

Temporomandibular joint pain treated by occlusal appliance therapy

Clinical Report

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ABSTRACT

The temporo-mandibular joint (TMJ) consists of three basic components: The TMJ, the teeth, and the neuromuscular component. The neuromuscular system consists of nerves and muscles which help in the functioning of the TMJ. The nerves transmit messages to the muscles for jaw functioning. They also transmit pain signals to the brain causing discomfort. Temporomandibular disorders (TMD) occur in many forms and varying degrees of severity. The symptoms of TMD can be an obvious jaw pain in the muscles, but can also exhibit as headache at the temporal region. Patients often feel this symptom as a tension or a sinus headache. Patients understandably fail to make this connection between TMD and headaches. Sometimes the symptoms may also be found in other facial structures; such as dull ear pain, toothache, and neck pain, etc. The pain of TMD can arise from either the muscles or the TMJ itself; or a combination of the two. TMD conditions are not "cured" but are managed instead. The goal of treatment is to allow the muscles and joints to heal through rest and care. Often damage to the joint itself cannot be reversed, but the body can often heal it enough to return to function without pain. The basic philosophy of treatment is to do the conservative and reversible treatments first. Irreversible procedures, such as surgery or orthodontics are only considered if conservative steps have failed to bring relief. Through this paper, we intend to present the successful results that can be achieved in patients with TMJ pain through conservative Occlusal Splint Therapy.

KEY WORDS: Anterior repositioning appliance, splint therapy, temporo-mandibular disorders

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INTRODUCTION

The occlusal splint therapy for temporomandibular disorder has shown favorable results. The shift towards the evidence-based dentistry has almost established its fruitfulness in the treatment related to neuralgia and temporomandibular dysfunction. It can be an effective, inexpensive, and reversible treatment for a wide range of dental problems.

An occlusal appliance (often called a 'splint') is a removable device usually made of hard acrylic that fits over the occlusal and incisal surfaces of the teeth in one arch, creating precise occlusal contact with the teeth of the opposing arch.^[1]

Uses^[2]

1. To provide a more orthopaedically stable joint

position.

2. To introduce an optimum occlusal condition that recognizes the neuromuscular reflex activity, in turn decreasing abnormal muscle activity; thus encouraging normal muscle function.
3. To protect the teeth and supportive structures from abnormal forces that may create breakdown, tooth-wear or both.

A critical review of literature revealed that its effectiveness is between 70 to 90%. The precise mechanism is however debatable and inconclusive at present.^[3]

The success or failure of occlusal appliance therapy depends on the selection, fabrication, and adjustment of the appliance, as well as, on patient co-operation.

Many types of occlusal appliances are suggested for

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treatment of Temporomandibular disorders (TMD); however, the two used most frequently are: (1) the stabilization appliance; and (2) the anterior positioning appliance. Other appliances used are the anterior bite plane, posterior bite plane, pivoting appliance, soft or resilient appliance.

CASE REPORT

A 35-year old female patient reported to the Department of Oral and Maxillofacial Surgery [Figure 1] with the chief complaint of pain in the right temporomandibular joint and clicking sounds on opening the mouth since the past 6 to 8 months. The patient was unable to associate any particular event relating to the onset of the symptoms. The pain and clicking aggravated on wide mouth opening and yawning [Figure 2].

On examination, reciprocal clicking of the right TMJ with joint tenderness was revealed. In addition, swelling on the related side was noticed. However, the left TMJ was asymptomatic.

Examination: Maximal opening and closing of the mandible was observed, deviation of the mandible was observed, a shift of the mandible during opening, and disappeared with continued opening i.e. return to the midline. Single reciprocal clicking sound was perceived on opening and terminal closing movement, accompanied by restricted mouth opening (less than 40 mm) and pain was felt on forced opening. "The end feel was hard".

Provisional/tentative diagnosis

Disc derangement in right TM joint was made.

Treatment planning

Disorder was explained to the patient, patient was taught to function in a manner to reduce the pain and joint sound, i.e. restrict wide mouth opening and position mandible slightly anteriorly while opening.

An anterior repositioning appliance was fabricated, indicated in disc derangement disorders. Its an interocclusal appliance that encourages the mandible to assume a position more anterior than the intercuspal position, its goal is to provide better condyle-disc relationship in the fossa so that tissues have better opportunity to adapt or repair, goal of the treatment is to change the position temporarily to enhance adaptation of the retrodiscal tissues. Patient was asked to wear the appliance during night time and occasionally during day to reduce pain, patient was recalled weekly to reassess the pain and clicking sound, on the first week itself patient reported considerable relief in pain and

sound, subsequently in three weeks time patient was normal with no pain and clicking sound and increased mouth opening, the appliance was continued for a week, after which patient was asked to discontinue the appliance. No need was felt for a stabilization appliance and follow up of the patient was done for a couple of months with no signs of pain and discomfort.

The patient was then referred to the Department of Prosthodontics where diagnostic impressions were made followed by bite registration in physiological rest position.

An anterior positioning appliance was fabricated for the patient [Figure 3], that positioned the mandible forwards enough [Figure 5] to eliminate the clicking of the left TMJ. The patient was instructed to wear the appliance at night while sleeping.

She was prescribed Ibuprofen 400 mg + Paracetamol 325 mg TDS and was recalled every week for check-ups.

After 3 weeks, the patient reported no joint pain but a minimal residual clicking sound.

The patient was instructed to continue using the appliance at night and was told that the minimal clicking sound may persist but the pain would not recur.

DISCUSSION

Anterior Positioning Appliance

The anterior positioning appliance is sometimes called an orthopaedic repositioning appliance because its goal is to change the position of the mandible in relationship to the cranium.^[4]

It is an interocclusal device that encourages the mandible to assume a position more anterior than the intercuspal position. Its goal is to provide a better condyle-disc relationship in the fossa so that the tissues have a better opportunity to adapt or repair.^[5]

The goal of treatment is not to alter the mandibular position permanently but only to change the position temporarily to enhance adaptation of the retrodiscal tissues.^[5]

Once tissue adaptation has occurred, the appliance is eliminated, allowing the condyle to assume the MS position and painlessly function on the adaptive fibrous tissues.

Indications

1. Disc derangement disorders.
2. Joint sounds (e.g. single or reciprocal click).



Figure 1: Preoperative view



Figure 3: The anterior positioning appliance



Figure 5: The appliance in occlusion

3. Intermittent or chronic interlocking of the TMJ.
4. Some inflammatory disorders such as retrodiscitis.

The anterior positioning appliance is a full-arch acrylic device that can be used in either arch. However, the maxillary arch is preferred because a guiding ramp



Figure 2: Pain on wide mouth opening



Figure 4: The appliance in disocclusion with guiding ramp visible

[Figure 4] can be more easily fabricated to direct the mandible into the desired forward position; with a mandibular appliance, the guiding ramp does not achieve this forward position easily.^[6] Hence, the mandible is not controlled as well.

The patient is instructed to wear the appliance only at night. It should not be worn during the day so that the normal function of the condyle will promote the development of fibrotic connective tissue in the retrodiscal tissue.^[7] If the patient reports pain during the day, the appliance may be worn for short periods during daytime to reduce the pain.^[8]

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