



NEURO-ARTICULO-MUSCULAR CONDITIONING IN THE COMPLETE EDENTULISM USING TRANSICIENT PROSTHESES: ABOUT A CLINICAL CASE

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| Received July 01, 2020 |

| Accepted July 14, 2020 |

| Published August 03, 2020 |

| ID Article | Elhamdi-Ref.8-ajira010720 |

ABSTRACT

A unanimous recommendation today is to resolve the musculo-articular system problems before starting any prosthetic treatment. Therapies aimed at solving problems of this kind vary according to the level of complexity of the case, they consist of muscle and/or joint rehabilitation by removing bad neuro-musculo-articular reflexes. The judicious use of old dentures sometimes proves useful insofar as they allow rehabilitation and a gradual transition to a clinical situation more apt to receive new prostheses.

Keywords: *Conditioning, Old prostheses, Transient prostheses.*

1. INTRODUCTION

Total edentulous patients are rarely ready to undergo all the stages and constraints inherent in prosthetic construction. Often pre-prosthetic treatments are necessary in order to place the patient in the optimal conditions to receive his new prosthesis and to adapt quickly.

Neuro-muscular-articular conditioning is part of this framework and it is intended for patients suffering from an imbalance reaching the neuro-muscular and/or articular system. This is often the case for patients wearing old dentures and wishing to renew them; they do not directly complain of muscle or joint pain, but rather a deficiency in masticatory function. Therapies aimed at solving neuro-Articulo-muscular problems in the total edentulism vary according to the level of complexity of the case. This article aims to describe a practical clinical method of neuro-muscular-articular conditioning aimed to:

- the restoration of a functional OVD (occlusal vertical dimension),
- function improving,
- re-centering of the mandible,
- the reestablishment of a centered and repetitive centric occlusion.

2. CLINICAL CASE REPORT

2.1 Identification and Clinical Examination: L.R is a 61 years old female, wearing old dentures for 13 years. The patient complained about the instability of her prostheses and the masticatory function's ineffectiveness. Upon inspection, the VDO was undervalued with remarkable protrusion of the mandible resulting in an inverted labial relationship. The maxillary prosthetic teeth are not visible either at rest or with a discreet smile. Her prostheses no longer provide satisfactory lip support and the patient looks like a toothless, unpaired patient (Figure 1).



Figure 1: Extraoral examination shows an under-evaluated VDO, Inadequate lip support, Mandibular protrusion, and hidden Prosthetic teeth.

examination of the old prostheses revealed completely abraded and flat occlusal tables. In the mouth, dentures showed a class III occlusion. Spacing was observed between the prostheses and the supporting tissues (Figure 2).



Figure 2: Examination of old dentures shows: Abraded prosthetic teeth and Class III occlusion.

2.2 Therapeutic approach :

Before the prosthetic renewal, neuro-Articulo-muscular conditioning was considered using the patient's old prostheses. First, the gradual addition of the functional soft resin was made in the lower surface of the maxillary prosthesis and then the mandibular prosthesis as a relining material (Figure 3). The objectives at this stage are:

- improvement of prosthetic stability
- occlusal plan reorientation
- OVD gradual increase
- partial correction of the mandibular protrusion.



Figure 3: Tissue conditioning using a soft reline (Kerr FITT ®).

Subsequently, self-molding was used to obtain occlusal surfaces cuspidated in self-cured, methylmethacrylate resin (UNIFAST ®). These blocks of resin were glued to the occlusal surfaces of the mandibular prosthesis after the creation of grooves to ensuring their retention (Figure 4, 5).



Figure 4: Using a silicone key, cusp occlusal surfaces were obtained.



Figure 5: the resin blocks were glued to the abraded occlusal surfaces.

To create cusp tables on the maxillary prosthesis in perfect cuspidation with the mandibular dentures, we deposited the self-curing resin on the maxillary occlusal surfaces and we tried to reorientate the mandible in centric occlusion. After the resin has set, the excess was removed from the maxillary prosthesis. Occlusal equilibration was necessary in order to have posterior balancing contacts. This step was carried out in several sessions until a reproducible mandibular position and a stable occlusion were obtained (Figure 6). The patient was able to observe the aesthetic and functional improvements of her old prostheses.



Figure 7: occlusal equilibration.

4. DISCUSSION

According to DABADIE, many total edentulous patients suffering from dysfunction in the TMJs want to obtain new dentures, their frequency varies according to studies and authors. Most often, patients do not complain directly from muscle or joint pain, but about a function's insufficiency and efficiency's lack of their old prostheses [1, 2, 3].

Any patient with a complete denture should be scheduled for a routine examination each year; during which, the medical assessment is re-evaluated, dentures should be examined, degree of ridges' resorption and mucosa's appearance checked, as well as prosthetic hygiene and mucosal hygiene. In addition, the patient's ability to perform precise and reproducible mandibular movements along an axis of rotation is controlled using para-articular marking. The activity, but above all the coordination of the muscles and the functioning of the TMJs are noted while the patient is trying to perform the requested movements freely. With these diagnosis criteria, it becomes entirely possible to highlight moderate or major problems before undertaking new prosthetic construction.

LUNDEEN confirms that mandibular movements dependent on the following factors:

- The relief of the prosthetic teeth's occlusal surfaces,
- The orientation of the occlusal plane,
- The depth of compensation's curve,
- And above all the denture's stability: When it exists, masticatory movements are carried out with the predominance of a vertical component. On the contrary, their instability generates anarchic movements [4].

According to « ORTHLIEB », occlusal disorders, such as stalling and guiding anomalies, may constitute possible predisposing and / or maintenance factors for pain and dysfunctions of the TMJs wedging occlusal anomalies include loss of the vertical dimension of occlusion, loss of posterior stalling and anterior open bite. Guidance anomalies are related to the presence of a non-functional (posterior interference) or dysfunctional (anterior interference) anterior guide or to the absence of anti-retrusion guidance. loss of VOD causes during swallowing either a lingual interposition or the lower incisors will come to rest on the antagonist's teeth, explaining an anterior and anterolateral occlusion generating joint and muscular pathology [5]. The therapies aiming at the resolution of the neuro-Articulo-muscular problems in a complete edentulism, vary according to the level of the case's complexity, one can call upon:

- muscle exercises
- transient prosthesis
- bite blocks
- a central support point system
- bite block association
- RMA system

The technique used in this patient, allowed us to transform the old prostheses into transient prostheses in order to obtain simultaneously:

- Tissue conditioning,
- Improvement of lingual behavior,
- reorientation of the occlusion plan: an essential prerequisite for forgetting all acquired posture and occlusion reflexes,
- suppression of all asymmetric muscle contractions and tensions,
- elimination of the hyperactivity of the lateral pterygoids,
- Rest of the TMJs,
- return of the condyles and menisci in symmetrical and physiological position,
- slackening of the Cranial-cervical-mandibular muscles' tone,
- gradual return to a vertical dimension restoring the aesthetics and improving the comfort of the bearing and articular surfaces,
- Treatment of atypical swallowing [6, 7, 8].

5. CONCLUSION

It is important to treat neuro-muscular-articular pathologies before starting prosthetic treatment of the complete edentulism, this is in order to avoid any failure of the renewal of old prostheses.

The improvement of prosthetic stability and the establishment of properly evaluated occlusal determinants in the patient (Occlusion plan, OVD, centric occlusion) have enabled real neuromuscular and neuro-articular rehabilitation.

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Cite this article: Elhamdi Hanane, Elmoutawakkil Nidal, et Bellemkhannate Samira. NEURO-ARTICULO-MUSCULAR CONDITIONING IN THE COMPLETE EDENTULISM USING TRANSICIENT PROSTHESES: ABOUT A CLINICAL CASE. *Am. J. innov. res. appl. sci.* 2020; 11(2): 113-116.

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