

Increasing Vertical Dimension of a case with Full Mouth Rehabilitation: Case Report.

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Introduction: Bruxism is one of the most frequent causes for occlusal tooth wear, with the loss of tooth structure caused by mechanical wear between maxillary and mandibular tooth surfaces, case report was conducted to improve the patient oral health, and to maintain the new vertical dimension since it was lost by teeth clenching.

Case description: this paper presents a 50 years old male suffering from severe bruxism, which implicated the appearance and function of the patient, he was transferred to TIU dental hospital for full mouth rehabilitation treatment.

Discussion: The rehabilitation of patients with extensive occlusal wear is complex and difficult to solve, becoming thus one of the biggest challenges of dentistry, a proper planning of a prosthetic rehabilitation should not attribute the re-establishing of occlusal vertical dimension (OVD) to new prostheses at the risk of the patient doesn't adapt to a new condition of vertical dimension.

Conclusion: Tooth wear causes dimensional changes in facial morphology and OVD decrease. The correct determination of occlusal vertical dimension represents a factor of success in the rehabilitation treatment.

Keywords: vertical dimension, rehabilitation, full mouth, bruxism

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INTRODUCTION

Tooth grinding is an activity particularly important to the dentist because of the breakage of dental restorations, tooth damage, induction of temporal headache, and temporomandibular disorders.¹

The term parafunction was introduced by Drum,² to suggest a distinction between occlusal stress exerted during mastication and swallowing and occlusal stress that is brought into action outside of the normal function. Parafunctional activities are non-functional oromandibular or lingual activities that include jaw clenching, bruxism, tooth grinding, tooth tapping, cheek

biting, lip biting, object biting, etc. that can occur alone or in combination and are different from functional activities like chewing, speaking, and swallowing. The term 'la bruxomanie' was first introduced by Marie Pietkiewicz in 1907.³ It was later adopted as 'bruxism' to describe the gnashing and grinding of the teeth occurring without a functional purpose. Glossary of Prosthodontic Terms (GPT-8),⁴ defines bruxism as parafunctional grinding of teeth or an oral habit consisting of involuntary rhythmic or spasmodic non-functional gnashing, grinding, or clenching of teeth in other than chewing movements of the man-

dible which may lead to occlusal trauma. Bruxism can occur during wakefulness or sleep. Bruxism during daytime is commonly a semi-voluntary ‘clenching’ activity and is also known as ‘Awake Bruxism’ (AB) or Diurnal Bruxism (DB). AB can be associated with life stress caused by familial responsibility or work pressure. Bruxism during sleep either during daytime or at night is termed ‘Sleep Bruxism’ (SB). SB is an oromandibular behavior that is defined as a stereotyped movement disorder occurring during sleep and characterized by tooth grinding and/or clenching.⁵ Sleep bruxism was recently classified as a sleep-related movement disorder according to the recent classification of Sleep Disorders [4]. The prevalence rate of AB and SB is about 20 and 8–16% respectively in the adult population.⁶ AB is found to occur predominantly among females while no such gender difference is seen for sleep bruxism.⁷ The onset of SB is about 1 year old soon after the eruption of deciduous incisors.⁸ The disorder is appearing more frequently in the younger population.⁸ The prevalence in children is between 14 to 20% of adults aged 60 and over only 3% are aware of frequent grinding.⁹

Case report

A 50-year-old patient came to Tishik Dental Hospital complaining about wearing his teeth without recognizing that he is a bruxer with severe tooth wear, his medical history revealed hypertension with no cardiac disease, and no signs and symptoms of any other disease. Random blood sugar test was in the normal range at 125mm, normal TMJ function with no clicking sound and no sign and symptoms of any lymphadenopathy, normal sclera normal conjunctiva and finally normal skin color so his treatment plan was as follows

1. Eliminating of causing factor by preventing teeth grinding (by the use of night guard).
- 2, increase in the vertical dimension using a 2 mm night guard.
3. root canal treatment for the majority of upper and lower anterior teeth.
4. build up for the upper and lower anterior teeth.

5. upper #8 needed root canal treatment to preserve it and use it as an abutment for the crown and bridge procedure as abutment for dental bridge

6. zircon crown and bridges to cover up his upper and lower arches to cover maxillary and mandibular teeth.

7. night guard for preserving the existing vertical dimension

8. periodic recall for the patient was scheduled. Every 3 months.

A 50 years old male came in for a restorative treatment because his lower and upper teeth were worn and unsightly. A thorough history and clinical examination followed, and baseline records were taken on a clinical assessment sheet. During the dental evaluation, excessive wear on the mandibular and maxillary anterior teeth, multiple fractures of restorations, and absence of teeth lower left 5,6 and right 4,6 were noticed. Also noticed a loss of anterior guidance and a reduction of OVD were noticed. The patient reported a grinding teeth habit, with sporadic episodes of painful symptoms. The periodontal condition was stable, with normal mucosa colour and no tooth mobility. The patient, signed the informed consent, accepted the treatment plan for full mouth rehabilitation (Figure 2). Impressions were made with alginate and cast models were fabricated, reproducing the current status of the patient’s occlusion. The OVD was assessed using a wax sheet. To do that, the patient was positioned in an erect posture and asked to look forward to performing the occlusion in maximum intercuspal position, gently touching the lips. The lower third of the face (base of the nose to up on the chin) was measured without pressing the soft tissues. After that, this measurement was compared to the measurement of the middle third of the face (distance between the inner commissure of the patient’s eye and the labial commissure). It has been found that these two distances were not coincident; meaning that OVD was reduced and the discrepancy was 2 mm.³⁵ The re-established OVD was also verified based on the patient’s physiological rest position (facial muscle relaxation),

satisfactory phonetics, aesthetics, and swallowing ability. The inter-maxillary distance of the re-established OVD was transferred to the cast models by bite registration with condensation silicon. Two portions of dense material were manipulated and positioned bilaterally on the occlusal surface of the lower posterior teeth. set on the re-established OVD was positioned on the patient's chin, without pressing the soft tissues. The patient was told to occlude and stay motionless.³⁶

Figure 1: patient upper and lower arches (severe teeth wear).

Figure 2: pre-operative radiograph before starting the treatment



Figure 3:10 teeth endodontic treated with 9 fiber post-build-up

Teeth preparation and chairside temporary fabrication

The teeth are prepared and temporary restorations are fabricated chairside segment by segment during several appointments (Figs. 1 and 5) to minimize patient discomfort and efficiently use the appointment time. The patient's vertical dimension of occlusion is maintained by using unprepared teeth or provisional restorations as occlusal vertical stops. Minimal occlusal reduction is indicated for patients scheduled for rehabilitation at an altered vertical dimension of occlusion.³⁷

Figure 4: final appearance of the patient after full mouth rehabilitation





Figure
5: 30

units of zircon crown and bridges

DISCUSSION

The full mouth of patients with extensive occlusal wear is complex and difficult to solve, thus becoming thus one of the biggest challenges of dentistry. Full mouth Rehabilitation procedures are increasingly sought after by patients.²⁵ As these cases become more complex, aspects related to the patient's OVD re-establishing must be observed because its recovery is of great importance for making prosthetics works, although it's not taken into consideration in most of the cases. Physiologically all teeth suffer wear due to functional activity, however, this process can be accelerated and intensified when there is loss of posterior elements causing overloading of the remaining anterior teeth and increasing the potential to wear, occlusal disorders, and parafunctional habits such as bruxism.³⁶ According to the glossary of prosthodontic terms, bruxism is the parafunctional grinding of teeth, or an oral habit consisting of involuntary rhythmic or spasmodic non-functional gnashing, grinding, or clenching of teeth, other than chewing movements of the mandible, which may lead to occlusal trauma. method for OVD determination is an option to ease the weaknesses of each method. Proper planning of prosthetic rehabilitation should not attribute the re-establishing of occlusal vertical dimension (OVD) to new prostheses at the risk of the patient not

adapting to a new condition of vertical dimension.³⁰ The restoration of OVD should be obtained gradually and, for this, we can use provisional removable partial dentures, also called therapeutic and often involving the need for coronary coverage, with prostheses of type "overlay". They are reversible, easy to adjust, restore VD and stabilize the occlusion, providing a preliminary analysis of the neuromuscular system's response and the phonetic and aesthetic evaluation before definitive changes in the dentition. The rehabilitative treatment requires that the restoration of OVD go through a trial period, with the use of these interim prostheses. Some authors mention the re-establishing splint of vertical dimension.⁴⁸ In patients with excessive dental wear, it acts as a device that determines the correct OVD, providing to mandible a positioning where the occlusal contacts are comfortable, this device can be considered a provisional prosthesis of type overlay. There is no consensus about the period of the patient's adaptation to the new VD, but according to the literature review the minimum is 4 weeks, where aspects such as the discomfort of TMJ, chewing, swallowing, speech, and aesthetics will be evaluated. The loss of OVD must be treated in a patient who has the habit of teeth grinding,⁴⁵ even if the patient doesn't present painful symptomatology, because this parafunction is capable of destroying the aesthetics and function of the teeth

CONCLUSION

OVD decreases and face morphology dimensions vary as result of tooth wear. Correctly determining the occlusal vertical dimension is crucial to the effectiveness of rehabilitation therapy, because if it's not increased or appropriately repaired, it may result in harm to the teeth, muscles, TMJ, swallowing and speech. In cases of OVD reduction, the use of occlusal overlay bilateral lower splint made of acrylic resin allowed for the restoration of acceptable level of function, aesthetics, and comfort. As such, it can be regarded as suitable rehabilitation procedure. The patient asymptomatic persisted, the rehabilitation therapy did not result in any painful symptoms for the patient, and the subsequent occurrence of painful symptomatology episodes prior to

treatment may be related to OVD loss once there was a remission of these symptoms following its restoration. The outcome was extremely satisfactory.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest relevant to this article.

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