TREATMENT OF A YOUNG PATIENT WITH SYMPTOMS OF MYOFASCIAL PAIN

EVIDENCE BASED DENTISTRY ROUNDS
SPECIALTY – TMD

GROUP 10
TEAM B-1
DATE 10/21/20

ROUNDS TEAM

Group Leader: Dr. Yray

Specialty Leader: Dr. Thompson

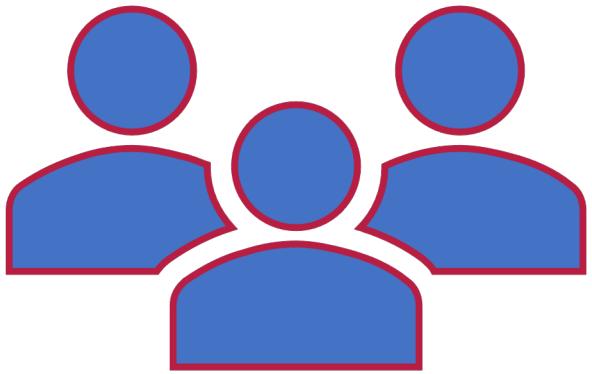
Project Team Leader: TJ LeMoine

Project Team Members:

D3 - Kabitzke, Emily

D2 - Nelson, Madison

D1 - Kick, Isabelle



PATIENT

- **Age:** 21 y.o.
- **Gender:** Female
- **Ethnicity:** Caucasian
- **Chief Complaint:** "I'm having a lot of Jaw pain"

- Patient-identified causes:
  - **Stress -** applying to medical school
  - **Grinding/clenching -** worse in the AM

MEDICAL HISTORY

- 21 y.o. healthy female
- Medications:
  - Tilia Fe (Birth-control) → a combination of estrogen and progestin
- No known allergies

DENTAL HISTORY

- **Orthodontic history:** 2 separate times, 4/5 years apart
  - Braces in middle school
  - Appliance to correct class III tendency
    - Against the recommendation of her orthodontist: **denied orthognathic surgery**
    - "We had multiple opinions, and most doctors wanted to break my jaw to fix it, but my parents didn't want anything to do with that."
  - Braces again in late high school

DENTAL HISTORY AT MUSOD

- **Presents to ACC 11/4/19**
  - Pain level: 8/10
  - 3+ years without seeing a dentist before this time
  - Maximum opening: 20mm
  - Prescribed cyclobenzaprine (muscle relaxant)
  - Advised to become a patient of record and stop using soft splint
- **ACC – 11/18/19**
  - Pain level: 4/10
  - advised MU PT appointment

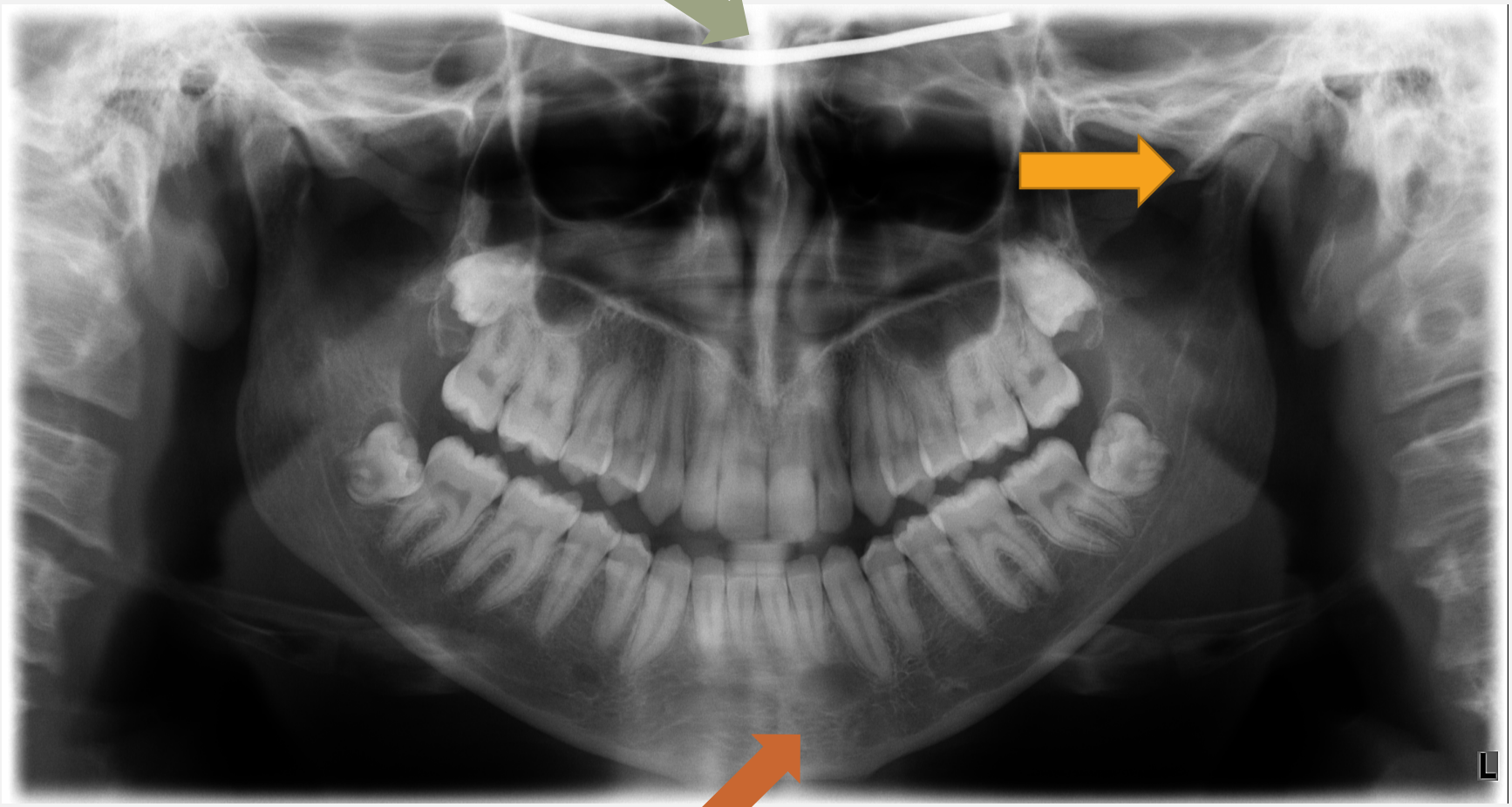
PANORAMIC RADIOGRAPH

- Positioning
- Distortion

Happy Halloween!

https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.pinterest.com%2Fpin%2F459226493227951143%2F&psig=AOvVaw12KDt0fJVDt5IxV0xiQuIw&ust=1603317831955000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCLDH_ZSYxOwCFQAAAAAdAAAAABAE

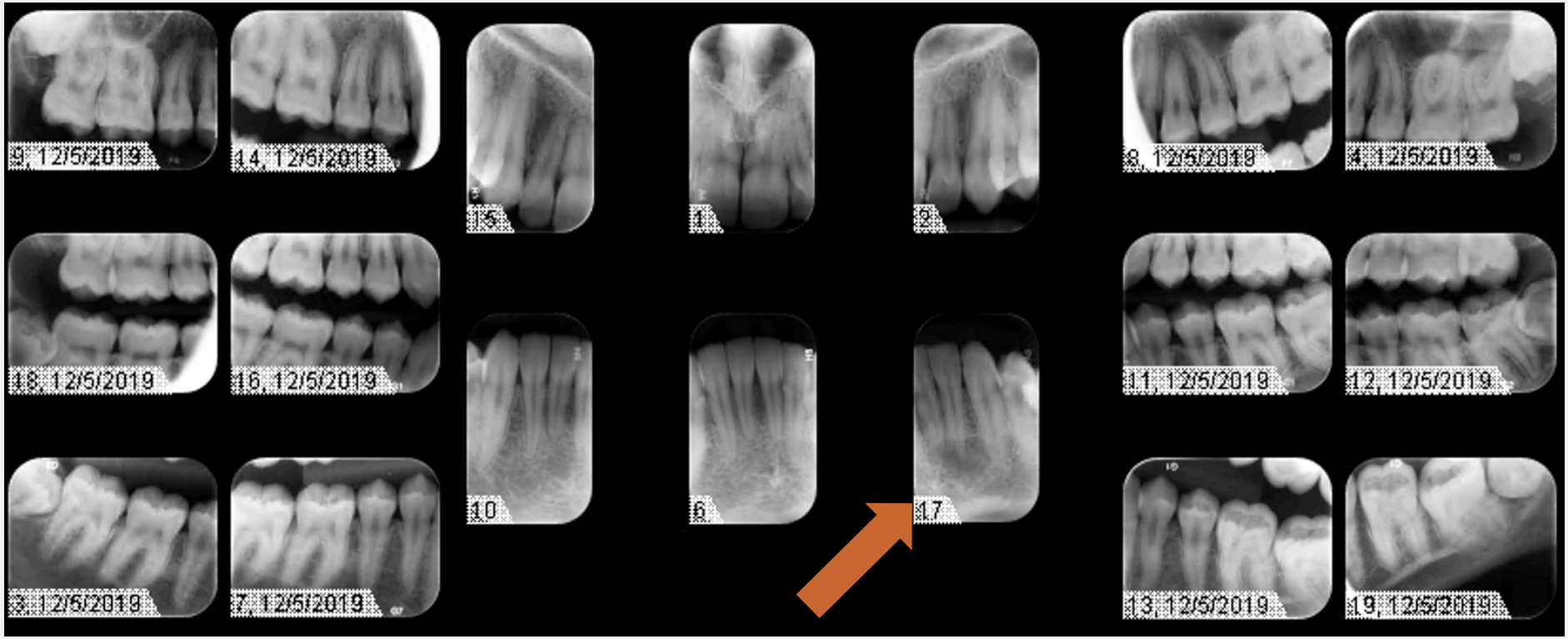
RADIOGRAPHS
PAN: 11/4/19



- Condylar Flattening
- Radiolucency
- Wisdom Teeth

- White bar?

FMX: 12/5/19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12, 12/5/2019
3, 12/5/2019
7, 12/5/2019
13, 12/5/2019
19, 12/5/2019

RADIOGRAPHIC FINDINGS

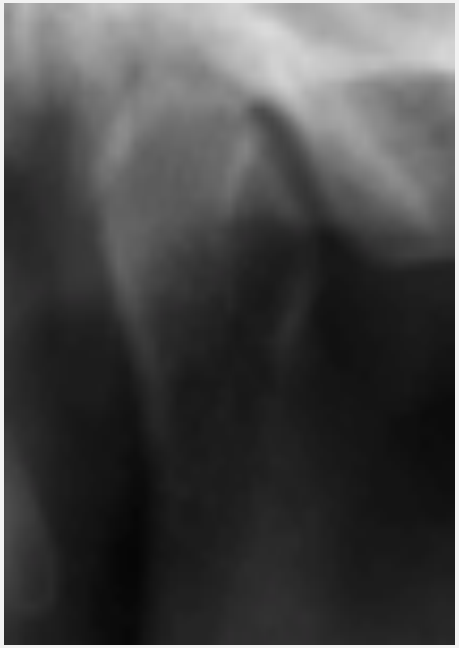
General:

- Good oral hygiene, minimal caries (limited to occlusal surfaces of molars)

Radiolucency:

- Does not appear to be associated with #23
- Plan to move forward with path consult and possible cone beam / needle aspiration if necessary

CONDYLES



- Left condyle is flattened when compared to the right

CLINICAL FINDINGS

- Soft tissue:
  - Moderately high mandibular frenum – per Dr. Kassab, this should not be an issue, but re-evaluate if recession occurs
- Caries:
  - Occlusal caries on #2, 3, **4**, **14, 15**, **18**, **19**, **30**, and **31**
- Musculature:
  - Pain on palpation of all muscles of mastication as well as scalenes and SCM

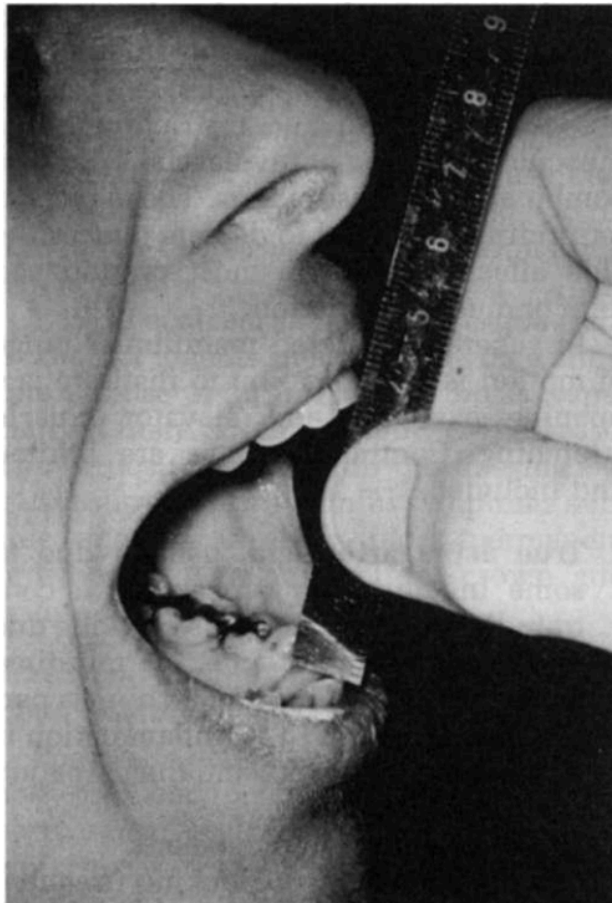
CLINICAL PHOTOS

CLINICAL PHOTOS

SPECIFIC FINDINGS

Comprehensive Exam : 1/29/20

- Subjective:
  - Ear aches, headaches, neck pain (worse on the right)
  - Has been locked closed on 2 occasions
  - Limited mouth opening → She must "warm up" her jaw in the morning and she can open more throughout the day
  - Pain is focused on the Right side, but PT clinic noted that her left side was tighter
  - Maximum opening is between 11am-1pm
  - She does NOT chew gum



SPECIFIC FINDINGS

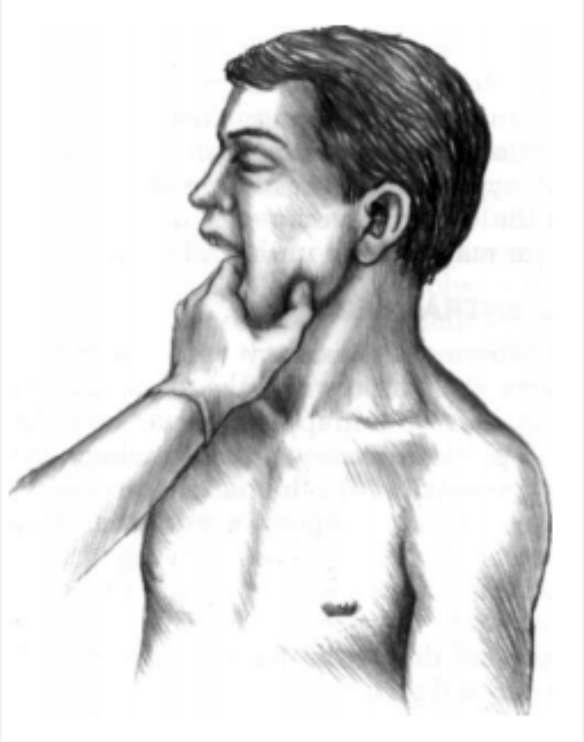
Objective:

- Maximum opening: 26mm
- Maximum *Assisted*: 30mm
- Deviation to the right on opening
- Masticatory Myalgia
  - Masseters: R = moderate, L = mild
  - SCM: moderate
  - Frontalis = good
  - Occipital muscles = moderate

HOW DO YOU PALPATE FOR TRIGGER POINTS? (MASSETER SPECIFIC)

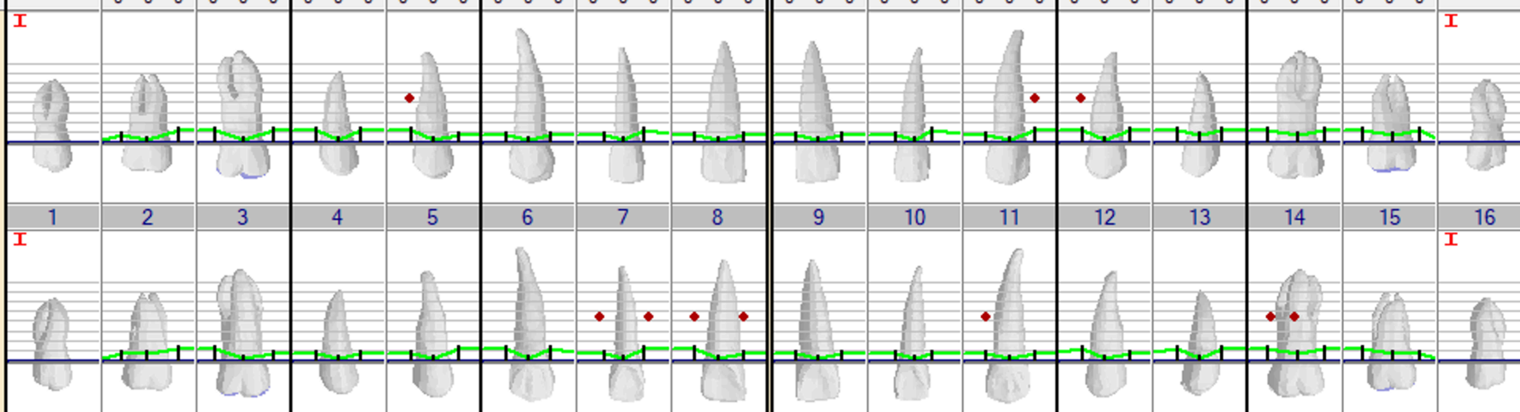
- **Pincer method** → superficial masseter

- **External flat palpation** → deep masseter



PERIODONTAL CHARTING

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MOBILITY																
FURCA																
PLAQUE		P P	P P				P P	P P	P P	P P	P P			P P	P P	
BOP					B						B	B				
MGJ		5 5 5	5 5 5	5 5 5	4 4 4	5 5 5	5 5 5	5 5 5	5 5 5	4 4 4	5 5 5	3 3 3	4 4 4	4 4 4	4 4 4	
CAL		2 1 3	3 1 3	3 1 3	3 1 2	2 1 2	2 1 3	2 1 2	2 1 2	2 1 3	2 1 3	3 1 3	3 2 3	3 2 3	3 2 3	
P.D.		2 1 3	3 1 3	3 1 3	3 1 2	2 1 2	2 1 3	2 1 2	2 1 2	2 1 3	2 1 3	3 1 3	3 2 3	3 2 3	3 2 3	
FGM		0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FGM		0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	
P.D.		2 2 3	3 1 2	2 1 2	2 1 3	3 1 3	2 1 3	3 1 2	2 1 2	2 1 2	2 1 2	3 1 2	3 1 3	3 2 3	3 2 2	
CAL		2 2 3	3 1 2	2 1 2	2 1 3	3 1 3	2 1 3	3 1 2	2 1 2	2 1 2	2 1 2	3 1 2	3 1 3	3 2 3	3 2 2	
MGJ																
BOP							B B	B B			B			B B		
PLAQUE		P	P P	P			P P P	P P P	P P							
FURCA																
PROGNOSIS																

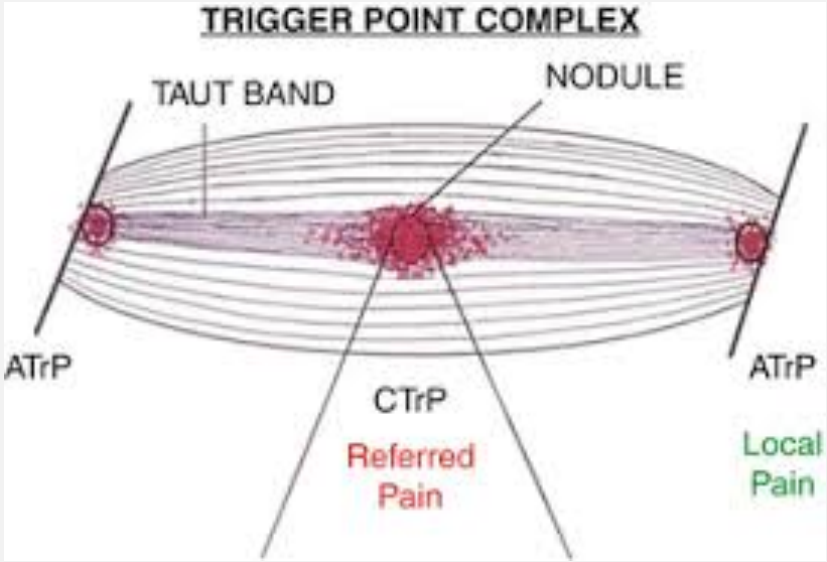
DIAGNOSIS

- Assessment:
  - **Moderate masticatory myalgia**
    - Per: Dr. Khaled
  - Signs of clenching at night
  - Symptoms have lasted > 1 year: Chronic issue

WHAT ARE TRIGGER POINTS?

- **Dr. Janet Travell** defines a trigger points as:

  "A hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band. The spot is painful on compression and can give rise to characteristic referred pain, referred tenderness, motor dysfunction, and autonomic phenomena."



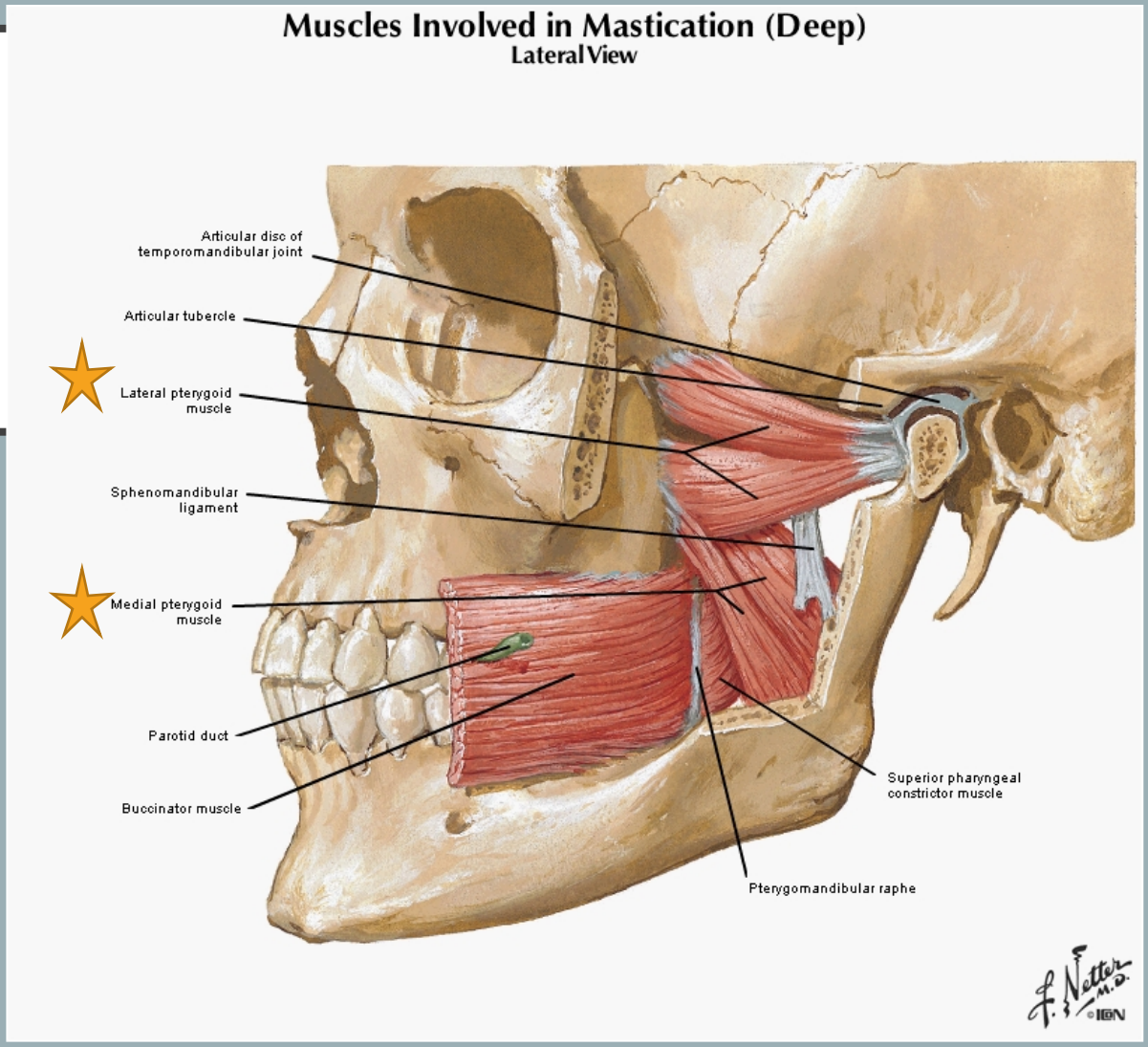
MUSCLES OF MASTICATION

Medial and lateral pterygoid

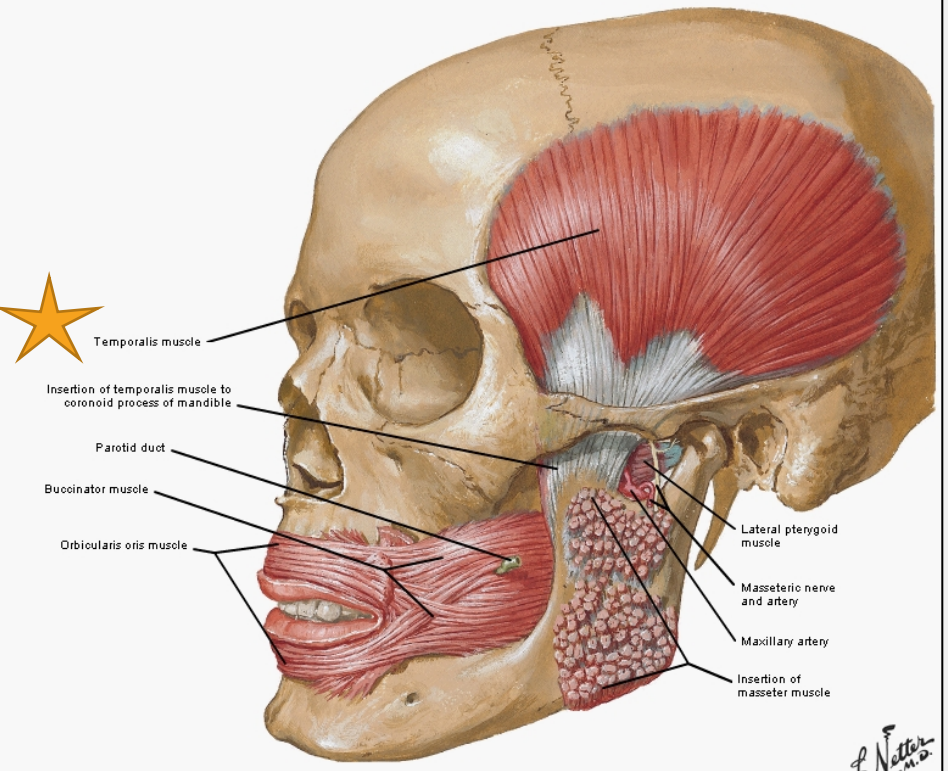
Temporalis

Masseter

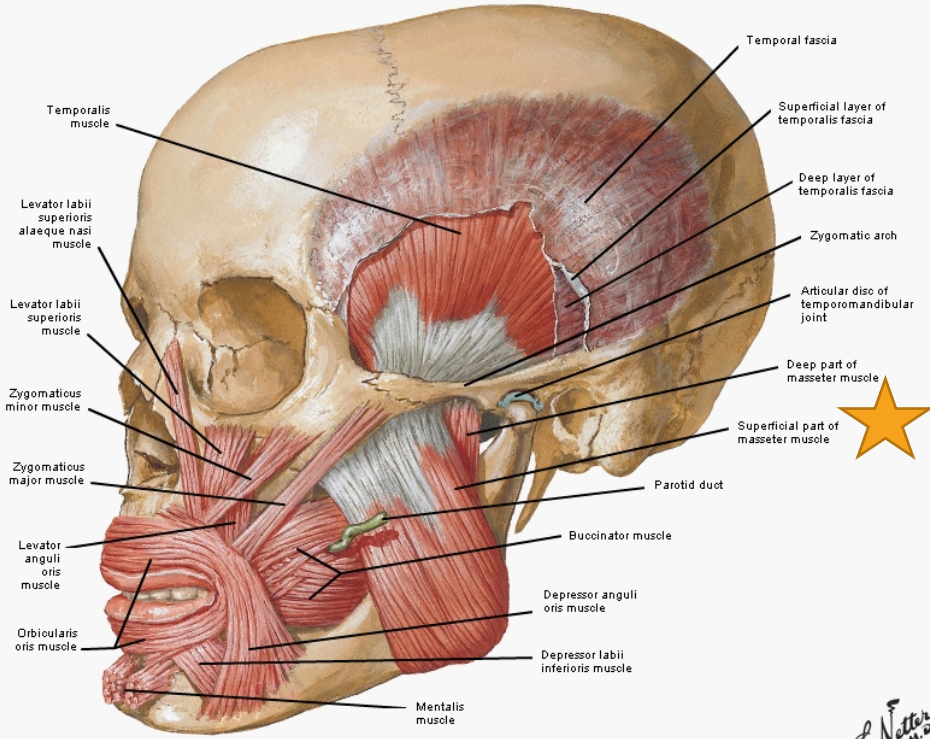
Innervated by CNV



Muscles Involved in Mastication - Masseter Removed
Lateral View



Muscles Involved in Mastication
Lateral View



D2 PATHOLOGY- WHAT IS THE ETIOLOGY OF TEMPOROMANDIBULAR JOINT DISORDER?

- ***Etiology-***
  - ***More common in women between the ages of 20 and 40 years old***
  - ***Previously believed to be heavily caused by malocclusion***
  - ***Today, true etiology is unknown. Believed to be a multifactorial disorder.***

TMD AS A MULTIFACTORIAL DISORDER

- ***Structural misalignment between the mandible and the cranium***
- ***Laxity of the joint***
- ***Rheumatic or musculoskeletal disorders***
- ***Unhealthy lifestyle***
- ***trauma (acute, hyperextension- dental procedures, yawning)***
- ***Parafunctional habits- Bruxing, clenching, and lip or cheek biting***
  - ***Enhanced by emotional distress***

D3 PICO

- **Clinical Question:** What minimally invasive techniques are effective for the treatment of TMD and myofascial pain?

PICO FORMAT

P: Patients with temporomandibular myofascial pain

I: Trigger point injections

C: Dry needling

O: Effective treatment modality

PICO FORMATTED QUESTION

- For patients with temporomandibular myofascial pain, are trigger point injections, compared to dry needling, an effective treatment modality?

CLINICAL BOTTOM LINE

- Both dry needling and trigger point injections are effective modalities in the treatment of temporomandibular myofascial pain
- Trigger point injections given with 0.5% lidocaine may provide for a more comfortable therapy option
- Both treatment modalities can be combined with others to improve treatment efficacy

SEARCH BACKGROUND

- **Date(s) of Search:** October 12, 2020
- **Database(s) Used:** PubMed
- **Search Strategy/Keywords:**
  - Temporomandibular disorder
  - Myofascial pain
  - Orofascial pain
  - Dry needling
  - Trigger point

SEARCH BACKGROUND

- **MESH terms used:**
  - Myofascial Pain Syndromes / therapy
  - Injections, Intramuscular
  - Temporomandibular Joint / physiopathology
  - Temporomandibular Joint Dysfunction Syndrome / drug therapy
  - Acupuncture Therapy / methods
  - Fascial Pain / drug therapy

ARTICLE 1 CITATION, INTRODUCTION

- **Citation:**
  - Dıraçoğlu D, Vural M, Karan A, Aksoy C. Effectiveness of dry needling for the treatment of temporomandibular myofascial pain: a double-blind, randomized, placebo controlled study. J Back Musculoskelet Rehabil. 2012;25(4):285-90. doi: 10.3233/BMR-2012-0338. PMID: 23220812.
- **Study Design:** Randomized Control Trial
- **Study Need / Purpose:**
  - Compare dry needling treatment with a placebo treatment

ARTICLE 1 SYNOPSIS

- **Method:**
  - 2 groups of 26 randomly divided into study group (dry needling) and placebo group (sham needling)
  - Pain threshold assessed as a measurement of unassisted jaw opening without pain using pressure algometry and a 10 cm visual analog scale (VAS)
- **Results:**
  - Mean algometric values were higher in the study group as compared to the placebo group
  - There were no differences between the groups for VAS or opening without pain

ARTICLE 1 SYNOPSIS

- **Conclusions:**
  - Dry needling is an effective treatment method in relieving myofascial trigger points
- **Limitations:**
  - Does not compare both treatment modalities that we are researching
  - Small study group (52 participants)

ARTICLE 1 SELECTION

- **Reason for selection:**
  - This RCT ompares dry needling to sham dry needling of a placebo group for the treatment of temporomandibular joint pain in order to determine if dry needling is actually effective
- **Applicability to your patient:**
  - Our patient is looking for a minimally invasive procedure for TMD and myofascial pain, and dry needling is a potential treatment option
- **Implications:**
  - Dry needling could be a potentially effective method of treatment for our patient

LEVELS OF EVIDENCE

☐ **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)

☒ **1b** – Individual RCT

☐ **2a** – Systematic Review of Cohort Studies

☐ **2b** – Individual Cohort Study

☐ **3** – Cross-sectional Studies, Ecologic Studies, "Outcomes" Research

☐ **4a** – Systematic Review of Case Control Studies

☐ **4b** – Individual Case Control Study

☐ **5** – Case Series, Case Reports

☐ **6** – Expert Opinion without explicit critical appraisal, Narrative Review

☐ **7** – Animal Research

☐ **8** – In Vitro Research

STRENGTH OF RECOMMENDATION TAXONOMY (SORT)

☐	**A** – Consistent, good quality patient oriented evidence
☒	**B** – Inconsistent or limited quality patient oriented evidence
☐	**C** – Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

Double click table to activate check-boxes

Optional footer for reference citations or other notes. Delete if not needed.

ARTICLE 2 CITATION, INTRODUCTION

- **Citation:**
  - Kamanli A, Kaya A, Ardicoglu O, Ozgocmen S, Zengin FO, Bayik Y. Comparison of lidocaine injection, botulinum toxin injection, and dry needling to trigger points in myofascial pain syndrome. Rheumatol Int. 2005 Oct;25(8):604-11. doi: 10.1007/s00296-004-0485-6. Epub 2004 Sep 15. PMID: 15372199.
- **Study Design:** Randomized Control Trial
- **Study Need / Purpose:**
  - Compare the efficacy of 3 different treatment modalities for TMD and myofascial pain

ARTICLE 2 SYNOPSIS

- **Method:**
  - 3 groups randomly assigned: lidocaine injection (32 TrP), dry needling (33 TrP), and BTX-A injection (22 TrP)
  - Trigger point injections (TrP) performed on cervical and/or periscapular regions
  - Evaluation based on cervical range of motion, pain pressure threshold (PPT), pain scores (PS), visual analog scales for pain, work disability and fatigue (VAS), and quality of life using Nottingham health profile at beginning and end of 4 week trial
- **Results:**
  - PPT and PS improved in all 3 TrP groups
  - PPT values were significantly higher in lidocaine injection group than dry needling group
  - PS values significantly lower in lidocaine injection group than both dry needling and BTX-A group
  - Quality of life scores improved for both lidocaine injection and BTX-A groups, but not dry needling group

ARTICLE 2 SYNOPSIS

- **Conclusions:**
  - Of the 3 treatment modalities tested, lidocaine injection is the most practical method of TrP, as it causes less disturbance to the nerve and tissue than dry needling and is more cost effective than BTX-A injection
- **Limitations:**
  - Treatment modalities were tested in cervical/periscapular region
  - Addressed myofascial pain but not TMD pain specifically
  - Small study group (23 female and 6 male participants)

ARTICLE 2 SELECTION

- **Reason for selection:**
  - This RCT directly compares the efficacy of dry needling versus lidocaine trigger point injections or botulinum toxin trigger point injections
- **Applicability to your patient:**
  - Our patient is looking for a minimally invasive procedure for TMD and myofascial pain, and all 3 of these are potential treatment options
- **Implications:**
  - Any of these treatment modalities could be effective

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ARTICLE 3 CITATION, INTRODUCTION

- **Citation:**
  - Ozkan F, Cakır Özkan N, Erkorkmaz U. Trigger point injection therapy in the management of myofascial temporomandibular pain. Agri. 2011 Jul;23(3):119-25. doi: 10.5505/agri.2011.04796. PMID: 21935818.
- **Study Design:** Randomized Control Trial
- **Study Need / Purpose:**
  - Compare treatment using a stabilization splint alone to combination therapy using a stabilization splint and trigger point injections

ARTICLE 3 SYNOPSIS

- **Method:**
  - 50 patients randomly assigned to 2 groups: Group 1- treated using stabilization splint alone and Group 2- treated using stabilization splint combined with trigger point injections
  - Evaluated using visual analog scores (VAS) at weeks 4 and 12
- **Results:**
  - Improvement in signs and symptoms noted in both groups
  - Significant reduction in VAS scores in Group 2 (stabilization splint + trigger point injections) at weeks 4 and 12

ARTICLE 3 SYNOPSIS

- **Conclusions:**
  - Trigger point injection therapy combined with stabilization splint therapy is more efficacious than stabilization splint therapy alone
- **Limitations:**
  - Does not compare both treatment modalities that we are researching
  - Small study group (50 participants)

ARTICLE 3 SELECTION

- **Reason for selection:**
  - This RCT compares the efficacy of treating temporomandibular myofascial pain by stabilization splint alone to stabilization splint combined with trigger point injections in order to determine if the addition of trigger point injections makes treatment more efficacious
- **Applicability to your patient:**
  - Our patient is looking for a minimally invasive procedure for TMD and myofascial pain, and trigger point injections are a potential treatment option
- **Implications:**
  - Trigger point injections are an efficacious treatment method for TMD and myofascial pain

LEVELS OF EVIDENCE

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CONCLUSIONS: D3

How does the evidence apply to this patient?

- Our patient is currently experiencing TMD and myofascial pain and is currently looking for a minimally invasive, but effective treatment option

Based on the above considerations, how will you advise your D4?

- According to the results of the 3 randomized control trials discussed, both dry needling and trigger point injections have proven to be effective treatment methods for TMD and myofascial pain
- Trigger point injections may be a more comfortable treatment option if given with 0.5% lidocaine

CONCLUSIONS: D4

How will you *advise* your patient?

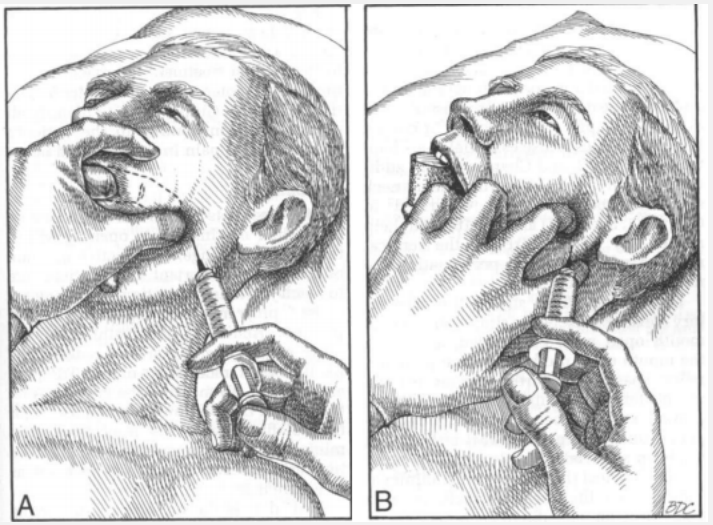
- Stress management
- Anti-inflammatory medications
- No-Chew diet (assess improvement in symptoms at next visit)
- Muscle Relaxants
- Continue Physical Therapy
- Moist heat to the affected side

How will you *help* your patient?

- Continue possible Trigger point injections
- Flat plane splint if necessary (After restorative work is complete)
  - Separation of the posterior teeth during protrusion
- Track progress over time – evaluate posture improvements
- Spray and Stretch Technique
- Consider a Brisement procedure if maximum opening does not improve

WHAT ARE TRIGGER POINT INJECTIONS?

- Injection into trigger points can often inactivate them
- Can be performed intraoral or extraoral – whatever is best to access the taut band
- Identify taut band with pincer palpation
- Peppering is performed
- A few drops of plain lidocaine or .5% procaine is deposited when an active trigger point locus is encountered



Travell & Simons' myofascial pain and dysfunction _ the trigger point manual

THANK YOU

Questions?