

Irreducible Disc Displacement: From Diagnosis to the Occlusal Splint

Zenati Latifa* and Ait Mehdi Mahdia

Department of Prosthodontics, Benyoucef Benkhedda Algiers University, Algeria

*Corresponding Author: Zenati Latifa, Department of Prosthodontics, Benyoucef Benkhedda Algiers University, Algeria.

Received: March 07, 2019; Published: March 18, 2019

Abstract

Introduction: Irreducible disc dislocation is part of the internal disturbances of TMJ. The positive diagnosis is sometimes difficult to pose especially when the clinical signs are blurry. The purpose of this poster is to show the progression of a case of closed lock from clinical examination to treatment.

Materials and Methods: A 36 years old patient consulted for joint pain after the clinical and occlusal examination, we explore with radiological image MRI and axiographic splots, all of which allowed us to move towards the diagnosis of a chronic disc displacement without reduction.

Result and Discussion: The diagnosis is very difficult to pose since the clinical signs and symptoms are very little revealing (the differential diagnosis is facial neuralgia) The axiographic pattern closely resembles a physiological pattern of a healthy ATM, it is also sharp of greater amplitude, the closing movement has a deflexion synonymous that the mandibular condylar passes behind the disc by crushing the posterior bilaminar zone The treatment was to restore the occlusion in first intention by a prosthetic restoration and secondarily by an occlusal splint of ante position whose goal is to cause a mandibular advancement and therefore condylar increasing the posterior joint space and decompression of the posterior area.

Conclusion: The management of patients with TMJ disorders must be supported from the beginning of the consultation by using all means necessary to arrive at a correct diagnosis and then establish a treatment plan.

Keywords: Irreducible Disc Displacement; Occlusal Splint; Temporomandibular Joint Disorders (TMJ)

Introduction

The treatment of temporomandibular joint disorders (TMJ) dates back to ancient times. The Smith papyrus, circa 1550 BC, already deals with TMJ disorders and more specifically with "dislocation of the lower jaw". Hippocrates later in his treatise Joints will describe the maneuver to reduce the temporomandibular dislocation still used today [1].

In 1934 Costen, an American otolaryngologist published an article stating that joint pain and some otological symptoms (subjective hearing loss, dizziness) were improved by the prosthetic rehabilitation of the molar segments. Even though most of his hypotheses have been refuted, many dentists still treat occlusion as the main cause of TMJ despite the lack of scientific evidence [2].

In 1969, Laskin evoking for the first time the role of muscle spasms produced by oral parafunctions (bruxism, dental claspation) at the origin of a painful muscle syndrome, he clearly distinguishes the problems of joint relevance from those of muscular relevance [3].

For many years, and still today, several schools are fighting over the etiology, classification and treatment of these disorders.

In 1994, the American Association of Orofacial Pain published recommendations on the definition, clinical presentation and prevalence of TMJ disorders, highlighting their varied and often multifactorial nature [4]. Currently, ATM disorders are divided into two categories:

1. Muscular disorders or myofascial syndrome; myofascial pain and disease, MPD

2. Joint disorders or internal disturbance; internal derangement, arthrogenous, TMJ Typical joint and muscle disorders may be present at the same time, making diagnosis and treatment even more complicated [5-7].

Epidemiology: In 2016 and according to the IASP (International Association for the Study of Pain) 75% of the world's population has at least one sign of AMD including 41% muscle and 33% articular [6].

Materials and Methods

A patient aged of 36 years old consulted for joint pain. The anamnesis is of interest here, he tells us about the follow up of the patient by a neurologist for two years already following facial, muscular and joint pain, the treatment was based on Tegretol® 40 mg. The clinical interview revealed that extraction of the 47 was the main cause of the onset of facial, ear and joint pain. The pain is classified at 7 EVA (Visual Analogical Scale) expressed by the patient during chewing, speech and mouth opening and remains a subjective parameter.

Evaluation of mandibular kinematics

Three elements must be noted during this evaluation:

1. Amplitude of the movement
2. Trajectory of the movement
3. Presence of pain during mandibular movements (opening, closing mouth, propulsion, diduction) and its localizations.

The Farrar diagram is exaggerating after a mouth opening that exceeds 45 mm; the latter is deviated to the side that is reached (Figure 1).



Figure 1: Diagram of FARRAR exceed.

Joint palpation is painful but without any distinct abnormalities.

The occlusal examination shows us an unstable occlusion following a disturbed occlusion plane resulting from a loss of

dental substance at level 26 with a loss of posterior wedging on the right side

Anterior overbite with protrusion that ensures disocclusion of posterior teeth and canine guidance and group function during right and left diduction movements.

The panoramic X-ray reveals some care to be taken, a cantilever bridge on the 46 in distal extension, compression of the posterior bilaminar zone and a narrowing of the line between the two mandibular and temporal condyles, an asymmetry of the left and right condylar anatomy (Figure 2-6).



Figure 2: Occlusion of the patient.



Figure 3: Panoramic radiography 45 mm.



Figure 4: Shuller radiography.

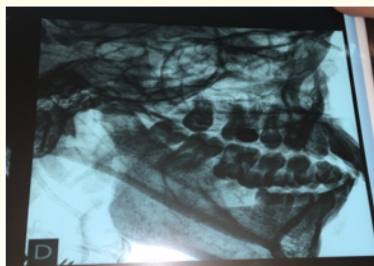


Figure 5: Tomography of the ATM.

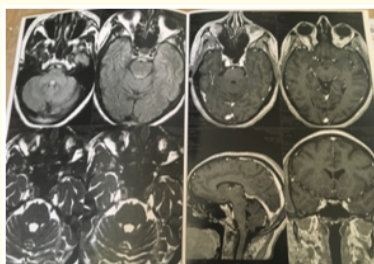


Figure 6: Cerebral MRI.

Instrumental review

Mechanical axiography is used to record a course of the condylar path during propulsive or oral opening movement on grid paper that tells us about the quasi-normal amplitude related to a physiological pattern (Figure 7 and 8).

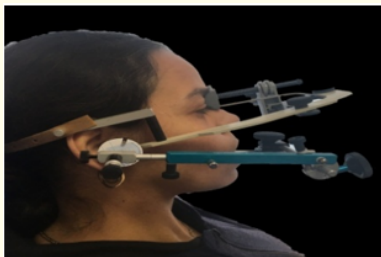


Figure 7: Axiography on the patient.

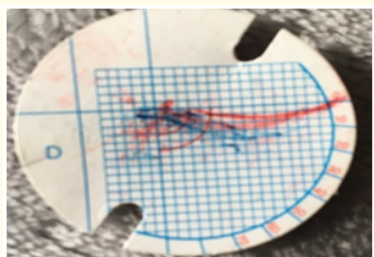


Figure 8: Initial axiography registration.

The therapeutic approach

Management was reversible, conservative and non-invasive.

Preliminary impressions with alginate have been made, from which hard plaster models are derived.

These were mounted on a semi-adaptable SAM II articulator using a transfer face bow to position the maxillary model on the upper branch of the articulator and using the centric relation as the reference occlusion to fix the lower model on the lower branch of the articulator.

The occlusal splint, in hard resin, placed on the mandibular teeth, aims to restore stabilizing contacts on the largest possible number of teeth [8,9].

This one is realized on a semi-adaptable articulator with a real programming of the condylar compartment ($Pc = 18^\circ$, $AB = 0^\circ$) and on which we placed aluminum paper under the condylar ball, it should present an occlusal surface slightly indented and true premolar blocking or anti-retropulsion guide (to avoid mandibular retroposition) with previous contacts on natural teeth to maintain proprioceptive control (Figure 9-12).



Figure 9: Aluminium paper.



Figure 10: Programming of the articulator.



Figure 11: Equilibration of the ante position splint.



Figure 12: Occlusal splint in occlusion.

Some equilibrium grinding is made to the ante position splint to complete the occlusal wedging which thus simultaneously ensures the mandibular centering. Can we imagine that the mandibular repositioning and the muscular relaxation consecutive to the installation of the occlusal splint could lead to a replacement of the disc in its functional position? Our answer was YES for this clinical case.

Result and Discussion

The positive diagnosis made by the neurologist following the complementary examinations (CT tomography and cerebral MRI) was wrong; moreover the prescribed treatment was not effective.

The diagnosis is very difficult to make because the clinical signs and symptoms are very little revealing (the differential diagnosis was a facial neuralgia) [10].

The Farrar diagram was exaggerated with a mouth opening greater than 45 mm; the latter was deviated to the affected side synonymous with hyper-ligament laxity

The axiographic plot was related to the physiological pattern of a healthy patient (healthy ATM), it is also clear, of greater amplitude, the closing movement has a deviation synonymous that the mandibular condyle passes behind the disc by crushing the bilaminar zone posteriorly, we thus allow the positive diagnosis

of a chronic irreducible disc displacement which is the evolution of an irreducible disc dislocation: discopathy in which the articular disc is in a more anterior situation by contribution to the mandibular condyle and that the latter could no longer catch him during the mandibular kinematics by crushing the posterior bilaminar zone.

The treatment consisted in restoring the occlusion in first intention by a prosthetic restoration and secondarily by an occlusal splint of anteposition aiming at causing an advance of the mandible and thus a condylar lowering and a decompression of the posterior region.

This type of occlusal splint imposes a mandibular position more anterior than that given by the centric relation occlusion (O.R.C).

The formerly repositioning splint (GAP) is also indicated in persistent Dysfunction Temporomandibular cases or directly in situations of manifest condylar retro-position with temporomandibular pain.

This is, according to the GELB principle [11], a partial posterior occlusal splint. However, the anteposition ensuring contact between the anterior teeth themselves, the occlusal contacts will be made on the entire arch, as for an occlusal splint full recovery.

The GAP is formally contraindicated when it is impossible, in spite of the anteposition, to obtain anterior contacts with an overlap of at least 2 mm.

It will be wear continuously (24 hours a day, even during meals) for about 3 months. Weaning will be done gradually.

The axiographic plot after one month wearing the ante position splint shows us a harmonious course, net with no jump disc (Figure 13).

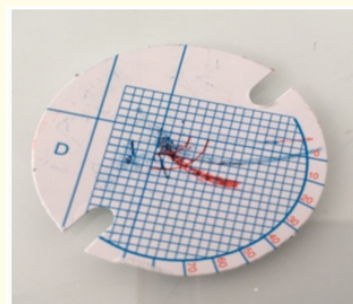


Figure 13: Axiography registration after one month of wearing the ante position splint.

Conclusion

Like the Russian dolls, the mandatory apparatus is itself included in an even more global edifice: the individual to be apprehended in its biological component and its psycho-social imperatives. For us occlusodontist occlusion is the guarantee of balance and harmonious functioning. The management of patients with irreducible disc displacement should be taken at the beginning of the consultation using all means necessary to arrive at a correct diagnosis and to establish an overall plan individualized and effective treatment.

Bibliography

1. Orthlieb JD, Chossegros C, Cheynet F, Giraudeau A, Mantout B, Pérez C, et al. Therapeutic framework of dysfunction of the Mandatory System (TMD). *Inform Dent*. 2004;39:2626-2632.
2. McNeill C. *Science and Practice of Occlusion*. Carol Stream: Quintessence Publishing Co., 1997.
3. Ramfjord SP, Ash MM. *Occlusion*. Philadelphia: W. B. Saunders Company Co., 1966.
4. Rozencweig D. *Algies and Malfunctions of the Mandatory system*. Paris: Editions CdP, 1994.
5. Schiffman E. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research. Applications: Recommendations of the International RDC/TMD Consortium Network and Orofacial Pain Special Interest Group. *J Oral Facial Pain Headache*. 2014;28(1):6-27.
6. IASP. Orofacial pain. Fact Sheets 2016.
7. Greene CS. The etiology of temporomandibular disorders: implication for treatment. *J Orofac Pain*. 2001;15(2):93-105.
8. Chossegros C, El Zoghby A, Carlier JF, Orthlieb JD. *Occlusal Splints: Occlusal Focus*. 2017.
9. Cheynet François, Jean-Daniel Orthlieb, Françoise Saint-pierre. *Occlusal Orthoses (Splints): Indications in Temporomandibular Dysfunction (TMD) Recommendations of Good Practice*, 2016.
10. Jules E Lemay. *Temporo-Mandibular Disorders: Focus on Diagnostic Methods and Treatments*, 2012.
11. Gelb ML, Gelb H. Gelb appliance: mandibular orthopedic repositioning therapy. *Cranio Clin Int*. 1991;1(2):81-98.

Volume 2 Issue 4 April 2019

© All rights are reserved by Zenati Latifa and Ait Mehdi Mahdia.