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Temporomandibular Disorder and Physiotherapy Treatment Approaches

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ABSTRACT

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Introduction

Temporomandibular joint (TMJ) consists of the mandibular condyle, which sits in the mandibular fossa below the temporal bone, and a fibrous cartilage structure that prevents direct contact of the bone surfaces. Unlike other joints, TMJ with a ginglimoarthroidal structure performs rotation and translation movements, as the disc forms a stable platform. Being a bilateral joint, the TMJ is separated from other joints and cannot move independently of its contralateral side. TMJ; is active during chewing, speaking, swallowing and breathing movements. Unlike the opening and closing movements in the joint, grinding movement is also performed [1].

Temporomandibular Disorder

TMD includes many etiological causes; and is a clinical problem involving pain and dysfunction in the masticatory muscles and TM joint. Symptoms such as pain, limitation of mouth opening distance, deviation during mandibular movement, and joint sound and/or crepitation are observed. The underlying causes of the problem include internal factors such as bruxism, inflammatory diseases, malocclusions, degenerative joint diseases, as well as environmental factors that affect mood [2]. Symptoms and signs of TMD increase in the 2nd and 4th decades and they are more common in females. In females; hard and soft tissue tenderness with a clicking sound is more common. (Wurm, et al. [3]) reported that "33% of the general population has articular disorders and 41% has masticatory muscle disorders, but only 7% of the population has disorders that require treatment". Evaluation; consists of physical examination, extraoral examination, intraoral examination and diagnostic tests.

Classification of Temporomandibular Joint Disorders

(Ohrbach [4]) explained the RDC/TMD (Research Diagnostic Criteria for Temporomandibular Disorders) classification, which will form the standardization as it is intended to be suitable for clinical studies of the most common subgroup of TMD. Dual axis system is used in RDC/TMD. While Axis 1; analyzes clinical anamnesis results and physical examination findings and gives the clinical diagnosis, Axis 2; examines pain parameters, mandible function, psychological state, and psychosocial function. As a result, TMD; was divided into three subgroups as muscular dysregulation, TMJ disc irregularity and inflammatory degenerative diseases of TMJ. In addition, when these two axes are examined together, RDC/TMD; shapes the understanding of health and disease conditions, diagnosis and classification of TMJ disorders, and treatment approaches that can be applied in related research with a biopsychosocial approach. However, this classification cannot provide the diagnosis of conditions or pathologies such as less common condylar neoplasm, polyarthritis, traumatic injuries and atypical facial pains. Correct diagnosis and treatment are of great importance in patients. Determining which structures are damaged and determining the cause of the damage is a prerequisite for the

application of «treatment for the cause». Conservative treatment options are important and primary for initial treatment.

Conservative Treatment Options

Manual Therapy for TMD

a) Effects of Manual Approaches and Exercise on TMD

Manual therapy techniques and jaw exercises aim to reduce pain, increase joint mobility, relax, improve and optimize jaw function. The effects of jaw exercises are thought to be a result of increased muscle length through reciprocal muscle inhibition, proprioceptive neuromuscular facilitation, increased awareness, improved motor control, muscular endurance, strength, and stretching. Strengthening exercises and stretching have been reported to be the most beneficial techniques for retraining and rehabilitation of chewing muscles [5]. Exercise programs can be carried out in several different ways. Generally, exercise programs include relaxation exercises, free movement of the lower jaw, as well as resistance movements with stretching of the jaw muscles. Despite the quality of evidence is mostly uncertain, it supports the use of active and passive oral exercises to reduce pain intensity, induce relaxation, and optimize jaw mobility in myogenous, arthrogenous, and mixed TMD. In addition, postural exercises for the head and neck, neck exercises and manual therapies for the neck are also effective application in the management of TMD pain and dysfunction. Exercise programs should be considered as the first-line treatment for TMD pain because of the low risk of side effects. However, the implementation of exercise programs is varied and clear information regarding dosages, frequency, duration, repetitions or compliance is not yet available, and therefore the optimal treatment program for the treatment of TMD is unclear [5].

b) Cervical Joint and TMJ Mobilization and Manipulation

Joint mobilization is generally defined as low-speed, high-amplitude passive movement that induces intracapsular motion of varying amplitudes, while joint manipulation reduces joint slippage (Armijo Olivo, et al. [6]) have found that manual therapy, including manipulation and/or mobilization of the TMJ and/or cervical spine, is effective when managed alone or in combination with exercise for TMJ disorders, while effect sizes are low to moderate and depend on the type of TMD. In a meta-analysis carried out by (Martins, et al. [7]), they found moderate evidence to support TMJ mobilization and major clinical effects, particularly when combined with multimodal therapy, to improve pain and active mouth opening in patients with TMD.

c) Myofascial Trigger Point Manual Therapy

There are several interventions recommended for the treatment of trigger points: dry needling, ultrasound, laser therapy, electrotherapy or manual treatments [8]. (Hou, et al. [9]) found that low pressure below the pain threshold for a long time (90 seconds) and high pressure above the pain threshold for a shorter time (30 seconds) were equally effective for reducing pressure pain sensitivity on trigger points.

d) Therapeutic Exercise, Postural Training and Motor Control

Exercise therapy has many purposes. These; It can be explained as optimizing sensory input, reducing inflammation, reducing pain and muscle activity, as well as improving coordination and strengthening of muscles, promoting repair and regeneration of tissues and achieving normal function [10]. Two approaches have been proposed to train the cervical muscles. One includes low-load contractions aimed at motor control, and the other focuses on general strengthening and endurance exercises for the neck muscles [11]. It has been emphasized that both applications have positive effects on patients and can be used at different times of the rehabilitation process. Low-load intensity exercises and motor control exercises should be applied in the early stages of the condition where the pain and disability of the patients may prevent high-load exercises; After retraining and coordination of the deep and postural neck muscles, high-intensity, more muscular global exercises should be performed.

Other Applications for TMD

Other conservative treatment methods for TMD include dry needling for myofascial trigger points, electrophysical agents, acupuncture, brain training, pain psychology-behavior and body image training, and Kinesiotape. Although there are not adequate studies on these applications in the literature, the importance of conservative treatment for TMD is emphasized.

Conclusion

Treatment of temporomandibular disorder considers various types of treatment, such as surgical and non-surgical approaches; however, the non-surgical approach is usually the first step and is widely preferred in TMD management. Physiotherapy and rehabilitation practices are one of the most common non-invasive approaches to managing TMD and include many potentially effective interventions such as ultrasound, laser, and electrophysical agents such as transcutaneous electrical nerve stimulation (TENS). In addition, other Physiotherapy and rehabilitation practices, such as manual therapy and therapeutic exercises, are increasingly used to manage this situation due to their positive effects.

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