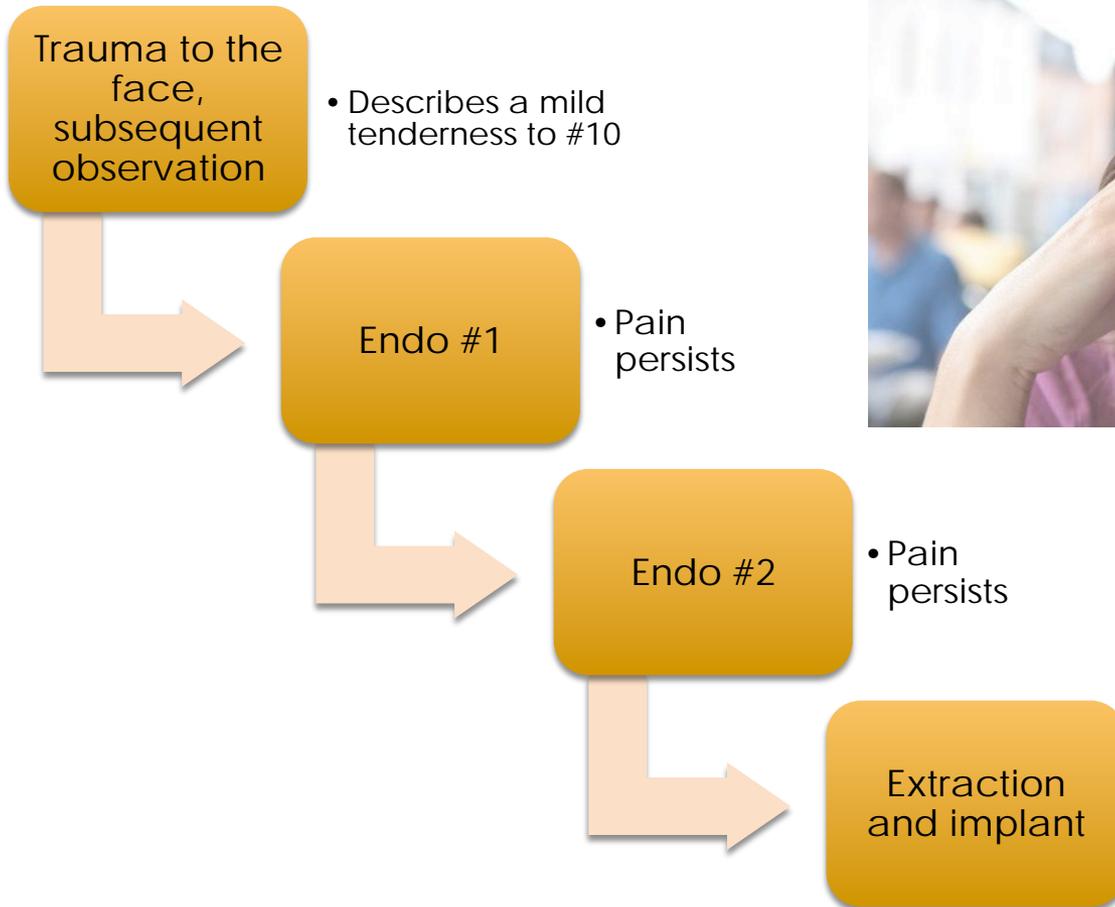




Myogenous Disorders

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35 yo female presents with persistent pain on #10



Case: Pain History



Onset	18 years ago
Location	#10
Quality	Severe pressure
Frequency	Began episodically, now daily
Attack duration	Constant
Severity	9/10
Ameliorating factors	Ibuprofen
Exacerbating factors	Bruxism
Associated symptoms	L TMJ clicking, day- and night-time parafunctional habits Wakes with her jaw clenched

Myogenous Disorders

A. Localized myalgia
B. Myofascial pain
C. Myofascial pain with referral
D. Tendonitis
E. Myositis
F. Spasm

G. Contracture
H. Hypertrophy
I. Neoplasm
J. Movement disorders
K. Masticatory muscle pain attributed to systemic/central pain disorders

Diagnostic criteria: Myalgia

- 1) History: positive for both of the following
 - Pain in the jaw, temple, in the ear or in front of the ear AND
 - Pain modified with jaw movement, function, or parafunction

- 2) Exam: positive for both of the following
 - Confirmation of pain location in the temporalis or masseter AND
 - Report of familiar pain in the temporalis or masseter with at least one of the following provocation tests:
 - Palpation of the temporalis or masseter OR
 - Maximum unassisted or assisted opening movement(s)

Validity: sensitivity 0.90 and specificity: 0.99

Myofascial pain

- ▶ Regional pain disorder characterized by localized muscle tenderness and limited range of

connective tissue

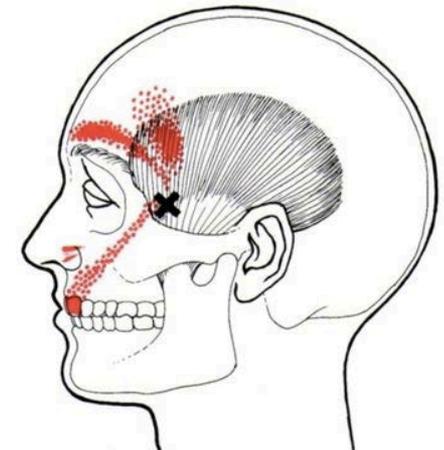
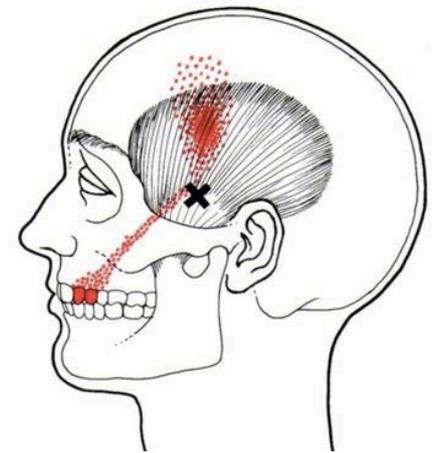
kinda mysterious

Myofascial Pain Syndrome

muscle

ouch

- ▶ masticatory muscle involvement can be a source of tooth pain
- ▶ Described as dull, achy, tiring, deep, pressure-like



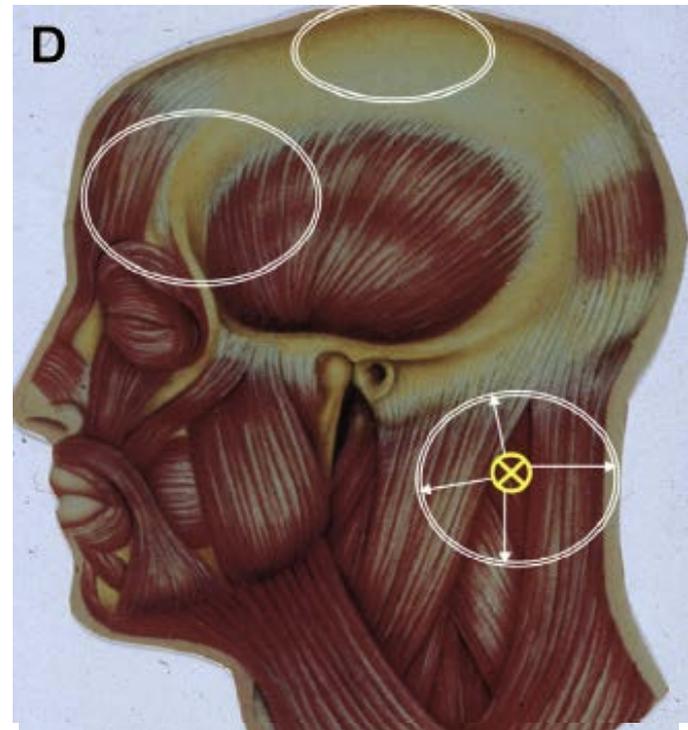
Diagnostic criteria: myofascial pain with referral

- 1) History: positive for both of the following
 - Pain in the jaw, temple, in the ear or in front of the ear AND
 - Pain modified with jaw movement, function, or parafunction
- 2) Exam: positive for both of the following
 - Confirmation of pain location in the temporalis or masseter AND
 - Report of familiar pain in the temporalis or masseter AND
 - Report of pain at a site beyond the boundary of the muscle being palpated

Validity: sensitivity 0.86 and specificity: 0.98

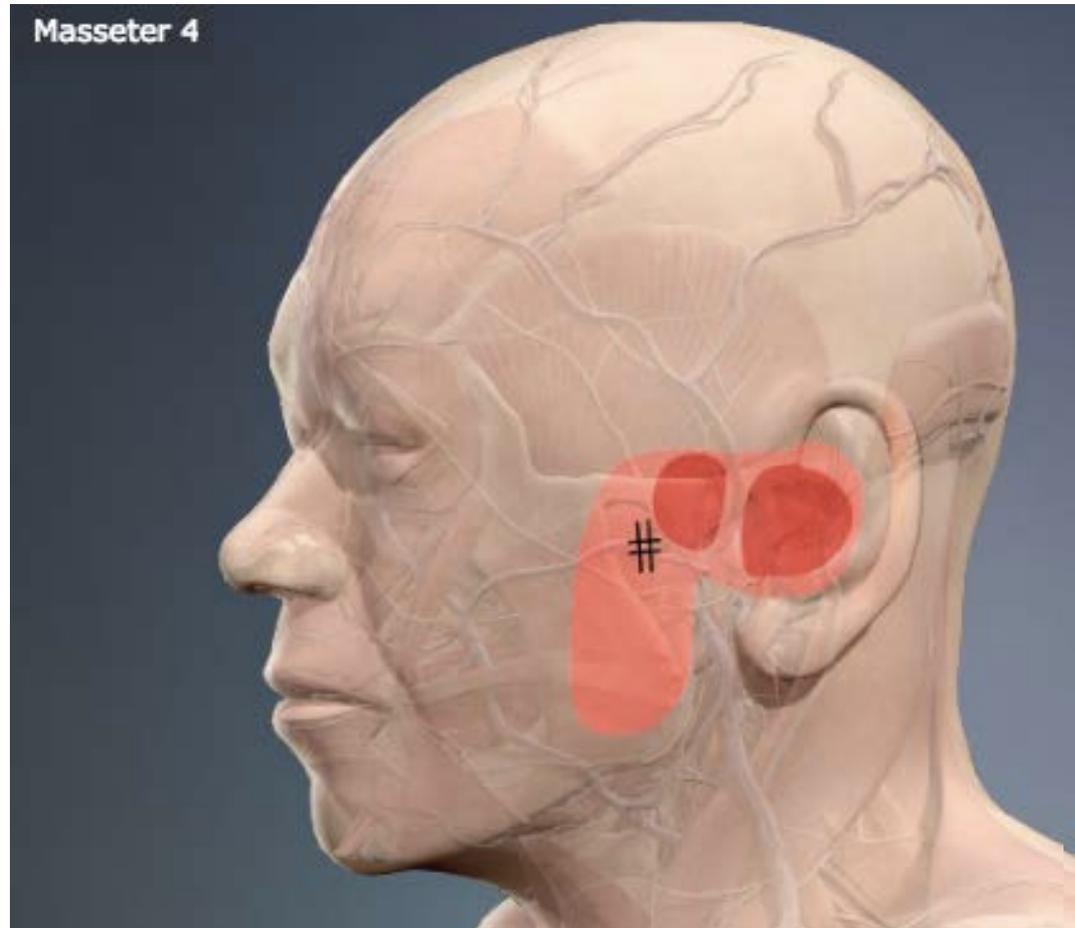
Muscle Referral Patterns

- ▶ Anterior temporalis
- ▶ Masseter
- ▶ Cervical musculature

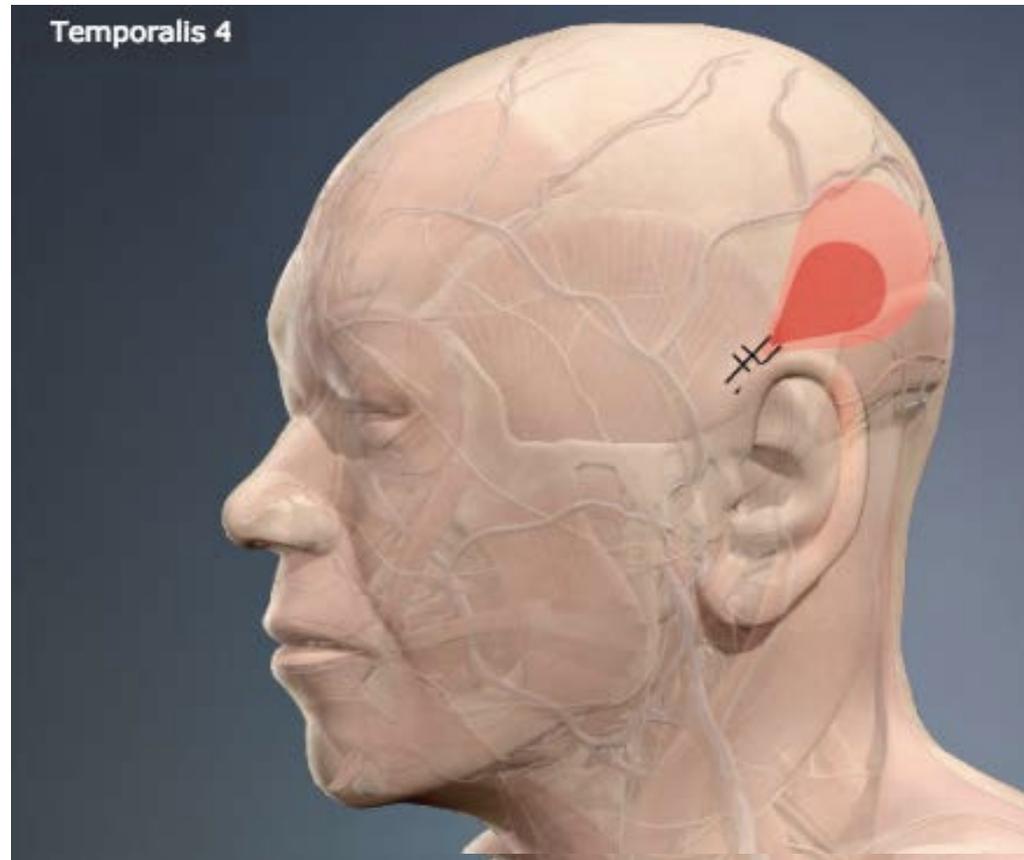


Simons DG, Travell JG, Simons LS. Travell & Simons' myofascial pain and dysfunction: the trigger point manual:upper half of body (Vol. 1). Philadelphia: Lippincott Williams & Wilkins, 1999.

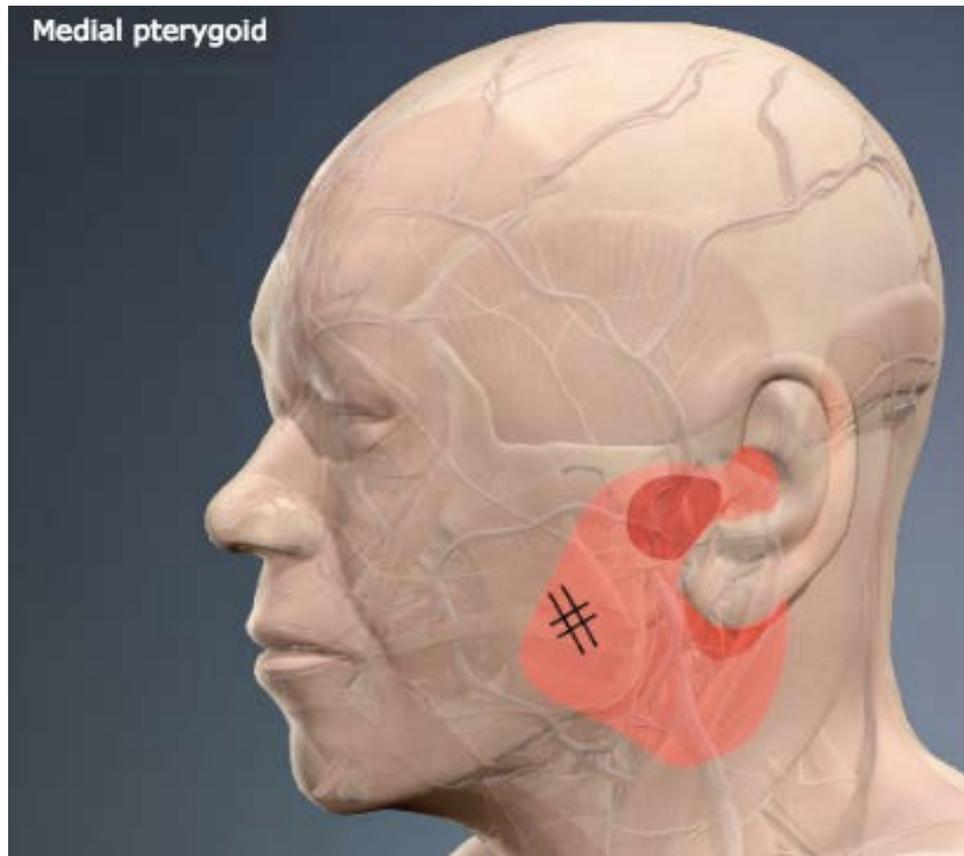
Muscle referral patterns: Masseter



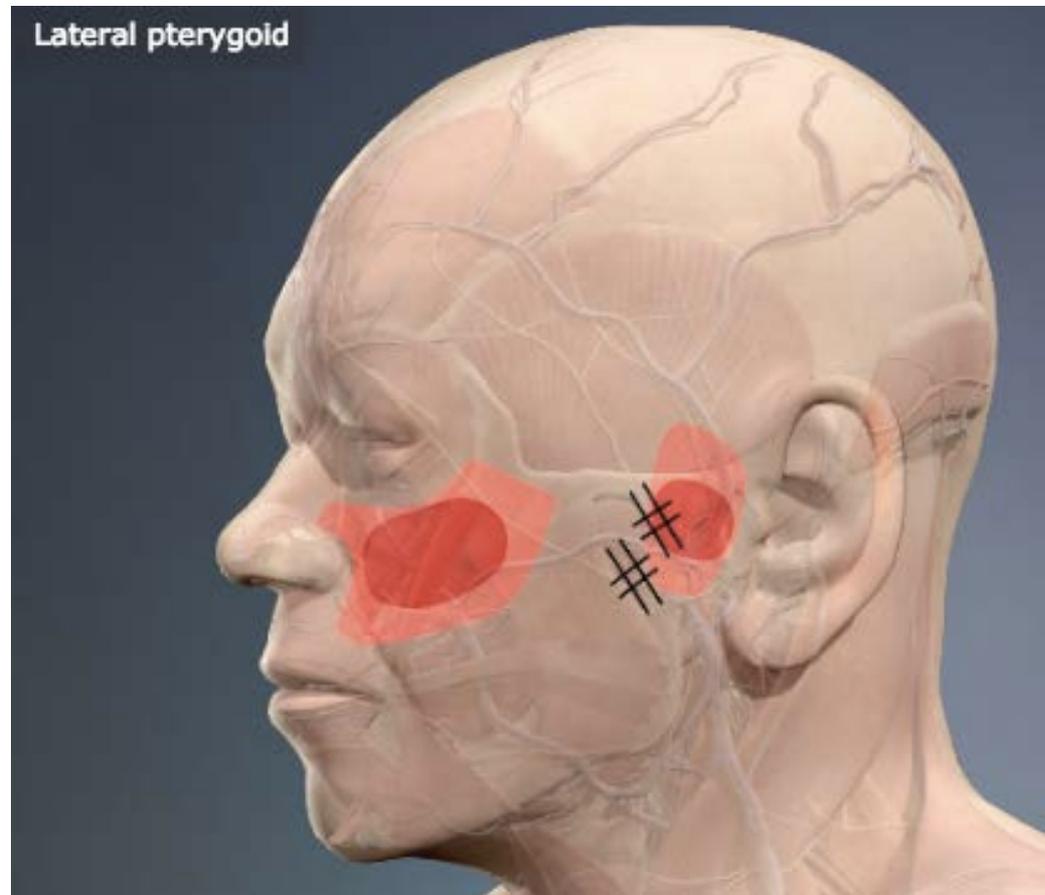
Muscle referral patterns: Temporalis



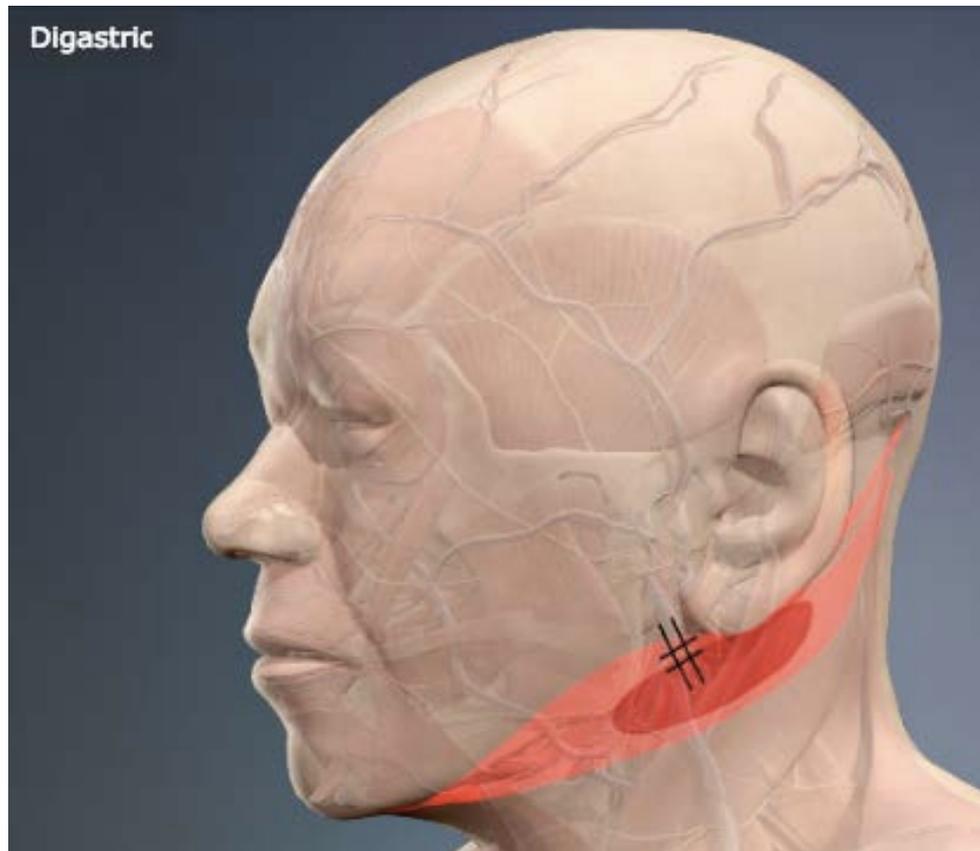
Muscle referral patterns: medial pterygoid



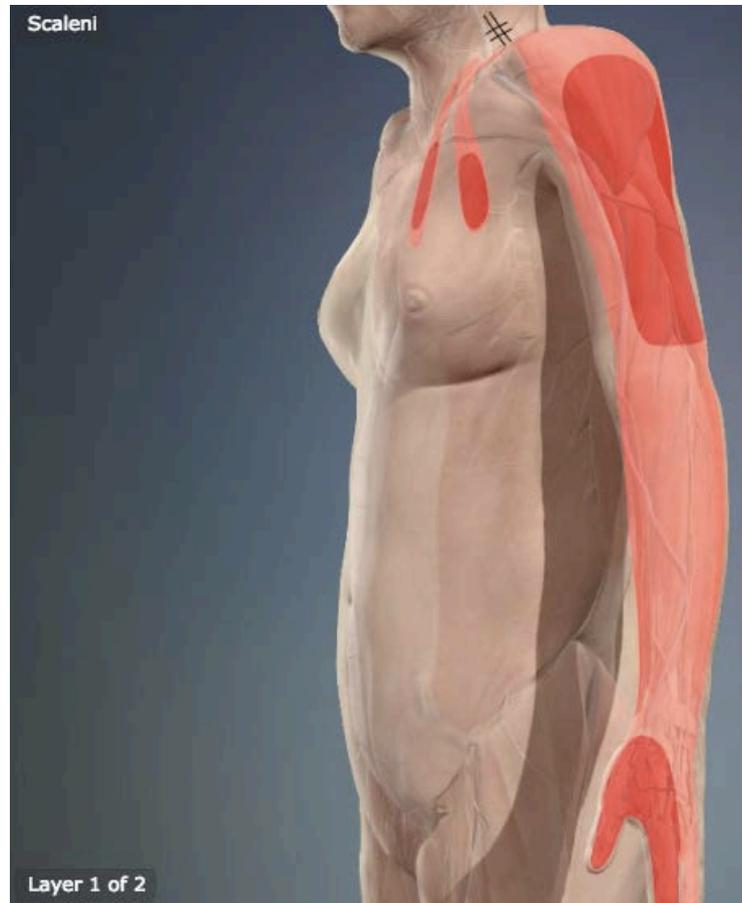
Muscle referral patterns: lateral pterygoid



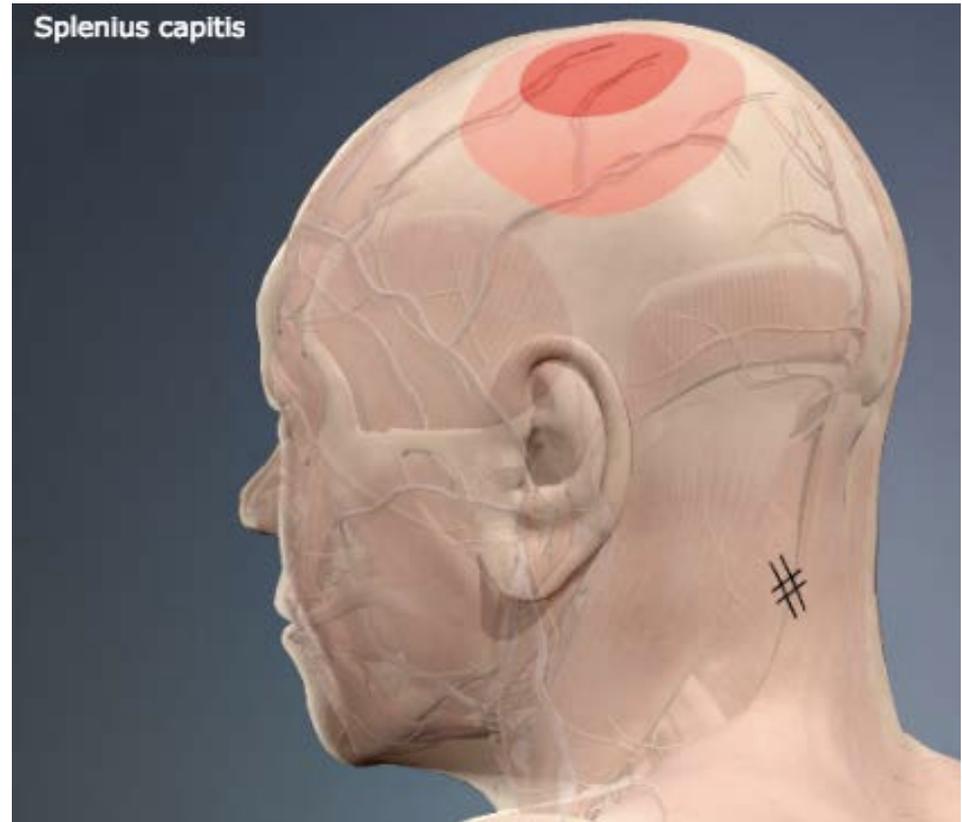
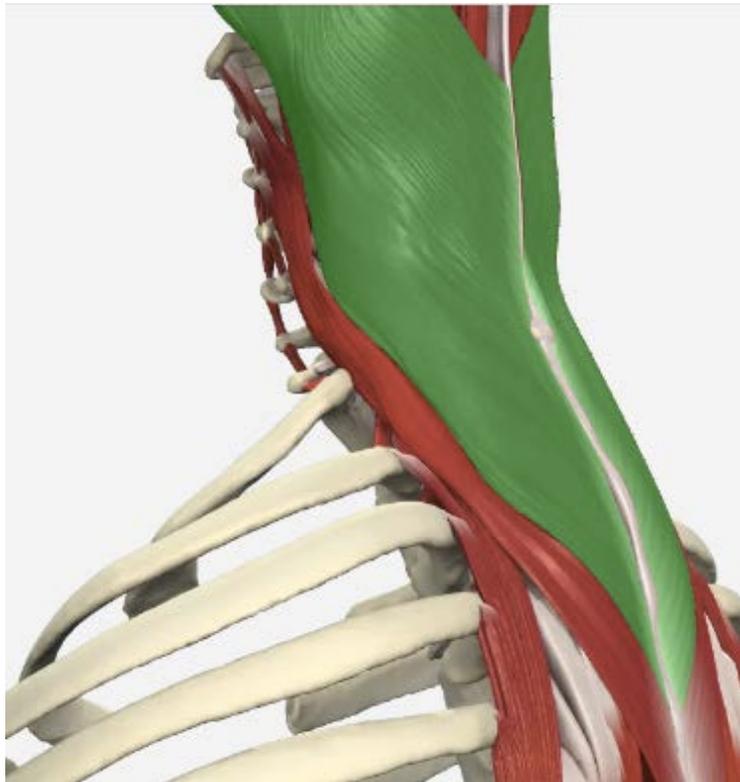
Muscle referral patterns: digastric



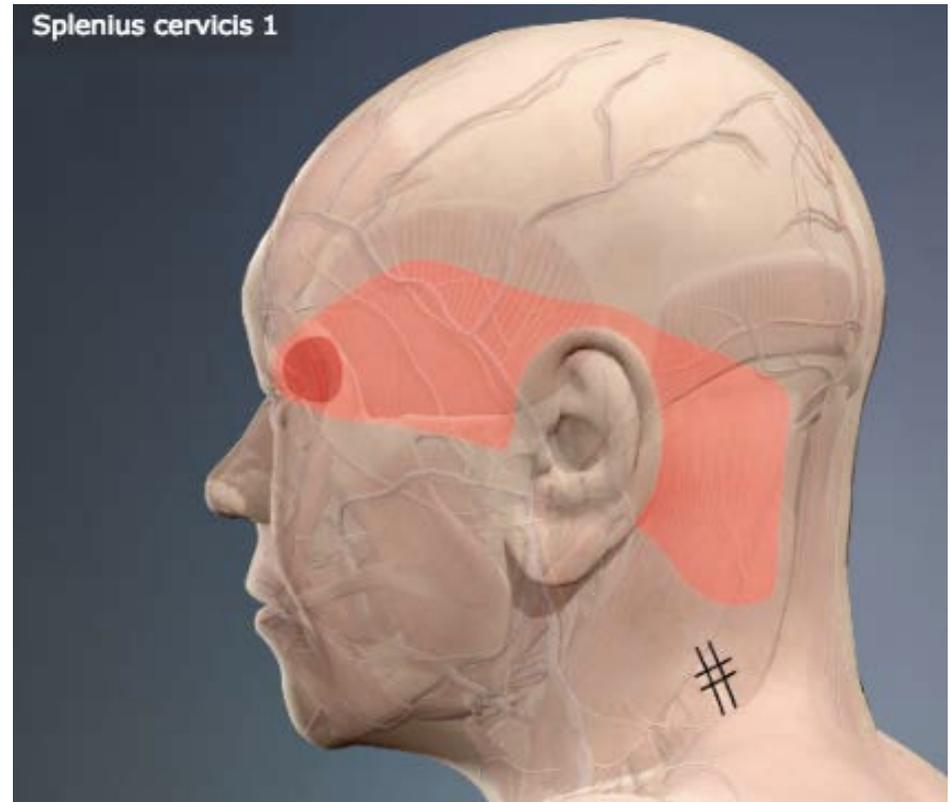
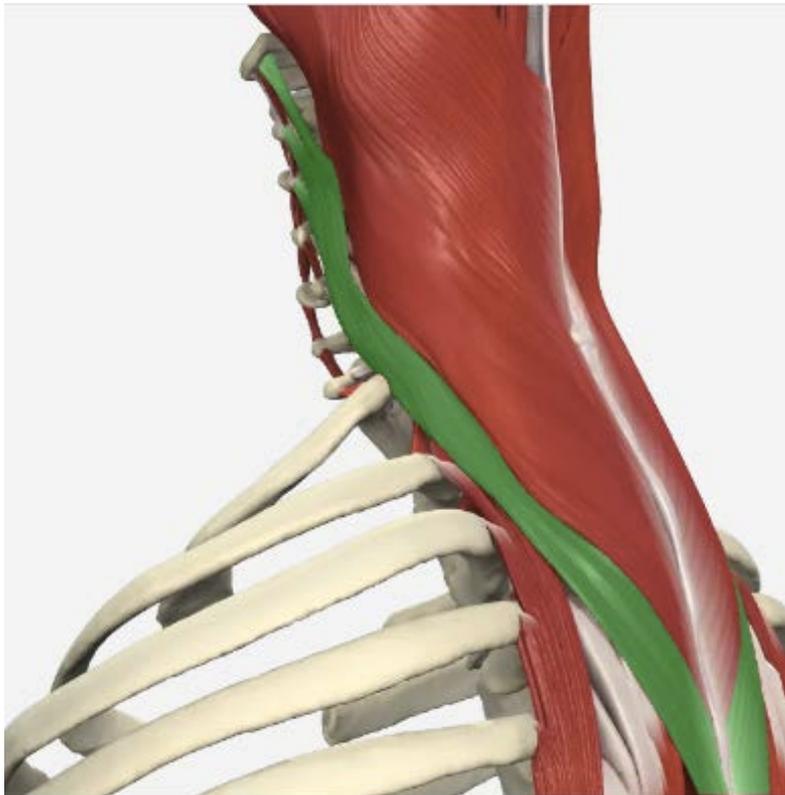
Muscle referral patterns: scalene



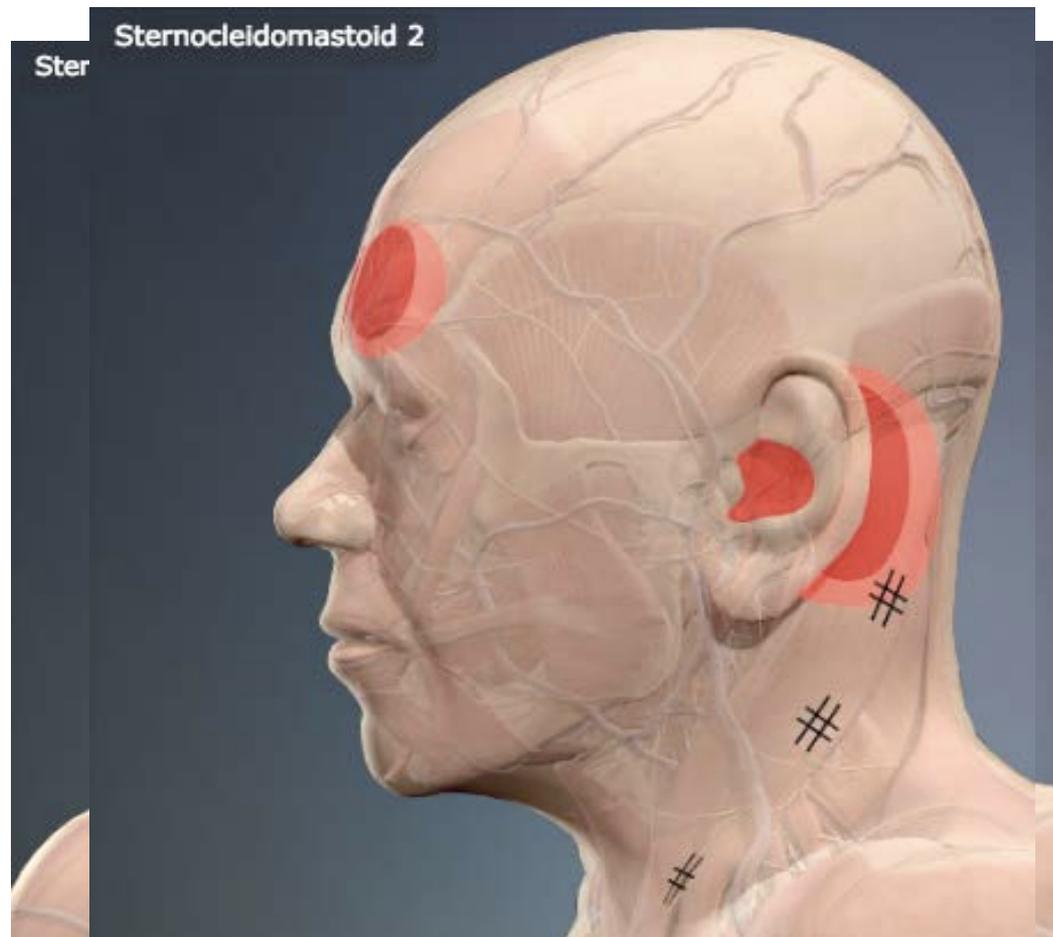
Muscle referral patterns: splenius capitis



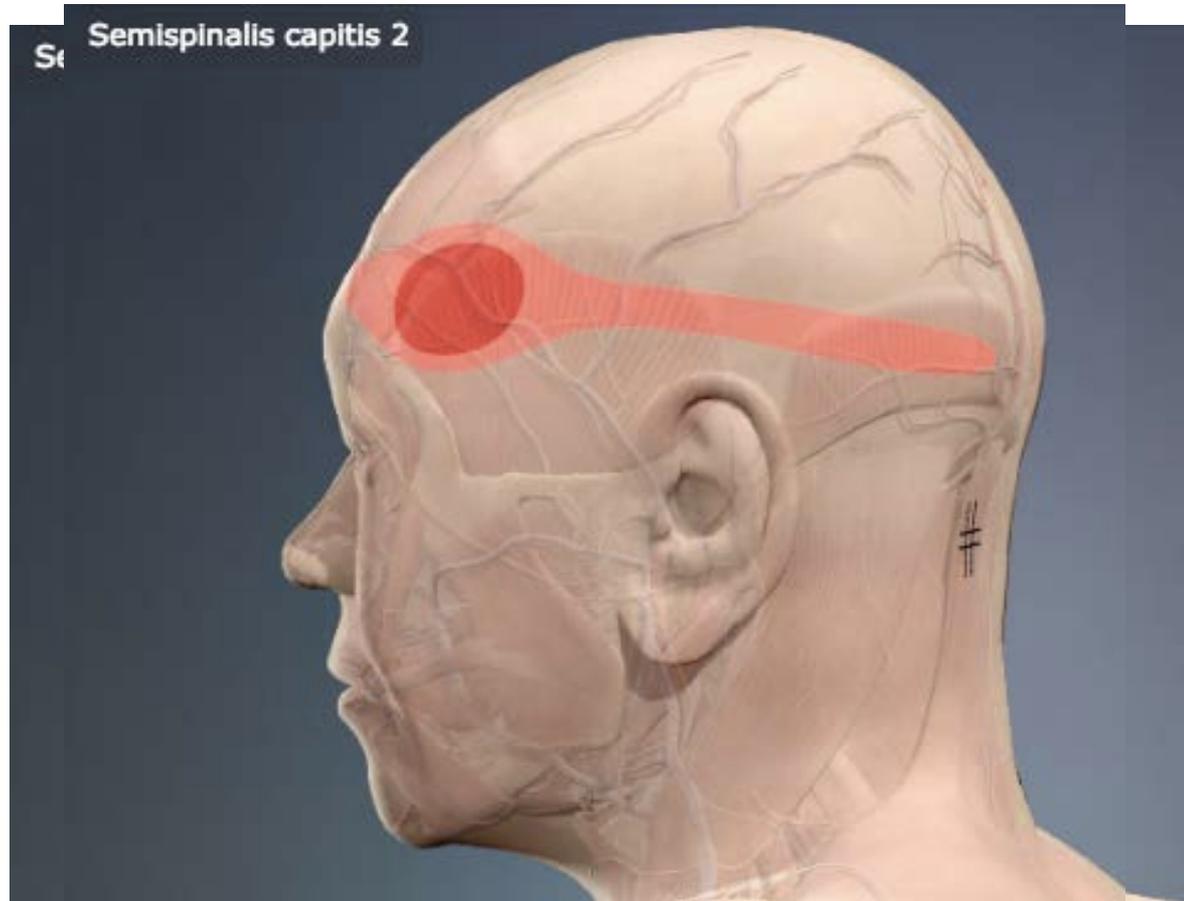
Muscle referral patterns: splenius cervicis



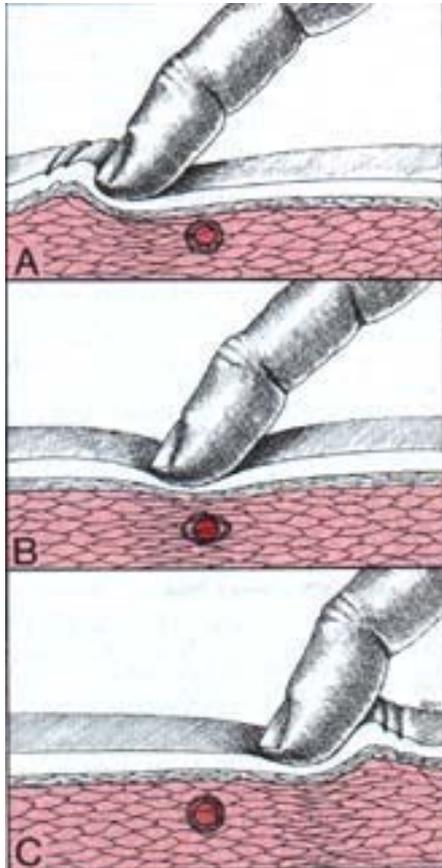
Muscle referral patterns: sternocleidomastoid



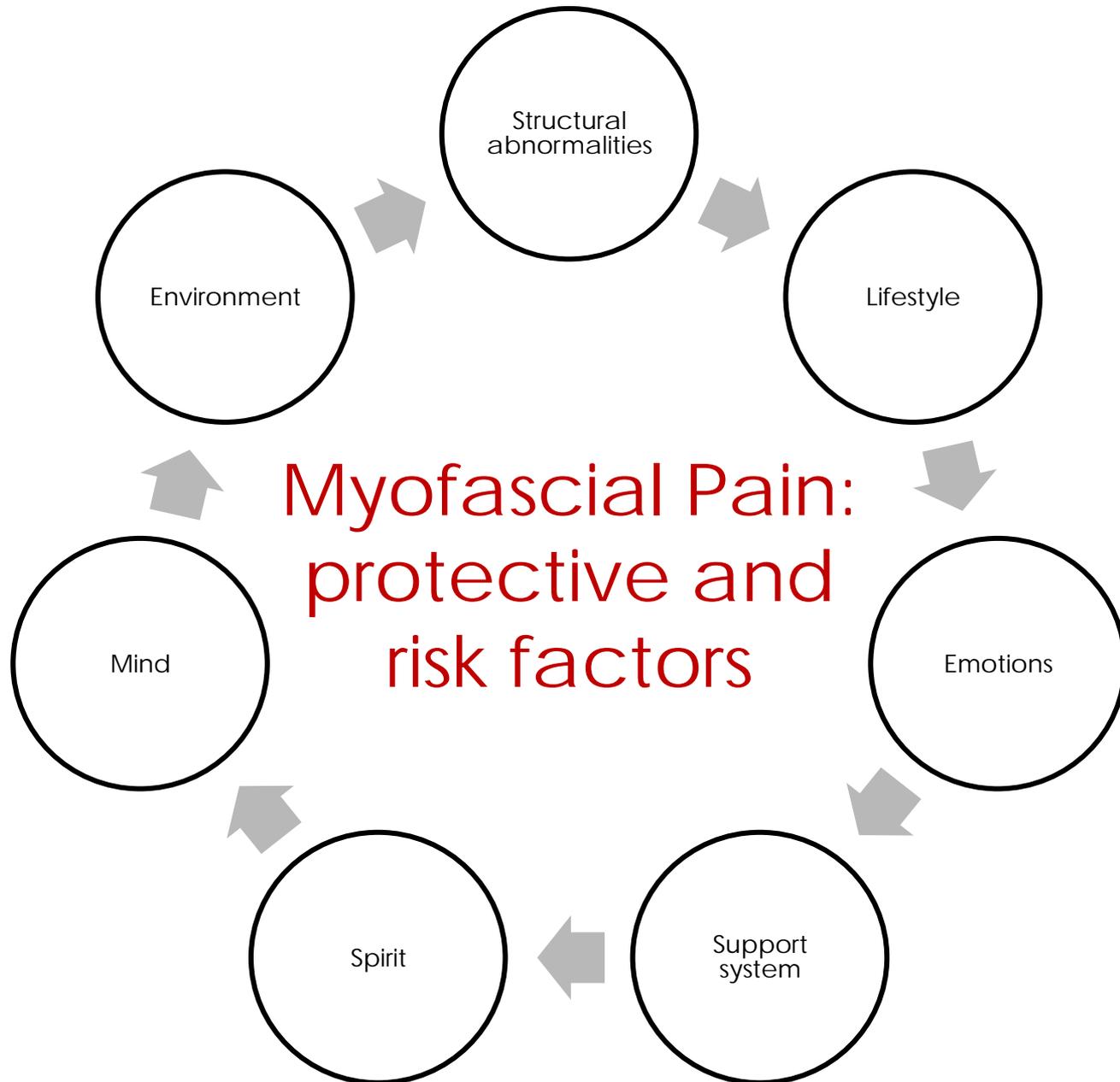
Muscle referral patterns: semispinalis capitis

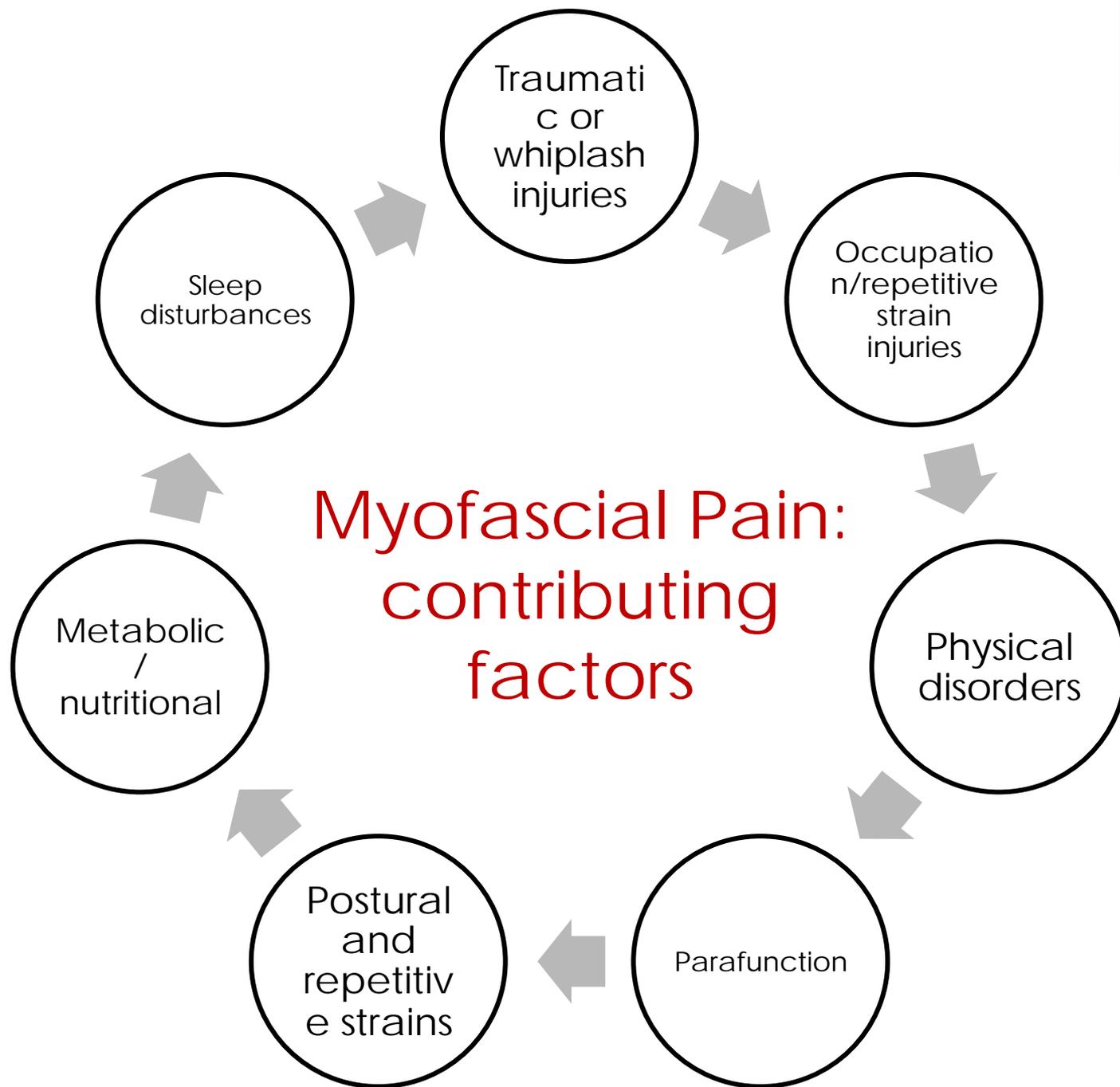


Myofascial Pain: Clinical Features



- ▶ Spontaneous dull, aching pain and localized tenderness
- ▶ Muscle stiffness
- ▶ Sustained muscle function causes fatigue easily
- ▶ Upon palpation: hyperirritable spot within a taut band that exhibits referral
- ▶ Trigger point (TP): motor endplate with spontaneous firing
- ▶ Decreased ROM
- ▶ Weakness w/o atrophy or neurological deficit





Case: Exam Findings



	R	L
Lateral Condyle (TMJ)	3	3
Dorsal Condyle	2	3
Superficial Masseter	3	3 (referred down the jaw)
Anterior temporalis	3	3 (referred down the head, into her anterior teeth; replicated her CC)
SCM	3	3
Upper trap	3	3
Shoulder trap	3	3

Case: Exam Findings



The image part with relationship ID r163 was not found in the file.

Range of motion	
Pain-free	27 mm
Passive	40 mm, pain on left superficial masseter, soft-end feel
Protrusive	8 mm
R Lateral	11 mm
L Lateral	12 mm

Myogenous pain: causation

Stress-induced
hypoperfusion

Direct muscle
trauma

Adverse effect
of medication

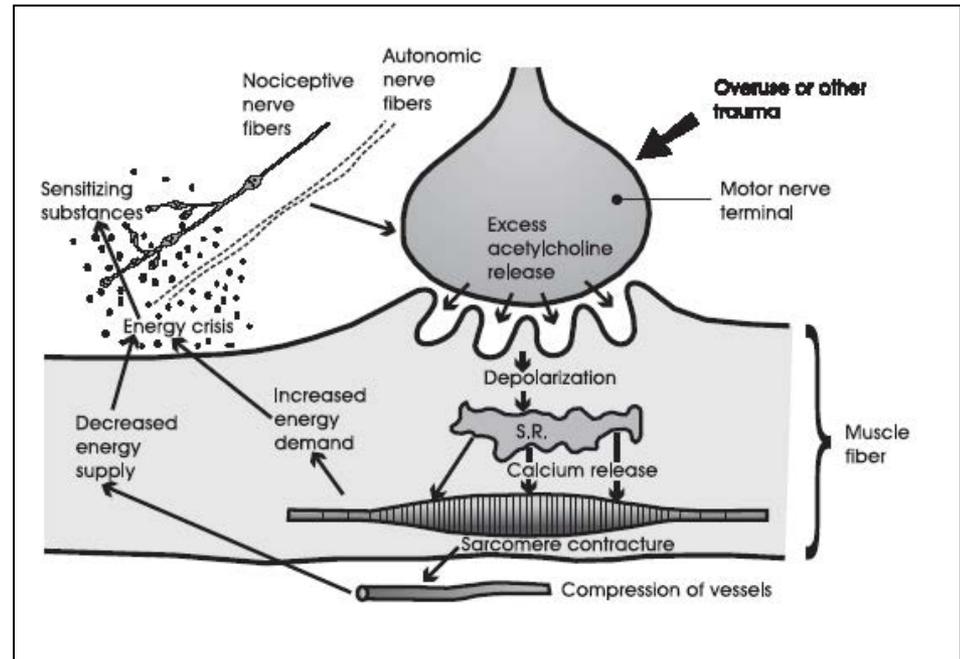
2^o pathology
induced
trismus

Parafunctions

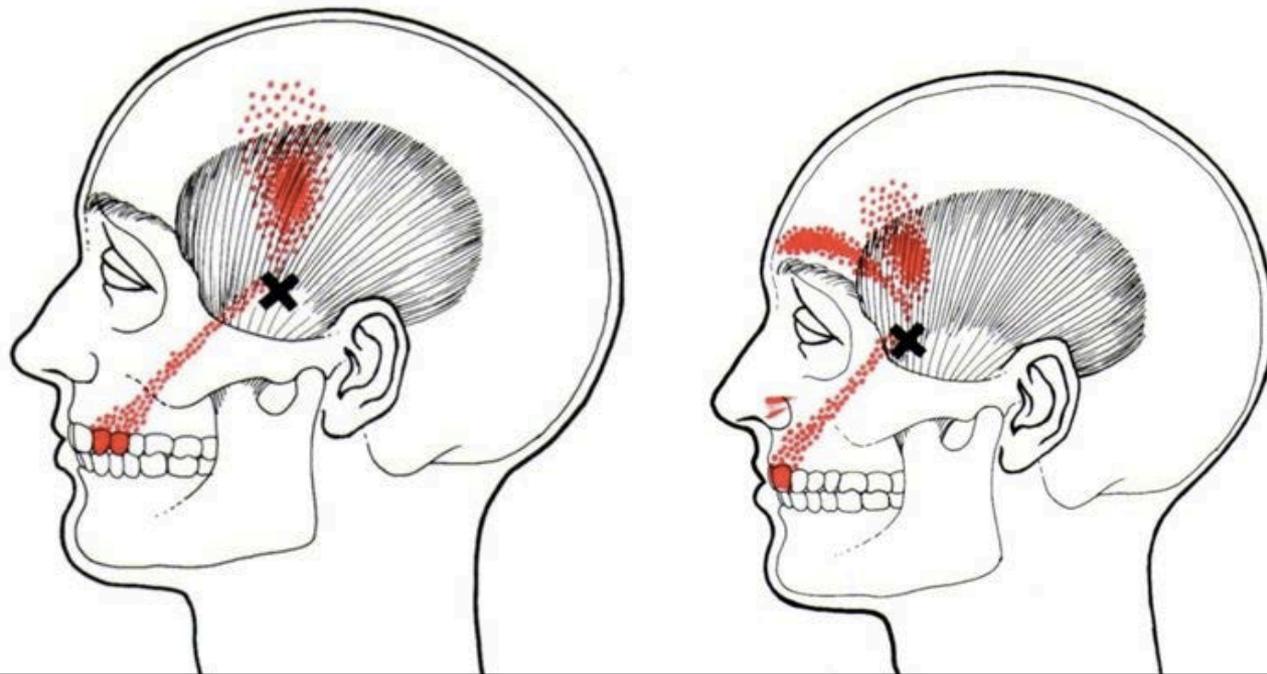
Peripheral and
central
sensitization

Pathophysiology

- ▶ Injury to Type I muscle fibers
- ▶ Metabolic distress at motor endplates
- ▶ Peripheral sensitization
 - ▶ Increase in muscle nociception
 - ▶ Muscle co-contraction
- ▶ Central sensitization



Central sensitization



Radiation of Pain

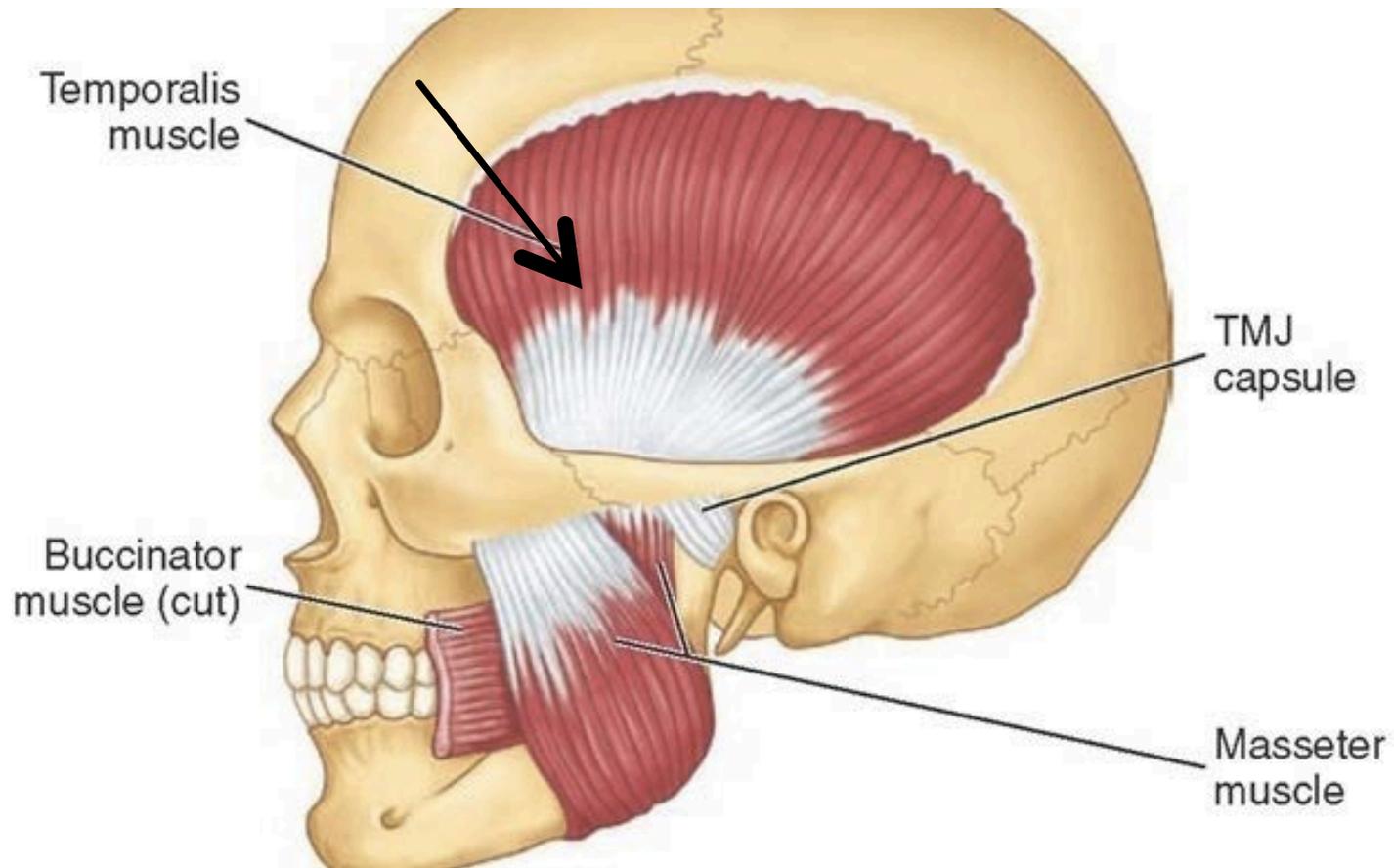
Myofascial pain: pain mechanisms



Diagnostic Tests: Spray and Stretch



Diagnostic Tests: Trigger Point Injection



18 yo female presents with jaw pain and headaches

Jaw pain

Jaw popping

Jaw locking

Headaches

Neck pain

Ear pain

Ear fullness

- Jaw Pain: started a few years ago, has worsened over time and is very severe
- Location bilateral TMJs and masseters
 - ▶ Headaches:
- Intensity is 5-10/10
- Location temples, sinus area, forehead, back of head, behind eyes
- Described as achy
- Occurs daily
- Described as throbbing
- Lasts until pain meds (ibuprofen) are taken
 - Stress aggravates throbbing pain
- ▶ Sound, stress, pressure aggravate the headache
- chewing, laughing, yawning, talking, smiling, teeth brushing aggravates pain
- pain pills, heat sometimes help- but often nothing relieves pain

Exam

Palpations	
Rectus capitus R	2
Rectus capitus L	2
Upper trap R	3
Upper trap L	3
Lateral capsule R	3
Lateral capsule L	3
Dorsal capsule R	3
Dorsal capsule L	3
Superficial masseter R	3
Superficial masseter L	2
Temporalis Tendon R	3
Temporalis Tendon L	3

Exam

- ▶ Comfort Opening: 25 + 4 mm
- ▶ Passive Opening: 30mm Pain

- ▶ RT Laterotrusive: Pain R TMJ 10mm
- ▶ LFT Laterotrusive: Pain L TMJ 11mm
- ▶ Midline: WNL 1mm
- ▶ Opening Path: left Deviation on opening

- ▶ TMJ Noise Dysfunction: left side late opening; left side mid closing

Diagnostic tests and treatment

- ▶ In-office spray and stretch: significant improvement
- ▶ Anterior repositioning splint: significant improvement
- ▶ 2 sessions of trigger point injections and nerve blocks
- ▶ 2 months later, all pain went from 9/10 to 2-3/10

Myositis

- ▶ Acute condition
- ▶ Inflammation of the muscle and connective tissue
- ▶ Associated with pain, edema, decreased range of motion



What do you think?

HPI:

RCT #31 3/29/17

Reports limited mouth opening,
swelling and pain

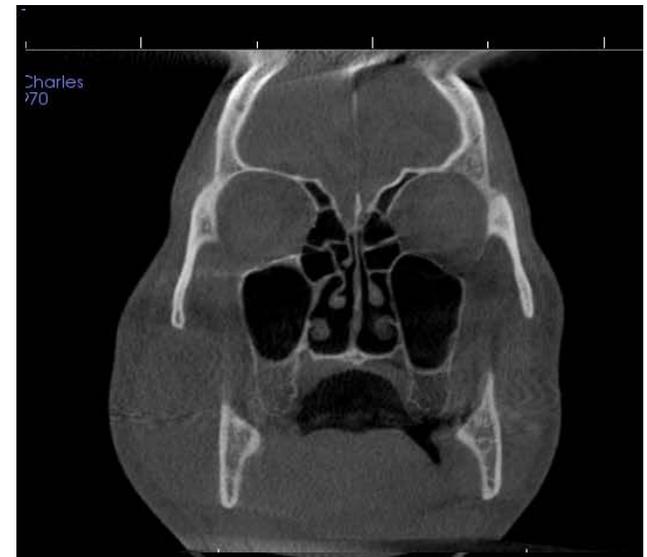
Rx: Muscle relaxant

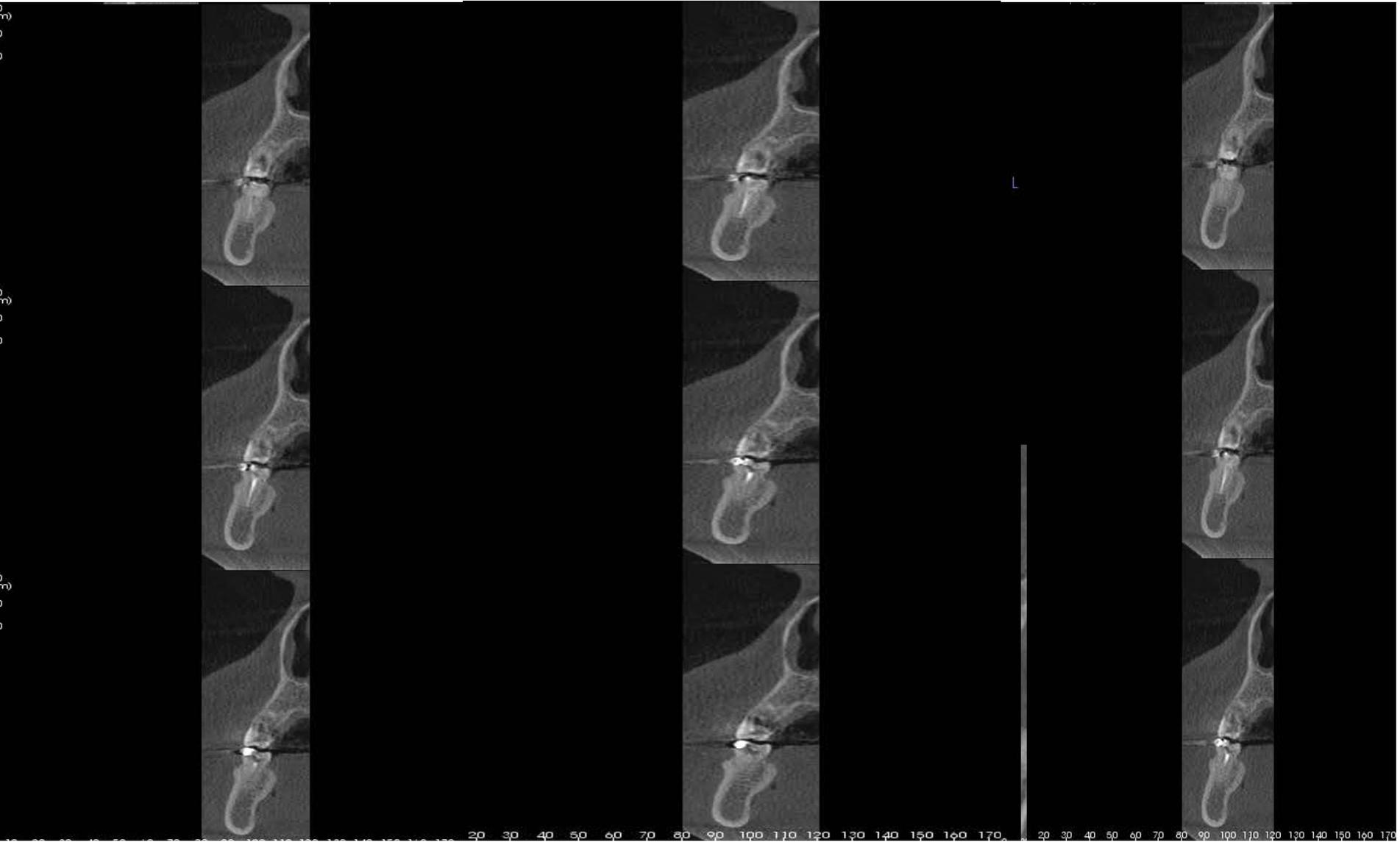
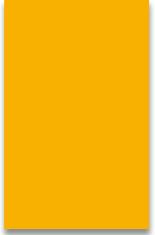
Then sent to ER and given IV
antibiotics for cellulitis

Since, the swelling has looked the
same

Referred for eval of TMJs

Mouth opening is progressively
becoming more limited with time





Trismus

- ▶ Any restriction in mouth opening (muscle-related)
- ▶ Can result from trauma, surgery, radiation
- ▶ Other terms: involuntary bracing, muscle splinting, protective guarding
- ▶ What is the most common cause of trismus in dentistry?



Differential diagnosis

- ▶ Infectious/inflammatory
- ▶ Medication-induced
- ▶ Neurologic
- ▶ Trauma
- ▶ Dental
- ▶ Congenital
- ▶ Radiation-induced
- ▶ Surgery

Pathophysiology

1

Limited jaw
mobility

2

Inflammation

3

Pain

4

Protective
reflex

5

Disuse/
atrophy

Muscle spasm

- ▶ Continuous, involuntary contraction of the muscle
- ▶ *Even at rest
- ▶ Painful if sustained
- ▶ Feels firm to palpation
- ▶ Causation: usually a normal protective reflex to the presence of regional pain (similar to trismus)

24 yo male presents with painful clicking in the left TMJ

- ▶ Clicking began 2 weeks ago
- ▶ Feels constant pain
- ▶ Cannot bring the back teeth together on the left side
- ▶ No structural abnormalities present?

Masticatory muscle contracture

- ▶ Abnormal reduction in the extensibility of the jaw muscles
- ▶ Clinical exam findings:
 - ▶ Limited opening
 - ▶ Unyielding passive opening stretch
 - ▶ Lateral movements are normal
- ▶ Causation:
 - ▶ Trauma-induced scar
 - ▶ Slowly developing shortening of muscles without hypertrophy or enlargement

Masticatory muscle hypertrophy

- ▶ Jaw muscle enlargement
 - ▶ Masseters
 - ▶ Temporalis
- ▶ Causation
 - ▶ Increased functional demand of the muscles
- ▶ Usually bilateral
- ▶ Rarely painful



Movement disorders

- ▶ Sleep Bruxism
 - ▶ 20% of max voluntary contraction of at least 2 seconds
 - ▶ Begins around ages 10-20
 - ▶ 85-90% of the population grind their teeth at some point in life
 - ▶ Most common in stage 2
 - ▶ Occurs during transition from deeper to lighter stages of sleep

Movement disorders

- ▶ Dyskinesia
 - ▶ Spontaneous
 - ▶ 3-4% of elderly
 - ▶ Milder symptoms: involves jaw and lips
 - ▶ Tardive
 - ▶ High-dose antipsychotic use
 - ▶ Involuntary, repetitive perioral, tongue, or jaw movements
 - ▶ Grimacing, tongue protrusion, lip smacking



Movement disorders

- ▶ Orofacial Dystonia
 - ▶ Intermittent, involuntary
 - ▶ Momentarily, sustained contraction of the jaw/ orofacial muscles
 - ▶ Movements disappear during sleep
 - ▶ Meige's Syndrome
- ▶ Orofacial Tremor
- ▶ Orofacial Tics

80 yo female presents with a chronic ulcer on the tongue

- ▶ Reports severe pain on the tongue for a year
- ▶ Examination reveals fractured #28
- ▶ Ulceration on the tongue approximates this fracture
- ▶ The tongue uncontrollably moves over this site



70 yo male presents with inability to close his mouth

- ▶ Chief complaint is that he cannot close his mouth on his own
- ▶ Began a few months ago, spontaneously
- ▶ Denies weakness in any muscles, pain or joint noises

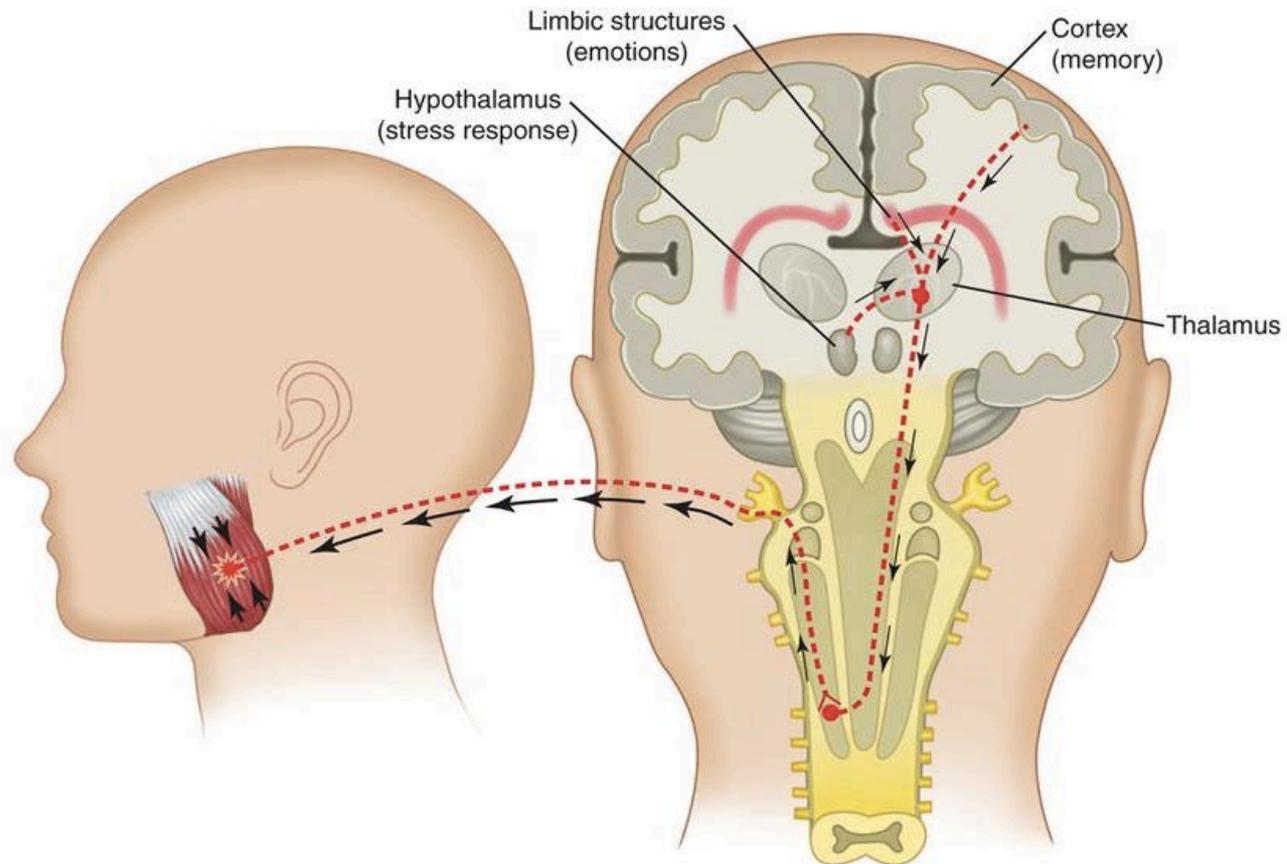
Centrally mediated myalgia

- ▶ Chronic, continuous muscle disorder
- ▶ 1. History of prolonged and continuous muscle pain
- ▶ 2. Regional dull, aching pain at rest
- ▶ 3. Pain is aggravated by function of the affected muscle
- ▶ 4. Pain is aggravated by palpation

Associated factors:

- ▶ Trigger points and pain referral on palpation
- ▶ Report of muscle stiffness, weakness, and/or fatigue
- ▶ Report of acute malocclusion not verified clinically
- ▶ Ear symptoms, tinnitus, vertigo, toothache, tension-type headache
- ▶ Limited range of motion
- ▶ Hyperalgesia

Pain mechanisms



Otologic symptoms and TMD

- ▶ Tinnitus
- ▶ Dizziness
- ▶ Vertigo
- ▶ Ear ache
- ▶ Fullness



- ▶ Prevalence of otologic symptoms in TMD is up to 85%
- ▶ TMD treatment modalities may help symptoms

Questions?

