



Internal disorder in the temporomandibular joint in young patient: Conservative Treatment vs Surgical Treatment Part 1

Roberta Vasconcellos Gutheil¹, Marcello Gaieta Vannucci²

¹Dental surgeon, Specialist in Orthodontics and specialist in temporomandibular dysfunction, Porto Alegre, Rio Grade do Sul, Brazil

²Dental surgeon, prosthesis specialist, specialist and doctor in maxillofacial surgery and traumatology, Porto Alegre, Rio Grade do Sul, Brazil



Marcello Gaieta Vannucci
marcellogaietavannucci@gmail.com

Edited by:
Raimundo Silva-Néto

Keywords:
Cronic pain
Acute pain
Temporomandibular joint disorders
Arthrocentesis
Mandibular condyle
Temporomandibular joint disc
Discectomy

Abstract

The patient presents with algia in the left mandible and in the ocular region, specifically at the base of the orbit. Initially, after clinical examination, the suspicion was migraine associated with bruxism with internal joint disorder. After imaging exams by tomography and magnetic resonance imaging with T1, T2, and DP contrast, it was observed that in the left temporomandibular joint, there is disc displacement without reduction, and in the right temporomandibular joint, the disc shows partial recovery. After one year of using an interocclusal device, the patient shows improvement in pain symptoms; however, the disc has only slightly improved in recovery, suggesting the possibility of future open surgery for disc repositioning through discopexy.

Submitted: March, 12, 2024
Accepted: March 24, 2024
Published online: June 30, 2024



Introduction

The temporomandibular disorders (TMD) are a heterogeneous group of conditions that affects the masticatory system and can be characterized by the complex articular joint and/or presence of muscular pain, joint sounds, and limited or irregular mandibular function (1). The low quality of life when present alongside with Otolaryngologic symptoms can be more severe with TMD. The TMD causes are complex and multifactorial. Biological, psychological, and social roles appear to be related to the observed association among TMD and female sex as an important factors to be evaluated and considered (2).

Case report and discussion

A young patient, 25 years old, female, good general health, with relative limited mouth opening (31.6 mm) arrives at the clinic complaining of pain on the left side of the face. This report of pain became more significant and relevant in the previous month, leading to the search for a solution to the problem. The left side of the face is affected, including the region around the eyes, temporal anterior bundle, auricular pavilion, and frontal muscle. General inspection of the head and neck (asymmetries, lymph nodes). Observe, for example, the presence of hypertrophied masseter, enlarged submandibular lymph nodes, and evaluation of the TMJ. Visual Analog Scale (VAS): pain at the moment, average pain, and the worst pain in the last 30 days was performed during the treatment appointments. Patient reports muscle pain mainly on the left side of the face upon waking up in the morning. In the quest to solve the problem, as often happens in many cases like this, the patient ends up consulting with many professionals. Otorhinolaryngologists and neurologists are usually the first choice, and tests are requested from the patient to begin the diagnostic journey. Not uncommonly, the field of psychiatry also appears on the list of mentioned professionals. Analgesics and anti-inflammatories are the primary treatments, used chronically by the patient from the early hours of the day, usually without much resolution of the symptoms, which persist and worsen as the day progresses. With no history of diseases and continuous medication, the dental clinical examination also rules out dental problems for the nursing student. The use of fixed containment on the lower incisors marks the previous fixed and mobile orthodontic treatment noted in the anamnesis, as well as the extraction of the 4 third molars without any reported complications during the surgeries. The requested initial exams during the consultation were nuclear magnetic resonance and tomography of the temporomandibular joints. The patient was already using a bruxism appliance in the maxillary region. While awaiting the results, we performed the low level laser therapy (LLLT) with laser device (DMC Therapy XT-DMC, DMC Group.) in the reported pain regions adjusted for pulsed infra-red wave length. Literature suggested that LLLT has a reasonable analgesic effect on TMJ pain and wound healing (3, 4). A meta-analysis by Chen et al.,(3) reported that LLLT might

substantially enhance the functional outcomes with limited pain amelioration in TMD patients. Facial regions from the angle of the jaw to the anterior bundle of the temporal muscle were mapped to receive infrared laser. At each patient visit, we applied 3 joules per laser application point in these regions. The protocol used for laser therapy application consisted of 2 sessions per week, with each point receiving 3 joules of infrared wavelength, and 4 points in the bilateral temporomandibular joint region for 3 weeks (5). With the diagnosis of bilateral disc displacement without reduction, we requested the joint biomodel made from the tomography DICOM images and MRI images. Assessing the cuts of the right TMJ in occlusion and opening, flattening of the anterior, superior, medial, lateral, and posterior poles of the condyle are observed. Areas of bone erosion at the superior pole of the condyle. Slight osteophyte at the anterior condylar pole. In the coronal view, the condyle is centered in the articular cavity, in occlusion. In the sagittal view, the condyle is centered in the articular cavity, in occlusion. Anatomical coronoid process. Flattening of the articular eminence. Assessing the cuts of the left TMJ in occlusion and opening, flattening of the anterior, superior, medial, lateral, and posterior poles of the condyle are observed. Bone irregularity at the lateral condylar pole. In the coronal view, the condyle is centered in the articular cavity, in occlusion. In the sagittal view, the condyle is centered in the articular cavity, in occlusion. Anterior angulation of the condyle. Anatomical coronoid process. Flattening of the articular eminence. The joint biomodel makes the planning more tangible and easily understood in the treatment dynamics, demystifying the subject that is sometimes difficult for patients to grasp. (Figure 1 and 2). The purpose of using the biomodel is to improve communication with the patient and also to observe with better precision the supradiscal space in the eventual possibility of performing the joint lavage procedure to improve condylar translation prior to the possibility of performing discopexy. In cases like this, with generalized facial pain and limitations in mouth opening, dental scanning becomes essential for case management. We made a mobile acrylic interocclusal device, covering the lower teeth occlusally, with distributed and balanced contacts for continuous use by the patient, who was informed about the possibility of surgical temporomandibular disrepositioning by surgical discopexy procedure. Due to the presence of disc displacement without reduction, the ideal approach is performing viscosupplementation in the temporomandibular joint to improve the supradiscal and infradiscal space prior to the possibility of performing minimally invasive surgery, such as posterior disc repositioning (discopexy). Viscosupplementation of the TMJ is a minimally invasive technique involving the intra-articular injection of Sodium Hyaluronate (HA) to alleviate or reduce signs and symptoms of TMJ disorders (TMDs) (6). After analysis if there is no improvement in symptoms and recovery of disc position and choose to secure the disc in its anatomical position using different techniques and



materials, such as sutures or other fixation devices (7, 8). After one year of clinical treatment with interocclusal devices and laser applications, we observed an improvement in the muscle pain condition, as well as an increase in mouth opening to 39 mm, with a gain of 7.8 mm in opening. The current follow-up at this stage of the treatment involves

observation and a request for magnetic resonance imaging to be performed in a period of 6 months. In conclusion, the correct diagnosis and clinical management of bruxism and temporomandibular disorders are resolving in 90% of cases, with surgical cases being specific and having specific indications.

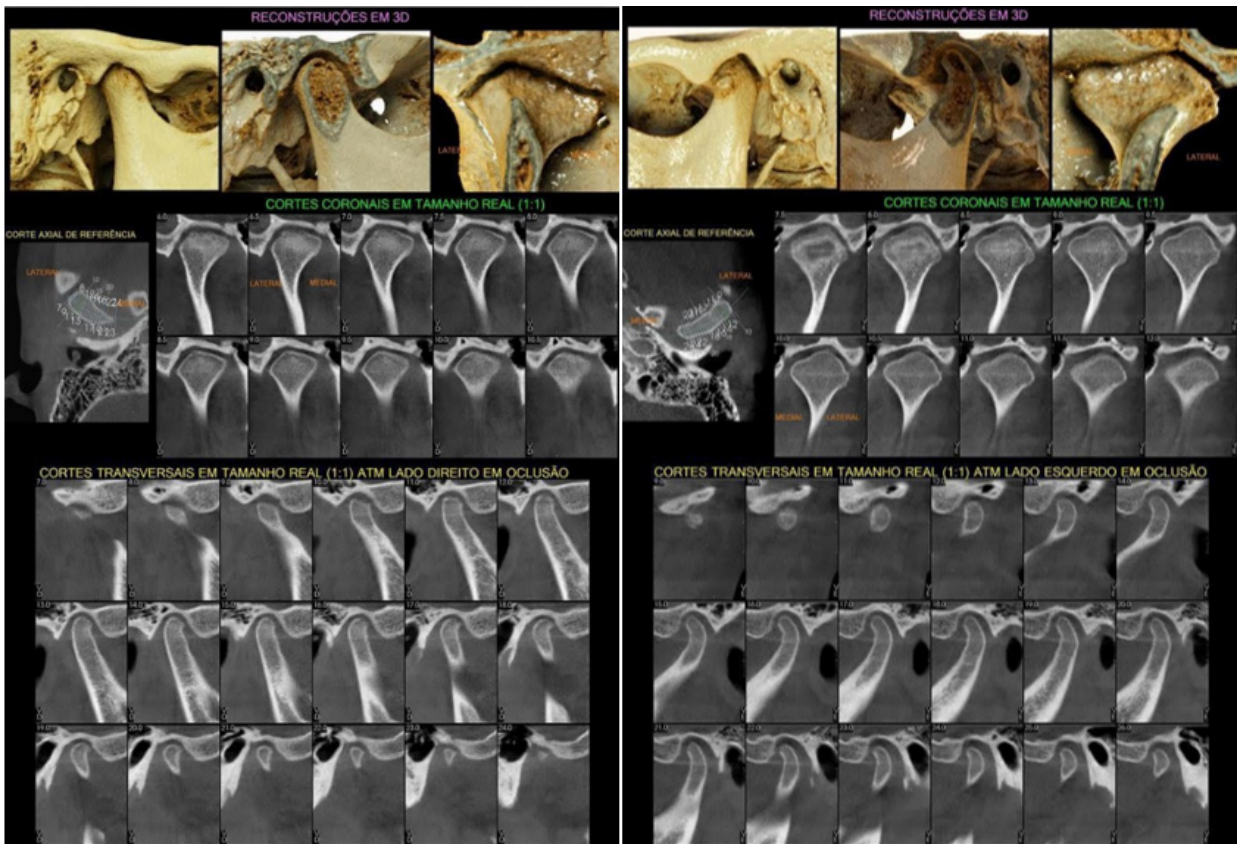


Figure 1. Temporomandibular joint CT.

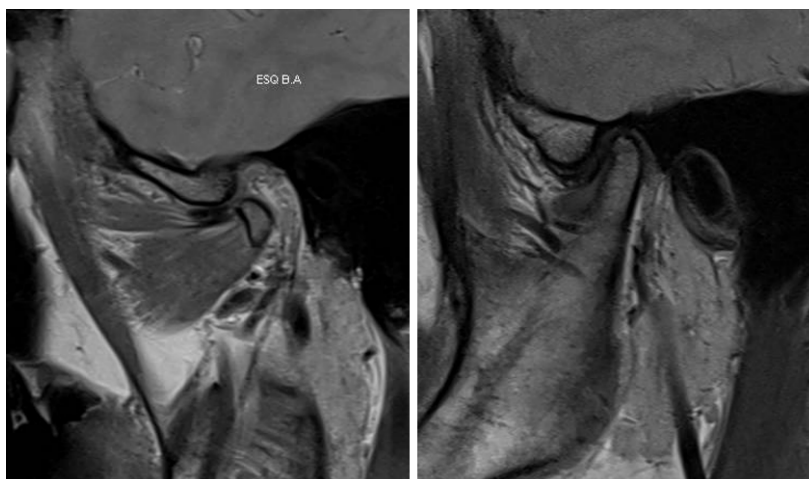


Figure 2. Temporomandibular joint MRI after occlusion bite.



Author's contributions: All those designated as authors gave substantial contributions to this manuscript, drafted and revised it, approved its final version and agreed to be accountable for all aspects of the work.

Conflict of interests: The authors declare that there is no conflict of interest.

Funding: This research did not receive specific funding from any funding agency in the public, commercial, or not-for-profit sectors

References

- Dworkin SF, Huggins KH, LeResche L, Von Korff M, Howard J, Truelove E, et al. Epidemiology of Signs and Symptoms in Temporomandibular Disorders: Clinical Signs in Cases and Controls. *The Journal of the American Dental Association*. 1990;120(3):273-81. Doi 10.14219/jada.archive.1990.0043
- Hwa TP, Brant JA. Evaluation and Management of Otagia. *Medical Clinics of North America*. 2021;105(5):813-26. Doi 10.1016/j.mcna.2021.05.004
- Shukla D, Muthusekhar MR. Efficacy of low-level laser therapy in temporomandibular disorders: A systematic review. *National Journal of Maxillofacial Surgery*. 2016;7(1). Doi 10.4103/0975-5950.196127
- Chen J, Huang Z, Ge M, Gao M. Efficacy of low-level laser therapy in the treatment of TMDs: a meta-analysis of 14 randomised controlled trials. *Journal of Oral Rehabilitation*. 2014;42(4):291-9. Doi 10.1111/joor.12258
- Avaliação do efeito biomodulatório local e à distância por laserterapia infravermelha e vermelha na cicatrização de feridas cutâneas em dorso de rato [Internet]. A1. Dworkin SF, Huggins KH, LeResche L, Von Korff M, Howard J, Truelove E, et al. *Epidemiology of Signs and Symptoms in Temporomandibular Disorders: Clinical Signs in Cases and Controls*. *The Journal of the American Dental Association*. 1990;120(3):273-81. Doi 10.14219/jada.archive.1990.0043
- Hwa TP, Brant JA. Evaluation and Management of Otagia. *Medical Clinics of North America*. 2021;105(5):813-26. Doi 10.1016/j.mcna.2021.05.004
- Shukla D, Muthusekhar MR. Efficacy of low-level laser therapy in temporomandibular disorders: A systematic review. *National Journal of Maxillofacial Surgery*. 2016;7(1). Doi 10.4103/0975-5950.196127
- Chen J, Huang Z, Ge M, Gao M. Efficacy of low-level laser therapy in the treatment of TMDs: a meta-analysis of 14 randomised controlled trials. *Journal of Oral Rehabilitation*. 2014;42(4):291-9. Doi 10.1111/joor.12258
- Avaliação do efeito biomodulatório local e à distância por laserterapia infravermelha e vermelha na cicatrização de feridas cutâneas em dorso de rato [Internet]. Available from: <https://seer.ufrgs.br/index.php/RevistadaFaculdadeOdontologia/article/view/294> Hersh EV, Balasubramaniam R, Pinto A. Pharmacologic Management of Temporomandibular Disorders. *Oral and Maxillofacial Surgery Clinics of North America*. 2008;20(2):197-210. Doi 10.1016/j.coms.2007.12.005
- Marlière DAA, Vicentin Calori MJA, Medeiros YdL, Santiago RC, Strujak G, Asprino L. Clinical outcomes of the discopexy using suture anchors for repositioning disc displacement in temporomandibular joints: Systematic review and meta-analysis. *Journal of Cranio-Maxillofacial Surgery*. 2023;51(7-8):475-84. Doi 10.1016/j.jcms.2023.06.007
- Gonçalves JR, Cassano DS, Rezende L, Wolford LM. Disc Repositioning. *Oral and Maxillofacial Surgery Clinics of North America*. 2015;27(1):85-107. Doi 10.1016/j.coms.2014.09.007