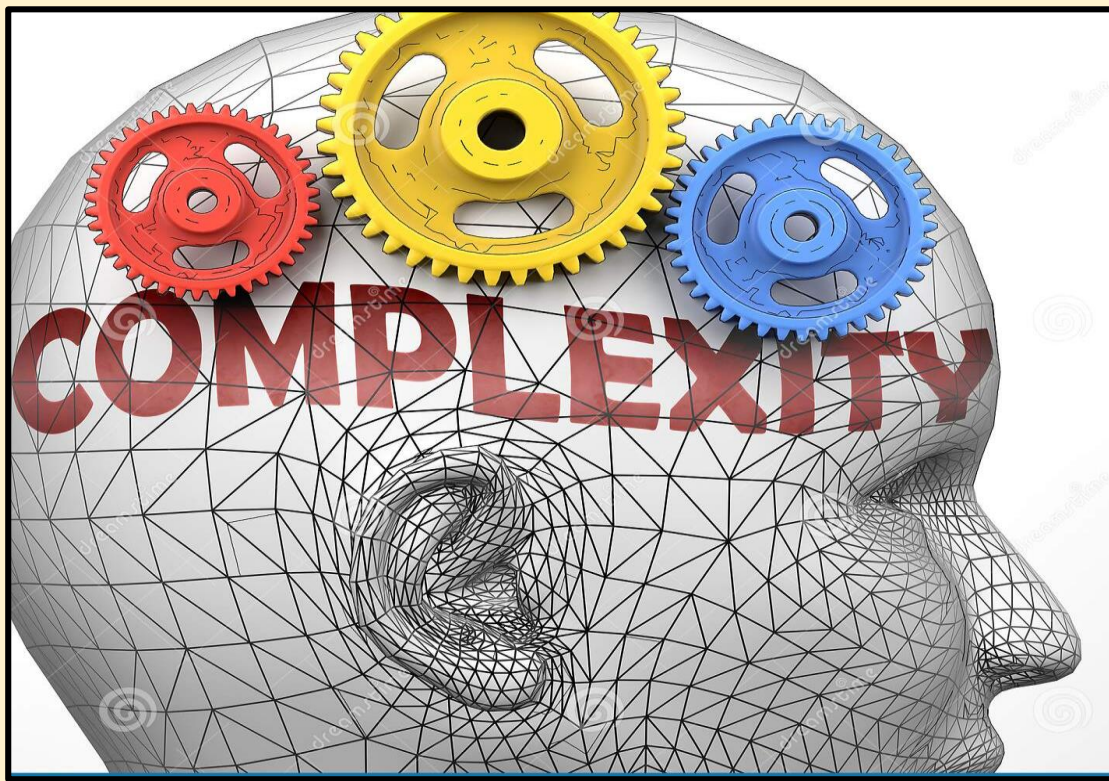


TMD from an Orthodontic Perspective

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TMD is often a combination of etiologies (rather than a single anatomical or functional disharmony), which often complicates successful treatment and can frustrate the clinician and patient!



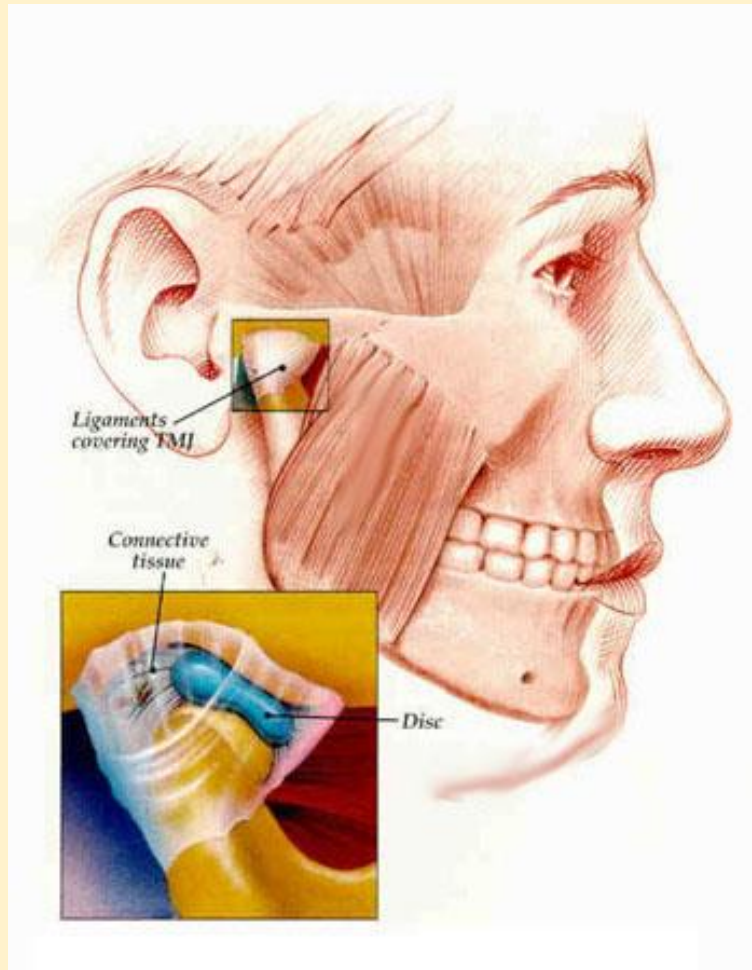
The orthodontist must be prepared to deal with patients who present with TMD signs & symptoms:

- **Orofacial pain**
- **Facial muscle tenderness**
- **Pain, crepitus, clicking in one or both of the TM joints**
- **Difficulty/ pain while chewing**

In advanced scenarios:

- ❖ **Pain/ tinnitus in one or both ears**
- ❖ **Locking of the joint**
(difficult to open or close the mouth)

Arthrogenic vs. Myogenic TMD

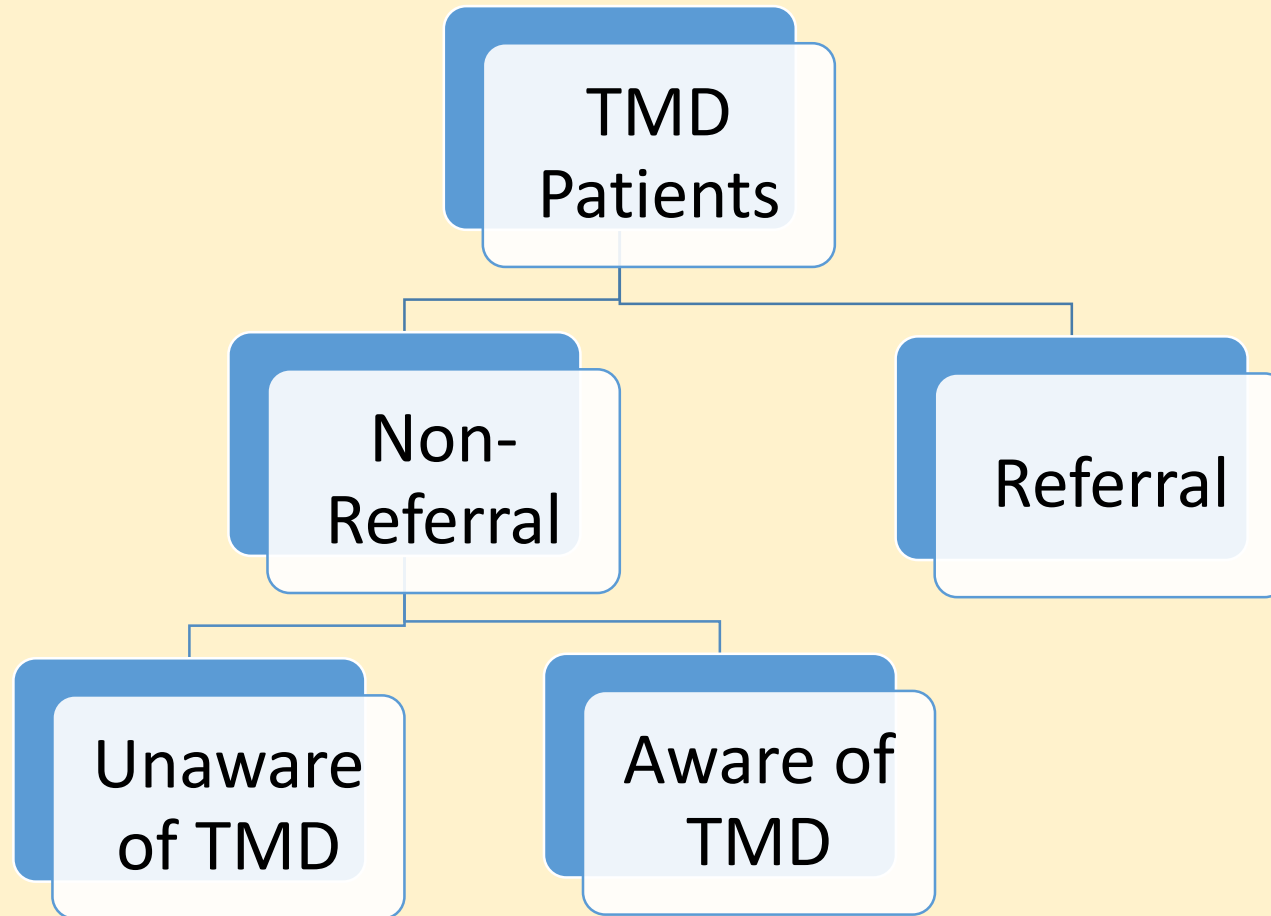


TMD signs and symptoms can be encountered and managed at three stages/phases:

- 1- TMD signs and symptoms may be present before the onset of orthodontic treatment**
- 2- TMD signs and symptoms may arise during orthodontic treatment**
- 3- A completed patient may develop TMD after orthodontic treatment**



1- TMD Signs and Symptoms Present before the Onset of Orthodontic Treatment **(Most Imp. Stage)**



➤ **Non-Referral Patient, Aware of an Existing TMD and Malocclusion, Seeks Ortho. Treatment to Resolve the TMD!!**

1- Inform the pt. that ortho. WILL NOT resolve the TMD!!

2- Severity of TMD should be assessed and recorded

3- If the TMD is acute or severe, ortho. Must be postponed until the TMD is resolved (controlled)

NOTE: Treatment of TMD either by the orthodontist OR referral to a specialist



Treatment (1st Line)

- ❑ Occlusal splint (Night Guard), Rigid vs. Flexible (pros & cons)
- ❑ Medications (Systemic: Muscle relaxants & analgesics; Topical: Gel massage)

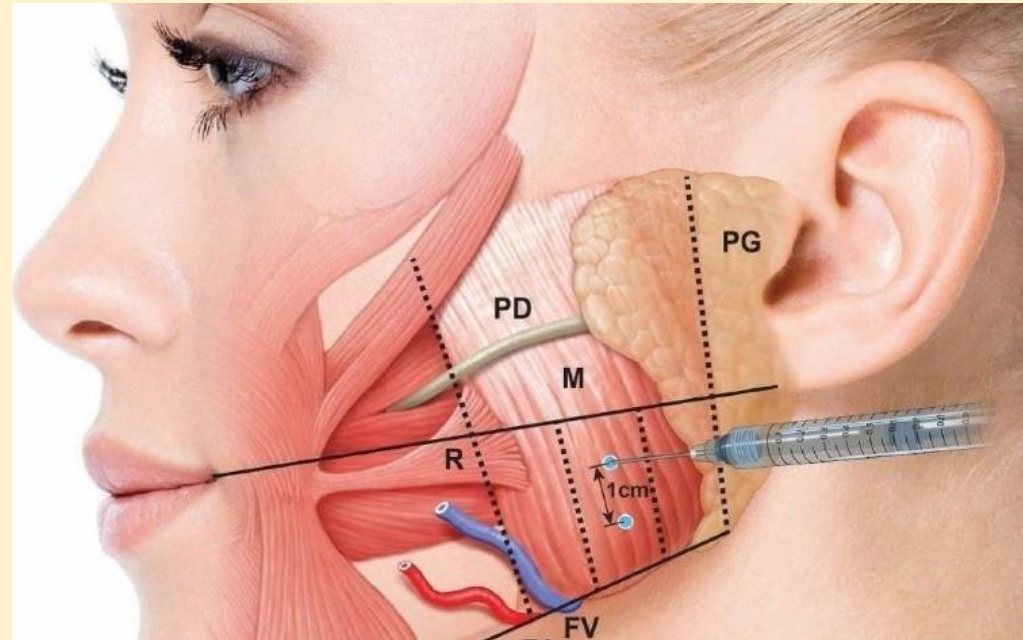


Adjunctive Treatment

Physiotherapy (Heat, Infrared, Vibration)

Laser Therapy

Botox Injection



3rd Line Treatment

□ Surgical Intervention



➤ **Non-Referral Patient, Unaware of an Existing TMD Problem**

1- Inform the pt. and record the TMD problem

2- No guarantee that ortho. can resolve OR aggravate the TMD

3- The TMD is mostly mild in those pts., go ahead with ortho. treatment



➤ Referral Patient: A Dentist/Physician Refers a Pt. with Existing TMD and Malocclusion, Seeking Ortho. Treatment to Resolve the TMD!!

1- Inform the pt. that ortho. WILL NOT resolve the TMD!!

2- Reassess the severity of TMD problem and record

3- If the TMD is acute or severe, ortho. Must be postponed until the TMD is resolved (controlled)



2- TMD Signs and Symptoms May Arise during Orthodontic Treatment

Possible Causes:

- 1- TMD is a phenomenon most commonly noted (onset) during adolescence with peak frequency between the ages of 18 and 40 years (Coincidental Development of TMD)
- 2- Sudden change in lifestyle (e.g. stress due to various reasons).
- 3- Excessive orthodontic forces/mechanics.
- 4- Rarely, idiopathic condylar resorption (signs: sudden, rapid open bite, sudden mandibular retrusion).

Kandasamy S, Greene CS, Rinchuse DJ, Stockstill JW. TMD and Orthodontics: A Clinical Guide for the Orthodontist. Springer, 2015.



2- TMD Signs and Symptoms May Arise during Orthodontic Treatment

Management:

1- Assess the severity of TMD problem.

2- Reassure and educate the pt. that TMD is not necessarily a progressive problem and in most cases symptoms will improve over time with conservative treatment.

3- Excessive orthodontic forces/mechanics should be stopped. If no response, the pt. must be dealt with as a TMD case.

4- Once TMD has been alleviated or controlled, active ortho treatment may be resumed with consideration to modification of treatment (reduction of forces on headgear, lighten elastics, change mechanics, etc.).



3- A Completed Patient May Develop TMD after Orthodontic Treatment !!

Possible Causes:

**Coincidental Development
Neurotransmitters, Pain mediators
(prostaglandins and cytokines)**



3- A Completed Patient May Develop TMD after Orthodontic Treatment

Management

- 1- Overcome negative beliefs or opinions.
- 2- Treat the pt. using the protocols of treating a TMD case.



There is little basis that orthodontic treatment affects the prognosis of TMD either positively or negatively, except in some cases of open bite, deep bite, and unilateral posterior crossbite in the growing patient.

- [McNamara J. Orthodontic treatment and temporomandibular disorders. Oral Surg Oral Med Oral Path. 1997; 83:107–17.](#)
- [Luther F, Layton S, McDonald F. Orthodontics for treating temporomandibular joint disorders. Cochrane Database Syst Rev. 2010;7.](#)
- [Daniele Manfredinia; Edoardo Stellinib; Antonio Graccoc; Luca Lombardod; Luca Guarda Nardinie; Giuseppe Siciliani. Orthodontics is temporomandibular disorder–neutral. Angle Orthod. 2016;86:649–654.](#)
- [Ye Choung Lai, Adrian Ujin Yap, Jens Christoph Türp. Prevalence of temporomandibular disorders in patients seeking orthodontic treatment: A systematic review. J Oral Rehabil. 2020;47:270–280.](#)



Extraction vs. non-extraction, Fixed appliances, Functional or Orthopedic appliances, etc., are not considered as risk factors for the development of TMD

- Antonio Jiménez-Silva, Romano Carnevali-Arellano, Matías Venegas-Aguilera. Temporomandibular disorders in growing patients after treatment of class II and III malocclusion with orthopaedic appliances: a systematic review. *Acta Odontologica Scandinavica*. 2018;76.
- CS Greene, MTS Galang-Boquiren, BY Bartilotta. Orthodontics and the temporomandibular joint: What orthodontic providers need to know. *Quintessence Int*. 2017;48:799-808.
- Gary Klasser, Charles Greene. Screening orthodontic patients for temporomandibular disorders. *Clin Dent Rev*. 2017; 1:8.



Recommendations for Early Treatment of Posterior Crossbite with Mandibular Displacement

- Tsukiyama Y, Baba K, Clark GT. An evidence-based assessment of occlusal adjustment as a treatment for TM disorders. *J Pros Dent.* 2001;86:57–66.
- Birgit Thilander, Krister Bjerklin. Posterior crossbite and temporomandibular disorders (TMDs): need for orthodontic treatment? *European Journal of Orthodontics.* 2012;34(6):667–673.

Bilateral vs. Unilateral Posterior Crossbite



True vs. False Unilateral Posterior Crossbite



CONCLUSIONS

- **Orthodontics is TMD–neutral (Orthodontic treatment is neither the cause nor cure for TMD).**
- **Orthodontists need to distinguish between major (significant) and minor signs and symptoms of TMD discovered during the screening.**
- **There is no guarantee/evidence that early orthodontic treatment of patients with malocclusions will prevent the development of TMD in the future.**

