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## Case Report

# Appliance therapy for temporo-mandibular disorder- A case report

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### ABSTRACT

Disorder of the orofacial complex that affects a vast majority of the people now-a-days, almost about 1/3rd of the population is “Temporo-mandibular Disorders” also commonly referred to as TMDs. These are essential disorders of masticatory structures whose onset is associated with the motion and movement of the mandible in relation to the temporo-mandibular complex and has wide similarities with musculoskeletal disorders of other parts of the human body. Clinical presentation a young college going student presented with pain in the right temporo-mandibular joint region following trauma.(?) Treatment anterior positioning appliance was used for the treatment. Conclusion after proper case selection and treatment planning following relevant physical examination and other diagnostic procedures Anterior Positioning Appliance can be used as a non-pharmacological method of pain management and treatment of the described condition.

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## 1. Introduction

The temporomandibular joint is mainly concerned with movement of the mandibular condyle that is the mandible about the temporal fossa and requires guided gliding movement to the glenoid fossa and back, thus, creating a three-dimensional space about which all the range of movements are brought about in relation to the muscular and bony structures of the joint complex during the functional movements of the mandible. Hence, the most common symptom that a patient presents with, when this complex is affected is pain.<sup>1</sup> localized mainly in the pre auricular area. This pain is also sometimes referred to the ear, temple and muscles of the neck - though to a very lesser extent. A comparatively smaller subset of patients with TMDs do not experience pain but they complain of some internal sounds that arise from the temporomandibular joint during chewing, yawning, loud laughing like Clicking and Popping etc.

The perception of the symptoms sometimes is barely noticeable and also at times are so much pronounced that might leave the patient in a debilitating condition.

Laskin et al. (1983) defined TMD as “a group of orofacial disorders characterized by pain in the pre auricular area, TMJ, or muscles of mastication, limitations and deviations in mandibular range of motion, TMJ sounds during jaw function”.<sup>2</sup> at the American Dental Association President’s Conference on Temporomandibular Disorders (American Dental Association, 1983).

A temporomandibular disorder (TMD) is a disorder of the musculoskeletal system associated with the exercise of masticatory function. A large group of practitioners refer to TMD as a single disorder though patients often present with various sub-diagnosis like myofascial pain, temporomandibular joint (TMJ) inflammation.<sup>1,3</sup> Temporomandibular Joint Disorder is a common disorder mostly observed in persons in the age group of 20 and 40, Statistical data suggests 33% of the population has at least

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one TMD symptom and 3.6 – 7% of the population has severe TMD for which they seek treatment.<sup>1,3,4</sup>

As common with other disorders and diseases associated with repetitive function and motion, TMD self-management instructions counsel patients to let rest, their masticatory muscles by consciously and voluntarily limiting their use by avoiding hard or chewy foods and restraining themselves from activities that often cause over use of masticatory muscles (e.g., oral habits, clenching teeth, holding tension in the muscles of mastication, chewing gum and wide opening yawns).<sup>1,5,6</sup> The management of the condition initially begins with a set of home-based self-management practice which in turn help eliminate parafunctional habits like changing the unconscious teeth clenching habit to lightly keeping the tongue at a favorable and comfortable resting position to keeping the teeth at a small gap as should be in a physiological rest position so that the muscles of mastication are at a relaxed state and at the same time help build awareness of the patient of his/her present condition.<sup>1,3,6</sup> Pain management during function stands out to be the primary target of a successful treatment plan as with other musculoskeletal disorder.<sup>1,3</sup> Patients seeking therapy for masticatory stiffness, limited movement of mandible, dislocation of TMJ and unexplained change of occlusion (which could be anterior or posterior open bite, or shift in mandibular midline) are seldom found. However, individuals or medical/dental practitioners are very rarely concerned with TMJ noises since the treatment success is not as much expressed profoundly as a successful pain management.<sup>1,3,7–10</sup> The main purpose of this clinical review is to describe the examination, primary diagnosis and treatment of TMD from the perspective of both the dentist as well as the physical therapist.

## 2. Anterior Positioning Appliance

An interocclusal device that helps glide the mandible to assume a more anterior position than the position of maximum intercuspation (Figure 1). The purpose of this device is to achieve a better condyle – disc relationship in the fossae to promote a better adaptability of the tissues. Hence it should be able to eliminate the signs and symptoms of disc derangement disorders. The aim of this therapeutic management is not to alter the mandibular position permanently but to enhance adaptation of the condyles to the retrodiscal tissues. Once the tissue adaptation has occurred, the patient could easily be advised for discontinued wearing of the appliance. This is supposed to help the condyle to attain a musculoskeletal stable position and function painlessly on the adaptive fibrous tissue.

## 3. Case Report

A 26 years old male patient reported to the out-patient's department of Dr. R Ahmed Dental College and Hospital



**Figure 1:** Anteriorpositioning appliance

with chief complaint of pain in the right temporal region referred to as a pain near the right ear for the past 3 days. The patient added to his history of a trauma to the chin during a friendly football match 3 days back. Clinical examination revealed pain in the right TMJ and no tenderness to the left side on palpation. There was no noticeable sound in either joint. Maximum comfortable opening was 15 mm and maximum opening that could be measured was 41 mm. No fracture in relation to the right temporomandibular joint was noticeable Orthopantomogram (OPG) of the jaws. The muscle examination showed some tenderness of the right temporalis muscle and occlusal examination revealed a relatively normal healthy dentition. In the absence of any missing teeth the posterior support appeared to be sound. But on intentional clenching of the posterior teeth the intensity of pain increased.

### 3.1. Diagnosis

The patient was diagnosed to have retrodiscitis secondary to extrinsic trauma. Consequent examination of associated muscles and joint revealed tenderness of the left and right masseter muscles, the occipitalis and the right sternocleidomastoid on palpation. At the same time, parafunctional could be another additional coexisting factor, which would influence the outcome of retrodiscitis.

### 3.2. Treatment

The planned Anterior Positioning Appliance was fabricated with a comfortable anteriorly positioned mandible where the proper movement was recorded and the patient was strictly instructed to wear them during sleep or at any time when there is a noticeable pronounced clenching or bruxism. Simultaneous medication with NSAID was advised to be

initiated and the patient was recalled after 7 days.

The patient reported to the hospital outdoor after a week and admitted having much lesser intensity of pain almost about half of the previous experience. Advised with the same therapeutic and pharmaceutical regime, the patient reported back after a week with almost no pain. The patient was further encouraged to continue with the appliance therapy i.e., wearing it at night for four more weeks which was expected to promote healing of the retrodiscal tissues of the joint. The patient was advised to stop using the appliance further. The patient was recalled after 3 months and 6 months and reported with no further recurrence of pain or symptoms.



**Figure 2:** Right lateral movement showing disocclusion of posterior teeth



**Figure 3:** Left lateral movement showing disocclusion of posterior teeth

#### 4. Discussion

Patients who were exposed to pain due to Retrodiscitis caused by any extrinsic trauma is well aware of the source from which pain started. When the causative macrotrauma is no longer present, supportive therapy is the most effective



**Figure 4:** Appliance positioned in the mouth with teeth in centric occlusion position with uniform contact of all anterior and posterior teeth with the appliance

treatment protocol which establishes an optimum condition for healing.<sup>11–13</sup>

The step wise method of fabrication of anterior positioning splint is very much similar to a centric relation splint with the only important criteria - that all the posterior teeth disocclude when the anterior guidance comes into function (Figures 2 and 3). After achieving the optimum results in function, systematic gradual withdrawal of the appliance is to be carried out carefully. Elimination of the splint therapy is often associated with slight conservative modification and adjustments of occlusion.

##### 4.1. Final set of criteria in the fabrication of anterior positioning appliance

The following points must be carefully adhered to while fabricating the Anterior Positioning Device before delivering it to the patient –

1. It should accurately fit the maxillary teeth, with total stability and retention when in contact with the mandibular teeth and should be satisfied by digital palpation. In the established forward position all the mandibular teeth should be in contact with the appliance even if that has to be done with some extent of external force (Figure 4).
2. The forward position established by the appliance should eliminate the joint symptoms during opening from and closing to that position.
3. In the retruded range of movements, the retrusive guidance ramp fabricated lingually should come in contact upon closure and must direct the mandible to the previously established forward closure.
4. The device so fabricated must be smoothly polished and compatible with adjacent soft tissue structures.

## 5. Conclusion

As the dynamic and ever evolving nature of medical science has always proved, no single treatment approach is always the final fixed method of addressing Temporomandibular Joint Disorders. There is always a chance of addressing the root cause and treating the problem by some other approach. But as all treatment procedure starts, a proper case examination with history helps diagnose the condition and is extremely important in managing the disorder. Only when the clinician is almost a hundred percent confident about the outcome, only then the appliance therapy must be formulated. But it can be safely concluded that Anterior Positioning Appliance is an effective and established treatment therapy for Retrodiscitis.

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## 7. Conflict of Interest

None.

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