TREATMENT OF DISC DISPLACEMENT WITH REDUCTION & BILATERAL MASTICATORY MYALGIA

Group 8A-4
D4: Jayna Shah
D3: Dave Wertz
D2: Julia Snell
D1: Trevor Hine

November 18th, 2020

ROUNDS TEAM

- **Group Leader: Dr. Toburen**
- **Specialty Leader: Dr. Waliszewski**
- **Project Team Leader: Jayna Shah**
- **Project Team Participants: Dave Wertz, Julia Snell, Trevor Hine**

PATIENT: MS. JS

- Age: 43-year-old
- Gender: Female
- Ethnicity: Caucasian
- Chief Complaint: "I often get headaches/migraines in the morning in the areas of my temples, neck, and mostly the jaws. The muscles are frequently sore and stiff"

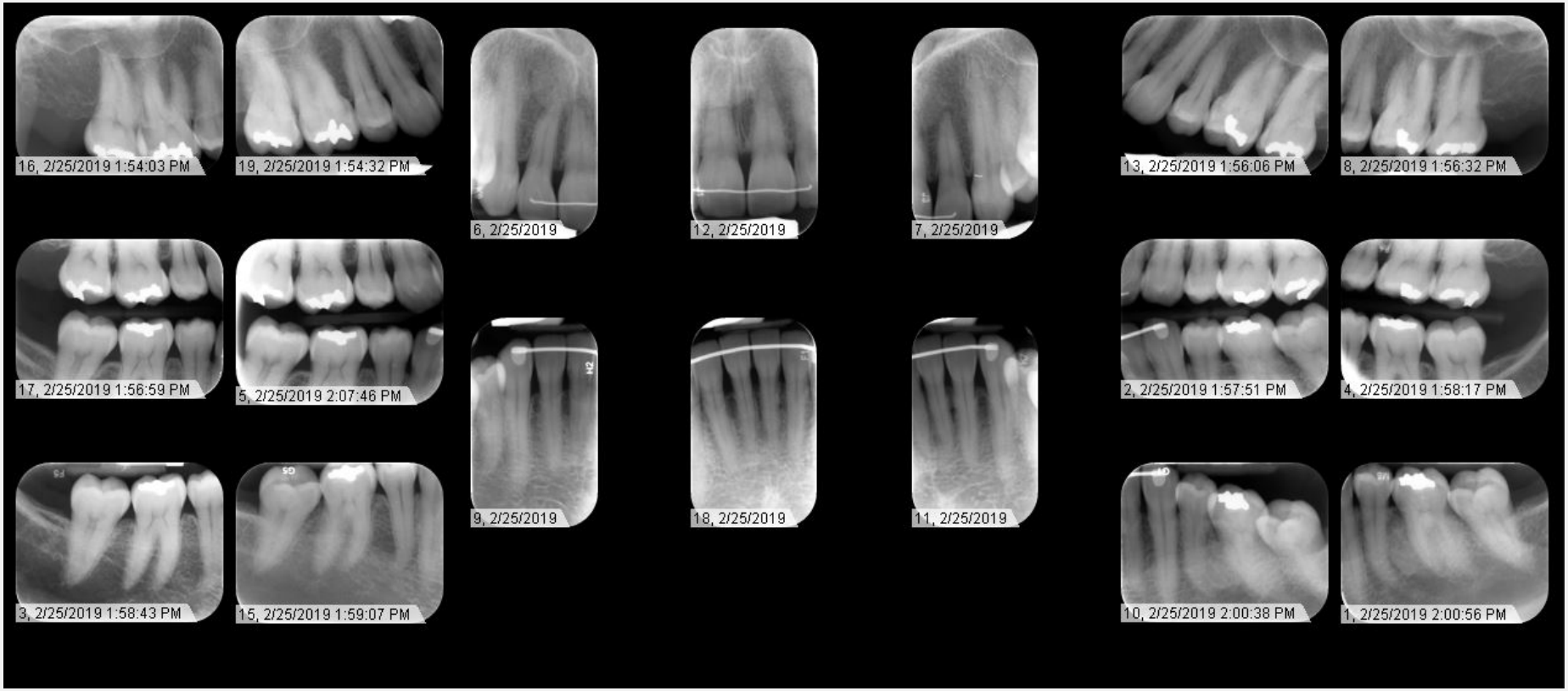
MEDICAL HISTORY

- Patient has muscle spasms on left shoulder and was given steroids and muscle relaxers for one week in March 2020 – pain subsided.
- Medications:
  - 10mg Cyclobenzaprine – as needed for TMD
  - Vitamin D3
  - Magnesium
  - Biotin

DENTAL HISTORY

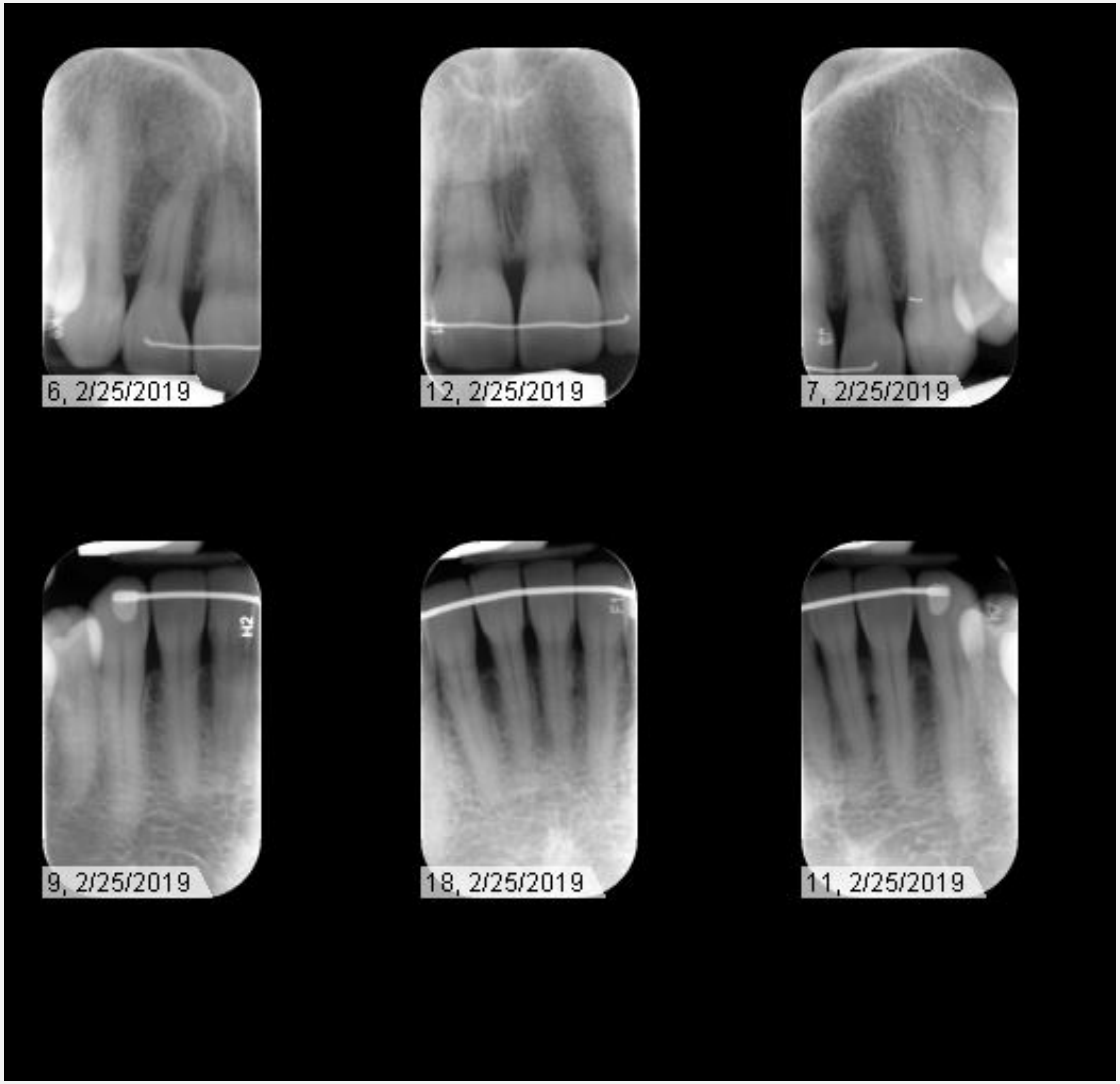
- Completed orthodontic treatment in teenage years
- Extractions of 2nd premolars during orthodontic treatment
- Previous amalgam/resin restorations and sealants:
  - #2, #3, #14, #15, #18, #19, #30
  - #28, #31 sealants
- History of TMD

RADIOGRAPHS - FMX



RIGHT POSTERIOR RADIOGRAPHS

ANTERIOR RADIOGRAPHS



RIGHT POSTERIOR RADIOGRAPHS

RADIOGRAPHIC FINDINGS

- After POE on 11/03/2020, found mesial caries #12 as seen on radiographs

2/25/2019

11/03/2020

CLINICAL FINDINGS

Restorations:

- Amalgam - #2 OL, #3 OL, #14 OL, #15 OL, #19 O, #30 O
- Resin - #18 OL
- Sealants - #28 O, #31 O

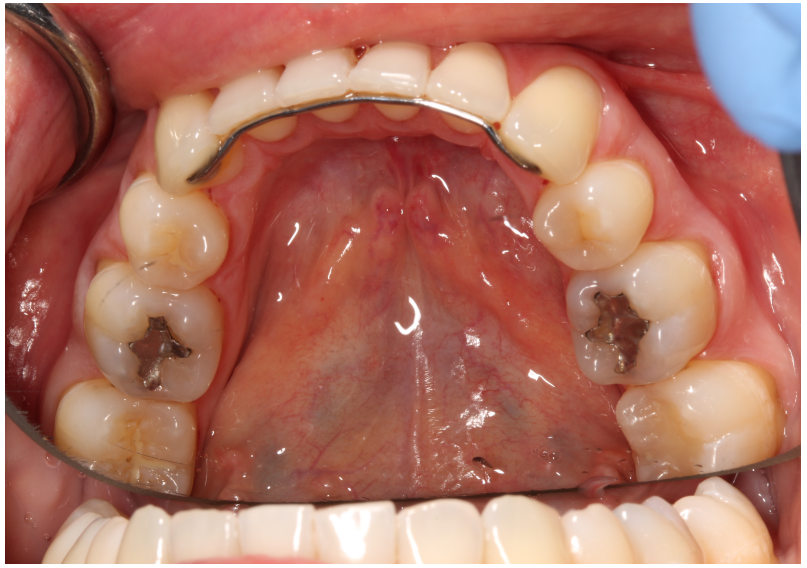
New findings:

- Fractured amalgam #30 occlusal
- Mesial caries #12

CLINICAL FINDINGS

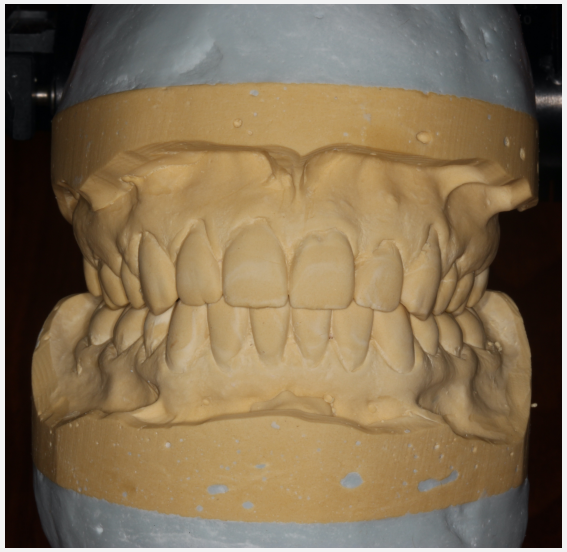
- Clicking of left TMJ upon closing of the mandible
- Class I molar and canine occlusion
- Bilateral canine guidance

CLINICAL FINDINGS - INTRAORAL



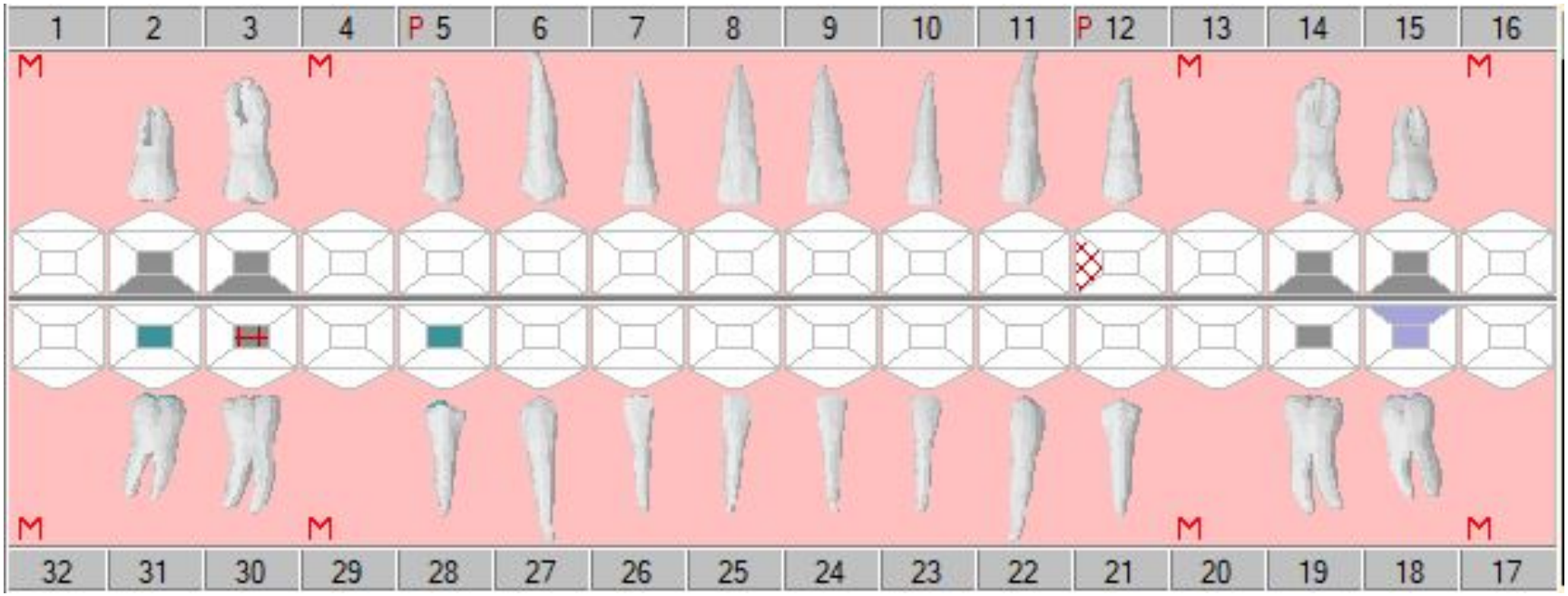
CLINICAL FINDINGS - INTRAORAL

CLINICAL FINDINGS - CASTS



SPECIFIC FINDINGS

- Clicking of left TMJ upon closing of the mandible



ODONTOGRAM

Odontogram updated 11/03/20

PERIODONTAL CHARTING

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

																PROGNOSI
																FURCA
	P	P P														PLAQUE
																BOP
	5 5 5	5 5 5		5 5 5	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	5 5 5	5 5 5		5 5 5	5 5 5		MGJ
	3 3 3	3 3 3		3 2 3	2 1 2	3 1 2	2 2 2	2 2 2	2 2 2	2 2 2	2 2 3		3 2 3	3 2 3		CAL
	3 3 3	3 3 3		3 2 3	2 1 2	3 1 2	2 1 2	2 1 2	2 1 2	2 2 2	2 2 3		3 2 3	3 2 3		P.D.
	0 0 0	0 0 0		0 0 0	0 0 0	0 0 0	0 1 0	0 1 0	0 1 0	0 0 0	0 0 0		0 0 0	0 0 0		FGM
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	
	0 2 1	1 2 0		1 2 0	1 1 1	1 1 1	1 2 1	1 1 0	0 0 0	0 0 0	0 1 0		2 1 0	1 1 1		FGM
	3 1 2	2 2 3		3 1 2	3 1 2	2 1 2	2 1 2	2 1 2	2 1 2	3 1 2	2 2 3		2 2 2	3 2 3		P.D.
	3 3 3	3 4 3		4 3 2	4 2 3	3 2 3	3 3 3	3 2 2	2 1 2	3 1 2	2 3 3		4 3 2	4 3 4		CAL
	3 3 3	3 3 3		2 2 2	2 2 2	2 2 2	2 2 2	3 3 3	3 3 3	3 3 3	4 4 4		3 3 3	3 3 3		MGJ
																BOP
							P P	P P	P P	P						PLAQUE
																FURCA
																MOBILITY

ADA Class I - Gingivitis

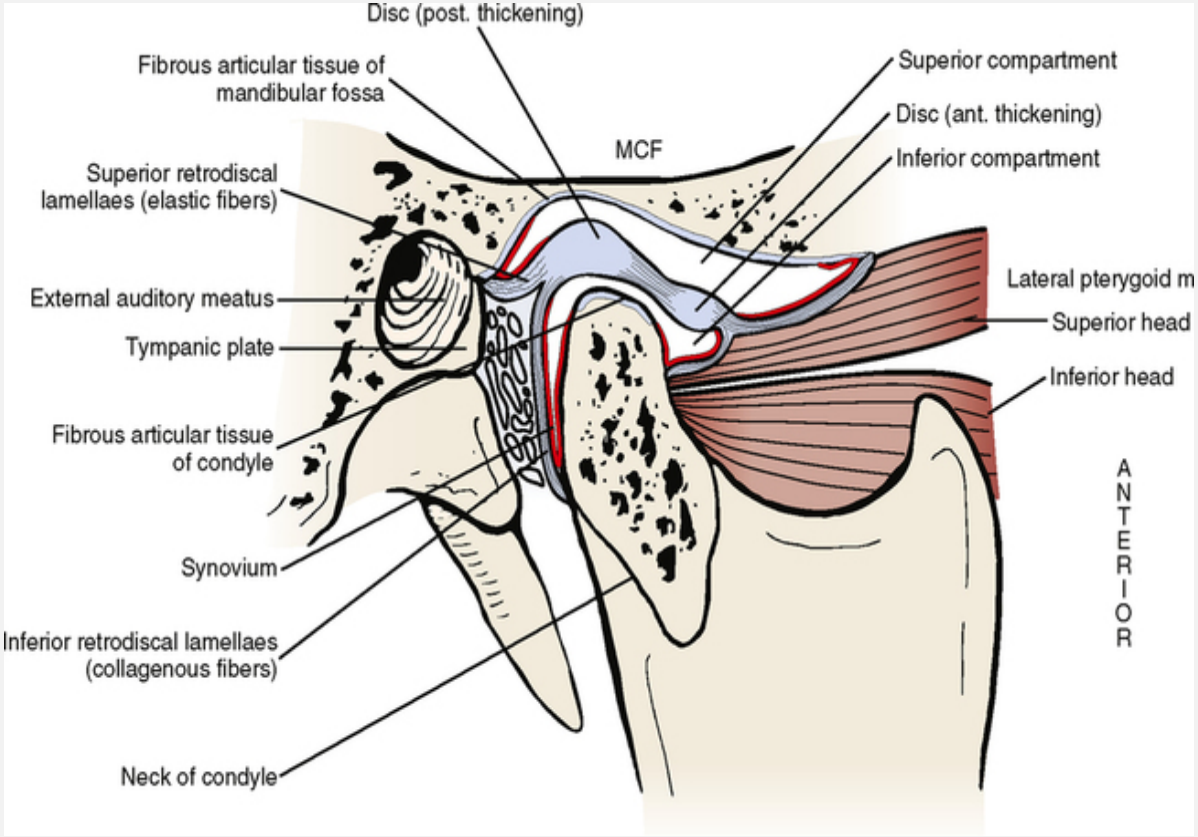
DIAGNOSIS

- Disc displacement with reduction
- Bilateral masticatory myalgia

PROBLEM LIST

- TMD
- Headaches/Migraines
- Caries

D1: ANATOMY OF THE TEMPOROMANDIBULAR JOINT



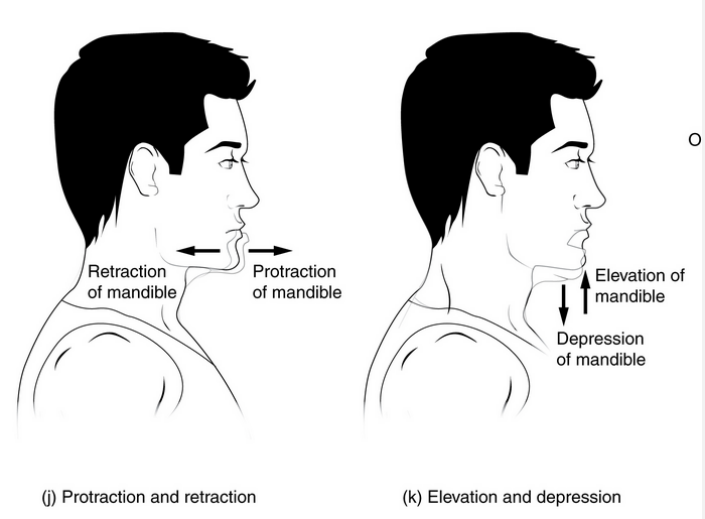
Articular disc- Anterior and posterior thickenings separated by a central region made of fibrocartilage

Inferior compartment- allows for hinge motion

Superior Compartment- allows for sliding motion

Joint capsule- fibrous connective tissue that attaches the articular eminence, the articular disc as well as the neck of the condyle

MUSCLES AND LIGAMENTS INVOLVED WITH THE TMJ

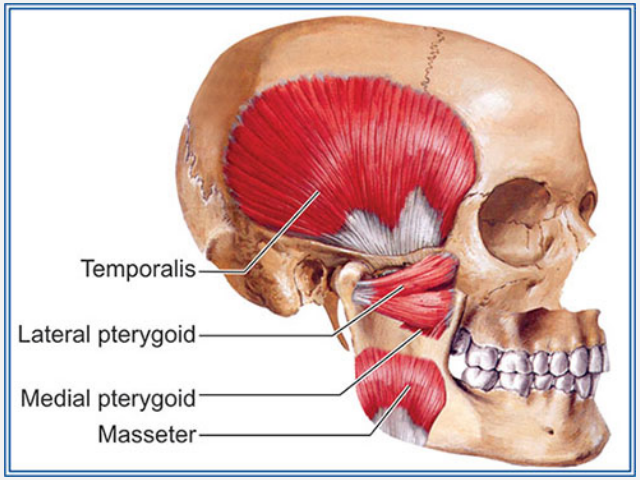


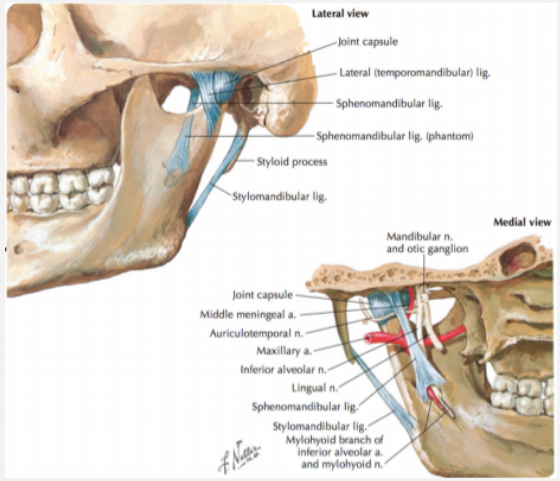
Elevation of the mandible - masseter, medial pterygoid, temporalis muscles

Depression - lateral pterygoid muscle

Protrusion - lateral pterygoid muscles

Retrusion - posterior horizontal fibers of the temporalis, deep fibers of the masseter muscle





3 Ligaments involved:

- Temporomandibular (lateral)
- Sphenomandibular
- Stylomandibular

D2 PATHOLOGY - TEMPOROMANDIBULAR JOINT ANTERIOR DISC DISPLACEMENT

- One of the most common TMJ disorders
- An abnormal relationship between the articular disc, the mandibular condyle and the mandibular fossa
- Often presents with clicking, joint pain, a limited range of mouth opening, and masticatory difficulty

(Young, A. 2015)

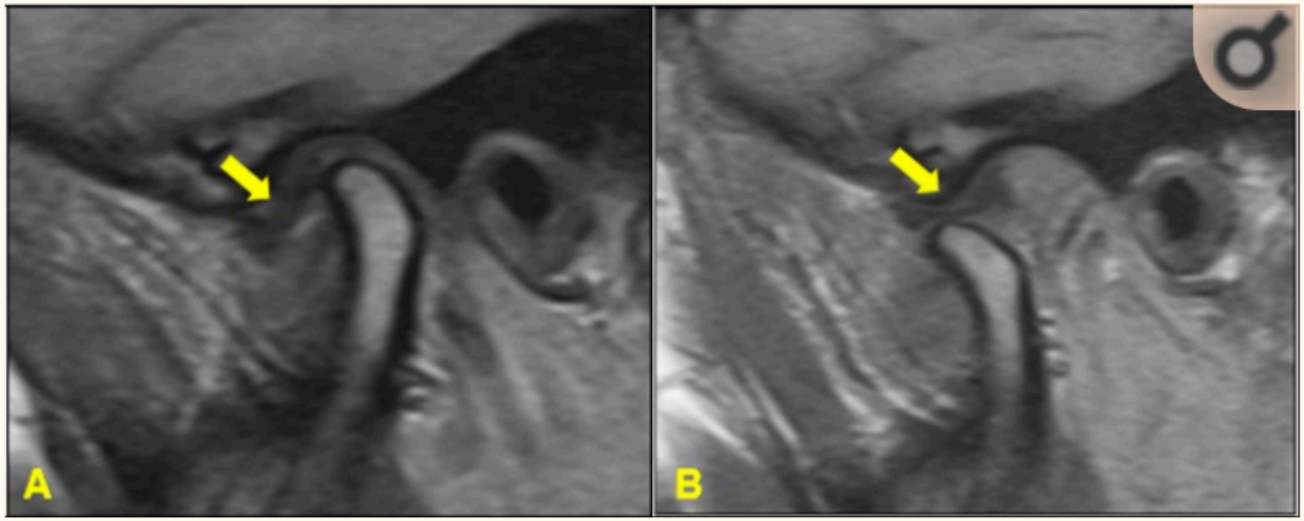


Figure 1

Disc displacement with reduction (DDWR). A: Closed mouth, the articular disc (yellow arrow) is anteriorly displaced in relation to the condyle; B: Open mouth, the disc (yellow arrow) returns to the intermediate area

- **Disc displacement with reduction (DDWR)**: The articular disc displaces anteriorly to the condylar head, when the mouth is opened the disc relocates on the the condylar head

(Young, A. 2015)

WHAT CAUSES ANTERIOR DISC DISPLACEMENT?

- **Caused by trauma to the jaw or joint - chronic (microtrauma) or acute injuries (macrotrauma)**
  - abnormal biomechanical forces applied to the mandibular condyle, which alter the shape and function of the articular tissues.
  - shape and/or dynamic properties alterations of the TMJ components,
  - lack of lubrication
  - degenerative articular disorder
  - occlusal abnormalities
  - thinning of the posterior border of the disc - displacement in a more anterior position
  - TMJ hypermobility/excessive opening of the TMJ

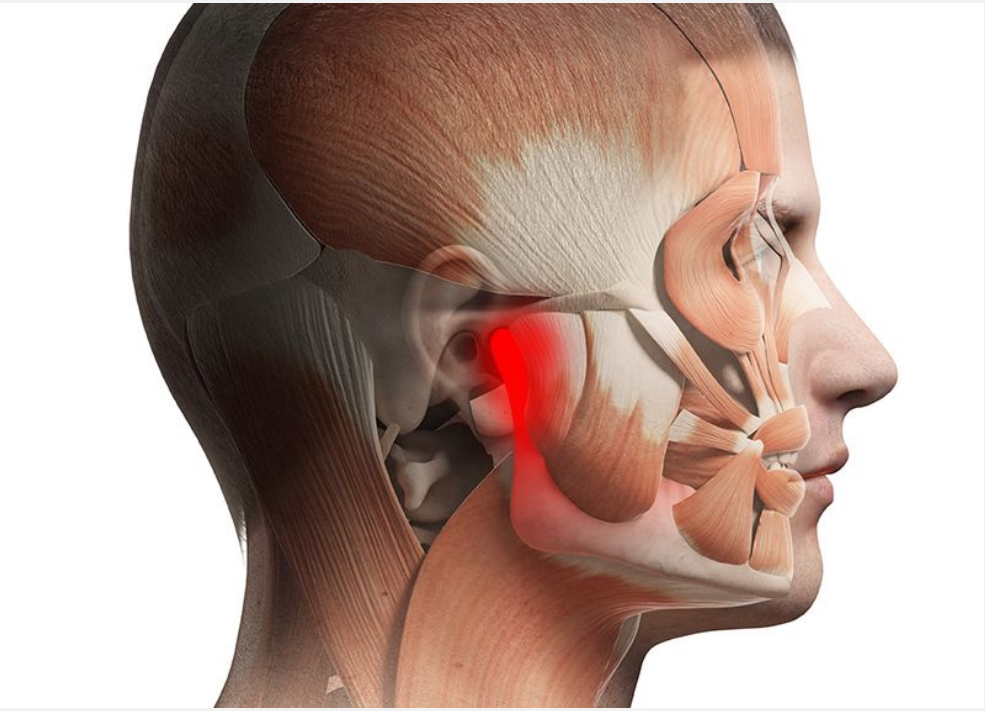
- **The articular disk is displaced anteriorly due to abnormal jaw mechanics; it may remain displaced (without reduction) or return (with reduction).**
  - Disk displacement with reduction typically manifests with clicking/popping and pain with jaw use (such as chewing).
  - Disk displacement without reduction does not manifest with clicking/popping, but maximum jaw opening is limited to ≤ 30 mm.

(Poluha, R., 2019)

WHAT IS BILATERAL MASTICATORY MYALGIA?

- **Masticatory myalgia:** is characterized as a dull persistent ache overlying the jaw

- Interplay between the muscles and joints
  - leads to stiffness, headaches, ear pain, malocclusion, clicking sounds/trismus, restricted opening, and fatigue



Litko, M. (2017).
Gray, R. J.,(1994).

SOURCES

- Gray, R. J., Quayle, A. A., Hall, C. A., & Schofield, M. A. (1994). Physiotherapy in the treatment of temporomandibular joint disorders: A comparative study of four treatment methods. *British Dental Journal, 176*(7), 257-261.
- Litko, M., Berger, M., Szkutnik, J., & Różyło-Kalinowska, I. (2017). Correlation between direction and severity of temporomandibular joint disc displacement and reduction ability during mouth opening. *Journal of Oral Rehabilitation, 44*(12), 957-963.
- Poluha, R. Canales, G., Costa, Y., Grossman, E., Bonjardim, L., Conti, P. (2019). Temporomandibular joint disc displacement with reduction: A review of mechanisms and clinical presentation. *Journal of Applied Oral Science, 27*.
- Young, A. (2015). Internal derangements of the temporomandibular joint: A review of the anatomy, diagnosis, and management. *The Journal of Indian Prosthodontic Society, 15*(1), 2.

D3 PICO

- **Clinical Question:** What treatment can be offered to patients with anterior disc displacement and bilateral masticatory myalgia?

PICO FORMAT

P:

I:

C:

O:

PICO FORMATTED QUESTION

CLINICAL BOTTOM LINE

SEARCH BACKGROUND

- **Date(s) of Search:**
- **Database(s) Used:**
- **Search Strategy/Keywords:**

SEARCH BACKGROUND

- **MESH terms used:**

ARTICLE 1 CITATION, INTRODUCTION

- Citation: Authors, Title, Journal, Date, Volume, Page Numbers.
- Study Design:
- Study Need / Purpose:

ARTICLE 1 SYNOPSIS

- 1-2 slides
- Method
- Results
- Conclusions
- Limitations

ARTICLE 1 SELECTION

- 1 slide
- Reason for selection
- Applicability to your patient
- Implications

ARTICLE 2 CITATION, INTRODUCTION

- Citation: Authors, Title, Journal, Date, Volume, Page Numbers.
- Study Design:
- Study Need / Purpose:

ARTICLE 2 SYNOPSIS

- 1-2 slides
- Method
- Results
- Conclusions
- Limitations

ARTICLE 2 SELECTION

- 1 slide
- Reason for selection
- Applicability to your patient
- Implications

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

Double click table to activate check-boxes

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

CONCLUSIONS: D3

How does the evidence apply to this patient?

- Consider/weigh:
  - Literature
  - Group Leader & Specialist experience
  - Patient circumstances & preferences

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

CONCLUSIONS: D4

Based on your D3's bottom line recommendations, how will you ***advise*** your patient?

How will you ***help*** your patient?

DISCUSSION QUESTIONS

- 1-2 slides
- List posted discussion questions
- Questions may also be from Group Leader or Specialist

DISCUSSION QUESTIONS

THANK YOU