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NON-OCCLUSAL TREATMENTS OF TEMPOROMANDIBULAR DISORDERS

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Abstract

Temporomandibular disorders (TMDs) are multifactorial pathologies. The high prevalence of associated physical and psychological comorbidities necessitates a multidisciplinary approach involving other non-dental specialties. Current recommendations are based on effective, non-invasive, and reversible therapies tailored to each patient. Treatment includes both occlusal and non-occlusal approaches. Non-occlusal therapies consist of medication, functional rehabilitation methods, and therapeutic education.

Keywords: *Bruxism, parafunctional habits, maxillofacial rehabilitation, botulinum toxin, therapeutic education*

Introduction

Non-occlusal treatments for TMDs aim to relieve the patient, raise awareness, and engage the patient in their care to take an active role in their treatment. Medication and maxillofacial functional rehabilitation must be accompanied by a simplified explanation of the pathology. Properly tailored therapeutic education helps gain the patient's trust, which is crucial for achieving results and preventing relapses.

1. Therapeutic Methods

Therapists treating TMDs have access to several simple, non-occlusal therapeutic tools. These are based on the principles of maxillofacial-oro-functional rehabilitation(MOFR) and medication. MOFR includes three main components:

- Therapeutic education of the patient
- Maxillofacial physiotherapy
- Behavioral therapy and self-rehabilitation

The American Association of Dental Research (AADR) recommends that MOFR "be supplemented with self-management programs in which patients are informed about their condition and taught how to manage their symptoms." (1)

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1.1 Therapeutic Education

Explaining the pathology and its risk factors is the first step in any treatment plan. Simple explanations are necessary to demystify the clinical picture and reassure the patient. Constructive patient-practitioner dialogue is crucial to gaining the patient's trust, thereby enabling them to understand the importance of self-management. Their involvement is vital to maintaining the benefits of rehabilitation and minimizing relapses. This education includes explaining the harmful impact of parafunctional habits, encouraging behavioral changes, managing stress and anxiety, practicing self-rehabilitation and physical exercise, and performing global muscle relaxation exercises such as deep breathing. (1-4)

1.2 Maxillofacial Physiotherapy

In the literature, there is no standardized maxillofacial rehabilitation program However, the tools available for alleviating pain and musculoskeletal disorders are well-documented.

1.2.1 Objectives of MOFR

- Reduce pain, promote muscle relaxation, and decrease hyperactivity in masticatory muscles to restore joint mobility and function.
- Improve or restore proper, comfortable masticatory function (enhancing muscular coordination and joint range of motion).

1.2.2 MOFR Methods

1.2.2.1 Physiotherapy

Thermotherapy (dry or moist heat) or ultrasound devices are used to apply heat to the preauricular region (right and left sides of the temporomandibular joints) or painful muscles. Each session lasts 5–10 minutes, repeated 3–4 times daily.

Ultrasound probes are used in circular motions at 3 MHz for 3–10 minutes. This therapy provides short-term relief due to the vasodilating and muscle-relaxing effects of heat.

Cryotherapy is sometimes applied for 2–3 minutes to each temporomandibular joint for acute pain or severe flare-ups, repeated 4–5 times daily.

Transcutaneous Electrical Nerve Stimulation (TENS) operates on the "gate control" theory, where cutaneous electrical impulses inhibit nociceptive signals. Electrodes placed on the preauricular region stimulate cutaneous non nociceptive afferents, aiding muscle relaxation and reducing mandibular pain. The most common frequency is 50–70 Hz for analgesic purposes.

1.2.2.2 Massages

Massages target the mandibular and cervical regions to alleviate pain and muscle spasms, promoting relaxation and muscular control.

1.2.2.3 Passive and Active Joint Mobilization

These techniques help restore mouth opening and decompress the joint disc in cases of condylar-disk misalignment. Techniques involve gentle, controlled intraoral maneuvers to facilitate joint decompression.

1.2.2.4 Muscle Strengthening

These exercises aim to strengthen the masticatory muscles, especially the jaw depressor muscles, so that they are as strong or firm as the elevator muscles. The goal is to keep the mandible balanced and correct bruxism. They are done by applying an opposing resistance to the different mandibular movements. This resistance is first applied by the therapist, then by the patient themselves. The intensity of the resistance is light and is done using the strength of the hand (10-12).

- The rhythm of these exercises involves 6 movements, repeated 4 to 6 times a day, with each position held for 6 seconds.
- Opening: Both hands or thumbs placed under the chin, feel a slight resistance in the muscles of the mandible and hold this sensation for 6 seconds (figure 1A).
- Closing: Two fingers (index and middle) placed on the edge of the lower incisors, resist the closing of the mouth, feel a slight resistance in the muscles and maintain this sensation for 6 seconds (figure 1B).
- Protrusion: Both index fingers placed on the front of the chin, gently push the chin forward, feel a slight resistance in the muscles of the mandible and maintain this sensation for 6 seconds (figure 1C).
- Lateral movement: One index finger placed on the side of the chin, gently move the jaw to this side, the index finger opposes this movement, feel a slight resistance in the muscles and maintain this sensation for 6 seconds. The exercise can be started with the help of the therapist (figure 1D).

a) b)

c) d)

Figure 1: Exercises for strengthening the masticatory muscles.

1.3 Behavioral Therapy and Self-Rehabilitation

This step combats parafunctional habits (teeth grinding, biting, chewing gum) and sleep bruxism through:

- Educating about TMD risk factors
- Reducing daytime bruxism episodes
- Sleep hygiene advice
- Stress management (relaxation, auto-hypnosis, psychotherapy)
- Deep breathing exercises
- Dietary recommendations (avoiding hard foods, alternating chewing sides)
- Encouraging physical activity

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- Adapting work ergonomics

1.4 Pharmacological Treatment

Medications are an integral part of the treatment, including analgesics, non-steroidal and steroidal anti-inflammatories, and muscle relaxants to reduce spasms. Botulinum toxin A (TbA) is indicated for hyperactive masticatory muscles (bruxism) or joint dysfunctions. Intramuscular injections provide relief lasting 3–5 months. TbA reduces pain, corrects hypertrophy, and improves jaw kinetics.

Conclusion

TMD patient care begins with a thorough clinical examination to assess psychological and somatic profiles. This establishes trust between therapist and patient, allowing for personalized and evolving therapeutic plans.

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