

## TREATMENT OF A PATIENT WITH NIGHT BRUXISM – A CASE STUDY

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## ABSTRACT

**Introduction:** Bruxism as a parafunctional habit can be an unpleasant, painful experience for the patient. Sometimes patients suffer a lot of pain, swelling, reduction of opening of the mouth and unaware of their condition visit many specialists. **Purpose:** The purpose of this paper is to represent a case study of a patient with night bruxism that came to the dental office suffering a lot of pain. **Material and method:** The patient was diagnosed for night bruxism with clinical and paraclinical methods. Intraorally the index for Smith and Knight was applied. Paraclinically a bruxchecker was developed. After that pharmacological therapy was administered and physiotherapy was used. For the patient a splint was custom made with the material durasoft@pd from Scheu Dental Technology, Germany. Tens Laser was used as additional therapy. **Results and discussion:** When the patient visited the dental office, she suffered enormous pain. She was treated previously from different therapists with different treatment modalities, yet still her pain persisted. After all the treatments applied and producing the soft/hard splint with the adjuvant therapy the patient felt that her symptoms gradually disappeared. The patient was followed for a period of one year. **Conclusion:** Temporomandibular dysfunctions can occur as a consequence of the forces of bruxism that develop during the night.

**KEYWORDS:** Bruxism as a parafunctional develop during the night.

## INTRODUCTION

According to the American Academy of Sleep Medicine, bruxism most commonly occurs during the second and third decade of life.<sup>[1]</sup> The results of a survey obtained in the year 2013 indicate that bruxism is present in 8–31.4% of the examinees, of which 22.1–31% are patients with daily bruxism and 9.7–15.9% of patients with nocturnal bruxism.<sup>[2,3]</sup>

Opinions about the etiology of the emergence of bruxism, are divided. It is thought that stress may also be directly linked to the occurrence of bruxism. Further factors such as suppressed aggression, emotional tension, anger, fear and frustration contribute to its manifestation.<sup>[4]</sup>

According to Kapusevska and Lobizzo depending to the severity, bruxism can be classified as moderate, severe and extreme (mild, moderate and advanced), but there is also evidence of lesions of the structures of the stomatognathic system.<sup>[5,6]</sup>

Mild bruxism does not always occur during sleep, does not cause tooth damage, and has no associated

psychosocial disorders. Moderate bruxism occurs every night, there is abrasion on the tooth surfaces and there is a slight disturbance in the patient's psychosocial life. However, it is necessary for this abrasion to be brought under control, as the middle form of bruxism can be advanced. Any additional stress in the patient's life results in tension, which on a subconscious level can be reflected at night as a manifestation of bruxism.<sup>[1]</sup>

The degree of bruxism marked as advanced tends to reoccur every night, there is a marked abrasion of agonists and antagonists. This causes greater damage to the teeth, their support apparatus, the tempomandibular joint (TMJ), and thus other disorders. Its appearance is associated with serious psychological problems or stress states.

The American Academy of Sleep Medicine has studied the numerous definitions, classifications, and theories attributed to bruxism. The knowledge gained by expanding scientific and research work has transformed the concepts of bruxism that were previously considered to be correct.<sup>[7]</sup> According to research, nocturnal bruxism is no longer considered to be parasomnia, nor is its

etiology based on purely mechanical factors or psychological problems. Newer studies primarily describe bruxism as a movement disorder connected with sleep, with multifactorial etiology yet to be fully studied. Complex multi-system physiological processes are involved in its occurrence. Dental practitioners need to recognize the transformation taking place in the study of nocturnal bruxism, to understand evolution and classification and to understand new concepts related to its etiology.<sup>[7]</sup>

### Purpose

The purpose of this article is to represent a treatment modality of a patient with diagnosed night bruxism who came to the dental office with anamnestic information that she suffers a lot of pain.

### MATERIAL AND METHOD

For the purpose of this study a female patient age 30, came at the University Clinical Centre St. Pantelejmon, at the department for removable prosthetics. Her major complaint was pain at the jaw muscles, headache, earache and pain in the region of the temporomandibular joint (TMJ).

Before the beginning of the therapy, the patient filled a consent form for the protocol and interventions. Also the patient was given a questionnaire consisted of two parts. One part was about the parafunction bruxism, the changes noticed and covering the origin of the pain. The other part is paying meticulous attention to the patients' character analyzing her psychological state.

At the extraoral examination methods such as inspection, palpation and percussion were used, where at touching the masticatory muscles the patient felt pain. Extraorally slight asymmetry of the right from the left side of the face could be noticed. The patient had limited mouth opening. Intraorally the index of Smith and Knight was 2 meaning affection of dentin.<sup>[8]</sup>

The patient also gave notification that she also felt like her immune system is lowered and was feeling feverish. She had asked help at otolaryngologist and neurologist where all findings were normal. For initial therapy the patient was administered analgesics, antibiotics and corticosteroids. Also the patient was given instructions on how to massage the painful area and to put warm bandages.

Since the symptoms were eased and the patient could open her mouth more, anatomical impressions were taken for development of a bruxchecker. It is a paraclinical method of diagnosing the type of bruxism.

After having worn the bruxchecker for 2 nights the patients came to the dental office for the diagnosis. After that a custom made splint was developed of a foil made by the firm Scheu Dental technology under the name - durasoft pd @ 3 mm.<sup>[9]</sup>

A foil of 3.0 mm (2.1 mm PETG / 0.9 mm TPU) of colorless material was applied. All articles manufactured by Scheu Dental Technology (Germany) have been tested to international standards ISO 10993 and EN ISO 7405, ensuring their safe use in clinical practice.<sup>[9]</sup>



*a*



*b*



c



d

**Fig. 1: a. Intraoral view of a patient. b. The foil durasoft@pd in its original package. c. The custom made splint. d. Intraoral look of the splint.**

Low frequency therapy - with the help of the Scorpion Dental Optima (Optica Laser Sofia) diagnostic-therapeutic complex was applied during the wearing of the splint. It has two components:

- TENS laser application (transcutaneous electrical nerve stimulation, needle-free anesthesia in acute painful TMD).
- Laser therapy for the treatment of painful TMJ symptomatology and masticatory muscles.



**Fig. 2: Scorpion Dental Optima Aparatus.**

During the therapeutic protocol in the patient with diagnosed night bruxism and painful symptomatology of the masticatory muscles and TMJ, as well as with diagnosed temporomandibular dysfunction (TMD), additional methods were applied, such as the TENS laser system with many options and programs (fig 2).

The power of the appliance should be adjusted from 15 to 20 mW. Adequate protection was provided during the laser treatment to both the patient and the therapist with appropriate protective glasses covering the red rays to prevent retinal damage.

Alternative therapy was applied such as physiotherapy and psychotherapy.

From the perspective of physiotherapy, the patient was advised on how to help themselves by massaging the muscles at home when resting.

As a physiotherapeutic method for patients, we have advised that muscle massage is practiced to relieve their hyperactivity. As an opportunity a selection of 5 types of exercises was provided for which prospects were given on the manner and duration of the performance.

From the point of psychotherapy the patient was advised on how to help herself during the day and later what to apply at the night period.

## RESULTS AND DISCUSSION

From the detail clinical and paraclinical observations of the patient, as well as the used paraclinical method – bruxchecker, it has been concluded that the patient has nocturnal (night) bruxism, moderate form. Having taking in consideration the index by Smith and Knight – 2, in value it shows that the dentin has been affected. The index is measured as a mean value from all teeth. As it can be seen (fig. 1) some teeth have had fractures of the forces from bruxism that develop during the night. The

intensity of the bruxism has lead the patient to feel pain in the head, in the neck and irradiating pain in the ear and the masticatory muscles and temporomandibular joint. On the first visit there was swelling on the left side of the face leading to asymmetry and the patient felt acute pain. She was given analgesics Ibuprofen and while making the diagnosis because of her anesthetic allergy, transcutaneous electronic anesthetic stimulation with the Scorpion Dental Optima apparatus have relieved her pain. She was prescribed antibiotics and corticosteroids. She was advised at home to put warm bandages at the painful area, to replace them with cold bandages and again finish with warm.

The splint was fabricated by molding in the Ministar @ Scheu heat vacuum press machine. The soft, flexible inner layer provides comfort in carrying patients, making nighttime worn splints - durasoft @ pd, well adapted to the teeth. If further adaptations are required, a cold-polymerizable solid acrylate coating may be added to the outer solid layer.

Durasoft @ pd is a high quality fabric that is manufactured from two types of fabric. Polyethylene terephthalate glycol-modified (PETG) a solid base material and thermoplastic polyurethane (TPU) with soft consistency. If used correctly according to the manufacturer's instructions, the material is abrasion resistant even with high application of force. Cold polymerization acrylate can be added to models fixed in an individual or semi-individual articulator.

In the history of the disease the patient states that previously she was treated with flexible soft splints, that worsened her symptoms. She was also given hard acrylic splints which had her feeling pain as well.

At the visits to the dental office, one week after handling the splint with the given instructions, then on controls at one month, three months, six months the patient had felt relieving of the symptomatology. She could open her mouth more and was relieved from the swelling. Another splint was fabricated and was worn additional 6 months. After one year of wearing these splints the symptomatology was completely eliminated and the patient was feeling better.

The patient was additionally treated in the visits with the Scorpion Dental Optima apparatus, laser multifunctional device. Laser therapy affects the pain, improves circulation, processes of exchange of substances, as well as inhibiting inflammation of the TMJ and masticatory muscles. Laser radiation from the red part of the spectrum was used in 5-7 sessions regarding the subjective and objective symptomatology of TMD. The joint was irradiated extraorally, while the muscles were irradiated extraorally and intraorally.

After reducing acute symptomatology, and to stimulate regenerative processes, 5-6 sessions with a dose of 90 to 100 mW/cm<sup>2</sup> were applied.

Because of the patients age, character and temperament in the questionnaires it was discovered that she is a very young, ambitious, temperament and overall a complex person. She is very competitive and used to press her teeth in stressful situations. After having multiple visits to the dental office, the therapist need to knowhow to practice in situations in influencing the psychological state of patients. As literature states sometimes what bothers the person subconsciously can be manifested when the person is asleep, and having expressing that stress at night.<sup>[10]</sup> Even studies show that the more the person is ambitious and competitive the higher the degree of bruxism can develop.<sup>[10]</sup> Once the person is thought to find stress relieving methods such as yoga, relaxation sports, having thinking positive it will additionally help the entire treatment protocol.

## CONCLUSION

Bruxism is a complex field with a great challenge for its treatment. The patient studied in this paper had a long way until discovering what work at most for her condition. After visiting previous dentists and having worn different splints it has been discovered that the combination of soft/hard splint with the entire additional therapy protocol helps her in her painful symptomatology and in coping with nocturnal bruxism.

Each patient is different, because of which individual design of treatment and individual approach must be taken in consideration especially when treating bruxism. It is the patient who bearing the condition bruxism is the one who can give the therapists a direction of the treatment and to help themselves.

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