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Case Report

REHABILITATION OF DYSFUNCTIONAL PATIENT WITH SEVERE BRUXISM

F. Lio[1], A. Pinto[1], A.M. Pujia[1]

[1]Department of Clinical Sciences and Translational Medicine, University of Rome "Tor Vergata", Rome, Italy

Correspondence to:
Fabrizio Lio, DDS
Department of Clinical Sciences and Translational Medicine,
University of Rome "Tor Vergata",
Rome, Italy
e-mail: fabriziolio90@gmail.com

ABSTRACT

Full-mouth rehabilitation of patients with bruxism and severely worn dentition is challenging for clinicians. Several treatments and restorative materials are available, and clinicians should be able to select the most suitable treatment and materials for each patient, depending on his specific situation. A 58-year-old male affected by bruxism was referred for evaluation of a severely worn dentition. Clinical and radiographic evaluation revealed tooth abrasion in the entire dentition. Before the full mouth prosthetic rehabilitation, the patient was gnathologically treated for 8 months. The full-mouth restoration showed satisfactory functions and esthetics. No complications were observed in the restorations, supporting tissues, and temporomandibular joints during the 3-year follow-up.

KEYWORDS: *bruxism, full-mouth rehabilitation, dental abrasion, vertical occlusal dimension*

INTRODUCTION

Some loss of occlusal surface can be considered physiological over the years (1). However, severe tooth wear can be influenced by factors such as reflux disease, eating disorders, skeletal class, and parafunction (2). Dental erosions are mainly caused by parafunction of the masticatory muscle activity at night. Bruxism is characterized by teeth' occlusal surfaces rubbing on the occlusal surfaces of the opposite jaw (3). In normal conditions, the functional day contact between teeth during mastication is very short and does not lead to pathological wear. Bruxism can be divided into sleep and awake bruxism (4). The diagnosis of sleep bruxism is made by polysomnography (PSG), while the patient's self-report mainly makes the diagnosis of awake bruxism. Severe bruxism may lead to loss of function, aesthetic, and vertical dimension of occlusion (VDO).

Oral parafunctions are frequently observed in patients with high stress and anxiety (5). No specific treatment can stop sleep bruxism. In order to prevent the destructive effects of bruxism, interocclusal appliances have been proposed, such as

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occlusal splints or nightguards. The treatment plan of patients with severe erosion, loss of VDO and bruxism is the main challenge for clinicians, dental technicians, and the patients themselves. This report aims to describe the treatment of a dysfunctional patient with severe bruxism and loss of VDO employing fixed ceramic prostheses.

CLINICAL REPORT

A 58-year-old man was referred to examine abrasion of the entire dentition. The patient was concerned about tooth wear and was dissatisfied with his smile, especially for the short clinical crown length of the anterior teeth (Fig. 1, 2).

The patient had a parafunctional habit of bruxism and clenching, and the clinical history was uneventful. Intraoral and radiographic examination revealed severe attrition and dentinal exposure of the entire dentition. Abrasion determined pulp exposure in the lower frontal group, which caused pain to the patient. The maxillary left of the first premolar exhibited vertical mobility. The patient had a >20-year history of tooth erosion. The interocclusal distance at rest was 4mm. Before the prosthetic treatment, teeth with pulp exposure were endodontically treated to eliminate pain. Then a gnathological treatment started using an occlusal splint.

The case was studied on plaster models and merged with clinical measurements. The estimation of loss of vertical dimension due to abrasion was about 6 mm. A 6 mm height resin occlusal splint was provided to the patient to verify muscle response and avoid other more invasive treatments such as injections with botulinum toxin in masseter muscles. The patient was instructed to wear the occlusal splint for at least 12 hours daily. He was recalled for occlusal adjustments once a week in the first month and then once a month.

Fig. 1. *Intraoral view before rehabilitation.*

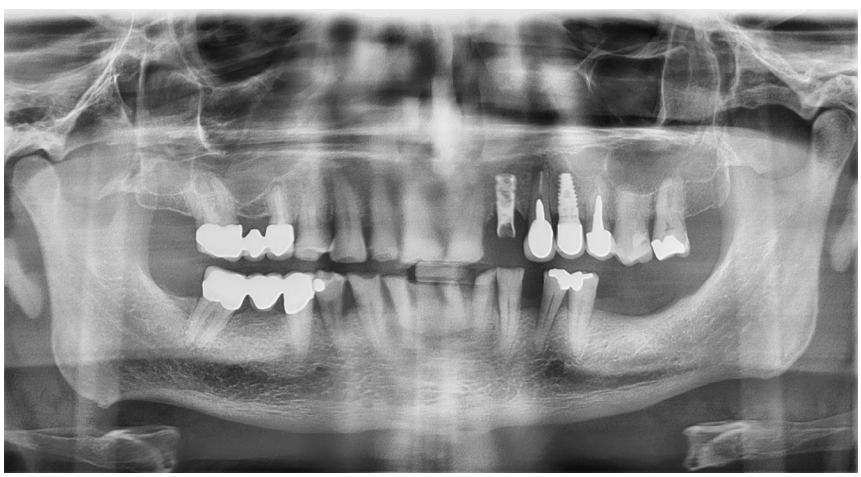

Fig. 2. *X-Ray examination before treatment.*

The patient's response was excellent during the eight months of the gnathological treatment. The patient was well adapted to the increased VDO without any muscle or joint pain complaints. A diagnostic wax-up was prepared on the casts mounted on a semi-adjustable articulator (SAM®3, SAM Dental, SAM Präzisionstechnik, Germany). After the VDO was elevated by 6 mm from the incisal guide pin of the articulator, a full-mouth diagnostic wax-up was created. The upper border of the lower lip was used as the reference line for the maxillary incisal curve to restore the smile line. Provisional full-mouth crown restorations were fabricated with acrylic resin (Jet, Lang Dental Manufacturing Co., Wheeling, IL, USA) by duplicating the diagnostic wax-up. The provisional restorations remained in function for 6 months. The shells of the interim crown restorations were relined with acrylic resin following crown preparation of the entire dentition. The goal was not to stress masticatory muscles and to continue the musculature adaptation with a not very hard restoration. Considering the patient's bruxism and abrasion history, specific restorative materials for the definitive prostheses were selected.

The definitive impressions of the maxilla and mandible were obtained using polyvinyl siloxane (PVS; Aquasil Ultra XLV; Dentsply Intl, York, PA, USA). The master casts were fabricated with Type IV dental stone (GC Fujirock EP, G.C. Europe N.V., Leuven, Belgium). Cross-mounting was performed on the semi-adjustable articulator, and the casts duplicated the intraoral provisional crowns. Definitive restorations were made by replicating the shape of the provisional crowns, which were tried and finalized in the oral cavity. Metal ceramic crowns were fabricated and cemented with resin-modified glass ionomer cement (GC FujiCEM 2, G.C., Tokyo, Japan) (Fig. 3, 4).

A night guard was made for the patient to be used during the night. During the follow-up period of 3 years, the full-mouth restorations were well maintained, and no complications were observed in the restorations, supporting tissues, or temporomandibular joints.

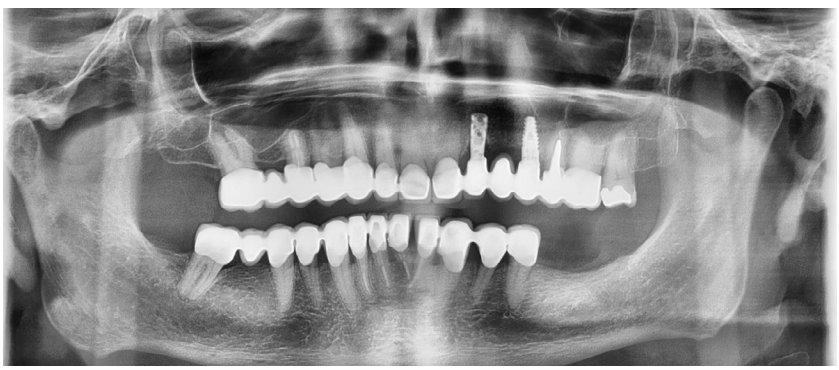

Fig. 3. *X-ray after metal-ceramic crown placement.*

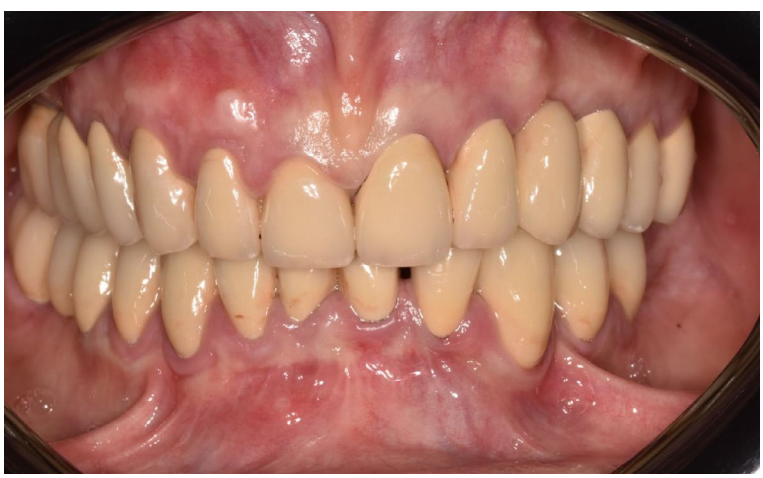

Fig. 4. *Intraoral view at last follow-up visit.*

DISCUSSION

The present clinical report performed a complete prosthetic rehabilitation of both arches. The patient lost a significant amount of teeth structures, and therefore the main challenge of the overall rehabilitation was the amount of VDO increase (6 mm). In these terms, the patient's compliance was crucial to achieving an acceptable result. The treatment methodology followed a strict protocol: the patient had to wear the occlusal splint for at least 12 hours daily (6, 7). In this way, the newly established VDO was tested with the occlusal splint. The idea was to reach comfort, bringing the mandible to a normal position without muscle or temporomandibular side effects (8, 9).

For the reconstructive material, using the same material in both jaws was suggested in several studies to avoid irregular abrasions, which can produce overloading areas (10).In addition, to prevent future technical complications with ceramic restorations, nightguards were recommended for the treated patients.

CONCLUSIONS

Treatment of severely dysfunctional patients is always a hard challenge for every clinician, especially when an increase in VDO is required. Increasing the VDO can be difficult for the patient because of the long time spent reaching functional rehabilitation. Motivation, accurate diagnosis, and individualized treatment plan are the keys to obtaining restoration with function and aesthetic results.

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