INTERNATIONAL MULTIDISCIPLINARY JOURNAL FOR RESEARCH & DEVELOPMENT
SJIF 2019: 5.222 2020: 5.552 2021: 5.637 2022:5.479 2023:6.563
eISSN 2394-6334 https://www.ijmrd.in/index.php/imjrd Volume 10, issue 09 (2023

COMPREHENSIVE TREATMENT OF PATIENTS WITH DISEASES OF THE TEMPOROMANDIBULAR JOINT WITH DYSFUNCTIONAL SYNDROME

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Annotation: Temporomandibular disorder (TMD) refers to a group of conditions involving the orofacial region divided into those affecting the masticatory muscles and those affecting the temporomandibular joint (TMJ). The typical features include pain in TMJ, restriction of mandibular movement, and TMJ sounds.

Key words: temporomandibular , blood , mindubula , major ligament .

Temporomandibular disorder (TMD) refers to a group of conditions involving the orofacial region divided into those affecting the masticatory muscles and those affecting the temporomandibular joint (TMJ). The typical features include pain in TMJ, restriction of mandibular movement, and TMJ sounds. These symptoms may resolve by themselves without further treatment. If not, conservative methods are the first to be used with positive results in most patients. This activity reviews the evaluation and treatment of temporomandibular disorder and highlights the role of the interprofessional team in evaluating and treating patients with this condition.

Objectives:

- Review the different types of temporomandibular disorder.
- Summarize the presentation of a patient with temporomandibular disorder.
- Describe the evaluation of a patient with temporomandibular disorder.
- Summarize the differential diagnosis for temporomandibular disorder.

Temporomandibular Joint Anatomy

The temporomandibular joint (TMJ) is a ginglymoarthrodial joint formed by the glenoid fossa of the temporal bone and the mandibular condyle.[1] An articular disc separates the joint into two synovial cavities with distinctive movement patterns. Gliding or translatory movement occurs in the superior joint (between the articular disc and the glenoid fossa).[2] Rotary or hinge movement takes place in the inferior joint (between the articular disc and the condyle).[2]

The muscles involved in temporomandibular disorders are the muscles of the mastication: temporalis, masseter, medial and lateral pterygoid muscles.[1] Three major ligaments stabilize the TMJ: temporomandibular, stylomandibular, and sphenomandibular ligaments.

The primary blood supply of the TMJ comes from the superficial temporal and maxillary branches of the external carotid artery.[3]

Other contributing branches include the anterior tympanic, deep auricular, and ascending pharyngeal arteries. The TMJ receives its sensory innervation from the auriculotemporal and masseteric branches of the mandibular nerve (V3), a branch of the trigeminal nerve.[1]

The etiology of TMD is mildly understood, but it is believed to be multifactorial; the appropriate management of the condition requires recognizing the predisposing and contributing factors.[1]

Myofascial and intraarticular TMDs differ in their etiological factors. As the name implies, a myofascial disorder means that the muscles – in this case, the ones involved in mastication - are affected, becoming tensioned, fatigued, and painful. Several factors are linked to muscular dysfunction, including stress, parafunctional habits like bruxism and abnormal posture, psychological conditions like depression and anxiety, and autoimmune diseases.[1] Chronic pain conditions such as fibromyalgia are also often linked to TMD.[4]

Intraarticular disorders refer to inflammatory or mechanical factors that affect the joint itself, articular disc displacement being the most common.[1] Other intraarticular causes include trauma, capsular inflammation, osteoarthritis, hypermobility, and inflammatory diseases, like rheumatoid arthritis. It is not clear yet if malocclusion contributes to TMD.[1]

TMD symptoms can appear at any age, but a peak incidence occurs in adults between 20 to 40 years.[1][5] Women are much more likely to be affected than men, the reason for which is still unknown.[1] Even though up to 60 to 70% of the population shows signs of TMJ disorders, only 5% to 12% of people report symptoms and require treatment. Temporomandibular Joint Disorders

Derangement of the Condyle-Disc Complex

The derangement of the condyle disc complex arises due to a breakdown in the rotational function of the disc. This condition can result from the lengthening of ligaments (discal collateral and inferior retro-discal ligaments) or thinning of the posterior disc border. The contributing factors can be micro or macro trauma.

Disc Dislocation with Reduction

Disc displacement can lead to partial or complete disarticulation of the disc from discal space in condyle–disc assembly. When the mouth is closed, the articular disc is displaced anterior to the condyle head; when the mouth opens, the disc repositions on the condyle head similarly to normal.[6] This on and off disc movement explains the click, snap, or pop sound in the TMJ. This sound does not appear with every movement of the mandible but with some frequency.[6] A normal range of motion is expected since the articular disc reduces during condylar translation.[6] Jaw deviation while opening the mouth can occur; the interincisal distance of disc reduction during opening is greater than when the disc is dislocated during the closure.

The disc can sometimes fail to reduce with consequent mouth opening limitation. This is known as disc displacement with reduction with intermittent locking.[6]

Disc Dislocation without Reduction

When the articular disc fails to reduce repeatedly, causing a limited mouth opening, the diagnosis of disc displacement without reduction is given.[6] The repositioning of the disc can

become problematic due to the loss of elasticity in the superior retro-discal lamina. This situation causes forward translation of the condyle forcing the disc in front of the condyle. It presents as a locked jaw during the closure, represented as difficulty in maximum opening. The mandibular opening is around 25 to 30 mm, deflects towards the involved joint, and is associated with pain. The bilateral manipulation technique of loading the joint is painful due to the condyle position in the retro-discal tissues.

Structural Incompatibility with Articular Surfaces

The disorder results from changes in the smooth sliding surfaces of the TMJ. The alteration causes friction stickiness and inhibits joint function. Structural incompatibility classifies as a deviation in form, adhesions, subluxation, and spontaneous dislocation.

Deviation in the Form

The physiological aging or minor degeneration of the condyle, disc, and fossa can cause deviations and dysfunction, significantly affecting mandibular movements.

Adherences and Adhesions

An adherence represents a brief hold of the articular surfaces. Adhesion can happen between the condyle and disc or the disc and fossa. Adhesions result from a fibrous connective tissue or loss of lubrication between the structures. It is characterized by restriction in the normal translation of the condyle movement with no pain. In chronic situations, the patient senses an inability to get the teeth back to occlusion during the closure.

Subluxation

It is a non-pathologic condition, a repeatable clinical phenomenon characterized by a sudden forward movement of the condyle past the crest of the articular eminence during the final stages of mouth opening. The steep, short posterior slope of the articular eminence and the longer anterior slope - more superior to the crest - cause the condyle to subluxate. The examiner can witness it by requesting the patient to open wide, creating a small void or depression behind the condyle.

Luxation (dislocation)

A dislocation happens when the condyle moves in front of the articular eminence and cannot descend back to the normal position.[7] Dislocations result from the TMJ's hyperextension, causing the fixing of the joint in an open position during the opening of the mouth. It can be partial (subluxation) or complete (luxation). It can be acute or chronic (protracted or recurrent), bilateral or unilateral.[7] Anterior teeth are usually separated, and the posterior teeth are closed. The patient will find difficulty closing the mouth and pain.

Inflammatory Disorders of the TMJ

The joint disease of inflammatory origin characteristically presents with deep continuous pain commonly accentuated on functional movement. This constant pain can trigger secondary excitatory effects. It expresses as referred pain, sensitivity to touch, protective contraction, or a combination of these problems.

Inflammatory joints are classified according to the structures involved into synovitis, capsulitis, retro-discitis, and arthritis.

Synovitis/Capsulitis

Trauma can cause inflammation of the synovial tissues (synovitis) and the capsular ligament (capsulitis). It presents as continuous pain, tenderness on palpation, and limited mandibular movement. However, it isn't easy to differentiate between these two entities clinically, and arthroscopy is helpful for diagnosis.

Retrodiscitis

It is caused by trauma or progressive disc displacement and dislocation. The patient complains of pain, which increases with clenching. Limited jaw movement, swelling of retro discal tissues, and acute malocclusion are associated with the disease.

Arthralgia

The pain originates in the jaw and is affected by jaw movement, function, or para-function. The pain can be replicated with provocative testing of the TMJ.

Arthritis

Pain originates in the joint, and features of inflammation or infection over the affected joint are usually seen, such as edema, erythema, or increased temperature. Further symptoms include dental occlusal changes, e.g., ipsilateral posterior open bite if intraarticular with unilateral swelling or effusion. This disorder is also known as synovitis or capsulitis, although these terms limit the sites of nociception. TMD is a localized condition; there should be no history of systemic inflammatory disease.

Osteoarthritis

It is an inflammatory disorder that arises due to an increased joint overload. The increased forces soften the articular surfaces and resorb the subarticular surface. The progressive loading and the subsequent regeneration cause loss of the subchondral layer, bone erosion, and osteoarthritis. The condition characterizes by joint pain that increases with movement. It is also associated with disc dislocation and perforation.

Osteoarthrosis

Arthrosis is the adaptive unaltered arthritic changes of the bone due to decreased bone loading. It occurs after the overloading of the joint, mainly due to parafunctional activity, and is often associated with disc dislocation.

Systemic Arthritis

Several arthritides can affect the TMJ, including traumatic arthritis, infectious arthritis, and rheumatoid arthritis.

Chronic Mandibular Hypomobility

It is a long-term painless restriction of the mandible. Pain only occurs when using force to attempt opening beyond limitations. Hypomobility can be caused by ankylosis, muscle contracture, or coronoid process impedance.

Growth Disorders

Growth disturbances can affect the TMJ bones or muscles. Common growth disturbances of the bones are agenesis (no growth), hypoplasia (insufficient growth), hyperplasia (excessive growth), or neoplasia (uncontrolled, destructive growth). Common growth disturbances of the muscles are hypotrophy (weakened muscle), hypertrophy (increased size and strength of the muscle), and neoplasia (uncontrolled, destructive growth). The growth alterations typically result from trauma.

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