Clinical Evaluation of Patients with Temporomandibular Disorders

Tiffany Tavares, DDS, DMSc

Clinical Assistant Professor

UT Health San Antonio, School of Dentistry

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Outline

- Principles of (Orofacial) Pain
- Principles of Patient Evaluation
- Pathophysiology of TMD
- Clinical Examination
- Diagnoses
- Principles of Management

Principles of Pain

Orofacial Pain

Toothache (odontalgia) is the most prevalent type of pain in the orofacial region

- 12% to 14% reported a history of a toothache within a 6-month period

Not all pains are the same, not all toothaches are the same

Odontogenic

- Pulpal
- Periodontal

Non-Odontogenic

- Myofascial
- Sinus/nasal
- Neurovascular
- Neuropathic
- Idiopathic
- Cardiogenic (rare)
- Systemic (rare)

Sharav & Benoliel, Orofacial Pain sand Headaches 2nd ed. (2015)

Jeffrey Okeson. Bell's Oral and Facial Pains 7th Ed. (2014)

Orofacial Pain

Other forms of orofacial pain

- Neuropathic Orofacial Pain
- Neurovascular Pain (Headaches)
- Sleep Disorders* (not really pain, but contributing factor)
- Mucosal Pain
- **Temporomandibular Disorders**

  - Young and middle-aged adults
    - Peak age 20-40 ys
    - More prevalent in children and elderly

  - F > M → 2:1

  - Remitting, self-limiting, fluctuating
    - progression uncommon
    - 3.6-7.0 % need treatment (do not treat in absence of pain)
    - 35% asymptomatic pts have disc displacement

de Leeuw R, Klasser GD, Pain AAOP. Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management: Quintessence Publishing Company, Incorporated; 2013.
Liu F, Steinkeler A. Epidemiology, diagnosis, and treatment of temporomandibular disorders. Dental clinics of North America. 2013;57(3):465-79.

What is pain?

"Unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage"

Why do we feel pain?

Instills protective behavior
but if unabated, pain can be harmful

- It is always subjective
- It may or may not be tied to a stimulus
- It is always a consequence of an emotional experience and psychological state

Biopsychosocial Model

Principles of Pain

Site of Pain vs. Source of Pain

Homotopic Pain

- **Site = Source**
  - ➢Treat site of pain, effective

Heterotopic pain

- **Site ≠ Source**
  - ➢Treat site of pain, ineffective

Jeffrey Okeson. Bell's Oral and Facial Pains 7th Ed. (2014)

Biological Factors

Principles of Pain

1. Central Pain

- Source is central but perceived peripherally
- **Example: Brain tumor (brain does not have nociceptors)**

2. Projected pain

- Pain follows **same nerve** distribution as primary source
- **Dermatome or motor distribution**
- Hyperalgesia may be present
- **Example: Post-herpetic neuralgia**

3. Referred Pain

- Pain occurs in different nerve than primary source and is spontaneous (non-provoked)
- Sensitization of interneurons – central sensitization
- Not aggravated by palpation
- Does not respond to anesthesia at site of pain –must block primary site
- Typically does not cross midline (only if generated at midline)
- Refers upward: cervical to trigeminal, mandibular to maxillary
- **Example: Referred dental pain -→ Mandibular molar affected, but perceived at maxillary molar**
  - **Same nerve root**

Jeffrey Okeson. Bell's Oral and Facial Pains 7th Ed. (2014)

Principles of Pain

Musculoskeletal

- Quality: dull, aching, pressure, tight, stiff, occasionally sharp
- Phenomena: Allodynia, hyperalgesia
- May be characterized by referral to or from distant sites
- Worse with function

Neuropathic

- Quality: shooting, burning, itchy, electric shock-like, cutting
- Phenomena: numbness, hyperalgesia, paresthesia, allodynia, dysesthesia

Neurovascular

- Quality: throbbing, stabbing, pouding, rhythmic
- Phenomena: worse with increased intracranial pressure
  - Bending over
  - Physical activity
  - Valsava maneuver
- May present nausea and vomiting (headaches)

Psychogenic

- Varied presentation, descriptive
- Complaints do not match anatomical sensory parameters

https://www.iasp-pain.org/Education/Content.aspx?ItemNumber=1698

Jeffrey Okeson. Bell's Oral and Facial Pains 7th Ed. (2014)

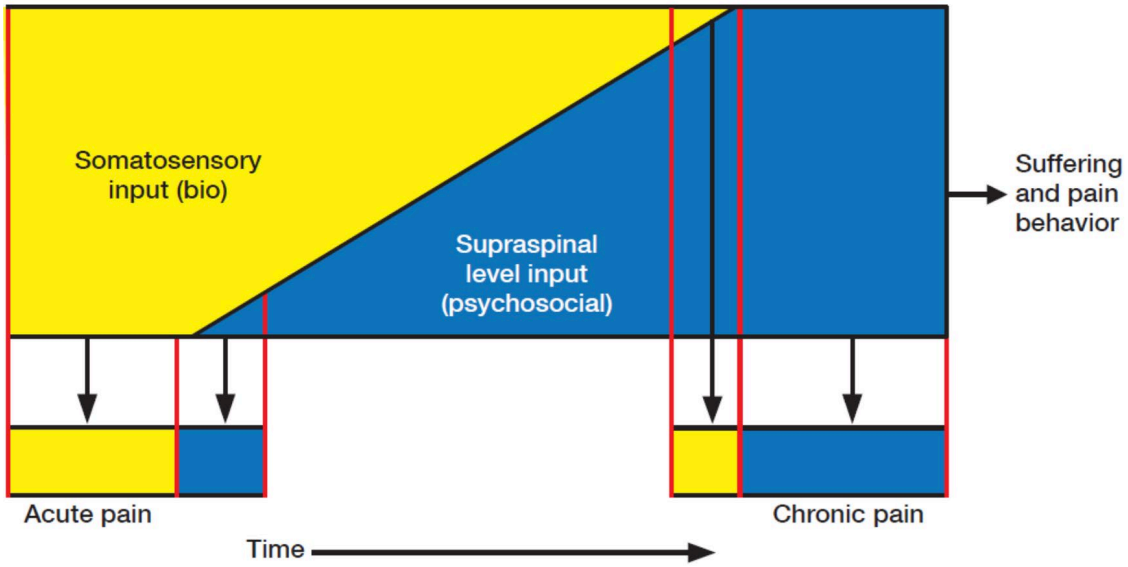
Principles of Pain

Acute Pain

- Pain with close temporal relationship to a stimulus, injury, disease
- Tends to respond to treatment in a linear dose-dependent fashion

Chronic Pain

- Pain that has lasted >3 months
- Does not typically respond to treatment in in a linear dose-dependent fashion
- Presence of other/multiple ongoing pains is a predictor for transition from acute to chronic
- More influence of psychosocial factors
- More difficult to treat



Jeffrey Okeson. Bell's Oral and Facial Pains 7th Ed. (2014)

Psychosocial Factors

Axis II

Psychosocial History and Assessment

Concept # 1:

- **ALL PAIN IS REAL**

Concept # 2:

- **Psychosocial factors can influence pain**
  - Initiating pain
  - Sustaining pain
  - Resulting from pain

Framing evaluations in light of this is helpful

Axis II

Psychosocial History and Assessment

Main topics to investigate

- Depression
- Anxiety
- Personality disorders
- Pain Distress
- Traumatic life events
  - **physical, sexual, emotional abuse**
- Coping mechanisms
- Litigation and secondary gains

Axis II

Most Common Disorders

- Anxiety
- Major depression
- Personality disorders
- Pain distress

Coping Mechanisms

- **Perceived control**
  - How much control do they think they have over their symptoms/management
- **Self-efficacy**
  - Do they think they have the skills to control their symptoms/management
  - Needs to balance with perceived control
- **Catastrophic thinking**
  - Worst case scenario is default
- **Hypervigilance**
  - Excessive alertness to pain and changes
- **Fear avoidance**
  - Disengagement from activities for fear of pain

Adams and Turk (2018) Journal of Applied Biobehavioral Science

Axis II

Psychosocial History and Assessment

Social Aspects

- **Socioeconomic Status**

- **Social Learning**
  - Positive and negative reinforcement
  - Stoicism vs attention-seeking
  - Substance abuse for escape

- **Stigma and Skepticism**

- **Social Support**
  - Having support tends to be better I
  - More important is the **TYPE** of support

Scenario

Your new patient presents with a chief complaint of “my mouth is a mess.” She states that “no one has been able to fix this. I have seen everyone for this. I am not sure why I even try anything because nothing ever works. I know I am going to lose all my teeth. I want to see if you can help me, but I don’t have much hope left.” The patient proceeded to explain how she experiences “bad side effects” to any medication she takes. After finishing the intake, you ask if you can examine her and the patient consents.

Which coping mechanisms best aligns with the patient’s statements?

Principles of Patient Evaluation

Principles of Patient Evaluation

1. What are the pain characteristics?

- Location
- Onset
- Quality
- Intensity
- Pattern
- Duration
- Flow
- Modifiers (alleviation/aggravation)
- Comorbidities/concomitant symptoms
- Past treatments
- Sleep quality
- Disability
- Functional limitation

2. What kind of pain are they describing?

- Acute, chronic
- Musculoskeletal, neuropathic,

  neurovascular

Jeffrey Okeson. Bell's Oral and Facial Pains 7th Ed. (2014)

Principles of Patient Evaluation

3. Why are they in pain?

- Physical examination to confirm the site and source
- Determine if the pain is a “syndrome” or a symptom?
  - Primary or Secondary
  - Central
  - Projected
  - Referred

Principles of Patient Evaluation

4. Are there any other contributing factors?

- Inflammation
- Systemic Disease
- Trauma
- Parafunctional habits
- Psychological disorders
- Social barriers

5. How can we modulate their pain?

- Reassurance
- Self-care/habit cessation
- Medications
- Multidisciplinary care
- Physical therapy
- Counseling
- Coping strategies
- Social services

Jeffrey Okeson. Bell's Oral and Facial Pains 7th Ed. (2014)

Pathophysiology of TMD

Pathophysiology of Orofacial Pain

Direct trauma (macrotrauma)

- Structural failure → Loss of function
- Fractures → Mandibular, condylar, and subcondylar
- Prolonged and wide opening
  - Dental procedures, intubation, yawning

Indirect trauma- controversial

- Whiplash
- Referred cervical pain

Microtrauma

- Parafunction – muscular hyperactivity
- Sleep bruxism – also controversial
- Orthopedic instability

de Leeuw R, Klasser GD, Pain AAoO. Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management: Quintessence Publishing Company, Incorporated; 2013.

Pathophysiology of Orofacial Pain

Skeletal (questionable role)

- Genetic, developmental, iatrogenic
- Skeletal malformation
- Inter- and intra-arch discrepancies
- Tooth injury

Occlusal

- Low contribution
- Cause *vs*. consequence
  - Loss of posterior support (6+ missing teeth)
  - Unilateral crossbite (maxillary palatal)
  - Overjet > 6 mm
  - RCP-IC slides > 2 mm

Osteoarthritic changes
Internal derangement
Myofascial pain

Orthopedic instability

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Pathophysiology of Orofacial Pain

Systemic

- Degenerative, endocrine, infectious, metabolic, neoplastic, neurologic, rheumatologic, and vascular
- Hypermobility
- Altered collagen metabolism

Local

- Mechanical overload
- Intracapsular pressure
- Lack of adaptive, reparative response

Genetic

- OPPERA case-control study
  - ➢ Psychosocial phenotypic differences

Fillingim RB, Ohrbach R, Greenspan JD, Knott C, Dubner R, Bair E, et al. Potential psychosocial risk factors for chronic TMD: descriptive data and empirically identified domains from the OPPERA case-control study. The journal of pain : official journal of the American Pain Society. 2011;12(11 Suppl):T46-60.
de Leeuw R, Klasser GD, Pain AAoO. Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management: Quintessence Publishing Company, Incorporated; 2013.

Clinical Examination

Clinical Examination

TMJ Movements

Opening (depressors)
- Lateral pterygoid (inferior)
- Anterior Digastric
- Mylohyoid

Closing (elevators)
- Masseter
- Temporalis (anterior and middle)
- Lateral pterygoid (superior)*

Range of Motion
- **40-58 mm**

"End feel"
- **Soft**
  - Can open further (assisted)
  - Muscle restriction
- **Hard**
  - Cannot open further (true max)
  - Intracapsular issue (disc derangement)

Okeson JP. Management of temporomandibular disorders and occlusion. Elsevier Health Sciences; 2014 Jul 21.

Clinical Examination

- **Deviation (Corrected deviation)**
  - Mandible deviates on opening
  - **Returns to midline** with maximal
  - Sign of disc derangement

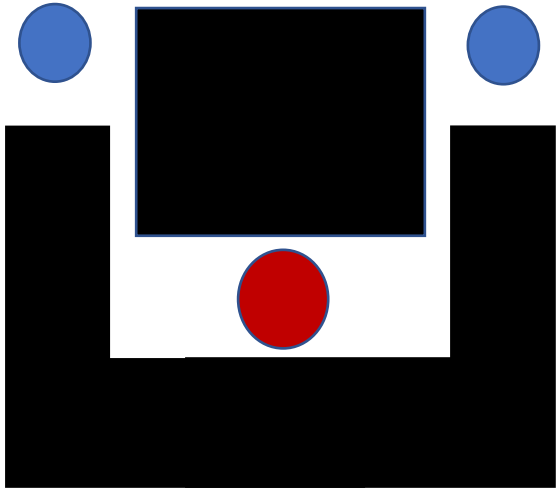
- **Deflection (Uncorrected Deviation**
  - Mandible deviates on opening
  - Deviation increases with continual opening
  - **Does not return to midline** with maximal opening
  - Sign of unilateral restricted movement
  - If restriction is intracapsular in origin deflection will be ipsilateral (same side)

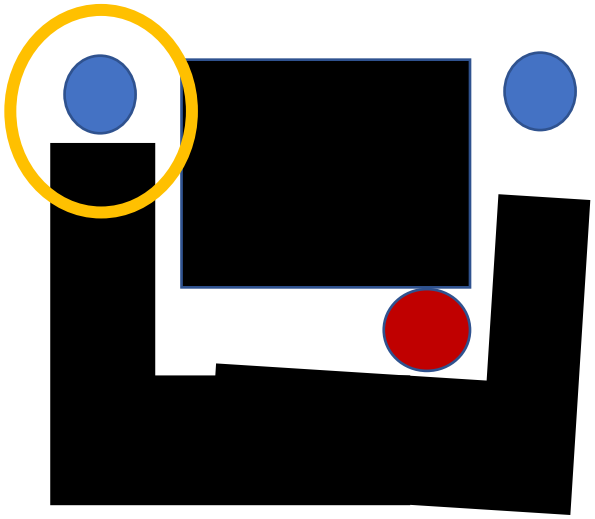
Clinical Examination

- **Loading Test**

  - Biting on a tongue depressor

    - Ipsilateral pain → muscular disorder component
    - Contralateral pain → Intra-articular disorder component





Benoliel & Sharav Orofacial Pain and Headache Quintessence Publishing (2015)
Ellis and Throckmorton. Mandibular Condylar Process Fractures. J Oral Maxillofac Surg 2005

Clinical Examination

Remember:

- Screening for TMD on panoramic imaging is not appropriate → only reveals gross changes
- Asymptomatic patients may have positive and subtle findings on imaging
  - ➢ Subtle changes should not be overestimated or receive much attention

A thorough clinical examination is necessary and the most important → guides need for imaging

Petersson, A. *Journal of Oral Rehabilitation* (2010)
Larheim *et al. Oral Maxillofacial Surg Clin N Am* (2018)

Clinical Examination

Guidelines for imaging of TMJ

Imaging must either be necessary to

1. Inform diagnosis (not better diagnosis)

2. Guide treatment

- Make sure you choose correct image modality for what you want to evaluate
  - Soft tissue
  - Hard tissue
  - Both

- Some indications
  - Suspected intra-articular pathology as cause of pain with consideration of invasive treatment
  - History of significant trauma likely to be associated with clinical findings
  - Progressive or acute malocclusion after ruling out dental etiology, including anterior open bite
  - Progressive or acute facial asymmetry
  - Suspected degenerative joint disease
  - Reduced range of motion without improvement after conservative therapies and anti-inflammatory meds
  - Reduced range of motion without pain
  - Sensory abnormalities

Scenario

A patient reports pain of the right temporalis and pain on the right maxillary molars. On intraoral exam, the dentition is intact with no gross caries, no clinical attachment loss, and no sign of tooth fracture.

What are possible explanations for her odontalgia?
What are your next steps?

Diagnoses

Muscle Disorders

Diagnosis

Myalgia

- Pain in muscles and modified with jaw movement, function or parafunction
  - Jaw, temple, ear or in front of ear

- Replication of muscle pain (familiar pain) with provocation testing (at least one)
  - Palpation
  - Unassisted or assisted opening

1. Local Myalgia

- Pain of muscle origin fulfilling myalgia criteria
- Myalgia localized only at the site of palpation

2. Myofascial Pain

- Pain of muscle origin fulfilling myalgia criteria
- Myalgia spreading beyond the site of palpation but within the boundary of the muscle
- Trigger points may be present

Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications: recommendations of the International RDC/TMD Consortium Network* and Orofacial Pain Special Interest Groupdagger. Journal of oral & facial pain and headache. 2014;28(1):6-27.

Diagnosis

Myalgia

3. Myofascial Pain with Referral

- Pain of muscle origin fulfilling myalgia criteria
- Myalgia with **<u>referral of pain beyond the boundary of the muscle</u>** being palpated
- Trigger points may be present
  - Taut band of muscle
  - Consistently tender to palpation
  - Palpation alters pain (local/distant)

Wright, Edward F., Manual of Temporomandibular Disorders,(2013)

Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications: recommendations of the International RDC/TMD Consortium Network* and Orofacial Pain Special Interest Groupdagger. Journal of oral & facial pain and headache. 2014;28(1):6-27.

Differential Diagnosis

Headache attributed to TMD

- Headache in the temple area secondary to pain-related TMD
  - Headache is temporally related to the TMD
  - Headache correlates with progression or improvement of TMD
- If headache is unilateral it is ipsilateral to the TMD affected side
- Headache modified with jaw movement, function, or parafunction
- Familiar headache in temple region with provocation testing (at least one)
  - Palpation
  - Unassisted or assisted opening, right or left lateral, or protrusive movement

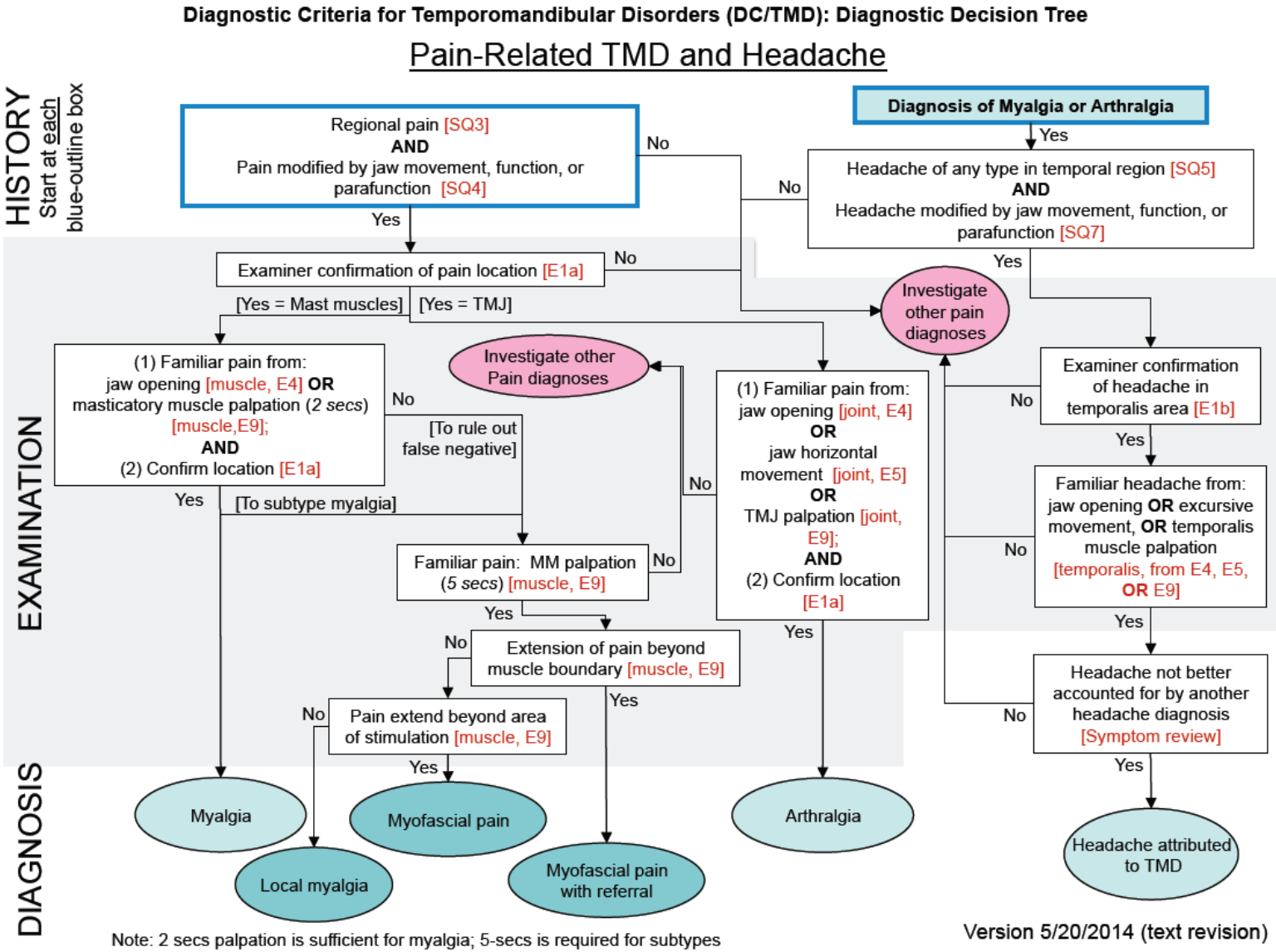
Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications: recommendations of the International RDC/TMD Consortium Network* and Orofacial Pain Special Interest Groupdagger. Journal of oral & facial pain and headache. 2014;28(1):6-27.

Differential Diagnosis

Tension-Type Headache (TTH)

- May be confused with headache attributed to TMD and migraine headaches

Episodic TTH
Location: Bilateral (cap-like)
Quality: Pressure, tightness, non-pulsating
Intensity: Mild to moderate
Pattern: infrequent episodic, frequent, episodic
Duration: 30 min – 7 days
Modifiers (alleviation/aggravation): Not aggravated by physical activity
Comorbidities & concomitant symptoms: No nausea or vomiting, no photophobia or phonophobia



http://www.rdc-tmdinternational.org/LinkClick.aspx?fileticket=h8mJRFXb70k%3d&tabid=1210&portalid=18&mid=3296

Differential Diagnosis

Fibromyalgia- Systemic/central disorders

- Abnormal processing of peripheral stimuli
- Features
  - Chronic widespread allodynia and/or hyperalgesia
  - At least 3 months duration
  - Involves both R and L sides
- Some associated symptoms disorders
  - Mood and anxiety disorders
  - IBS
  - Tension-type headache
  - Chronic pelvic pain
  - Fatigue
  - Sleep disturbances
- Up 75% of pts have TMD signs and symptoms
- Widespread Pain Index Scoring
  - History of widespread pain
    - Bilateral
    - Various anatomic locations: shoulder, arms (upper and lower) hip, leg (upper and lower), jaw, chest, abdomen, neck, back (upper and lower)
- Symptoms Score
  - Primary symptoms
    - Fatigue
    - Unrefreshed sleep
    - Cognitive symptoms
  - Secondary symptoms

de Leeuw R, Klasser GD, Pain AAoO. Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management: Quintessence Publishing Company, Incorporated; 2013.

Joint Disorders

Diagnosis

Disc Displacement WITH Reduction

- Intracapsular biomechanical disorder of the disc-condyle complex
- Radiographic: Intermediate zone of the disc is positioned anterior to the condylar head in the closed mouth position
- Disc reduces with opening of the mouth
- Clicking, popping or snapping during jaw movements (at least once during the 3 movement repetitions)
- Patient can usually open to normal range of motion

Corrected Deviation (deviation)
to **affected side** (ipsilateral)

Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications: recommendations of the International RDC/TMD Consortium Network* and Orofacial Pain Special Interest Groupdagger. Journal of oral & facial pain and headache. 2014;28(1):6-27.

Diagnosis

Disc Displacement WITH Reduction WITH Intermittent Locking

- Difference between previous
  - Disc **intermittently** reduces with opening of the mouth
- History of jaw locking when opening
- May require a maneuver to unlock
- Patient can usually open to normal range of motion

Jeffrey Okeson, Bell's Oral and Facial Pains, 7th Ed. (2014)

Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications: recommendations of the International RDC/TMD Consortium Network* and Orofacial Pain Special Interest Groupdagger. Journal of oral & facial pain and headache. 2014;28(1):6-27.

Diagnosis

Disc Displacement WITHOUT Reduction WITH Limited Opening

- Intracapsular biomechanical disorder of the disc-condyle complex
- Radiographic: Posterior zone of the disc is positioned anterior to the condylar head in the closed mouth position
- Disc **does not reduce** upon opening
- History of jaw locking when opening
- Maneuver **does not unlock**
- Limited range of motion affecting ability to eat
- Maximum assisted opening results in ROM <40 mm

Uncorrected Deviation (deflection)
to **affected side** (ipsilateral)

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Diagnosis

Disc Displacement WITHOUT Reduction WITHOUT Limited Opening

- Not associated with current limited opening
- Maximum assisted opening results in ROM > 40 mm

Uncorrected Deviation (deflection)
to **affected side** (ipsilateral)

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Diagnosis

Joint disease – Systemic arthritides

- Generalized systemic inflammatory disease
  - Idiopathic juvenile arthritis
  - Rheumatoid arthritis
  - Spondyloarthropathises
    - Ankylosing spondylitis
    - Psoriatic arthritis
- Systemic lupus erythematosus, systemic sclerosis
- Crystal induced-disease
  - Gout
  - Chondrocalcinosis

- Variable presentation
  - Pain
  - Swelling/exudate
  - Tissue degradation
  - Growth disturbance
  - Malocclusion (anterior open bite)
- Must have:
  - Systemic inflammatory joint disease diagnosed by rheumatologist
  - Degenerative joint disease

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Scenario

A 50-year-old F presents with "dull, aching pain of my left jaw". She reports ongoing pain 3-4 times/week for the past 7 months, but notes worsening over the past 2 months, which is why she is seeking evaluation. She report that it is worse upon waking and with function (chewing, talking for a long time) and sometimes she also has headaches. Her pain is usually 2/10 during the day, but 5/10 upon waking.

Past medical history: gastritis, overactive bladder, hypothyroidism, rheumatoid arthritis (in remission)

Medications: Ranitidine, omeprazole, oxybutynin, levothyroxine

Social history: Never smoker, non-drinker, divorce attorney

Extraoral examination:

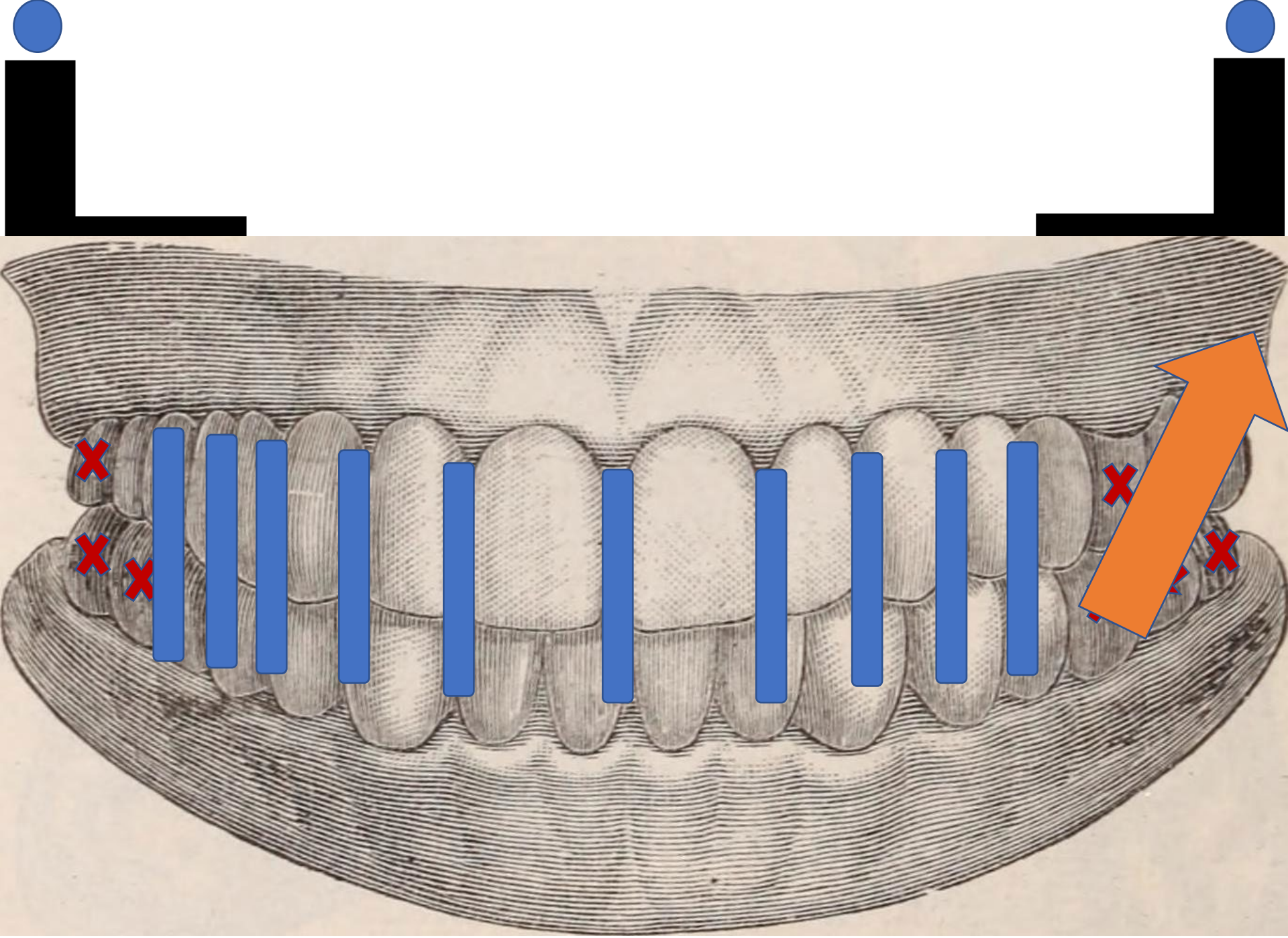
- Pain on palpation of the L masseter with spreading characteristics
- Pain on palpation of the L temporalis without spreading characteristics
- Nontender click of the L TMJ on opening and closing
- Deviation to the L upon opening with correction
- Maximal unassisted range of motion = 36 mm with familiar pain
- Maximal assisted range of motion = 41 mm with familiar pain

Analysis

- **Additional questions?**
- **Adjunctive tests?**
- **Diagnosis(es)?**

Intraoral examination: Generalized moderate wear facets, missing teeth # 1, 14, 15, 17, 19, 31, and 32

Three minutes after you finish your clinical exam she starts reporting a familiar headache of the temple region.



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Principles of Management

Principles of Management

Understand why the patient is in pain (MOST IMPORTANT)

- Treat source and cause of pain

Determine what type of treatment goal is appropriate and achievable

- Curative intent
- Palliative intent
  - Limit tissue damage
  - Get patient through adaptive phase
  - Manage chronic pain
  - Aggressive care if palliative care is ineffective to control symptoms or of there is significantly decreased quality of life

Multidisciplinary approach may be necessary

Jeffrey Okeson. Bell's Oral and Facial Pains 7th Ed. (2014)

Principles of Management

Management Strategies

Patient education	• Education on condition • Self-management strategies (identification and avoidance of contributing factors) • Motivation, cooperation, and compliance
Physical therapy	• Home physiotherapy (stretching and strengthening exercises) • Professional physiotherapy
Pharmacologic	• Treat for 10-14 days and re-evaluate • Analgesics and anti-inflammatory (NSAIDS, steroids) - acute • Muscle relaxants – acute and chronic • Antidepressants and benzodiazepines - chronic
Injections*	• Trigger point injections • Botox (not first-line) – refractory disease • Local Anesthesia - Muscle injections (Short-acting local anesthetics WITHOUT vasoconstrictors; 7-day intervals) - TMJ arthralgia (auriculotemporal nerve block, intracapsular infiltration)
Occlusal*	• Occlusal appliances - Stabilization appliance first-line - Anterior reposition appliances for acute pain, short-term use then stabilization app. - Avoid partial coverage appliances • Occlusal adjustment ***only if***: -Occlusal interference from recently restorative therapy precipitated TMD symptoms -Specific TMD resulted in unstable occlusal relationship

Scenario

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Past medical history: gastritis, overactive bladder, hypothyroidism, rheumatoid arthritis (in remission)

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Management Strategies?

Extraoral examination:

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- Pain on palpation of the bilateral trapezius with spreading characteristics
- Nontender click of the L TMJ on opening and closing
- Deviation to the L upon opening with correction
- Maximal unassisted range of motion = 36 mm with familiar pain
- Maximal assisted range of motion = 41 mm with familiar pain

Intraoral examination: Generalized moderate wear facets, missing teeth # 1, 14, 15, 17, 19, 31, and 32

Three minutes after you finish your clinical exam she starts reporting a familiar headache of the temple region

Principles of Management

Occlusal Appliances

When would an appliance be indicated?

- Considering what appliances can and cannot do, what is your purpose in using the appliance?
  - Reduce or eliminate pain, improve function
  - Reduction of joint loading*
  - Protect occlusal surfaces and restorations
  - May improve locking/catching symptoms of internal derangement

- Patients with
  - Signs and symptoms of bruxism
  - Distinct, consistent greater symptoms upon waking (muscle and/or joint pain, stiffness)
  - Arthrogenous pain
  - Anterior disc displacement with locking
  - Anterior disc displacement with ***painful*** clicking

- If condition is characterized by widespread pain, central sensitization, chronic, psychosocial factors occlusal appliances are less likely to be effective

Greene & Menchel *Oral Maxillofacial Surg Clin N Am* 30 (2018) 265–277

Principles of Management

Occlusal Appliances

- **Stabilization**

- **Partial-coverage**
  - Disadvantage: malocclusion (anterior open bite)
  - Aspiration

- **Anterior positioning**
  - Acute joint pain with disc displacement
  - Short-term
  - Disadvantage: malocclusion (posterior open bite)

Reasonable approach: Appliance + adjunctive therapy for pain relief (pharmacologic) and improved function (home exercises, physical therapy)

Principles of Management

Occlusal Appliances

Muscle disorders

- Flat plane appliance (stabilization appliance)
- Anterior bite plane appliance if refractory myofascial pain, headache (short-term)

Disc Displacement/Internal Derangement

- Flat plane appliance
- Anterior repositioning appliance if occasional locking or if symptoms persist (short-term)

Disc Displacement/Internal Derangement

- Flat plane appliance
- Anterior repositioning appliance if sever inflmmation (short-term)

Greene & Menchel *Oral Maxillofacial Surg Clin N Am* 30 (2018) 265–277

Principles of Management

Occlusal

- Occlusal adjustment
  - Irreversible
  - Only if:
    - Occlusal interference from recently restorative therapy precipitated TMD symptoms
    - Specific TMD resulted in unstable occlusal relationship

- Restorative
  - Never primary treatment for TMD
  - ??Treat TMD then restorative interventions to reduce adverse loading and redistribute forces?? → not predictable

- Orthodontic-orthognatic
  - No cause-effect relationship between ortho and TMD – no cause nor cure
  - May exacerbate pre-existing TMD – screening necessary prior to ortho
  - Orthognatic treatment indicated when there is occlusal stability and esthetic concerns in patients with *severe* skeletal malocclusion and TMD

de Leeuw R, Klasser GD, Pain AAoO. Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management: Quintessence Publishing Company, Incorporated; 2013.

Principles of Management

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Review Article

Diagnosis and treatment of temporomandibular disorders: an ethical analysis of current practices

K. I. REID* & C. S. GREENE† *Division of Orofacial Pain, Department of Dental Specialties, Mayo Clinic, Rochester, MN and †Department of Orthodontics, UIC College of Dentistry, Chicago, IL, USA

- Biopsychosocial model
- Conservative, reversible treatment
- Treatment that will be successful in most TMDs

4 questions

- Will the problem get worse if the treatment is not performed?
- Is the treatment valid within proven clinical value?
- Would a lesser procedure solve the problem?
- Does the risk/benefit ratio justify the invasiveness of the procedure?

Principles of Management

Take-Home Message

- Understanding why the patient is in pain is the most important aspect for diagnosis and to guide treatment
  - History of trauma?
  - Underlying systemic disease?
  - Infection?
  - Tumor?
  - Comorbidities?
  - Psychosocial aspect

- Most of the time TMD pain is self-limiting

- Pain does not always correlate with severity of disease and dysfunction

- Symptoms can be due to adaptive nature without significant disability

Principles of Management

Take-Home Message

- Determine what type of treatment goal is appropriate and achievable
  - Management of acute pain
  - Limit tissue damage
  - Get patient through adaptive phase
  - Manage chronic pain
- Care is frequently multimodal
- Determine if there are multidisciplinary needs
- Conservative care is first-line in most cases

Questions?

tavarest@uthscsa.edu