

Temporomandibular Disorders

Awni Farhan Ismael Alani*

*Faculty of Dentistry, School of health, BPP University, London, UK

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ABSTRACT

Temporomandibular disorders (TMD) are musculoskeletal and neuromuscular conditions that are heterogeneous and involve the temporomandibular joint complex (TMJ). Around 15 per cent of people who fall in the age group of 20 to 40 years of age are said to be affected by TMD. The classification of TMD can either be extra-articular or intra-articular. The regular symptoms in TMD would comprise of dysfunction or pain in the jaw, facial pain, headache and earache. From an etiological perspective, TMD is said to be multifactorial and would include triggers that are social, cognitive, emotional, biologic and environmental. In the event that intra-articular or malocclusion abnormalities are suspected, diagnostic imaging can prove to be beneficial. Several therapies that are non-invasive can be beneficial in treating TMD amongst a large number of patients. These would comprise of cognitive behavior therapy, physical therapy, patient education, pharmacotherapy, self-care and the use of occlusal devices. For treatment, in the initial phases NSAIDs are recommended with benzodiazepines being used in extreme cases. Referring to maxillofacial and oral surgeon is recommended when the patient does not respond to conservative measures.

Keywords: Headaches, Toothaches, Dizziness, Neck aches, Problems in hearing, Earaches, Pain in the upper shoulder and ringing in the ears (also known as tinnitus) it could be symptoms of TMD.

INTRODUCTION

Temporomandibular disorders (TMD) is said to be a largely common disorder that affects the maxillofacial region which usually manifests in the form of uneasiness while chewing and locking the jaw, strange sounds and pain. Pain that arises out of TMD usually affects the preauricular region or the masticatory muscles and on the temporomandibular joints. The pain is augmented during chewing or any other mandibular movements [1]. Patients suffering from TMD also experience an asymmetry and restriction during mandibular movements. They are also most often known to experience crepitus, popping, grating and clicking. Patients who are known to suffer from TMD might also complain of pain in the mandibulofacial region, earache and headaches too. Patients of TMD would also experience a hypertrophy in masticatory muscles and a strange occlusal surface aspect of the dentition owing to mandibular movements in excess which might include grinding and bruxism [2].

The key lies in diagnosing the condition quite early as it has been proven beyond doubt that treatment is relatively easy when the patient is experiencing acute TMD as compared to cases of chronic TMD [3]. Accurate diagnosis and treatment for TMD can prove to be challenge as patients with TMD are usually known to ail from disorders of other kinds too. In such instances, a treatment can only be successful if the diagnosis is accurate wherein all factors that initiate,

perpetuating and predisposing factors as well as treatment of other proven disorders are taken into consideration [4].

One of the major causes of pain that is of the non-dental type in the facial region is said to be TMD. As per studies based on population, it has been indicated that on an average around 10 to 15 per cent of adults are affected by TMD. However, only around 5 per cent out of the total number actively seek treatment [5]. As a disorder, TMD is said to largely affect people who fall under the age group of 20 to 40 years of age and the incidence of TMD has been observed to be twice in women as compared to men. The occurrence of TMD can also be debilitating from a financial perspective as many people who have been affected have had to quit their work [6].

It has been clearly proven that any disorder that affects the masticatory muscles can eventually cause TMD. This paper will essentially delve into etiology, symptoms, classification,

*Corresponding Author: Dr. Awni Farhan Ismael Alani, Faculty of Dentistry, School of health, BPP University, London, UK, Tel: 0097339994287; Email: awnifarhan@yahoo.com

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diagnosis and treatment of TMD.

Etiology of TMD

From an etiological perspective, TMD can be multifactorial and would include triggers that could either be cognitive, social, environmental, emotional and biologic. Factors that are regularly linked with TMD would other than pain conditions (chronic headaches) comprise of autoimmune disorders, psychiatric illness, sleep apnea and fibromyalgia [7]. TMD can also arise due to several factors that can impair the balance in TMJ and the masticatory system. Deformation of the bone, reduction in muscle activity and soft tissue metaplasia of TMJ are usually a response to change that is adaptive. Hyperactivity in the masticatory muscles that arise due to Para functional habits can give rise to responses that are adaptive within the dynamic balance owing to hyperactivity and heavy load over an extended period. Alterations in excess in either of the functions mentioned above can cause a disability in adapting which eventually causes disorders in the TMJ. For instance, an external trauma suffered by any part can lead to injury and can impair the normal functioning of the joint [8]. In addition, systemic, anatomic, emotional and pathophysiological causes tend to aggravate the disorder.

Symptoms of TMD

A person affected with TMD is said to experience severe discomfort and debilitating pain. The pain and discomfort varies from patient to patient and in some cases it might either be temporary or could be long lasting. TMD can impact either one or both sides of the patient's face [9]. As mentioned, according to studies it has been proven that the number of women who experience TMD is comparatively larger than men and TMD affects people between the age group of 20 to 40 year. A patient with TMD can experience one or several symptoms which might include; a tenderness or pain in their face, neck and shoulders, area of the jaw joint, it can also manifest in or around the vicinity of the ear especially when patients' open their mouth wide, speak or chew, another symptom that could indicate the onset of TMD would be when the patient experiences difficulties when the attempt to open their mouth wide, their jaws tend to get locked or stuck when their mouth is closed or open, patients hear some kind of grating, clicking or popping sounds in the joint of their jaw when they chew or open and close their mouth, this might or might not be painful, patients experience a feeling of tiredness in their face, they also often find it difficult to chew or experience a sudden bite which might be uncomfortable, they might get the feeling that there is no proper alignment between the upper and lower set of teeth and patients would also experience swelling on the side of their face [10]. In addition, patients are also known to experience headaches, toothaches, dizziness, neck aches, and problems in hearing, earaches, pain in the upper shoulder and ringing in the ears (also known as tinnitus).

Classification of TMD

TMD can be classified as something that occurs within the joint (intra-articular) or affects musculature that surrounds the joint (extra-articular). The conditions that are most commonly known to lead to TMD happen to be musculoskeletal conditions which is known to account for half (50 per cent) of the cases. The most common cause of TMD which is intra-articular in nature is said to be the displacement of articular disk which involves the condyle-disk association [11]. Classification of TMDs renders the process of diagnosis relatively easy. Since disorders and pain of a similar kind in the region of the neck and head it is necessary to have a differential diagnosis.

DIAGNOSIS OF TMD

Differential Diagnosis

In a diagnosis of TMD disorders that are differential in nature, difficulties like migraine, neoplasms, mental disorders and neuralgia should be taken into account. In addition, an aspect that is evident is that development disorders related to growth which comprise of hypoplasia, aplasia, dysplasia and hyperplasia can also cause problems associated with TMJ [12]. Special attention should be taken by clinicians at the time of diagnosing TMD amongst patient who are known to experience pain in the TMJ area. Special attention is required because there are certain conditions that are known to closely resemble the conditions of TMD and would include oral lesions (herpes simplex, lichen planus, herpes zoster, oral ulcerations), abscess or dental caries, conditions that arise due to an overuse of muscle (for instance, spasm, bruxism, excessive chewing, clenching), maxillary sinusitis, trigeminal neuralgia, dislocation or trauma, disorders of the salivary glands, glossopharyngeal neuralgia, pain linked with cancer, primary headache syndrome, postherpetic neuralgia and giant cell arteritis [13].

Effectively diagnosing TMD would largely depend on the findings from the physical examination and history of the patient. TMD symptoms are specifically related with movements of the jaw (for example, chewing, opening and closing the mouth), pain in the temple, preauricular and masseter region. Clinicians can also suspect a different source of orofacial pain in case the pain is not affected by the movement of the jaw [14]. While it is true that unnatural and strange sounds from the jaw such as grating, clicking, popping, crepitus might occur in cases of TMD but it is not exclusively restricted to TMD alone. Such unnatural noises can also be noticed in around 50 per cent of the patients who may not be suffering from TMD or TMJ.

Diagnosis of TMD supported by findings from physical examinations would comprise of but are not restricted to-reduction in the range of motion, mandibular movement that is abnormal, pain with dynamic loading, tenderness in

masticatory muscles, muscle tenderness in the neck or shoulder and signs of bruxism. Clinicians should also evaluate for malocclusion – for instance; restorative occlusal rehabilitation, hemifacial asymmetries and acquired edentulism, which can be a contributing factor in the occurrence of TMD [15]. Abnormalities in the cranial nerve must not be considered as a trait of TMD. Locking, clicking or crepitus in the TMJ might be accompanied by dysfunction of the joints. A single click that is experienced when the mouth is being opened could be linked with an anterior displacement of disk.

A second click that occurs when the mouth is being closed indicates that the displaced disk has been recaptured. This condition is usually considered as a displacement of disk with reduction. In the event that the disk displacement advances and it reaches a point where the patient is unable to open the mouth which means the translation of the condyle is being blocked by the disk. This condition is termed as a closed lock. A disruption in the articular surface is associated with crepitus and it is known to occur more in patients who have been diagnosed with osteoarthritis [16]. Intra-articular derangement is indicated when there is reproducible tenderness to palpation in the TMJ. Any tenderness in the surrounding neck muscles, masseter and temporalis might differentiate referred pain syndrome, myofascial trigger points or myalgia. Displacement of the anterior articular disk can be evidenced through any deviation in the mandible to the side that has been affected, at the time of opening the mouth [17].

Imaging

Diagnosis of TMD can be aided through imaging especially in instances where physical examination and history may not be conclusive [18]. Though imaging is not used frequently, several imaging options exist to gain more information in cases where TMD is suspected. Initially, the clinician should opt for plain radiography (transmaxillary and transcranial views) or panoramic radiography. Examinations through these mediums can reveal any chronic degenerative articular disease, acute fractures or dislocations. As compared to plain radiography, computed tomography (CT) can be superior when examining subtle bony morphology. The optimal modality to extensively evaluate joints in patients exhibiting symptoms and signs of TMD would be magnetic resonance imaging (MRI) [19].

Diagnostic Injections

Diagnosing the source of jaw pain can be also carried out by injecting local anesthetics at the point of trigger which also includes mastication muscles. Only those dentists and physicians having due experience in auriculotemporal nerve anesthetizing should carry out this procedure. Appropriately executing this procedure can reduce the scope of any complications. In case the pain continues even after blocking the appropriate nerve, it is an indication to the clinician to

reassess the symptoms of TMD and opt for an alternative method for diagnosis [20].

Treatment of TMD

The percentage of patients who actually require treatment for TMD is around 5 to 10 per cent while 40 per cent of the patients' symptoms are resolved naturally [21]. There are several approaches that can be used to treat patients with TMD. These would comprise of non-pharmacological, pharmacological, occlusal splints and adjustments and referrals.

Non-Pharmacological approach

For the initial treatment of TMD supportive patient education is most recommended. Measures that are adjunctive would include soft diet, passive stretching exercises, jaw rest and moist warm compresses. Immobilization of TMJ has not indicated any benefit and the symptoms can worsen due to contractures in the muscle, reduced synovial fluid production and muscle fatigue [22].

Physical therapy

Evidence pertaining to the use of physical therapy for improving symptoms related to TMD is available, though it is nothing robust. The methods could either be passive or active with the objective of enhance the strength of the muscles, relaxation, coordination and motion range. Specific physical therapy methods like iontophoresis, ultrasound, low-level laser therapy and electrotherapy is known to have been utilized in managing symptoms of TMD [23].

Acupuncture

Myofascial TMD has been known to be increasingly treated with acupuncture where a regular session duration is between 15-30 minutes while the total number of sessions would range from six to eight [24]. As per existing medical literature it is said that acupuncture can be a feasible adjunctive treatment for analgesia of short-term especially in patients with symptoms of TMD which is painful.

Biofeedback

Biofeedback and cognitive behavior therapy for long and short-term management of pain in patients with TMD can be beneficial as compared to regular methods. Appropriate counseling should be provided to patients regarding modifying their behavior in terms of lowering stress, eradicating parafunctional habits, sleep hygiene and avoiding mandibular movements that are extreme [25].

Pharmacological approach

This kind of approach to TMD treatment mostly depends on the opinion of experts. Diverse classes of medicines have been utilized to treat the pain linked with TMD. Non-steroidal Anti-Inflammatory Drug (NSAIDs) is used during the initial treatment period for 10 – 14 days to manage acute pain [26]. The use of NSAIDs is said to be advantageous for patients with synovitis and early disk displacement. Though

NSAIDs are available in multiple choices, naproxen offers more benefits in terms of pain reduction. It is also possible to prescribe medications for relaxing the muscle along with NSAIDs in case the symptoms indicate a muscular element to TMD. Tricyclic antidepressants usually desipramine, doxepin, amitriptyline and nortriptyline is utilized to managed chronic pain in TMD. The use of benzodiazepines is restricted to two to four week initial treatment period [27].

Occlusal splints and Adjustments

Degenerative forces that are said to impact TMJ, dentition and articular disk can either be prevented or alleviated with the use of occlusal splints [28]. Devices of this kind can be beneficial to patients specifically known to suffer from cases of extreme nocturnal clenching and bruxism. However, it is imperative to acquire appropriate dental consultations to identify the occlusal device that is most appropriate. But preventing or managing TMD cannot be of any benefit if occlusal adjustments are used [29].

Referrals

It is recommended that the patient be referred to a maxillofacial and oral surgeon in case the patient is said to have a history of fracture or trauma to the TMJ. Also if it is associated with extreme levels of dysfunction and pain from internal derangement does not respond to any conservative treatment or in case the patient experiences pain but the source cannot be identified and the pain persists for a longer duration ranging between three to six months [30]. Treatment of TMD rarely warrants the need for surgery and surgery is usually considered as an option in case there is a need to correct abnormalities that are articular or anatomic. Options in terms of surgery would include arthroscopy, condylotomy, arthrocentesis, total joint replacement and disectomy.

CONCLUSION

The challenges presented by temporomandibular disorders spans the entire spectrum of research and it comprises of understanding symptoms to causes, diagnosis of TMD and extends to prevention and treatment too. Though TMD is not considered to impact mortality, the affects can be debilitating where the patient might experience excruciating pain, inability to carry out normal mandibular functions and in some instances it might also impact the work life of the patient. Awareness about the symptoms can be instrumental in leading the patient to a healthcare provider who can appropriately diagnose and treat the disorder. But the right diagnosis would make all the difference as the symptoms of TMD are similar to other ailments too. Proper diagnosis will help in determining the kind of treatment that is required to alleviate the pain.

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