

## Myofascial Pain: Diagnosis and Behavior in Patients with Orofacial Pain and TMD

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**Submitted:** 30 July 2018; **Accepted:** 06 Aug 2018; **Published:** 13 Aug 2018**Abstract**

The high prevalence, significant demand for treatment of patients with Chronic Pain, and the general difficulty of establishing an accurate diagnosis, together with psychosocial and behavioral conditions, lead many therapeutic approaches to failure or unexpected outcomes. The objective of the present report was to show the evolution of a clinical case of long-term and high-intensity Myofascial Pain, in which the patient had been undergoing treatment with Tricyclic Antidepressants (Nortriptyline Hydrochloride) for two years, using minimally invasive conduct. In order to reach the Diagnostic Hypothesis of Myalgia, the DC/TMD (Diagnosis Criteria for Temporomandibular Disorders) protocol was employed, in which the subdivision of this form of TMD was attained. We found substantial myofascial impairment of chewing and cervical muscles, with referred pain and secondary cephalgia. The temporomandibular joints (TMJ) did not exhibit any clinical changes in movement, noise or arthralgia. After locating the myofascial trigger points (TrPs), Dry Needling was incorporated, with manipulation of the oral and cervical musculature (with and without resistance), in addition to electrotherapy with TENS (Transcutaneous Electrical Nerve Stimulation) coupled with heat application. The patient was instructed to perform cervical and masseter stretching exercises twice daily and to carry out sleep and medication prophylaxis. The result was rewarding. After seven visits in six months, with an interval from the sixth to the seventh visit of sixty days (follow-up), the patient was discharged and scheduled to return after a six-month period. Pain episodes continue to occur occasionally, but with low intensity, score 3 on the visual analog scale (VAS), and short duration. The course of treatment was well administered by the patient, without the use of antidepressants and cephalgia and myofascial pain, and without the use of interocclusal devices, as shown in this report.

**Keywords:** Dry Needling, TMD, Trigger Point**Introduction**

Myofascial Pain Syndrome constitutes a disorder of great complexity and high prevalence (5 to 12% of the adult population) that affects skeletal muscles and may be present in various parts of the body, including masticatory muscles [1]. The condition has as its primary characteristic the presence of Myofascial Trigger Points (TrPs), which are defined as hypersensitive points caused by shortening of the muscle band, due to contraction, causing Referred Pain. Referred Pain consists of the soreness felt in a location other than that where it is produced, such as in Tension Headaches, and is always present in Chronic Pain. TrPs can be active, causing spontaneous pain, or latent, that ache only when stimulated [2]. In individuals with Temporomandibular Disorders (TMD), TrPs are highly prevalent in the Masseter and Temporal muscles (MTrPs) [3]. Simons, et al. consider Sleep Bruxism an activity that perpetuates TrPs in these muscles [2]. MTrPs alter the function of the antagonist muscle, reducing the range of motion of the joint, in addition to its strength.

The excessive contraction of the musculature releases inflammatory chemical mediators, such as cytokines, prostaglandins, bradykinins, and substance P, which act on the receptors causing pain [4].

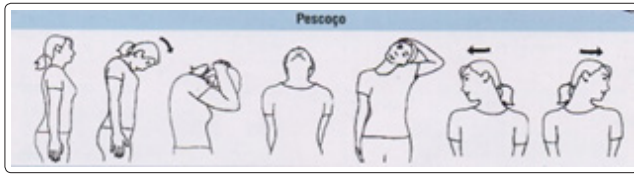
In order to understand the problem and arrive at a Diagnostic

Hypothesis, the DC/TMD technique is applied. At first, the patient's complaint is recorded, and the individual is asked to mark the pain points on a head and neck chart. Then, a careful history is taken, to understand the duration, type, frequency, onset, points of improvement and worsening, and medication use, among other issues. Afterward, the chewing and cervical muscles are palpated (Figure 1) and the buccal opening observed (Figure 2), as well as pain and deviations in functional movements. At that point, the presence or not of TrPs and Referred Pain are identified and localized in the case of Myalgias. The protocol follows with the palpation of the TMJs (Temporomandibular Joints, for arthralgia) and ganglia, the effort and resistance test, and the evaluation of the cranial nerve pairs.

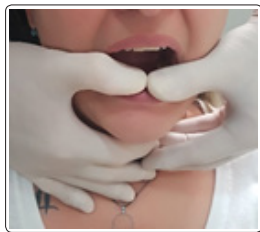


**Figure 1 and 2:** (1) Palpation of the chewing and cervical muscles and (2) Evaluation of buccal opening

Upon myalgia and TrPs detection, manipulation begins, with the stretching of the cervical musculature and masseters (Figure 3 and 4) [5]. This maneuver is later taught to the patient to conduct daily at home upon waking and before bedtime, promoting muscle relaxation through the exercise of the agonist/antagonist muscles [6].

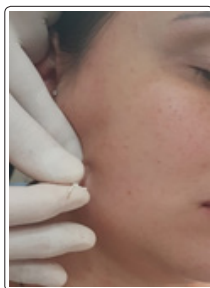


**Figure 3:** Illustration delineating cervical muscle stretching



**Figure 4:** Image depicting the masseter stretching maneuver

In the next step, skin asepsis and Dry Needling (DN) is conducted (Figure 5) at the Masseter, Temporal and Cervical muscle trigger points. Several studies available in the literature describe variations between DN and Acupuncture, and the use of anesthetics associated or not with corticosteroids. In the vast majority, extensive and rapid evolution in the improvement of pain is observed [3,6-12]. When associated with physiotherapeutic maneuvers, these techniques improve vascularization, peripheral analgesia, and central analgesia modulation [6,8]. Dommerhlt, et al. reviewed 24 papers published in several countries around the world, and cite a study carried out in Japan by Hasuo, et al. in 2016, in which five patients with advanced cancer stated having intense pain and the presence of TrPs throughout the entire body [7]. The constant use of opioid analgesics reduced the pain threshold of these individuals, leaving them in a trance state due to the dosage. The patients then underwent DN and Acupuncture at the TrPs, which contributed significantly to reduce the analgesic dosage. The paper cites considerations of individual immunity to be assessed, as well as some contraindications, which are not the object of the present report.



**Figure 5:** Skin asepsis and Dry Needling (DN)

After the DN procedure, electrodes are fixed to the masticatory and cervical muscles. Following minor adjustments, TENS electrotherapy is conducted, together with the application of heat, for a period of 20 minutes (Figure 6a and 6b).



**Figure 6a and 6b:** (a) Electrode fixation to the masticatory and cervical muscles and (b) Electrotherapy with TENS coupled with heat application

After procedure completion, the patient is requested to report if any immediate improvement in pain occurs, based on the VAS scale. Home physiotherapy recommendations (Figure 7) and sleep observation and prophylaxis are then described to the individual. The use of interocclusal devices was initially not indicated herein due to low efficiency [6]. However, their use should be advised in patients with bruxism exhibiting tooth and/or periodontal destruction.



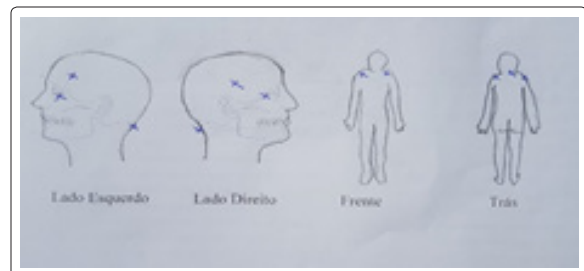
**Figure 7:** Recommended techniques of home physiotherapy

### Case Report – Materials and Methods

Patient R.M.O., an 18-year-old female university student, came to the Odonto Vanni Institute on a day we here refer to as Day 1, corresponding to the first consultation; with the following complaint:

- Daily and constant headaches and neck pain dating back 3 years, with worsening upon awakening. She consulted with two neurologists during that period, uses “Pamelor” (Nortriptyline Hydrochloride), and reported episodes of disabling pain, in which she is unable to get out of bed.

The patient used the following illustration to show the location of the pain points (Figure 8).



**Figure 8:** Points of pain of patient R.M.O

### Previous History of the Current Disease (PHCD)

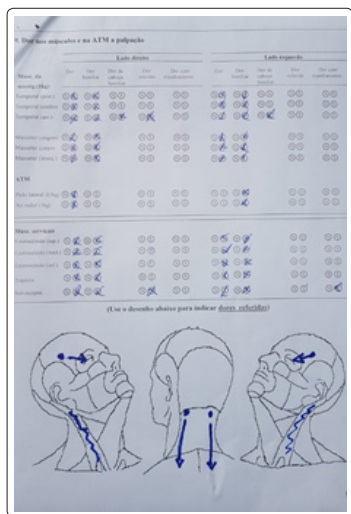
- a. Headaches during the past 3 years; came to be daily in the past 2 years, sometimes throughout the entire day; the pain sometimes ceases and reappears stronger.
- b. Throbbing, persisting pain that is generally bilateral, sometimes unilateral.
- c. Score 8 on the Visual Analogue Scale (VAS).
- d. Feels a more significant impact in the cervical and temporal region. Neck pain with difficulty of movement, sensation of “weight” on the shoulders.
- e. Pain is stronger upon awakening; realized she “tightens” her teeth at night, uses an interocclusal device sporadically (without major improvements or adjustment of the occlusal plaque).
- f. Bites her nails and grinds her teeth.
- g. Feels back pains and cracking.
- h. Anxiety.
- i. Finished orthodontic treatment 3 years ago (used removable braces) and underwent turbinate hypertrophy surgery.
- j. Feels worse when subjected to bright and blue lights and feels better when lying down in the dark or during exercise, also when distracted, e.g., when talking.
- k. Has used “Pamelor” (Nortriptyline Hydrochloride) for the past 2 years, but does not feel improvements.

### Pain Questionnaire and Clinical Exam

The patient stated sustaining constant pain in the region of the head and neck, without jaw locking, with an open or closed mouth, and without noises or joint pains. She exhibited a straight and functional mouth opening pattern (50 mm) and pain-free lateral movement and protrusion.

In the Functional Cervical Exam, limitation and pain were observed in the lateral inclination movement (60°) on the right and left sides.

In the palpation assessment, performed by digital pressure with 1.0 kg of force, the patient reported pain in the Masseter, Temporal, Sternocleidomastoid Trapezius, and Suboccipital muscles, with “Familiar or Known Pain” in all of them and “Referred Pain” in the anterior bundle of the Temporal muscle (bilateral), referring pain to the back of the eyes. Palpation of the Suboccipital muscle also referred pain to the back (Figure 9).



**Figure 9:** Description of the patient’s pain referral according to the pain questionnaire and clinical exam

### Diagnostic Hypothesis

The patient presented TMD due to Myalgia, with myofascial pain and referred pain, possibly aggravated by Sleep and also Vigil Bruxism, the latter probably intensified by the use of Antidepressant medication. TMJ involvement was not observed.

### Investigative Conduct

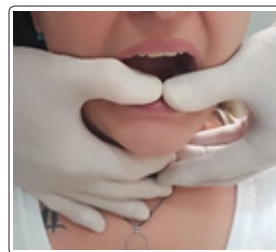
No additional exams were solicited due to lack of joint involvement and the pattern of Myofascial Pain Myalgia. Nonetheless, we did request the suspension of the medication.

### Therapeutic Conduct

Due to the pain intensity, therapy began at the first consultation.

#### Appointment I

1. Cervical muscle stretching maneuver, with Flexion, Extension, right and left Rotation (70°), and right and left Inclination (60°) movements, with and without resistance, to activate agonist/antagonist relaxation [6]. The same procedure was conducted on the Masseter muscle, in which the patient was asked to close her mouth with resistance from the professional’s hand (Figure 10).



2. Palpation for TrP localization. DN was performed on the Temporal, Masseter (R and L) and cervical muscles.
3. Electrotherapy with TENS for 30 minutes.
4. Thermotherapy with heat for 30 minutes.
5. Orientation of cervical and Masseter stretching exercises to be carried out 2 to 3 times per day.
6. This conduct would be performed again every 3 weeks.
7. We requested the patient to keep a pain diary.

At the end of the first visit, the patient went home without headaches and reported an improvement score of 10.

#### Appointment II (21 days after the first visit)

The patient reported a good improvement, and stated being pain free for 3 days, had very strong headaches for 5 days, and had only 1 day of intense disabling pain. On the other days, the morning’s light pains dissipated until lunchtime. Exercise aided in easing the pain.

The same clinical procedures in Appointment I were conducted.

#### Appointment III (15 days after the second visit)

No episodes of severe pain; mild and moderate pain was reported, lasting approximately 3 hours.

The clinical procedures of the previous consultations were re-conducted.

#### Appointment IV (26 days after the third visit)

The patient sustained 4 episodes of severe pain, and 1 day of disabling pain. She used Carbamazepine 5.0 mg once a day for 3 days. On the other days, she reported having mild and moderate pains that dissipated. We performed the same clinical procedures as the previous consultations.



### Appointment V (22 days after the fourth visit)

Low and transient pains were reported in the morning. However, the patient stated having slept for about 6 hours during the period (tension due to personal problems); she stated having woken up feeling tired; four days of severe pain.

The same clinical procedures from the previous consultations were performed.

### Appointment VI (36 days after the fifth visit)

The patient stated having sustained 10 days of severe pain. She used Carbamazepine 5.0 mg only once. On the other days, she reported having little pain.

The performed clinical procedures were the same as in the previous consultations.

Even with spikes of intense pain, the patient was motivated by her new situation. The pain is now minimal and short-term, and she began to understand how to improve and how to prevent the pain from getting worse (better quality of life). We decided to delay the return period, being available in case of an acute situation. The next visit was scheduled for 60 days.

### Appointment VII (57 days after the sixth visit)

The patient reported five days of severe pain, without the use of medication. On the other days, she stated having little pain with short duration in the morning; she felt better and safer. No procedures were performed. The patient's quality of life had improved with the passed stretching exercises, coupled with the practice of sports activities. We requested her to return in 6 months, or in the case of reappearance of severe pain.

## Discussion

The prevalence of people with orofacial pain due to TMD affects 5 to 12% of the adult population [3]. The methods of treatment and control of this disease are diverse and often ineffective, and, in many cases, the prescription of central acting drugs does not relieve the sustained pain [4,6]. In general, the patient himself self-medicates, leading to changes in his pain threshold, chronifying both the pain and the medication [7].

The contraction of skeletal muscles and the formation of TrPs, as the cause of Myofascial Pain, and the understanding that their elimination can mean a significant reduction and even suppression of pain, offers new horizons for the treatment of these "penitent" individuals, most of whom suffer from chronic pain, disability spikes, and high doses of drugs, in a minimally invasive and low-cost manner [2,3,6-12].

Temporomandibular disorders (TMD) are diverse and complex. In this report, only the subdivision of TMD with the implication of myofascial pain (Myalgias), which represent the major complaints of the area, were discussed.

In the case of patient R.M.O., she had been undergoing chronic pain for the past 3 years and reported that they occurred daily for 2 years. She had been using an antidepressant drug for 2 years. A remarkable result was obtained in the 177 days of treatment and observation, in which the patient had 28 episodes of strong or very strong pain, and 2 days of disabling pain, using only four tablets of

Carbamazepine 5.0 mg. On the other days, she felt manageable pain, of low and moderate intensity, but of short duration. Throughout the entire treatment period, 83% consisted of bearable days.

Moreover, she now understands the origin of the pain and is currently seeking to recover her health by way of exercise, relaxation and sleep quality.

Although this conduct does not apply to all patients, and they may have recurrent pain crisis spikes, we are sure that the procedures described herein comprise an optimal initial approach.

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