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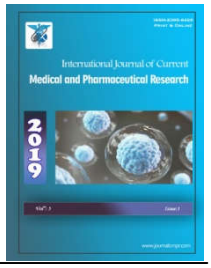

OCCLUSAL SPLINTS: A REVIEW

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ABSTRACT

An occlusal splint is defined as any removable artificial surface used for diagnosis or therapy affecting the relationship of the mandible to the maxilla. It can bea diagnostic, relaxing, repositioning and reversible device. It is commonly used for nocturnal bruxism. It is a specially designed mouthguard for patients having a history of pain and dysfunctions associated with their bite or TMJ, or have completed a full mouth reconstruction. It is a much safer and effective mode of a conservative line of therapy before the surgical therapy for TMJ disorders. It provides a relatively easy, inexpensive and non-harmful way to make reversible changes in the occlusion. The other goals of treatment are to improve jaw-muscle function and muscle dysfunction and to relieve associated pain by creating a stable balanced occlusion. Many designs are described in literature. This paper is a review of the different types of splints that are used to treat different conditions.

INTRODUCTION

Different occlusal splints, also known as bite guards, oral orthotics, and oral appliances, are available, and they vary by design and function. The intensity of a patient's parafunctional activity and adjunctive therapy and are major variables that are usually not discussed when proponents promote the success of a particular occlusal splint. They may be more responsible than the occlusal splint itself for any success achieved in treating a temporomandibular disorder (TMD).

Splint therapy may be defined as the art and science of establishing neuromuscular harmony in the masticatory system and creating a mechanical disadvantage for parafunctional forces with removable appliances.

A properly constructed splint supports a harmonious relation among the muscles of mastication, disk assemblies, joints, ligaments, bones, teeth, and tendons.

Review of Literature

Hiroshi kurita *et al* (1997) conducted study to evaluate the effect of maxillary full-coverage occlusal splint therapy for specific temporomandibular disorders and their symptoms/ signs. The results showed a positive effect with patients who didn't have clinical disk displacement.[2]

Marc Schmitter *et al* (2005) : The comparative evaluative study dealing with different types of occlusal splints in anterior disc displacement. The results concluded that centric splints are more effective than distraction splints.[3]

Firas Quran *et al* (2006) : The study conducted the efficacy of two occlusal splints and showed that AMPS & SS both were equally efficient but patients seemed to be more comfortable with the AMPS appliance.[4]

Funtions of Occlusal Splints:[5]

To provide diagnostic information
To protect teeth and associated structures from bruxism
To allow the condyle to seat in centric relation
To relax muscles
For cognitive awareness
To mitigate periodontal ligament proprioception

Applications of Occlusal Splints:[6]

Temporomandibular disorders
Myofascial pain
Disc displacement disorders
Arthritis of the temporomandibular joints

Motor and Sleep Disorders

Sleep bruxism
Sleep apnea
Parkinson's disease
Oral tardive dyskinesia

Occlusal Rehabilitation

Orthodontics
Periodontics
Prosthodontics

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Phantom bite

Other pain disorders
Headaches/migraine

Others (Prevention of tissue trauma, habits)

Diurnal bruxism
Sports
Cheek or fingernail biting
Electroconvulsive therapy
Lip commissure burn
Esophageal reflux
Sinusitis

Types of Occlusal Splints:

According to Dawson:[7]

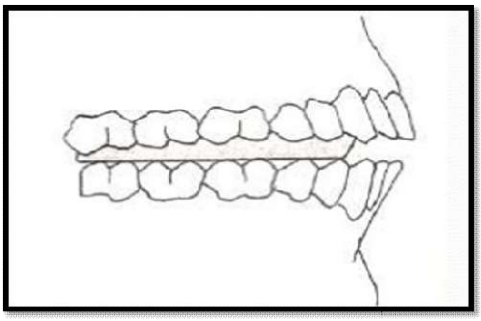
Permissive occlusal splints
Directive occlusal splints

According to Okeson:[8]

Stabilization appliance
Anterior repositioning appliance
Anterior bite plane
Posterior bite plane
Pivoting appliance
Soft/resilient appliance

Permissive Occlusal Splints

These are also known as muscle deprogrammers. These Splints have a smooth surface on one side that allows the muscles to move the mandible without interference to complete seating of condyles in centric relation.

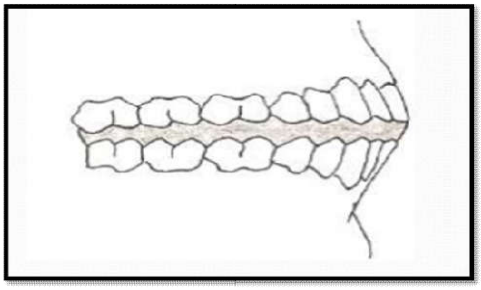


Indications

Orofacial pain
Masticatory muscle disorders
Occlusal Disharmony

Directive Occlusal Splints

These splints are designed to position the mandible in a specific pre-determined relationship with maxilla. Their primary purpose is to position / Align the Condyle-Disc Assemblies. They are used limitedly when specifically directed positions of condyles are required.



Indications

Intracapsular disorders

Anterior Bite Plane:[9]

It is a hard acrylic appliance that is worn over the maxillary teeth providing contact only with anterior mandibular teeth.This disengages the posterior teeth thus eliminating their influence on the function of masticatory system.

Indications

Treatment of muscle disorders
Parafunctional activity associated with posterior tooth contact.

POSTERIOR BITE PLANE:[10]
The posterior bite plane is a hard acrylic appliance that is fabricated on mandibular posterior teeth and connected by a cast metal lingual bar. Vertical dimension and mandibular repositioning are the main treatment goals of the posterior bite plane.

Indications

Severe loss of vertical dimension
A major change in anterior positioning of mandible is required.

Stabilization Appliance:[11]

The stabilization splint is also known as the Superior repositioning splint. It is a hard acrylic splint on maxillary arch provides an occlusal relationship optimal for the respective patient, thus eliminating the instability between the joint and occlusal position. The condyles are in their most musculo-

skeletally stable position when the splint is placed, at the same time the teeth are contacting evenly and simultaneously.

Indications

Masticatory myalgia(especially if pain is worse on awakening)
Parafunctional hyperactivity
Muscle soreness
Inflammatory joint disorders &retrodiscitis

Anterior Repositioning Splint:[12]

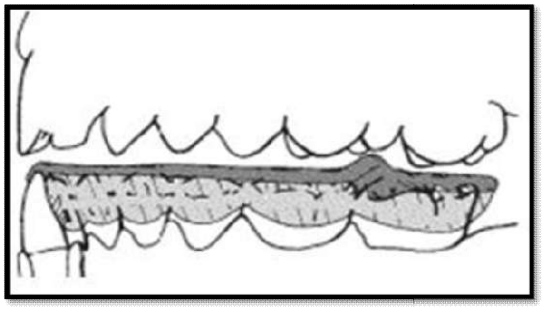
It is also known as the orthopedic repositioning appliance. The anterior repositioning splint alters the mandibular position to a more anterior one than the intercuspal position. The treatment goal is not to alter the mandibular position permanently but ideally to alter only till normal condyle disc function returns.

Indications

Joint sounds
Intermittent / Chronic locking of Joint Inflammatory disorders
Disc displacements
Disc dislocations

Pivoting Splint:[13]

The pivoting splint is fabricated with hard acrylic resin that covers the maxillary or mandibular arch. It has a single posterior occlusal contact, in each quadrant.placed as far posteriorly as possible. The pivoting splint was originally developed with the idea that it would create a decrease in inter-articular pressure, thus unloading the articular surface of the joint.



Indications

Osteoarthritis of the TMJ
Disc dislocations
Degenerative joint diseases

Soft or Resilient Splint:[14]

The soft splint is adapted to maxillary teeth with even and simultaneous contact with opposing teeth and fabricated of resilient material.

Indications

Protective device for athletic people
Repeated episodes / Chronic Sinusitis cause extreme sensitive posterior teeth
Soft appliance decreases symptoms while definitive treatment is directed towards the sinusitis.

CONCLUSION

There are various types of occlusal splints and they all have a special design, indication and precautions that must be followed for correct treatment. There are certain things that a splint cannot do. These include that they cannot unload the joint, this has been proven by Kuboki at al[15]. The right type of splint with correct placement under proper course of therapy can provide tremendous relief to patients. Selections, fabrication, adjustment of appliance amidst patient cooperation are key factors for success of the Occlusal Splint therapy.

Refernces

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