

Temporomandibular disorder therapy with splint stabilization

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ABSTRACT

A 14-years-old female patient came to a hospital with a complaint of feeling swelling on the left cheek, the right jaw joint often made noises since 6 months ago. The patient had a motorcycle accident 2 years ago and hit his left cheek at the time of the accident. the patient is dizzy, nauseous, does not vomit. The patient was referred to the prosthodontics department. Bad habits in elementary school often biting a pencil, bruxism and quitting in 6th grade. Intraoral examination showed dental caries 46, with missing teeth 33 and 28, good oral hygiene, anterior deep bite, normal occlusion. A composite filling restoration of tooth 46, tooth scaling and making stabilization splints were performed to help reduce pain, to eliminate occlusal disharmony, prevent tooth wear and tear, reduce bruxism and parafunction, treat masticatory muscle dysfunction and change the TMJ structural relationship. Joint disorders are symptoms of pain in the joints or muscles of mastication, with or without jaw movement. An occlusal splint is a removable appliance made of acrylic, made according to the occlusal and incisal surfaces. Occlusal splints have been used to treat symptoms of bruxism and disorders of TMJ.

Keywords: temporomandibular joint, temporomandibular disorder, splint stabilization

INTRODUCTION

Temporomandibular joint disorders (TMDs) are symptoms of pain in the joints or muscles of mastication (with or without jaw movement). The signs and symptoms of TMDs commonly include pain, joint sounds, and limited or asymmetrical jaw movement that may have an effect on the quality of life. Possible joint pain due to acute injury, chronic irritation, joint diseases (arthropathies).^{1,2}

The TMDs is a group of conditions musculo-skeletal pain-producing or dysfunction in the masticatory system.³ Several methods can treat TMDs by home therapy, physical therapy, behavioral therapy, pharmacological therapy, surgical therapy, as well as the use of occlusal devices (occlusal splint, night guard, biteguard). Therapies can be used to treat symptoms, both reversible or irreversible, surgical or non-surgical.¹

Splinting is the treatment of choice, because it is reversible, non-invasive, and less expensive than other treatments. The effectiveness of splints is very prominent compared to other therapies.²

According to Hart Long, splints of any design often result in a reduction in the sensitivity of the muscles of mastication in a short time. According to Pertes, occlusal splints are generally believed to reduce the load on the joint structure, thereby reducing its severity. Reducing the load on the joints can reduce muscle hyperactivity. Therefore, the occlusal splint is very helpful in reducing the symptoms of TMJ pain.³

Splints are often used to treat disorders of the TMJ and the masticatory system. The purpose of

using a splint is to eliminate occlusal disharmony, prevent tooth wear and tear, reduce bruxism and parafunction, treat masticatory muscle dysfunction and change the structural relationship of the TMJ.⁴

Occlusal appliances were originally made from acrylic resin and cover all or most of the teeth in one arch. Now day there are recent advance in materials, designs and using occlusal appliances as therapeutic devices,⁵ as described in this article.

CASE

A female patient, 14 years-old, came to the General Hospital with a complaint of feeling swelling on the left cheek, the right jaw joint often made noises since 6 months ago. The patient had a motorcycle accident 2 years ago and hit his left cheek. The patient is dizzy, nauseous, does not vomit, so she was referred from the community health center to an oral surgeon because of a suspected infectious disorder, but after examination the patient was suspected of having a jaw joint disorder and was referred to Prosthodontics Department. The patient had bad habits in elementary school like often biting a pencil, bruxism and quit in 6th grade (Fig. 1).

Intra-oral examination, 46 caries, 33 and 28 missing, good oral hygiene, anterior deep bite, and normal occlusion. Extra oral examination, observed the patient for facial asymmetries of one side and profile type. It may have occurred following injury, such as a fall, and the patient presents to the dentist with deranged occlusion and facial asymmetry. Extra oral TMJ examination, unilateral clicking noted while opening of the jaws, deviation towards

the right side while closing the mouth. No muscle tenderness was noted at the moment (Fig.2,3).

Closed mouth transcranial radiograph showed the right condyle is in the fossa, in a superior anterior position (+1), the left condyle is in the fossa, with anterior superior position (+1). Radiograph with the mouth open on the right side the condyle moves anteriorly but has not yet reached the peak of eminence (Grade 1). The left condyle moves anteriorly and reaches the apex of eminence (Grade 2). The right lateral movement is about 10 mm and the left lateral movement is about 11 mm (Fig.4).



Figure 1 Patient's profile shows swelling on the left cheek, swelling on the left cheek.



Figure 2 Intra oral examination view left, right and front



Figure 3 Intra oral examination, occlusal plane with missing teeth 33, 28 and caries of 46



Figure 4 Transcranial radiograph with closed and open mouth

Based on various examinations, a diagnosis of disc displacement with reduction can be determined with myofascial pain. Treatment plan using splint stabilization is a full arch hard acrylic splint that is generally fabricated for the maxillary arch that allows condylar seating in the CR. When splint is in place provides an optimal occlusal relationship canine disclusion of posterior teeth in excursion. The treatment goal was to eliminate any orthopedic instability between the occlusal position and the joint position (Fig.5).

MANAGEMENT

It is necessary to carry out preprosthetic treatment before using a stabilizing splint to treat TMD such as cleaning tartar with scaling and composite fillings restoration in dental caries. Impression of maxillary and mandibular arches of the patient was performed using irreversible hydrocolloid materials and followed by pouring with dental stones to make the casts.



Figure 5 Mandibular splint for day wear

After the occlusal splint ready, the appliance inserted in patient's mouth. On the next visit, splint is still used in good condition functionally, and the TMJ has improved. Splints in the lower jaw are recommended for this patient use the splint 24 hours daily, because the mandibular splint is less visible and does not interfere with the speech process compared to splints upper jaw. The patient had no longer complaints of pain in the TMJ and there is no face asymmetry anymore (Fig.6).

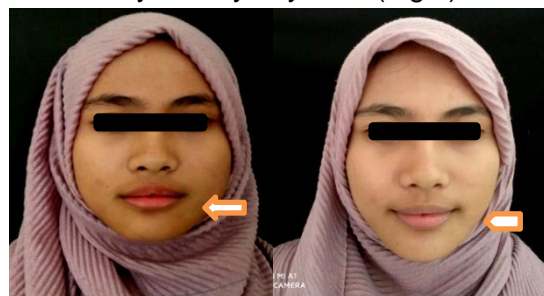


Figure 11 Before and after treatment using splint stabilization

DISCUSSION

A comprehensive general and extra oral examination of the patient can be performed without adding undue time to the dental office. Although it may seem lengthy, many aspects of the examination can be done when the patient enters the room. This, along with a thorough medical history, will provide information to enable safe and thorough treatment of the dental patient. The use of prepared questionnaires or pre-defined fields in electronic records will facilitate documentation. Dentists and dental care professionals are trained and work in areas where they can identify unknown medical conditions. They can make a difference to a patient's prognosis by timely referral or simply suggesting that the patient seek medical help.⁹

Myofascial pain is the most prevalent disorder among TMDs, accounting for more than half of the cases. The site of pain is generally located in the area and muscles of mastication which may also extend far from its site of origin.⁶

The management of myofascial pain is generally directed at relieving symptoms and enhancing the quality of life. Identification, assessment and elimination of precipitating and perpetuating factors are important parts of the management of myofascial pain. Various management techniques, mostly conservative and non-invasive have been suggested.⁸ A recent systematic review pointed out the beneficial effects of cognitive behavioural therapy and self-care management. Different school of thoughts suggest various mechanisms to deal with such a common but highly debilitating issue faced as the most often disease after dental caries. Correcting the occlusal equilibration plays the significant part in the management of TMD's.⁵ Disocclusion or any high contact during occlusion creates an imbalance in the relaxation of the masticatory muscles considering their role in maximal intercuspation and in centric relation. The relieve of the high contacts to attain an occlusal equilibration helps in relieving the symptoms the TMD's.³

In addition, intra-oral splints either alone or in combination with other approaches are often used to reduce pain and improve function in patients with myofascial pain. Among different types of occlusal splints, stabilization splints and nociceptive

trigeminal inhibition splint is safer and more effective than splints with irreversible designs.²

The choice of an occlusal splint depends on the specific diagnosis of TMD and thorough understanding of disc anatomy, splint made on lower jaw, it will be difficult to achieve anterior contact as well as proper interior guidance usage splints in the lower jaw are recommended for patients who use the splint 24 hours a day, because the mandibular splint is less visible and does not interfere with the speech process compared to splints upper jaw. Lower jaw splint allows the tongue is in the correct position, i.e. on the palate. In the case of tongue dysfunction, jaw splint bottom really helps to lift the tongue to the most appropriate position.^{7,8}

The occlusal splint must at the same time be aesthetic, comfortable, stable and functional. Treatment with using an occlusal splint should be preceded with a specific diagnosis, because appropriate treatment undiagnosed, uncontrolled or too time will cause permanent changes to the masticatory system, such as caries, periodontal disease, tooth movement, and changes in joint morphology. Every practitioner should properly understand that splint occlusal does not cure, but initial treatment of a general management comprehensive on TMD.²

It was concluded that occlusal splint is made to achieve balanced contact between the posterior teeth and maintain the centric or therapeutic position of the mandible through the maximal intercuspation of the splint. Every practitioner should properly understand that occlusal splint is an initial treatment of TMDs.

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