Content available at: https://www.ipinnovative.com/open-access-journals

IP Journal of Otorhinolaryngology and Allied Science

Journal homepage: https://www.joas.co.in/

Editorial

Temporomandibular joint dysfunction: A contemporary overview

Karthikeyan Padmanabhan[1]*

[1]Dept. of Otorhinolaryngology (ENT), MGMCRI, Pondicherry, India.

Received: 20-06-2025; **Accepted:** 26-06-2025; **Available Online**: 27-06-2025

Temporomandibular joint dysfunction (TMD) represents a diverse collection of conditions involving the temporomandibular joint (TMJ), the masticatory muscles, and associated structures. These conditions often manifest as pain, restricted jaw movement, and joint sound, affecting daily activities and quality of life. The TMJ is anatomically, a ginglymoarthrodial synovial joint, has function of both gliding (translational) and hinge (rotational) movements.[1] Unlike other synovial joints lined with hyaline cartilage, the TMJ's articular surfaces are covered by fibrocartilage, providing superior durability against stress and wear.

TMD frequently overlaps with symptoms seen in otolaryngology, such as earache, tinnitus, facial pain, bruxism, sleep issues and headaches. ENT clinicians must recognize these overlaps to provide appropriate referrals and avoid unnecessary interventions.[2]

1. Etiology and Contributing Mechanisms

Recent data indicate that TMD affects approximately one-third of adults and around 11% of children and adolescents.[3]The condition can arise from diverse causes, including mechanical stress (e.g., joint remodeling, osteoarthrosis), acute disc displacement (anchored disc phenomenon), and inflammatory changes (osteoarthritis with pain and swelling).

Interestingly, females are more commonly affected, with reported female-to-male ratios ranging from 2:1 to as high as 10:1. This disparity may be explained by differences in estrogen receptor expression within joint tissues, as well as elevated levels of oxidative stress markers found in joint aspirates.[2]

Major risk factors include: parafunctional habits (teeth grinding, jaw clenching), dental malocclusion, direct or repetitive trauma, emotional stress and anxiety, and systemic inflammatory diseases (e.g., rheumatoid arthritis). Furthermore, chronic TMD cases may involve central sensitization, where the brain's pain-processing pathways amplify discomfort beyond the peripheral joint pathology.[4]

2. Clinical Features and Diagnosis

Patients with TMD typically report: pain in the preauricular area, limited or asymmetric mouth opening, audible joint noises (clicking, popping, crepitus), headaches, neck stiffness, or bite changes. The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) provide a standardized two-axis framework for evaluation, integrating both physical examination and psychosocial assessment.[5] MRI is the gold standard for assessing joint soft tissues, while CBCT helps visualize bony components. Ultrasound and bone scintigraphy are emerging as adjunctive tools but require further validation.[2]

*Corresponding author Karthikeyan Padmanabhan
Email: kaartikbajaj73@gmail.com

https://doi.org/10.18231/j.ijoas.2025.008

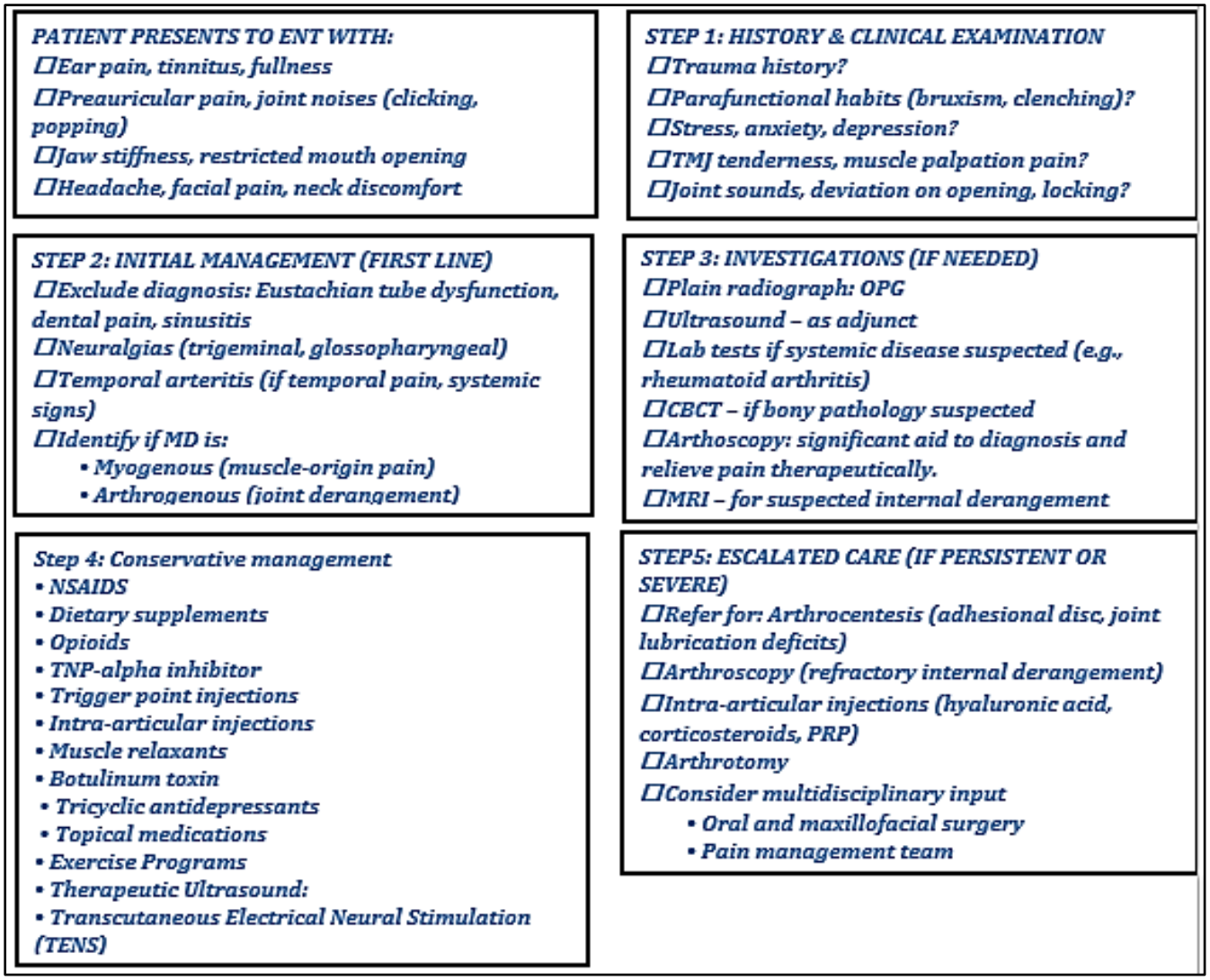

Figure 1: Clinical flowchart: ENT approach to temporomandibular joint dysfunction (TMD)

Table 1: Summary of common TMD Types and clinical features

TMD Type	Key Features
Myalgia	Muscle pain on palpation or mouth opening
Myofascial pain	Spreading muscle pain beyond palpation site
Arthralgia	Joint pain on palpation or function
Disc displacement with reduction	Clicking during function
Disc displacement without reduction	Limited mouth opening (<40 mm)
Degenerative joint disease (osteoarthrosis)	Joint crepitus, bony changes
Subluxation	Jaw locking open, self-maneuver to close

3. Treatment Strategies

Most patients benefit from conservative management, including pharmacotherapy (NSAIDs, muscle relaxants, antidepressants), occlusal splints (hard or soft types) to reduce nocturnal bruxism, physical therapy and muscle relaxation exercises, and behavioral therapies (counseling, cognitive-behavioral approaches). For refractory cases, minimally invasive interventions such as arthrocentesis, arthroscopy, or botulinum toxin injections may be employed. Arthrocentesis, involving joint lavage without direct visualization, is particularly effective for acute disc displacement with limited mouth opening.[2]

Importantly, rare but severe infectious complications must be recognized early. A recent retrospective analysis reported that 23% of skull base osteomyelitis (SBO) progressed to septic arthritis of the TMJ, requiring medical and surgical management which led to complete resolution.[6]

4. Emerging Directions

Innovations in TMD management are targeting both peripheral and central pain mechanisms. Neuromodulation, extracorporeal shockwave therapy, platelet-rich plasma injections, and even jaw exoskeleton devices are under

investigation, promising to expand future therapeutic options.[7]

5. Conclusion

Temporomandibular joint dysfunction is a multifaceted condition that frequently presents in ENT practice due to its overlapping symptoms with ear and craniofacial disorders. A sound understanding of its anatomical, functional, and psychosocial components allows ENT clinicians to guide patients toward effective, evidence-based, multidisciplinary care.

6. Conflict of Interest

None.

References

1. Baba K, Kurita K, Westesson PL. Recent advances in temporomandibular joint research. *J Oral Rehabil*. 2023;50(2):155–166.
2. Li DTS, Leung YY. Temporomandibular Disorders: Current Concepts and Controversies in Diagnosis and Management. *Diagnostics*. 2021;11(3):459.
3. Valesan LF, Da-Cas CD, Reus JC. Prevalence of temporomandibular joint disorders: A systematic review and meta-analysis. *Clin Oral Investig*. 2021;25(2):441-53.
4. Greenbaum S, Smith J, Patel R. Central sensitization in chronic temporomandibular disorders. *J Oral Facial Pain Headache*. 2024;38(1):45–54.
5. Schiffman E, Ohrbach R, Truelove E. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for clinical and research applications. *J Oral Facial Pain Headache.* 2014;28(1):6–27.
6. Karthikeyan P, Divya PS, Ravichandran K, Agathiyanathan V. Understanding the impact of skull base osteomyelitis: a retrospective analysis of 14 cases. *Cureus.* 2025;17(1):e77684.
7. Chen Y, Wang X, Li H. Advances in jaw exoskeleton design for temporomandibular rehabilitation. *J Med Eng Technol.* 2025;49(2):150–60.

Cite this article: Karthikeyan Padmanabhan, Temporomandibular joint dysfunction: A contemporary overview. *J Otorhinolaryngol Allied Sci.* 2025;8(2):30-32.