

Advanced Dental Rehabilitation in Case of Severe Tooth Wear Caused by Gastroesophageal Reflux Disease and Bruxism During COVID-19 Pandemia: A Case Report

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Abstract

Stomatological manifestations of psychosomatic diseases can be associated, culminating in advanced oral alterations. These psychosomatic changes have also increased during the COVID-19 pandemic. In this perspective, parafunctional habits, such as bruxism and clenching, and gastro-oesophageal reflux disease can develop major dental destruction. Thus, various types of treatment are required in the rehabilitation of these patients. The purpose of this article is to present the case of a patient who developed severe tooth wear due to the association between gastro-oesophageal reflux disease and bruxism, during the COVID-19 pandemic. The patient was treated with a bite raising, direct composite restorations and removable prostheses.

Keywords: *Tooth Wear; Gastroesophageal Reflux Disease; Bruxism; Oral Rehabilitation*

Introduction

During the COVID-19 pandemic, under emotional stress, humanity has developed various psychosomatic diseases. Some of them with severe stomatological manifestations. As an example, parafunctional habits such as bruxism and clenching have been occurring very frequently, and patients have had serious consequences and sequelae ever since¹⁻⁵. Episodes of bruxism can generate up to 6 times more force than normal chewing⁶. In addition, other disorders such as gastro-oesophageal reflux disease have also shown an increased incidence in this period. When associated, parafunctional habits and gastroesophageal reflux disease can promote excessive tooth wear^{1,6-12}.

Attrition is the loss of tooth substance that occurs as a result of tooth-to-tooth contact, without any other foreign interference. It is usually the result of parafunctional habits - bruxism or clenching. They are frequently observed in the dental clinic^{1,6,8-12}.

Gastro-oesophageal disorders such as gastro-oesophageal reflux disease, bulimia or anorexia nervosa, hiatus hernia, oesophagitis, sphincter incompetence, gastritis, increased gastric pressure, or in post-bariatric surgery patients can develop chemical erosion of the teeth^{1,9,12}. Perimolysis has been described to designate tooth wear lesions caused by vomiting, with enamel loss, particularly observed on the palatal and lingual surfaces of anterior teeth^{1,9}.

Several types of treatment can be used for patients with tooth wear. Treatments can vary according to the degree of wear presented, as well as the therapy associated with the etiological factor (parafunctional habits and/or gastroesophageal reflux disease). Occlusal splints are usually performed. Due to the hypermyotonia of the masseter muscles, botulinum toxin can be applied, particularly in symptomatic cases^{3,4,6,7,13}. However, in cases of greater wear, other rehabilitative treatments may be required, especially when there is a loss of vertical dimension of the generalised intermaxillary relationship⁶⁻¹⁰.

The purpose of this article is to present the case of a patient who developed severe tooth wear due to the association between gastroesophageal reflux disease and bruxism, during the COVID-19 pandemic. The patient was treated with a bite raising, removable prostheses and direct composite restorations.

Case Report

A Caucasian male patient, 52-years-old, came to the dental clinic with an aesthetic complaint about his smile.

In the intraoral clinical examination, dental absences of the posterior teeth were observed bilaterally. In the maxilla, tooth loss was observed in the 1st upper right premolar, canine and 1st upper left molar. The maxilla was rehabilitated using a removable partial denture. In the mandible, the patient had no rehabilitation, and the posterior teeth were missing bilaterally. The anterior teeth, both upper and lower, showed severe wear, caused by gastroesophageal reflux disease and bruxism, reported in the anamnesis. The upper teeth showed the most wear (Figure 1).

No pathological changes were observed on radiographic examination.

The administration of dexlansoprasol 60mg and domperidone 10mg daily was reported for the treatment of gastroesophageal reflux disease.

The planning of the case included the installation of a mandibular removable partial denture, with acrylic resin tooth augmentation, promoting the bite raising and the vertical dimension of occlusion (Figure 2). There was no need for endodontic treatment of the elements with tooth wear. In a second clinical stage, direct composite resin restorations were carried out on the anterior teeth. Finally, an upper removable partial denture was replaced (Figure 3).

The patient has been followed up for 4 years, with no signs of fractures or wear to the remaining teeth, restorations or prostheses.



Figure 1: Severe tooth wear caused by Gastroesophageal Reflux Disease associated to bruxism.



Figure 2: Augmentation of the posterior teeth in acrylic resin in the removable prostheses, promoting the bite raising and the vertical dimension of occlusion.



Figure 3: Confection of the composite resin restorations in the upper and lower anterior teeth.

Discussion

Generally, tooth wear has a multifactorial aetiology. From this perspective, it is necessary to understand the exact etiology in order to institute the appropriate treatment. Guidance on eating habits, oral hygiene and anti-smoking campaigns should be provided by the dental surgeon, or secondarily by other health professionals^{1,7,9,12,14}.

Tooth wear can be variable, causing aesthetic or functional alterations. Loss of the vertical dimension of occlusion, with a subsequent increase in the interocclusal rest space; tooth sensitivity; pulp complications; fractures of restorations; increased incidence of cheek and tongue biting; loss of chewing efficiency; loss of quality of life can occur. Aesthetic changes include fractures and discolouration. In facial aesthetics, the loss of vertical dimension can cause reduction of the lower third, inverted lip profile and facial ageing, sometimes early^{1,7-9,11,12,14}.

The diagnosis of tooth wear can be defined by various methodologies. Mandibular movements; use of the Willis ruler, jig (muscle deprogrammers for occlusal assessment) and pachymeter; assessment of facial tissues; and phonetic assessment can be used. Intraoral parameters such as intercuspation, centric occlusion, overjet and overbite can also help with diagnosis. Study models with subsequent assembly in semi-adjustable articulators can favour planning, as can diagnostic wax-ups and mock-ups. In addition, imaging tests such as panoramic and periapical radiographs, cephalometric tracings, computed tomography and magnetic resonance imaging, intraoral and extraoral photographs can complement the case information^{1,6,7,9-12,14}.

Generalised tooth wear can be complex, requiring different types of treatment. Its severity depends directly on the complexity of each case. In more discreet cases, rehabilitative treatments based on Restorative Dentistry may be sufficient. However, more advanced cases may require an increase in vertical dimension and complex prosthetic rehabilitation^{1,6-8,11,12}. Surgical periodontal and endodontic treatments are often necessary in preparation for rehabilitation⁹. Despite the extensive wear presented in this report, only restorative adhesive procedures and prosthetic rehabilitation (maxillary and mandibular removable prostheses) were carried out. No endodontic and/or periodontal treatments were required.

Initially, increasing the vertical dimension (bite raising) can be done using fixed or removable prostheses. At a later stage, fixed prostheses or overlays may be necessary. Various materials can be used, such as composite resin (direct or indirect), metal-ceramic or metal-plastic crowns, lithium disilicate or zirconia. The use of an occlusal splint may be necessary as a complement^{1,6-8,11,12}. It is important to consider the patient's adaptation to the removable method, which seems to be less acceptable than the fixed method⁸. Telescopic crowns over the remaining teeth or root can be used, depending on each case^{10,11}. The use of occlusal coverage or gold overlays has been cited to increase the strength of the occlusal region in advanced cases. Although gold is more mechanically resistant, this option is less attractive due to aesthetic factor or financial costs¹⁵.

The harmful association between gastroesophageal reflux disease and bruxism in the etiology of tooth wear has been reported in the literature. It is important for the dental surgeon to have comprehensive knowledge of these conditions and the aetiological factors involved, in order to provide the best and most appropriate treatment for these patients^{1,7,12}.

Conclusion

Tooth wear caused by the association between gastroesophageal reflux disease and bruxism can often be seen in dental clinic, particularly in the post-pandemic period of COVID-19. Various types of dental treatment may be necessary and the dental surgeon must recognise and identify the factors involved in order to design the most appropriate treatment plan.

Conflict of Interest

The authors declare no conflict of interest.

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