



TREATMENT PLANNING FOR TEMPOROMANDIBULAR JOINT DISORDERS.

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Abstract :-

Temporomandibular joint disease is a group of orofacial pain syndromes, the most common non-dental pain in the maxillofacial region that affects both the structure and function of the jaw. TMD can usually present with jaw pain and limited mouth opening, because the etiology of TMD is multifactorial, diagnosis and treatment planning are complex and individualized for each patient. Common symptoms include jaw pain, clicking when moving the jaw, difficulty opening or closing the mouth and headaches. In severe cases, treatment may include lifestyle changes, physical therapy, dental appliances, or surgery. This review provides an overview of TMD classification, etiology, clinical findings, TMJ examination diagnosis, and a detailed overview of treatment options, which include both conservative and surgical treatment. Thus, an electronic search was performed in PubMed, Science Direct, Google scholar, and analysed for the articles for detailed description of the treatment methods of temporomandibular joint disorders. Thus, the primary goal of therapy for temporomandibular disorders is to reduce or eliminate pain and/or joint pain and restore normal mandibular function.

Index terms:-

TMD, Therapy, Craniomandibular disorder, stiffness , joint pain, treatment modalities of TMD, ginglymoid joint, condyle and Temporomandibular joint.

I. INTRODUCTION :

The temporomandibular joint is a bilateral joint located on either side of the craniomandibular complex. The main functions of the temporomandibular joint are swallowing, speaking, chewing, yawning, grinding and pressing. Many different disorders arise from a change in the TMJ that leads to temporomandibular joint disease TMD is a catch-all word for a variety of clinical issues involving the muscles of the TMJ, TMJ complex, and other structures. Temporomandibular disorder has a catastrophic etiology and the main cause of TMD is deformity, psychological factors including tension, anxiety, depression and behavioral factors including grinding, tension, abnormal head movement [1]. TMD includes many different symptoms. There are multiple diagnostic and treatment modalities

in the literature for TMD. TMD occurs in up to 15% of adults, with the highest prevalence between the ages of 20 and 40[2].

II. CLINICAL FINDINGS :

Clinical findings may include neck and headache on exertion, preauricular pain, decreased range of motion, masseter tenderness, tooth wear, joint movement changes, masseter hypertrophy, and other symptoms such as inflammation. processes or sounds when making movements of the lower jaw [2]. Temporomandibular disorders clinically present with three main features: orofacial pain, joint sounds, and jaw functional limitations [3,4]. Pain is the most common complaint and the most difficult to assess [5,6]. However, the presence of joint sounds is a common finding and has little clinical significance [7]. The limited jaw function includes movements of the lower jaw in all directions. Thus, the purpose of this article is to provide a general overview of the treatment-related classification, clinical features and current treatment strategies for TMJ disorders.

III. CLASSIFICATION OF TEMPOROMANDIBULAR JOINT DISORDER :

In addition, temporomandibular disorder is classified by Okeson in the year as follows in Table -1 [8].

Table-1 Classification of temporomandibular joint disorder

I. Masticatory muscle disorder	II. Temporomandibular joint disorders	III. Chronic mandibular hypermobility	IV. Growth disorders
Protective co-contraction	A. Derrangement of condyle- disc disorder 1.Disc displacement 2.Disc displacement with intermediate locking 3.Good displacement without reduction	A. Ankylosis 1.Fibrous 2.Bony B. Muscle contracture 1.Myostatic 2.Myofibrotic C. Coronoid impedance	A. Congenital and developmental bone disorders 1.Agenesis 2.Hypoplasia 3.Hyperplasia 4.Neoplasia
Local myalgia	B. Structural incompatibility of the articular surfaces 1.Deviation in form a. Disc b. Condyle c. Fossa 2.Adhesions a. Disc to condyle b. Disc to fossa 3.Subluxation 4.Luxation	B.Muscle contracture 1.Myostatic 2.Myofibrotic	B. Congenital and developmental muscle disorders 1.Hypotrophy 2.Hypertrophy 3.Neoplasia
Myofacial pain	C. Inflammatory disorder of the temporomandibular joint. 1.Synovitis 2.Retrodiscitis 3.Arthritides	C. Coronoid impedance	

	a. Osteoarthritis b. Osteoarthrosis c . Polyarthritides 4.Inflammatory disorders of supporting structures 1.Temporal tendonitis 2.Stylomandibular ligament inflammation		
Myospasm			
Central mediated myalgia			

Table-1 Classification of temporomandibular joint disorder

IV. TEMPOROMANDIBULAR JOINT EXAMINATION :

The temporomandibular joint is examined in two ways : Intra-auricular and Extra-auricular palpation. In Intra-Auricular Palpation involves pressing the little finger into the external auditory meatus on one side at a time while encouraging the patient to open and close their mouth whereas in extra auricular examination, Palpation is done both at rest and while moving, one can feel the lateral aspect of the joint by gently pressing on the nearby preauricular region. Tenderness indicates that there is inflammation in the capsule.

The following symptoms are suggestive of broader diagnosis of TMJ

1. 1st clicking sound and deviation of mandible to the affected side -anterior disc displacement
2. 2nd clicking sound while closure- disc displacement with reduction, if this progresses in same manner leads to closed lock, tenderness to palpation in TMJ- Intrarticular dearrangement.

V. INVESTIGATIONS:

The most commonly used diagnostic classification system is Research Diagnostic Criteria for Temporomandibular Disorder (DC/TMD) which was edited by edited by Samuel F Dworkin and Linda LeResche, was published in 1992 in The Journal of Craniomandibular Disorders, Facial & Oral Pain in the year 1992.[9]

Table -2: Diagnostic criteria of temporomandibular disorder

Group	Criteria
Muscle Disorder	
Myofascial pain	<ul style="list-style-type: none"> ➤ Pain in masticatory muscle ➤ 2.Pain on palpation in atleast 3 sites (posterior,middle and anterior temporalis; origin,body and insertion of masseter,posterior mandibular region, submandibular region,lateral pterygoid, tendon of temporalis)
Myofascial pain with limited opening	<ul style="list-style-type: none"> ➤ Myofascial pain ➤ Pain free unassisted opening < 40mm ➤ Passive stretch >5mm
Disc Displacements	
Disc displacement with reduction	<ul style="list-style-type: none"> ➤ No pain or pain on palpation in joint ➤ Reproducible click on any excursion with either opening or closing. ➤ With click on opening and closing .

The most advanced diagnostic tool for TMD is OPG, which reveals problems in the jaw and TMJ, lateral cephalogram, computed tomography, cone computed tomography. MRI allows to analyze the blood circulation

Disc displacement without reduction	<ul style="list-style-type: none"> ➤ History of locking or catching that interfered with eating ➤ Absence of TMJ clicking meeting DDR criteria. ➤ Unassisted painful opening < 35mm. ➤ Passive stretch <5mm ➤ Controlateral excursion <7mm or uncorrected ipsilateral deviation on opening.
Disc displacement without reduction without limited opening	<ul style="list-style-type: none"> ➤ History of locking or catching that interfered with eating ➤ Presence of TMJ clicking excluding DDR criteria. ➤ Unassisted painful opening > 35mm. ➤ Passive stretch >5mm ➤ Controlateral excursion >7mm or uncorrected ipsilateral deviation on opening. ➤ Optimal imaging to confirm DD
Other Common Joint Problems	
Arthralgia	<ul style="list-style-type: none"> ➤ Pain on TMJ palpation either laterally or intra auricular. ➤ Self reported joint pain with or without jaw movement. ➤ Absence of crepitus and possibility of clicking
Osteoarthritis	<ul style="list-style-type: none"> ➤ Pain as for Arthralgia ➤ Crepitus on any movement
Osteoarthrosis	<ul style="list-style-type: none"> ➤ Crepitus on any movement ➤ No joint pain neither on palpation nor on any movement.

and blood vessels of the joint, and also to identify pathological accumulation of fluid in and around the joint. Skeletal scintigraphy is useful in the evaluation of developmental or growth disorders of the mandible, but it is not particularly useful in the diagnosis of temporomandibular disorders [10-12]. Arthroscopy is a minimally invasive surgical technique that allows direct visualization of TMJ anatomy.

VI. DISCUSSION:-

The treatment option of temporomandibular disorder is divided into non- surgical management and surgical management Only 5 to 10 % of TMD patients requires treatment and 40% of TMD patients have rapid relief of symptoms [13]. The 2 main objectives of treatment for TMD are: Reduction of pain and improvement of jaw function.

6.1 : NON-SURGICAL MANAGEMENT:

The non -surgical management of TMD includes soft diet, use ice or warm pack for 15minutes on the area of pain, exercise to reduce stress, use medicine such as ibuprofen in order to reduce inflammation around TMJ.[14]

6.1 [a] :PHARMACOLOGICAL MANAGEMENT :

NSAIDs are first-line agents generally used for 10 to 14 days for initial treatment of acute pain. Muscle relaxants can be prescribed with NSAIDs if there is muscle spasm. If stress is the cause of TMD then Tricyclic antidepressants most commonly amitriptyline and nortriptyline, (Pamelor)—are used for the management of chronic TMD pain [15-19]

6.1[b]: OCCLUSAL SPLINTS AND ADJUSTMENTS :

Any removable artificial occlusal surface that affects the connection between the mandible and the maxilla and is used for diagnosis or therapy is referred to as an occlusal splint. This therapy reduce pain intensity and increase maximal mouth opening [20]. There are different types of splint used in treating different types of TMD:

- Stabilisation splints is used in muscle hyperactivity, myospasm, myositis[21]
- Michigan splints is used in anterior disc dislocation with reduction, severe bruxism [22]
- Anterior repositioning splint is used in disc dearrangement, joint sounds [23]
- Soft and resilient appliance is used in bruxism, clenching [24]
- B splints allows the condyle to seat while clench and eliminate lateral pterygoid resistance to masseter [25]
- Pivoting splints is used in anterior disc dislocation without reduction and decreased Intra-auricular pressure [25]

6.2: SURGICAL MANAGEMENT :

Surgical management is done for patients whose symptoms do not improve after trial of conservative therapy and also done for congenital or severe TMD. Under Surgical management there are three procedure namely arthrocentesis, arthroscopy and open joint surgery . Arthrocentesis is minimally invasive treatment it involves placing small needles into the joint spaces washing the joint with the possibility of depositing a drug or other therapeutic substance. This is also used to remove inflammation.[26] Arthroscopy allows your order and maxillofacial surgeon to see inside your joint using a camera inserted through the incision in your skin your surgeon can diagnose problems such as stone cartilage and damage to the surface of the joint they may be they might be able to treat some problems using surgical instrument through this scope[27] .Open joint surgery involves an incision over the joint it is usually reserved for severe TMD patients as they have excessive tissue or bone growth; fusion of joint tissues ,cartilage or bone ; inability to reach the joint with Arthroscopy severely malpositioned or damaged disc and for replacement of TMJ with alloplastic material [28-32] .

VII. CONCLUSION :

Temporomandibular joint disease (TMD) is a multifaceted condition impacting the structure and function of the jaw, often characterized by symptoms like jaw pain, clicking, limited mouth opening, and headaches. The practitioner has to analyse the etiology before commencing a definitive treatment.

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