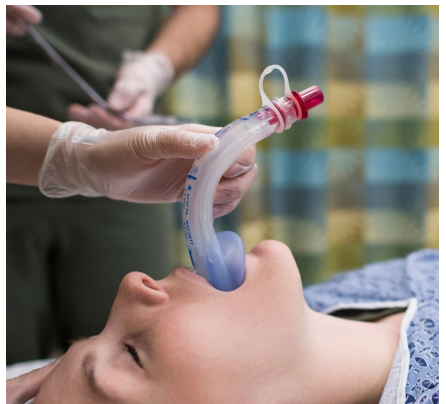
Cause?

- Suggested to be laxity in the elongation of the lateral collateral ligaments/retro-discal tissues allowing the disc to move anterior-medially due to the ongoing contraction of the superior belly of the lateral pterygoid.
- Why? Proposed to be recurring “microtrauma” from repeated daily activities such as clenching, “bruxism” gum chewing, pen biting, use of chin posture and other stress-related, “habits.”
- Facia Damage … (a large area of current research) …
- Clinical Suggestions? Tooth wear, clenching, etc.
- “Macro-Trauma.” MVA, GA Intubation, Prolonged dental procedure, 3rd Molar TE, “excessive yawning,” bagels …





Facia Pain (periosteal)



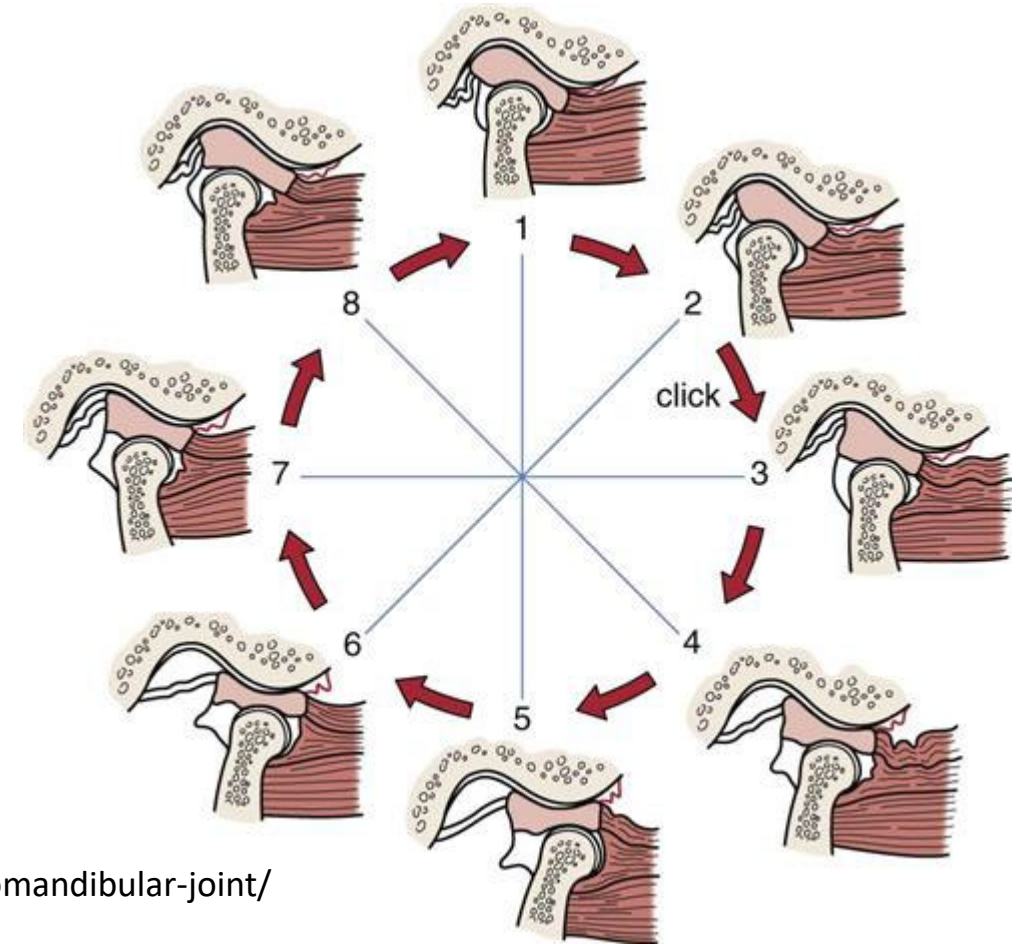
GA Intubation

Disc Displacement and “Clicks”, “Pops” and other noise

- Controversial - Disc displacement may be physiological (90% of population) which is unassociated with pain in most people
- Disc displacement is observed with and without joint noises on MRI
- Understand the terminology

TYPE #1

Patient has ONE “click”

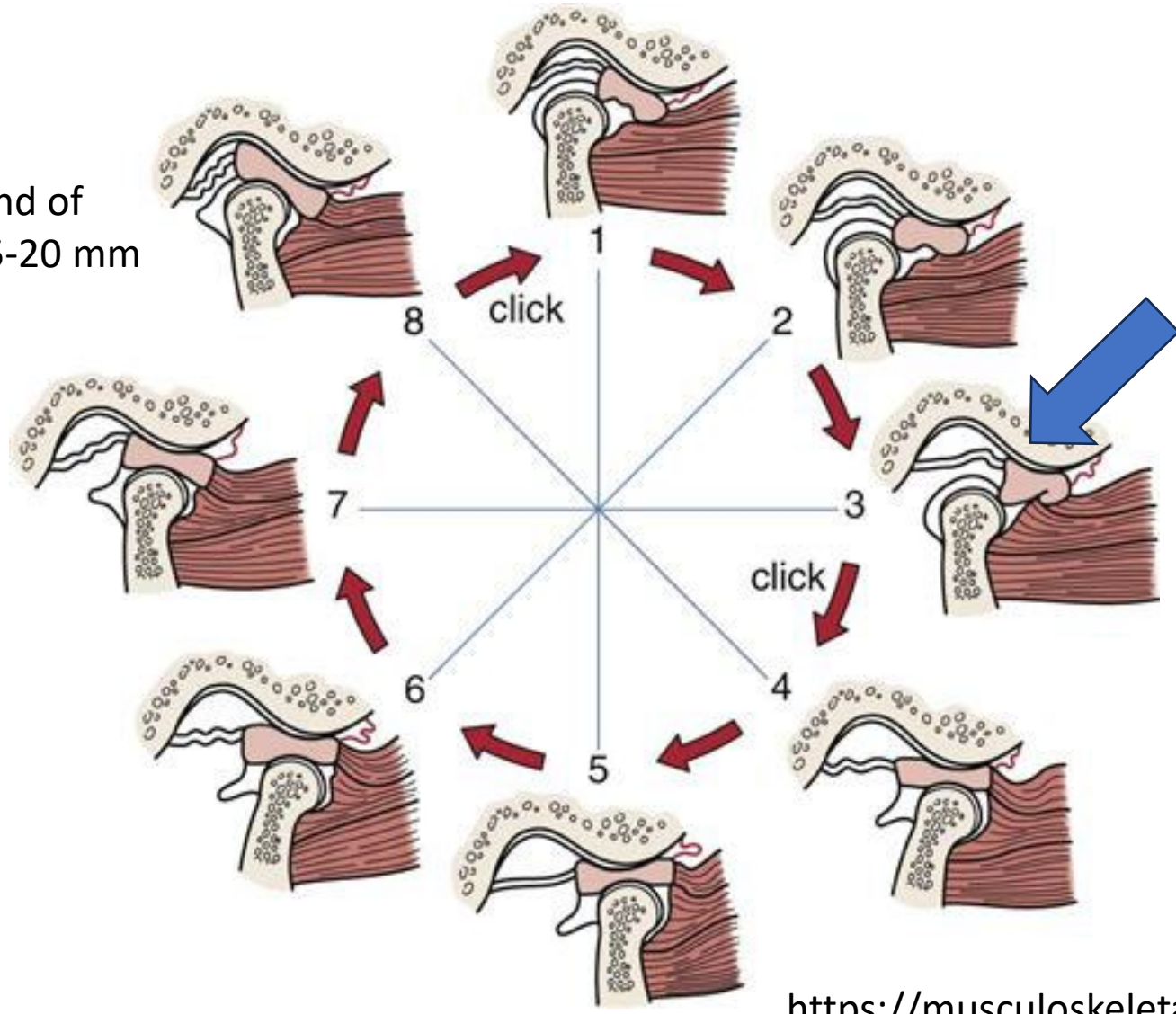


Explanation:
Single click.
Between positions 2 and 3,
a click is felt as the condyle moves across the posterior border into the intermediate zone of the disc.
Normal condyle-disc function occurs during the remaining opening and closing movement.
In the closed joint position (1),
the disc is again displaced forward (and medially) by activity of the superior lateral pterygoid muscle.

https://musculoskeletalkey.com/temporomandibular-joint/

Disc displacement with “reduction”

“Click #2”
Occurs at the end of translation (~15-20 mm incisal opening)



“Click #1”
Explanation: During translational opening, the condyle passes over the posterior border of the disc onto the intermediate area of the disc, thus “reducing” the dislocated disc.

TYPE #2

Patient having

2 “clicks”

1 on opening

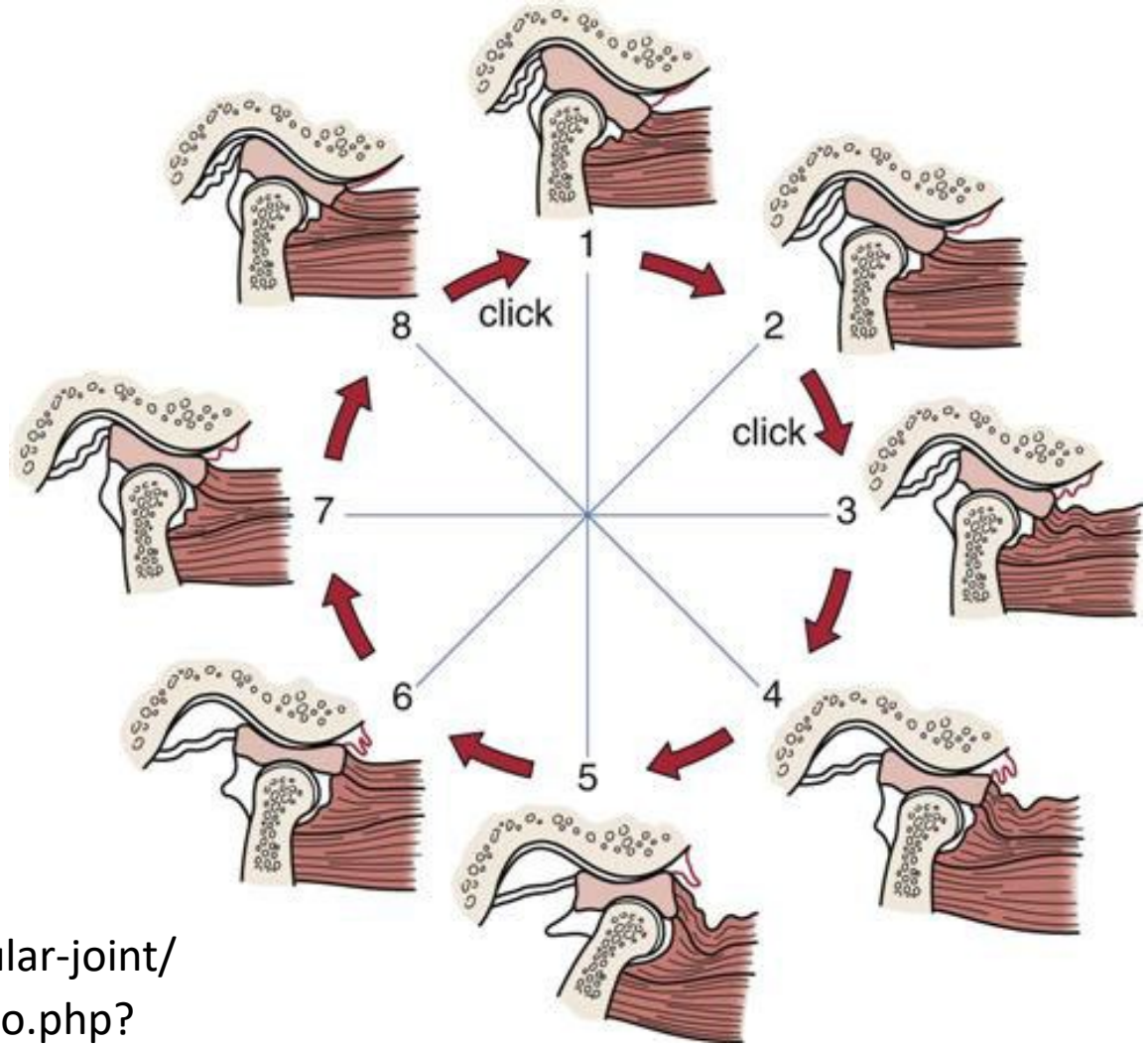
1 on late closing

https://musculoskeletalkey.com/temporomandibular-joint/

Disc Displacement with reduction (DDWR) (“Reciprocal Click”) ~ 33% prevalence rate* NOTE – here the condyle always stays on the disc

TYPE #3

- “Click,” “pop,” “crack” on opening or closing
- A slight difference in timing and condyle/disc position
- 2 Clicks (opening and closing) but the first is sooner in translation
- Explanation: Between positions 2 and 3, a click is felt as the condyle moves across the posterior border of the disc. Normal condyle-disc function occurs during the remaining opening and closing movement until the closed joint position is approached. A second click is heard as the condyle once again moves from the intermediate zone to the posterior border of the disc between positions 8 and 1.

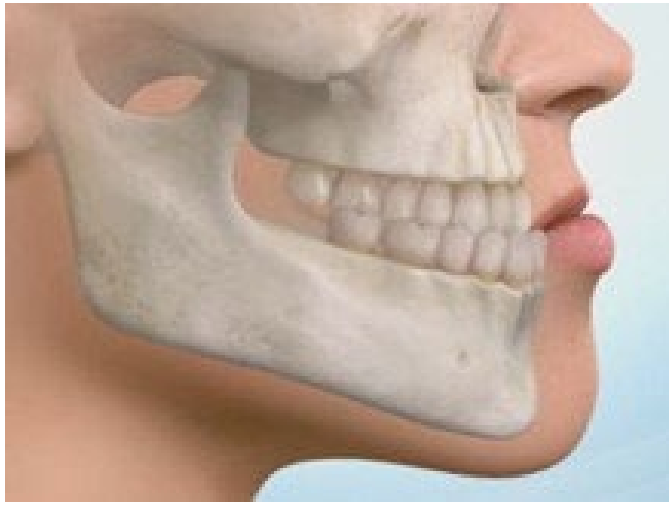


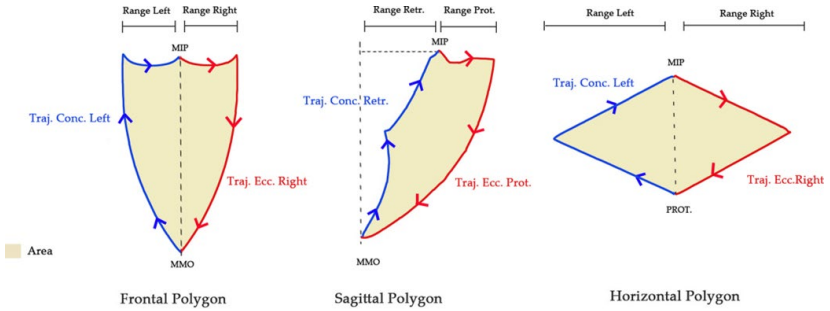
https://musculoskeletalkey.com/temporomandibular-joint/

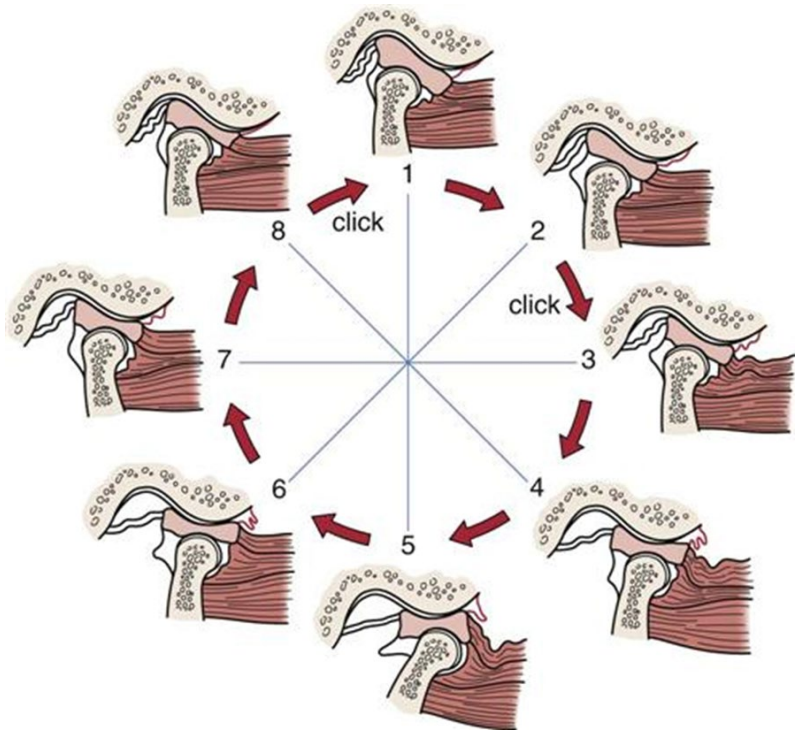
*J Appl Oral Sci. 2019; 27 (http://www.scielo.br/scielo.php?

One test

- Slide the jaw forward in protrusion, then open slowly.
- Should have no reciprocal click's ?
- Normal range of motion







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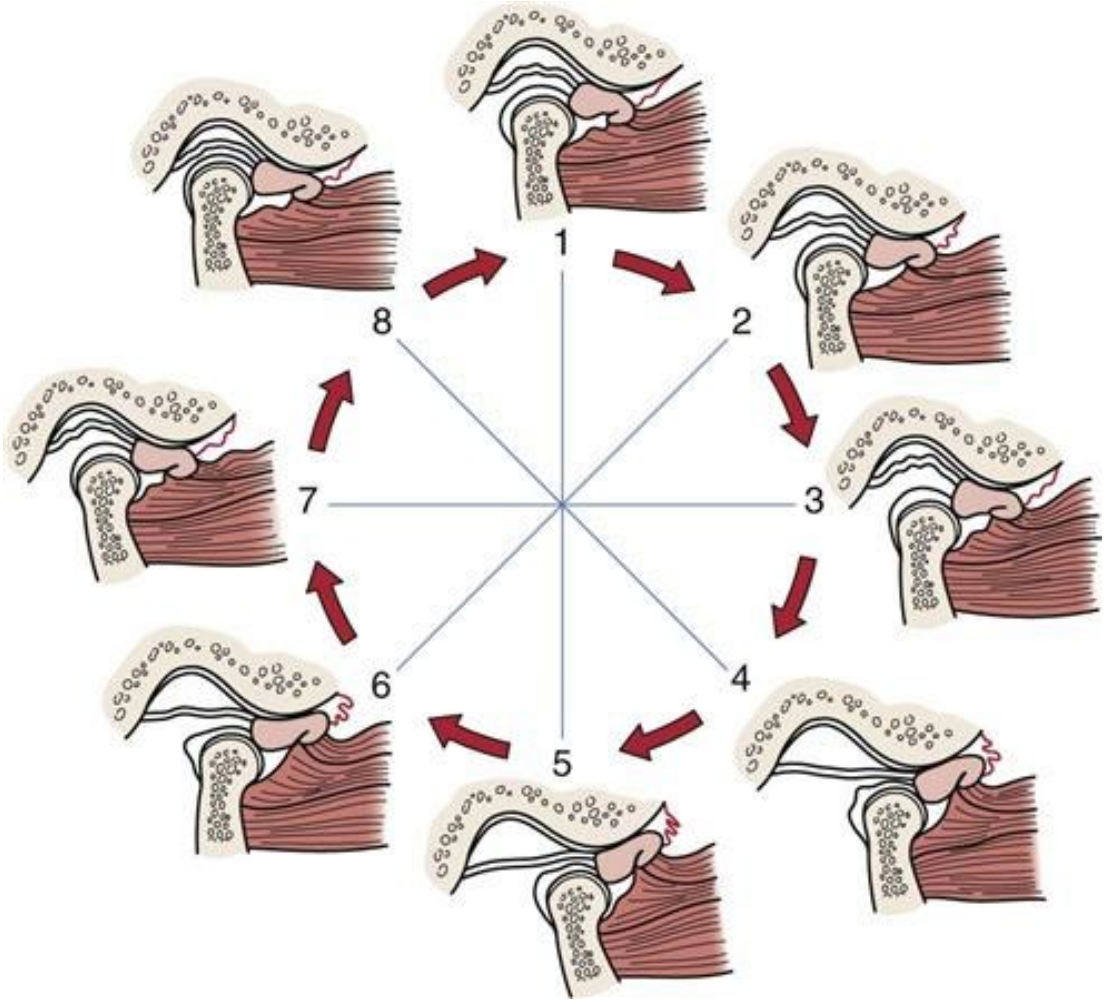
Closed Locked
(CL with limited opening; < 40mm at incisors)

Acute – Trauma, Painful, typically surgical repair
Chronic - guards, muscle relaxants, Botox

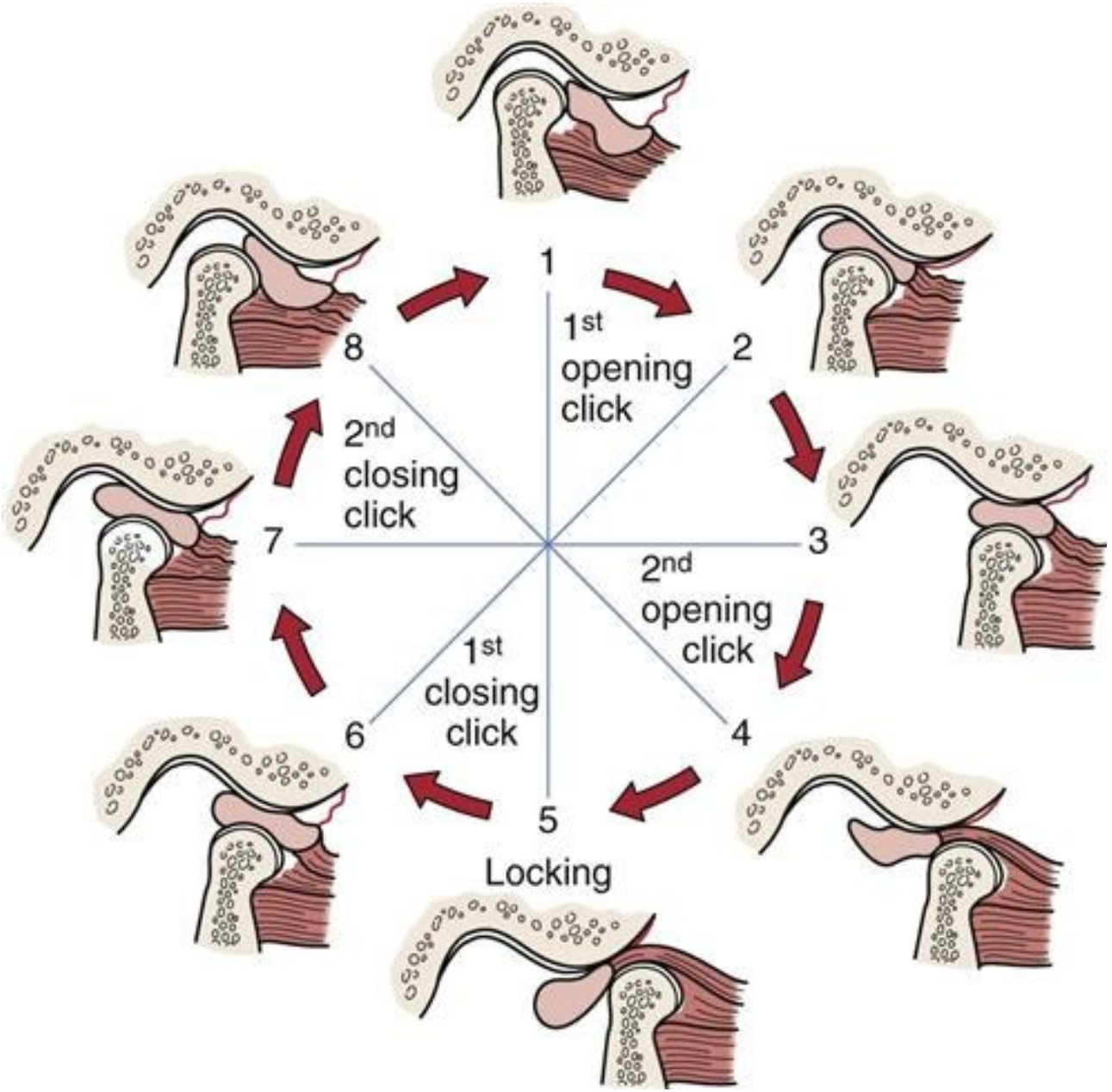
- No joint noise but limited opening
- Usually, prior history of normal ROM and DDWR – patient presents where previous clicking has stopped, limited ROM, significant pain on affected joint(s); as a chronic condition this can cycle between DDWR and CL.
- Explanation: The condyle never assumes a normal relation to the disc but instead causes the disc to move forward ahead of it. This condition limits the distance the condyle can translate forward.



https://musculoskeletalkey.com/temporomandibular-joint/

Open Locked (“*disc incoordination*”)

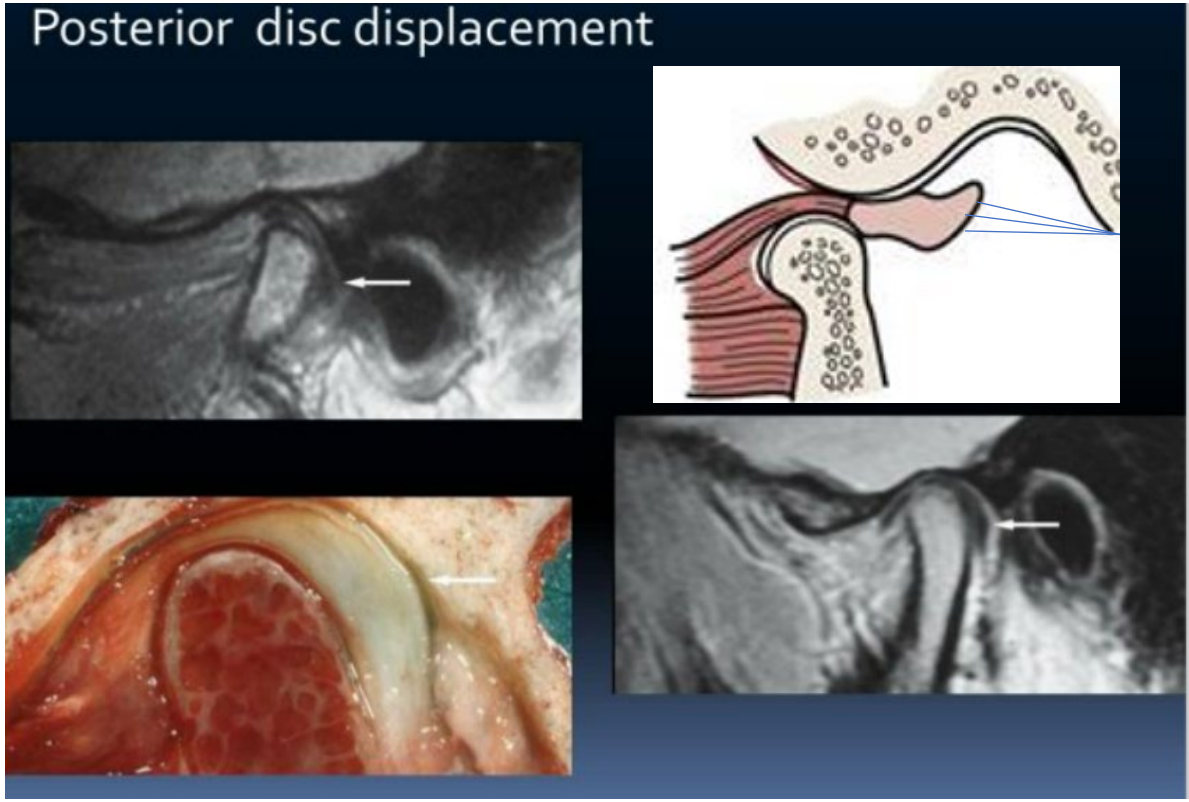
- 2-4 clicks possible
- 2 on opening and 2 on closing
- <u>Explanation</u>: 1, The disc always stays in anterior position with the jaw closed. 1-4, Disc is displaced posterior to the condyle with one or two opening clicks. 5-6, The disc disturbs jaw closing after maximum opening. 6-1, The disc is again displaced to anterior position from the posterior with one or two clicks.



https://musculoskeletalkey.com/temporomandibular-joint/

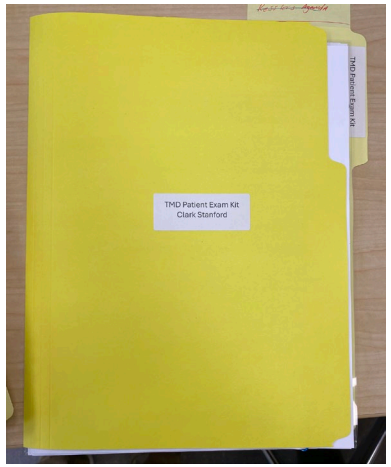
Posterior Displacement, without reduction

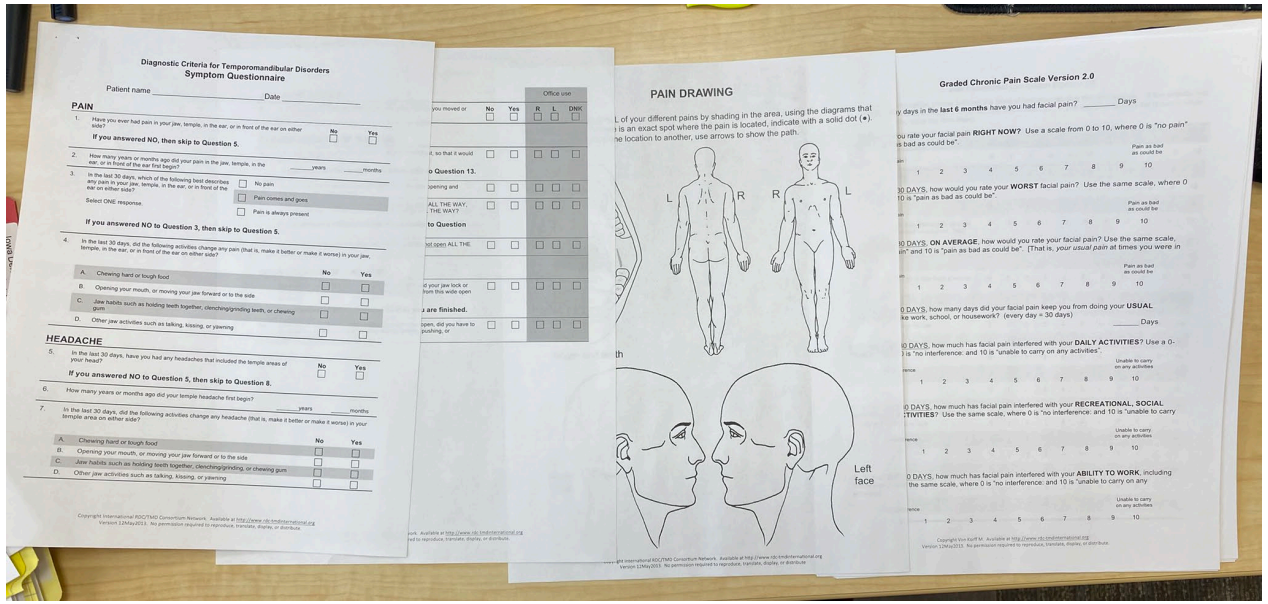
- Rare (0.7% of those with disc derangements)
- Open lock position of the jaw
- Theory: Clicking, followed by pain, dislocation (rupture) and open lock.
- Clinically: open occlusion on affected side and deviation to the unaffected side
- May occur more often in Angle Class III Malocclusions

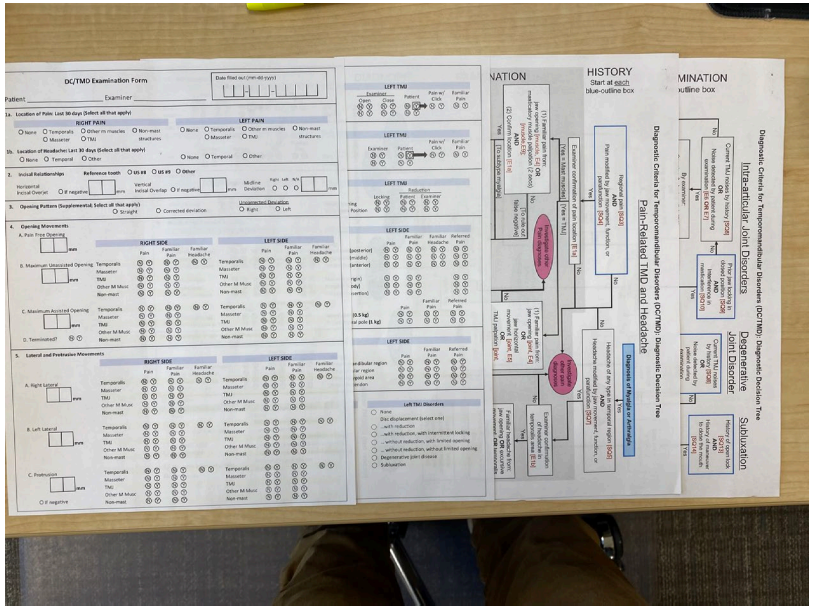


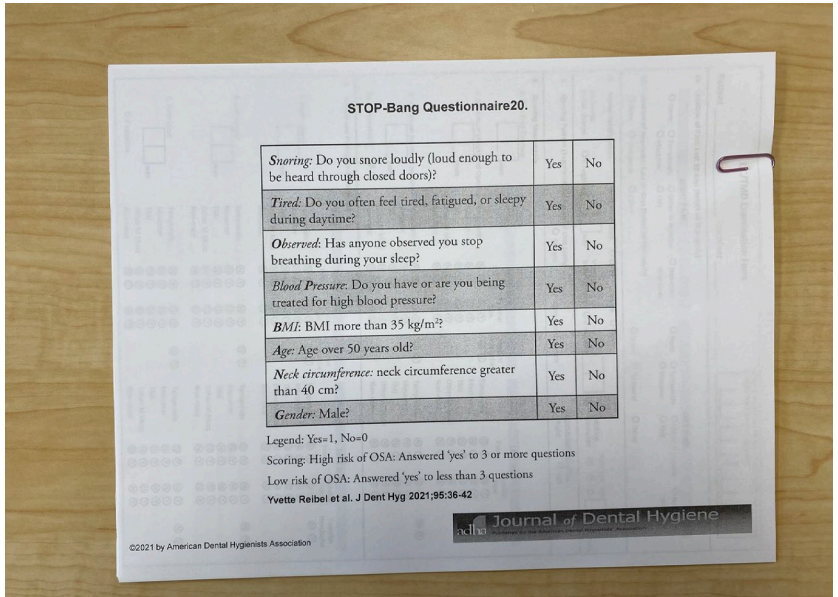
https://www.slideserve.com/treva/the-tempromandibular-joint-tmj

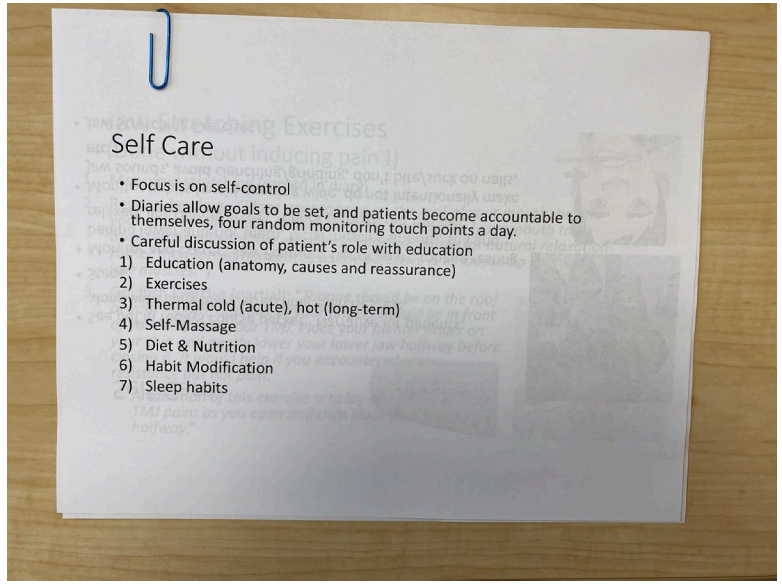
My TMD Exam “Kit”



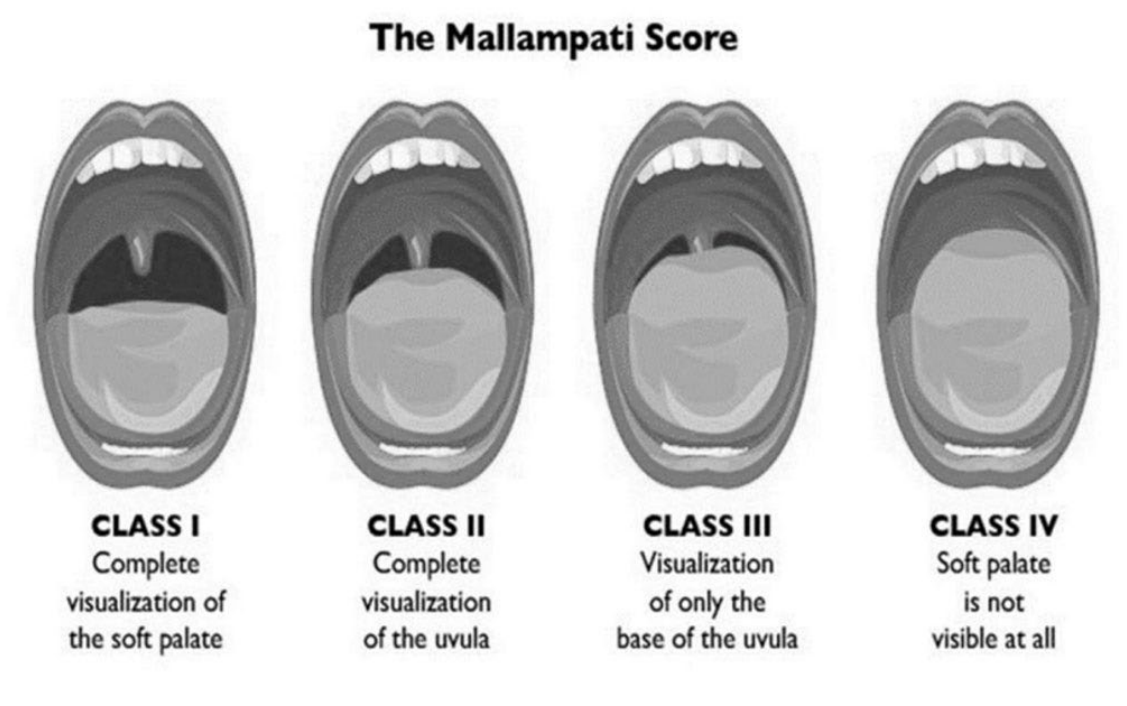








Sleep Apnea



OSA – "Stop-Bang" Screening assessment

STOP

S	So you **snore** loudly (louder enough to be heard through closed doors or louder than talking)?	Yes	No
T	Do you often feel **tired**, fatigued or sleepy during the daytime?	Yes	No
O	Has anyone **observed** you stop breathing or choking or gasping during your sleep?	Yes	No
P	Do you have or are you being treated for high blood **pressure**?	Yes	No

Bang

B	**BMI** more than 35?	Yes	No
a	**Age** – over 50 years old?	Yes	No
n	**Neck** circumference – is it greater than 17" if you are a male or 16" if you are a female?	Yes	No
g	**Gender** – are you a male?	Yes	No

Score your yes tally:

- 0 – 2 Low risk
- 3 – 4 Intermediate risk
- 5 – 8 High risk

http://www.stopbang.ca/

Clarified and define specific terms

- *Myalgia:* muscle pain (local or regional)
- *Myofascial Pain:* muscle and/or facia associated pain with trigger points with or radiating upon palpation (*referral*) or extending to other areas beyond the palpated area (*spreading*).
- *Arthralgia:* pain in the joint
- *Intra-articular joint disorders* (displacement with or without reduction)
- *Degenerative Joint Disorders* (OA)
- *Subluxation*: Hyper-extension (hypermobility) often called “subluxation” – Open Lock

INfORM

International Network for Orofacial Pain and Related Disorders Methodology

A Consortium Focused On Clinical Translation Research

https://inform-iadr.com/

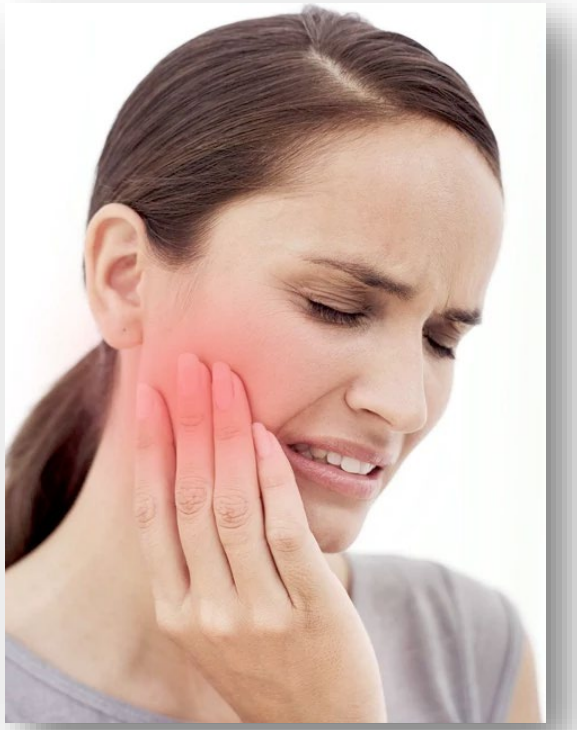
- TMDs are a complex set of disorders, many (*most*) are poorly understood
- Historically, multiple different ***diagnostic assessment approaches*** led to disagreements in basic diagnosis, let alone therapies
- Consortium led to the development of evidence-based diagnostic criteria that could be applied to clinical research protocols in TMD research.
- Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) was established in 1992 to improve TMD classification and accuracy.
- Calibration and consistency of ***each step*** is critical to the proper diagnosis.

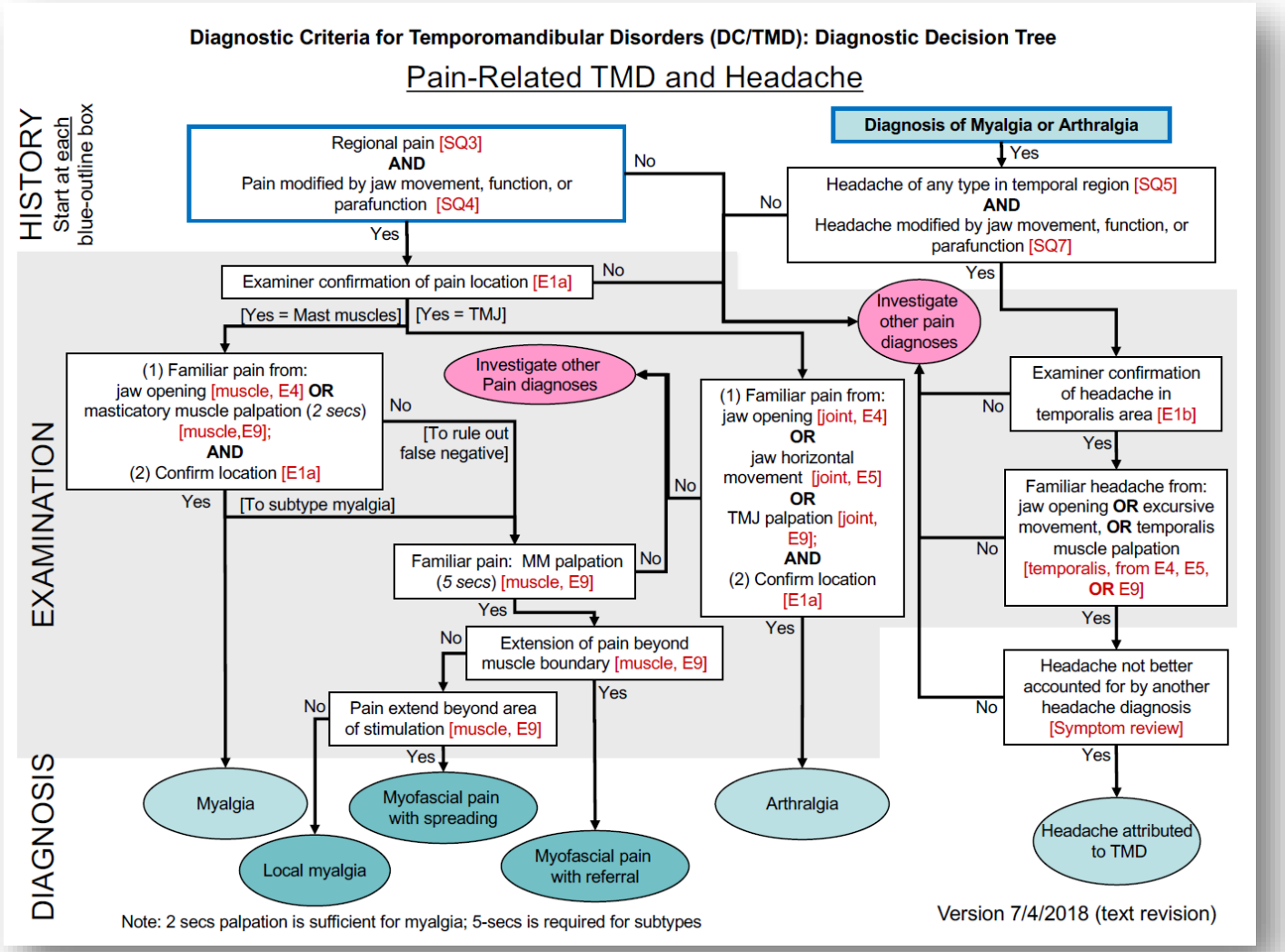
RDC/TMD Exam

- As the RDC/TMD exam was deployed, the role of and measurement of biopsychosocial aspects of pain were recognized. This led to two “Axis”
- Axis I: The Clinical Exam (reliable and calibrated physical assessment)
- Axis II: Utilization of calibrated and validated psychosocial survey instruments from other areas of medicine.

We will come back to this flowchart - but each step we will now talk about feeds into this, “Diagnostic Algorithm”

PAIN





Axis I: Diagnostic Criteria TMD Exam

- Incorporated an initial patient survey ("Diagnostic Criteria for Temporomandibular Disorders Symptom Questionnaire")
- 14 questions which will tie to the physical exam (and the Clinical Decision Support System or CDSS for TMDs).

Diagnostic Criteria for Temporomandibular Disorders
Symptom Questionnaire

Patient name _____ Date _____

PAIN

1.	Have you ever had pain in your jaw, temple, in the ear, or in front of the ear on either side? **If you answered NO, then skip to Question 5.**	**No** ☐	**Yes** ☐
2.	How many years or months ago did your pain in the jaw, temple, in the ear, or in front of the ear first begin?	_____years	_____months
3.	In the last 30 days, which of the following best describes any pain in your jaw, temple, in the ear, or in front of the ear on either side? Select ONE response.	☐ No pain ☐ Pain comes and goes ☐ Pain is always present	

If you answered NO to Question 3, then skip to Question 5.

4. In the last 30 days, did the following activities change any pain (that is, make it better or make it worse) in your jaw, temple, in the ear, or in front of the ear on either side?

		No	**Yes**
A.	Chewing hard or tough food	☐	☐
B.	Opening your mouth, or moving your jaw forward or to the side	☐	☐
C.	Jaw habits such as holding teeth together, clenching/grinding teeth, or chewing gum	☐	☐
D.	Other jaw activities such as talking, kissing, or yawning	☐	☐

Axis I: Patient initial Survey (14 questions)

HEADACHE

		No	Yes
5.	In the last 30 days, have you had any headaches that included the temple areas of your head? **If you answered NO to Question 5, then skip to Question 8.**	☐	☐

6. How many years or months ago did your temple headache first begin?

_____years _____months

7. In the last 30 days, did the following activities change any headache (that is, make it better or make it worse) in your temple area on either side?

		No	Yes
A.	Chewing hard or tough food	☐	☐
B.	Opening your mouth, or moving your jaw forward or to the side	☐	☐
C.	Jaw habits such as holding teeth together, clenching/grinding, or chewing gum	☐	☐
D.	Other jaw activities such as talking, kissing, or yawning	☐	☐

Axis I: Patient initial Survey

				Office use		
JAW JOINT NOISES						
8.	In the last 30 days, have you had any jaw joint noise(s) when you moved or used your jaw?	**No** ☐	**Yes** ☐	**R** ☐	**L** ☐	**DNK** ☐
CLOSED LOCKING OF THE JAW						
9.	Have you ever had your jaw lock or catch, even for a moment, so that it would not open ALL THE WAY? **If you answered NO to Question 9 then skip to Question 13.**	☐	☐	☐	☐	☐
10.	Was your jaw lock or catch severe enough to limit your jaw opening and interfere with your ability to eat?	☐	☐	☐	☐	☐
11.	In the last 30 days, did your jaw lock so you could not open ALL THE WAY, even for a moment, and then unlock so you could open ALL THE WAY? **If you answered NO to Question 11 then skip to Question 13.**	☐	☐	☐	☐	☐
12.	Is your jaw currently locked or limited so that your jaw will not open ALL THE WAY?	☐	☐	☐	☐	☐
OPEN LOCKING OF THE JAW						
13.	In the last 30 days, when you opened your mouth wide, did your jaw lock or catch even for a moment such that you could not close it from this wide open position? **If you answered NO to Question 13 then you are finished.**	☐	☐	☐	☐	☐
14.	In the last 30 days, when you jaw locked or caught wide open, did you have to do something to get it to close including resting, moving, pushing, or maneuvering it?	☐	☐	☐	☐	☐

Axis I: DC/TMD Physical Exam

- The exam is highly scripted and standardized.
- The word commands are intentionally standardized to elicit a validated answer.
- Time-based commands
- “Familiar” pain
- Some actions are only done by the patient, some are done by the provider to the patient and some are provider “assisted.”
- Video of the full exam is on the course website

Exam Specifics DC/TMD Protocol

PURPOSE **What you say** **How/Why you say it**

CONSTRUCT	VERBAL COMMAND	EXAMINER PROCEDURE
E1. Examiner Confirmation of Pain and Headache Locations		
Identifying information	<none>	Examiner enters patient name, examiner name, and date on examination form.
Instructions to the patient	**Before I start the exam, I want to review a few things with you.** **I will be asking you about pain, and only you know if you have pain. When I ask about pain, I want you to say either yes or no; if you are not sure, give me your best answer.** **If you feel pain, I will also ask if that pain is familiar. Familiar pain refers to pain that is similar or like the pain you may have had in that same part of your body in the last 30 days.** **If you feel pain in the temple area, I will ask if that pain is like any headache you may have had in the temple area in the last 30 days.**	• Pain as defined here is absolute but translation into local terms (or other language) requires attention to cultural standards. Intention is to clearly place responsibility for determination of pain on the patient, and the only response that can be accepted is either "yes" or "no". • Definition of "familiar pain" may require some elaboration when it is first asked during the examination. Other related words include "similar" or "feels like".
Scope of examination: anatomic areas of interest *Figure 1*	**For the purposes of this examination, I am interested in pain that you may have in these areas….** **…. and also inside the mouth.**	• Examiner touches, bilaterally at the same time, the following 4 areas in sequence: temporalis, preauricular, masseter, and posterior/submandibular areas. • Examiner says "here" while touching each of the above areas. • The areas are <u>not</u> named anatomically as they are touched.

E1 Examiner Confirmation of Pain and Headache Location

Examiner Instructions of Locations for Pain Reporting

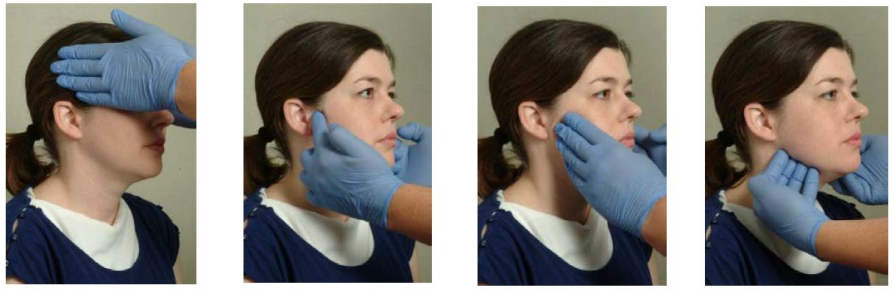


Figure 1. Examiner touches each area in turn (from left to right): temporalis, TMJ, masseter, and posterior and sub-mandibular areas. Both sides are touched at the same time, as illustrated. For the temporalis and masseter, the ventral aspects of the fingers contact the entire muscle.

Headache Location

CONSTRUCT	VERBAL COMMAND	EXAMINER PROCEDURE
E1b *Location of headache in the last 30 days.*	**In the last 30 days, have you had any headaches?** IF "YES": **Could you point with your finger to each of the areas where you have felt headaches** [in the last 30 days]**?** **Are there any other areas where you have felt headaches** [in the last 30 days]**?** IF "YES", EXAMINER CONFIRMS: Let me confirm your headache locations where you just pointed.	IF PATIENT REPORTS NO HEADACHE OR NO HEADACHE IN INDICATED AREAS: ● Record "None" for each of right side and left side in Q1b. IF PATIENT REPORTS HEADACHE: ● Examiner inquires into all locations. ● Examiner touches involved areas to confirm location with patient, and inquires "here?". ● Record pain locations in Q1b.

DC/TMD Clinical Exam Form

DC/TMD Examination Form

Date filled out (mm-dd-yyyy) ___-___-____

Patient _____ Examiner _____

1a. Location of Pain: Last 30 days (Select all that apply)

RIGHT PAIN				LEFT PAIN			
O None	O Temporalis	O Other m muscles	O Non-mast structures	O None	O Temporalis	O Other m muscles	O Non-mast structures
	O Masseter	O TMJ			O Masseter	O TMJ	

1b. Location of Headache: Last 30 days (Select all that apply)

O None	O Temporal	O Other	O None	O Temporal	O Other

2. Incisal Relationships **Reference tooth** O **US #8** O **US #9** O **Other**

Horizontal Incisal Overjet O If negative ___ mm

Vertical Incisal Overlap O If negative ___ mm

Midline Deviation Right O Left O N/A O ___ mm

3. Opening Pattern (Supplemental; Select all that apply)

O Straight O Corrected deviation

Uncorrected Deviation: O Right O Left

4. Opening Movements

A. Pain Free Opening ___ mm

B. Maximum Unassisted Opening ___ mm

C. Maximum Assisted Opening ___ mm

D. Terminated? (N) (Y)

RIGHT SIDE	Pain	Familiar Pain	Familiar Headache
Temporalis	(N) (Y)	(N) (Y)	(N) (Y)
Masseter	(N) (Y)	(N) (Y)	
TMJ	(N) (Y)	(N) (Y)	
Other M Musc	(N) (Y)	(N) (Y)	
Non-mast	(N) (Y)	(N) (Y)	

LEFT SIDE	Pain	Familiar Pain	Familiar Headache
Temporalis	(N) (Y)	(N) (Y)	(N) (Y)
Masseter	(N) (Y)	(N) (Y)	
TMJ	(N) (Y)	(N) (Y)	
Other M Musc	(N) (Y)	(N) (Y)	
Non-mast	(N) (Y)	(N) (Y)	

RIGHT SIDE	Pain	Familiar Pain	Familiar Headache
Temporalis	(N) (Y)	(N) (Y)	(N) (Y)
Masseter	(N) (Y)	(N) (Y)	
TMJ	(N) (Y)	(N) (Y)	
Other M Musc	(N) (Y)	(N) (Y)	
Non-mast	(N) (Y)	(N) (Y)	

LEFT SIDE	Pain	Familiar Pain	Familiar Headache
Temporalis	(N) (Y)	(N) (Y)	(N) (Y)
Masseter	(N) (Y)	(N) (Y)	
TMJ	(N) (Y)	(N) (Y)	
Other M Musc	(N) (Y)	(N) (Y)	
Non-mast	(N) (Y)	(N) (Y)	

DC/TMD Clinical Exam Form Page 2

5. Lateral and Protrusive Movements

	RIGHT SIDE				LEFT SIDE			
		Pain	Familiar Pain	Familiar Headache		Pain	Familiar Pain	Familiar Headache
A. Right Lateral ☐☐ mm	Temporalis	N Y	N Y	N Y	Temporalis	N Y	N Y	N Y
	Masseter	N Y	N Y		Masseter	N Y	N Y	
	TMJ	N Y	N Y		TMJ	N Y	N Y	
	Other M Musc	N Y	N Y		Other M Musc	N Y	N Y	
	Non-mast	N Y	N Y		Non-mast	N Y	N Y	
B. Left Lateral ☐☐ mm	Temporalis	N Y	N Y	N Y	Temporalis	N Y	N Y	N Y
	Masseter	N Y	N Y		Masseter	N Y	N Y	
	TMJ	N Y	N Y		TMJ	N Y	N Y	
	Other M Musc	N Y	N Y		Other M Musc	N Y	N Y	
	Non-mast	N Y	N Y		Non-mast	N Y	N Y	
C. Protrusion ☐☐ mm	Temporalis	N Y	N Y	N Y	Temporalis	N Y	N Y	N Y
	Masseter	N Y	N Y		Masseter	N Y	N Y	
	TMJ	N Y	N Y		TMJ	N Y	N Y	
	Other M Musc	N Y	N Y		Other M Musc	N Y	N Y	
O If negative	Non-mast	N Y	N Y		Non-mast	N Y	N Y	

6. TMJ Noises During Open & Close Movements

RIGHT TMJ	Examiner		Patient	Pain w/ Click	Familiar Pain
	Open	Close			
Click	N Y	N Y	N (Y)	N Y	N Y
Crepitus	N Y	N Y	N Y		

LEFT TMJ	Examiner		Patient	Pain w/ Click	Familiar Pain
	Open	Close			
Click	N Y	N Y	N (Y)	N Y	N Y
Crepitus	N Y	N Y	N Y		

7. TMJ Noises During Lateral & Protrusive Movements

RIGHT TMJ	Examiner	Patient	Pain w/ Click	Familiar Pain
Click	N Y	N (Y)	N Y	N Y
Crepitus	N Y	N Y		

LEFT TMJ	Examiner	Patient	Pain w/ Click	Familiar Pain
Click	N Y	N (Y)	N Y	N Y
Crepitus	N Y	N Y		

8. Joint Locking

RIGHT TMJ	Locking	Reduction	
		Patient	Examiner
While Opening	N Y	N Y	N Y
Wide Open Position	N Y	N Y	N Y

LEFT TMJ	Locking	Reduction	
		Patient	Examiner
While Opening	N Y	N Y	N Y
Wide Open Position	N Y	N Y	N Y

DC/TMD Clinical Exam Form Page 3

9. Muscle & TMJ Pain with Palpation

RIGHT SIDE (1 kg)	Pain	Familiar Pain	Familiar Headache	Referred Pain
Temporalis (posterior)	N Y	N Y	N Y	N Y
Temporalis (middle)	N Y	N Y	N Y	N Y
Temporalis (anterior)	N Y	N Y	N Y	N Y
Masseter (origin)	N Y	N Y		N Y
Masseter (body)	N Y	N Y		N Y
Masseter (insertion)	N Y	N Y		N Y

LEFT SIDE (1 kg)	Pain	Familiar Pain	Familiar Headache	Referred Pain
Temporalis (posterior)	N Y	N Y	N Y	N Y
Temporalis (middle)	N Y	N Y	N Y	N Y
Temporalis (anterior)	N Y	N Y	N Y	N Y
Masseter (origin)	N Y	N Y		N Y
Masseter (body)	N Y	N Y		N Y
Masseter (insertion)	N Y	N Y		N Y

TMJ	Pain	Familiar Pain	Referred Pain
Lateral pole **(0.5 kg)**	N Y	N Y	N Y
Around lateral pole **(1 kg)**	N Y	N Y	N Y

	Pain	Familiar Pain	Referred Pain
Lateral pole **(0.5 kg)**	N Y	N Y	N Y
Around lateral pole **(1 kg)**	N Y	N Y	N Y

10. Supplemental Muscle Pain with Palpation

RIGHT SIDE (0.5 kg)	Pain	Familiar Pain	Referred Pain
Posterior mandibular region	N Y	N Y	N Y
Submandibular region	N Y	N Y	N Y
Lateral pterygoid area	N Y	N Y	N Y
Temporalis tendon	N Y	N Y	N Y

LEFT SIDE (0.5 kg)	Pain	Familiar Pain	Referred Pain
Posterior mandibular region	N Y	N Y	N Y
Submandibular region	N Y	N Y	N Y
Lateral pterygoid area	N Y	N Y	N Y
Temporalis tendon	N Y	N Y	N Y

11. Diagnoses

Pain Disorders
○ None
○ Myalgia
○ Myofascial pain with referral
○ Right Arthralgia
○ Left Arthralgia
○ Headache attributed to TMD

Right TMJ Disorders
○ None
Disc displacement (select one)
○ ...with reduction
○ ...with reduction, with intermittent locking
○ ... without reduction, with limited opening
○ ... without reduction, without limited opening
○ Degenerative joint disease
○ Subluxation

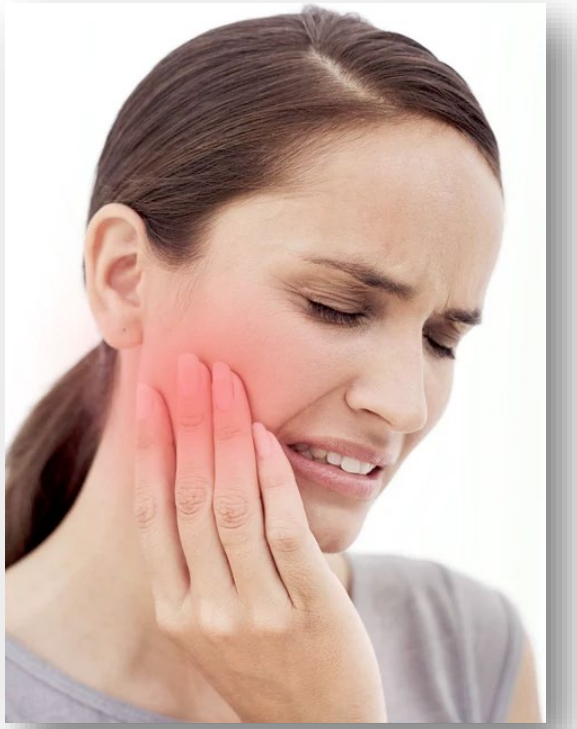
Left TMJ Disorders
○ None
Disc displacement (select one)
○ ...with reduction
○ ...with reduction, with intermittent locking
○ ... without reduction, with limited opening
○ ... without reduction, without limited opening
○ Degenerative joint disease
○ Subluxation

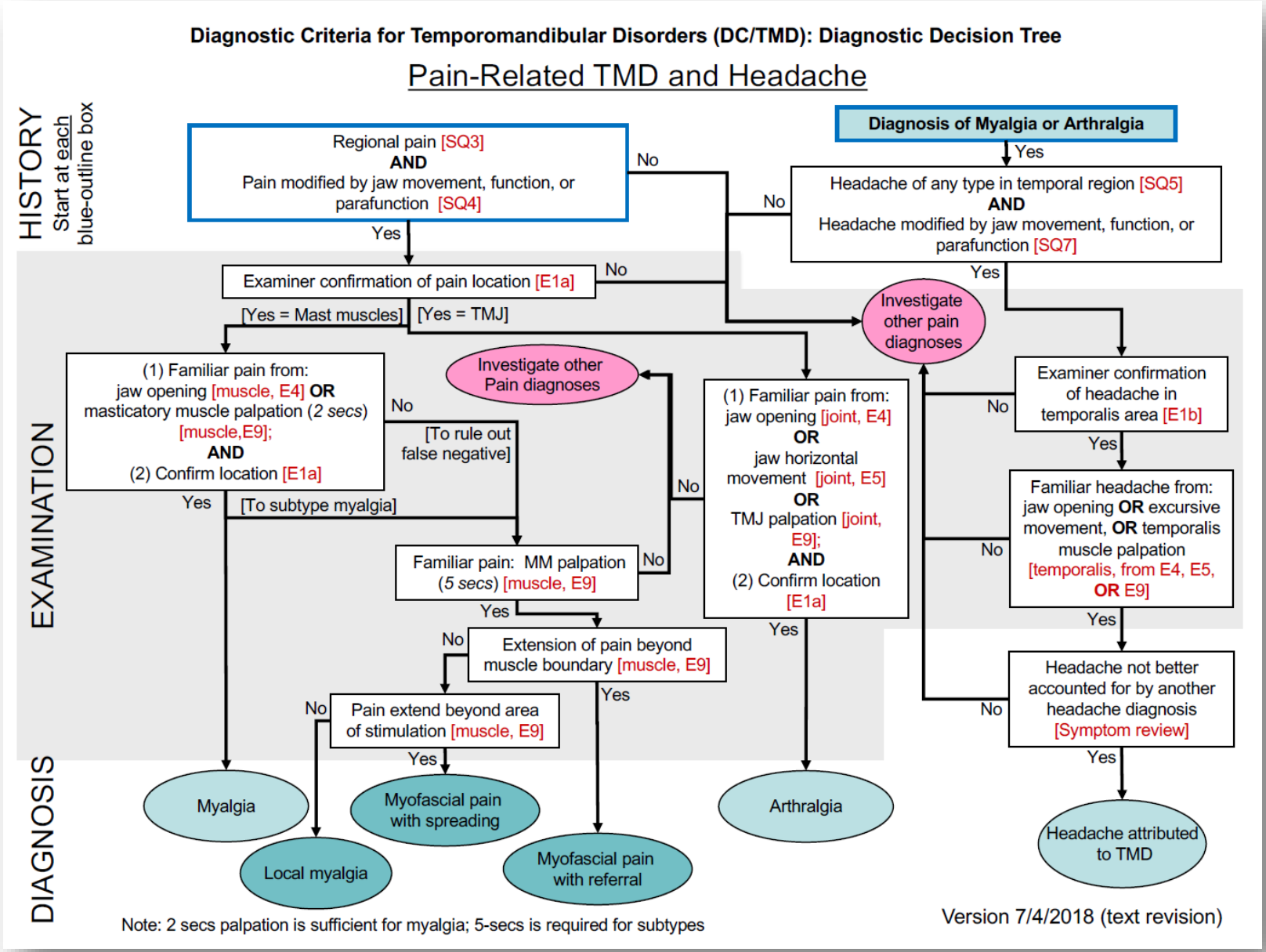
12. Comments

This feeds into a diagnostic criterion flowchart

Diagnostic Algorithm “Clinical Decision Support System (CDSS)”

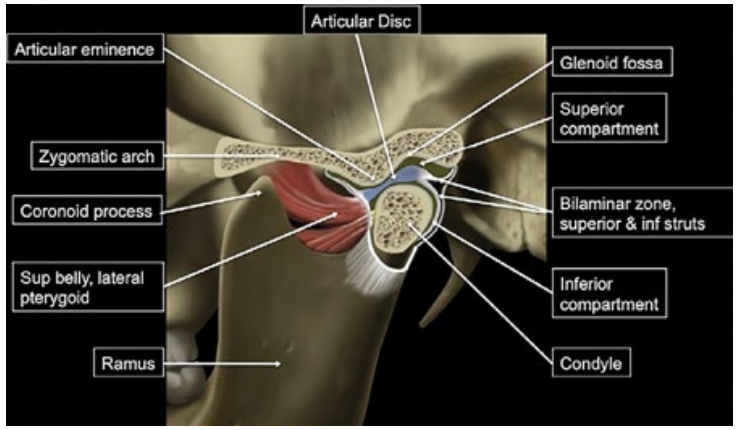
PAIN

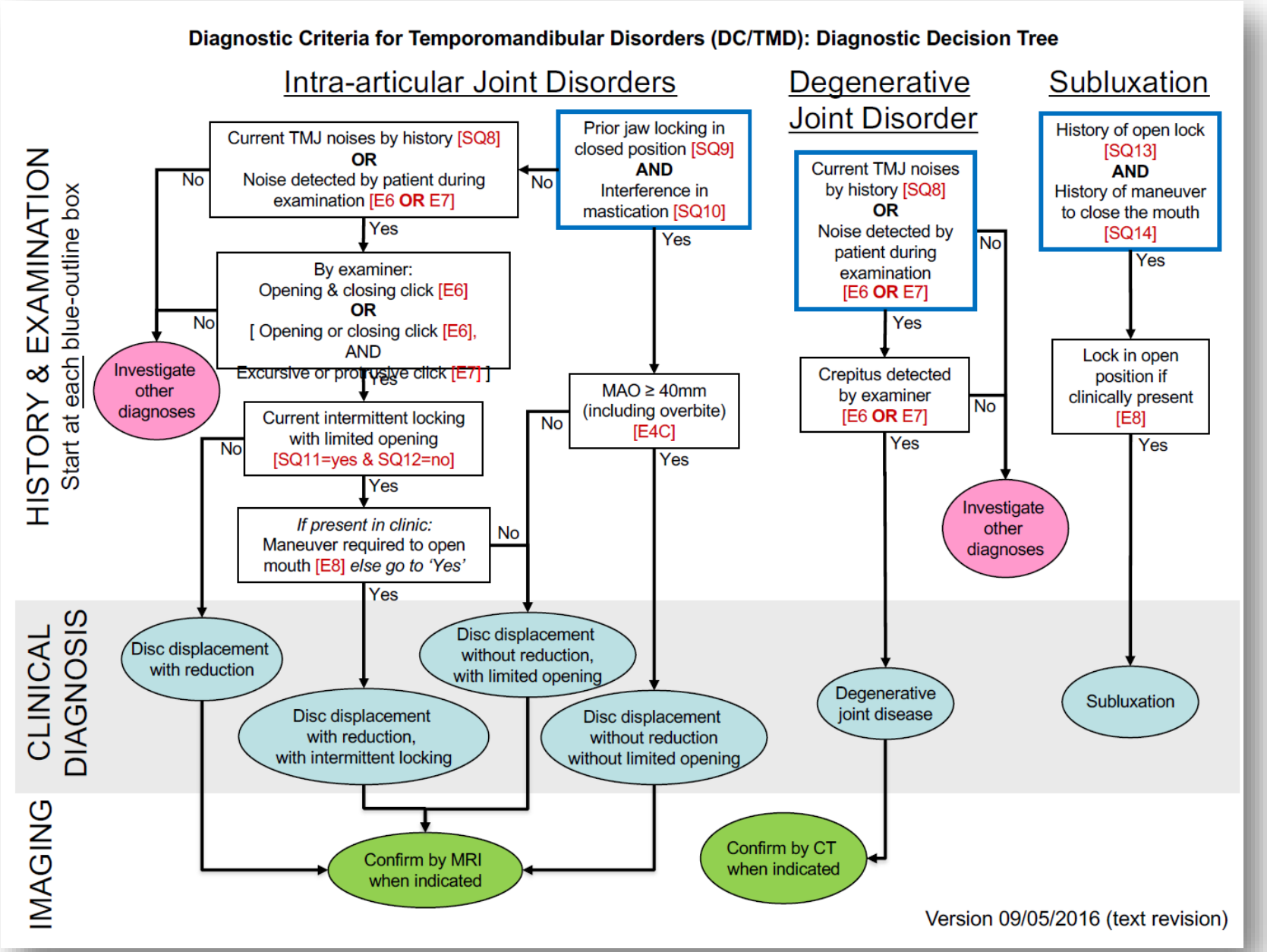




Diagnostic Algorithm “Clinical Decision Support System (CDSS)”

JOINT(s)



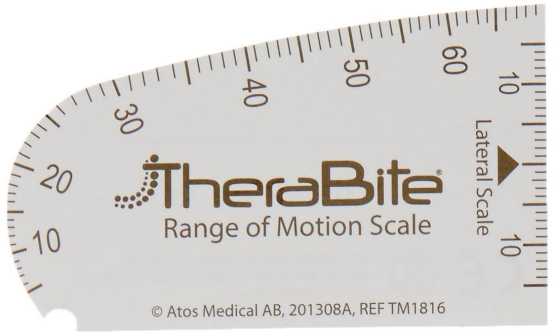


Self Care (first line) for “simple” TMD

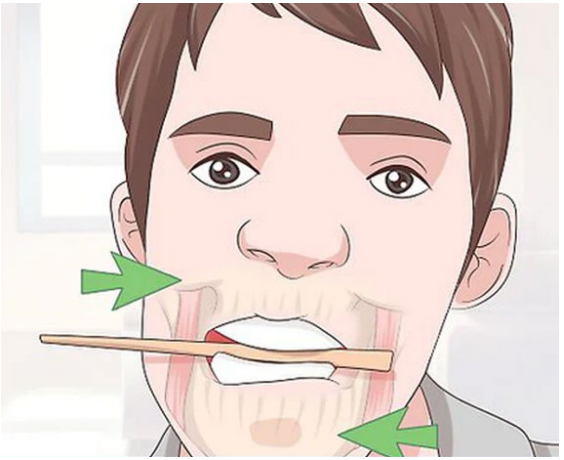
- Focus is on self-control
- Diaries allow goals to be set, and patients become accountable to themselves, four random monitoring touch points a day.
- Careful discussion of patient’s role with education

1) Education (anatomy, causes and reassurance)
2) Exercises
3) Thermal cold (acute), hot (long-term)
4) Self-Massage
5) Diet & Nutrition
6) Habit Modification
7) Sleep habits

Self-Care



- See pdf in todays course packet. Narrative for patients along with daily diary, stretching exercises, etc.
- Steps
- Monitor and Correct Jaw Postures (teeth apart, tongue resting behind lower anterior teeth, facial muscles smooth, still and relaxed, lips slightly apart). Check through out the day.
- Monitor habits (avoid opening wide, do not intentionally make jaw sounds, avoid clenching/grinding, don't bite/suck on nails, etc.)
- Jaw Stretching Exercises



(SAMPLE)

Monitoring Symptom Patterns

Use a scale from 0–10 (0 = "no symptom"; 10 = "symptom as bad as can be").

Symptom #1: pain
Symptom #2: headache
Symptom #3: jaw stiffness

Time to Monitor

		Waking (#1)	Time #2	Time #3	Bedtime (#4)	Activities, events or moods that may increase symptoms
MONDAY	Time:	6 a.m.	12:15 p.m.	6:15 p.m.	10:45 p.m.	
	1:	3	5	7	5	
	2:	0	0	0	0	
	3:	4	2	2	2	
TUESDAY	Time:	6:30 a.m.	11:45 a.m.	6:00 p.m.	11:00 p.m.	
	1:	6	5	6	5	more stress at work; jaws feel tight in morning; may be clenching at night
	2:	4	2	0	0	
	3:	6	4	2	2	
WEDNESDAY	Time:	6:00 a.m.	12:00 p.m.	6:00 p.m.	11:00 p.m.	
	1:	4	5	5	4	may be clenching while asleep
	2:	0	0	0	0	
	3:	5	3	2	2	
THURSDAY	Time:					
	1:					
	2:					
	3:					
FRIDAY	Time:					
	1:					
	2:					
	3:					
SATURDAY	Time:					
	1:					
	2:					
	3:					
SUNDAY	Time:					
	1:					
	2:					
	3:					

What I have learned about these symptoms (e.g., patterns, aggravating factors, factors that decrease symptoms): _____

PERSONAL TMD HEALTH CARE PLAN

Name: Jane Doe

Date: From September 12 To September 19

Activity	Frequency	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
CHECK and correct jaw posture and habits	4 times minimum	4		4	5	4	2	
Jaw STRETCHING	3 times-before meals	3	3	3	3	3	3	
Abdominal BREATHING	4 times minimum	3	4	5	5	4	5	
Monitoring Symptom Patterns	4 times	4	4	2	5	3	5	
Opening	(1/week)							

Reading: — **Feedback Form completed (✓)**

1) Understanding Temporomandibular Disorders (TMD)

2) Pain and Basic Stress Management (pp. 42-48)

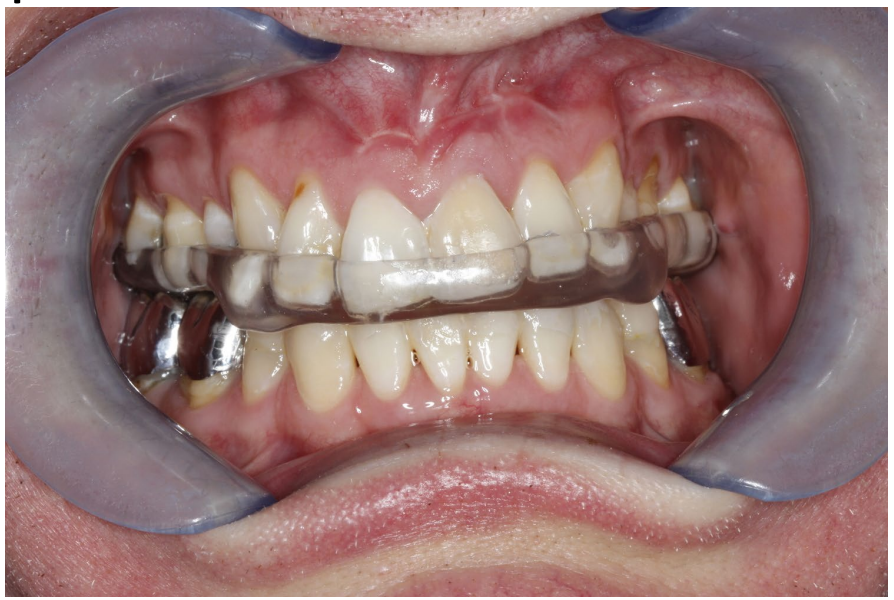
3)

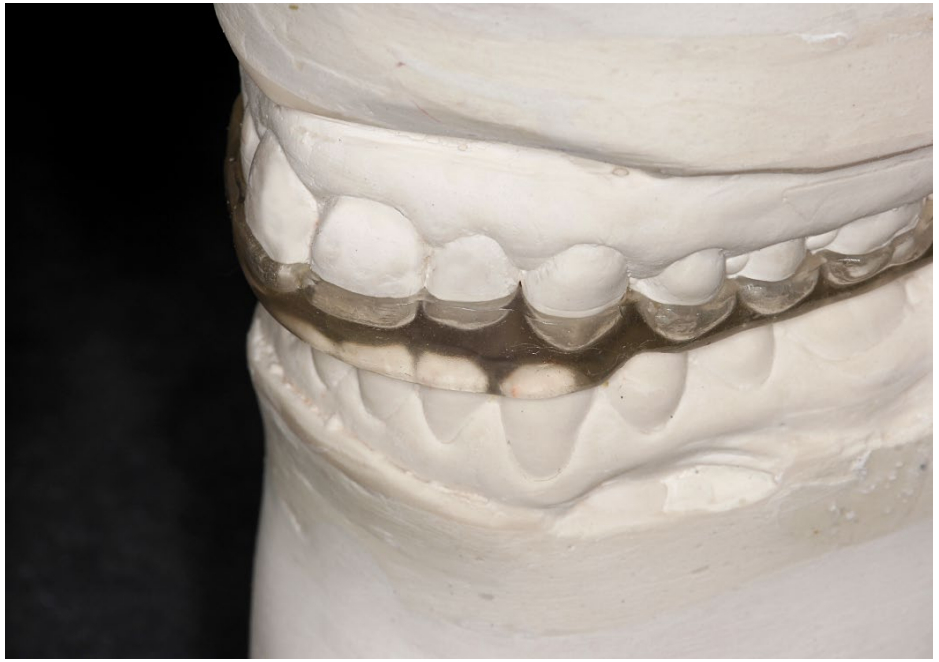
4)

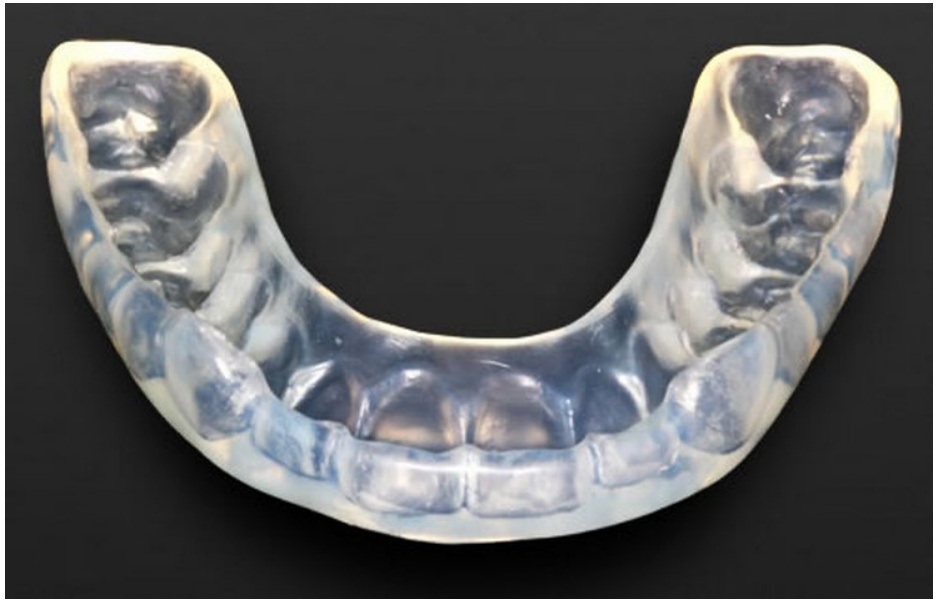
Obstacles	Solutions
1) forgot to check jaw posture on Tuesday when not at work	1) reminder in bathroom at home
2)	2)
3)	3)
4)	4)

Splints?

- A printed, milled or processed maxillary overlay at about 2mm increased VDO.
- Classically has canine risers to open the posterior teeth







Summary

- Types of orofacial pain
- Types of TMDs (TMJDs)
- Diagnostic steps
- Calibrated Exam and Diagnostic Algorithm

University of Iowa
site for course materials