



Prosthodontics

CONSERVATIVE MANAGEMENT OF TMJ DISORDER WITH OCCLUSAL STABILISATION SPLINT

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ABSTRACT

Introduction: symptomatic cases of degenerative TMJ disorders can be associated with significant morbidity causing severe pain and discomfort associated with limited mouth opening and clicking and locking of the joint. It can be treated at the earliest with occlusal splints.

Clinical presentation: A 22 year female patient with pain in TMJ region with deviated mouth opening and clicking sounds was diagnosed with degenerative TMD with anterior disk displacement. After four months of stabilization splint therapy her symptoms subsides and post treatment CBCT image shows central positioning of condyle in glenoid fossa.

Conclusion: this case report potentiates the practice of employing stabilization occlusal splints for initial non surgical management of TMD cases before going to definitive treatment.

KEYWORDS : Occlusal splint, temperomandibular joint, splint therapy.

INTRODUCTION:

Some of the most challenging problems that restorative dentist was to treat those of the features with class 2 deep bite patient, some of the features of these patients are loss of vertical dimension, TMJ disorders, possible joint pain, clicking and locking of the jaws.¹

Stabilization occlusal splints are commonly used as non invasive treatment modality to relive TMJ symptomatology in many cases like class 2 malocclusions, TMD headaches/migraine and bruxisms.^{1,2,3} In this present case report a Class I Canine relation on right side & Class II Canine relation on left side patient associated with TMD symptoms was treated with occlusal stabilization splint with CBCT evaluation of both joints before going to definitive orthodontic treatment.

CASE REPORT:

A 22 year old female patient reported to department of prosthodontics with chief complaint of pain and discomfort during mouth opening since 9 months. On examination deviation of mandible, locking and clicking were observed and on palpation mild tenderness of masseter and temporalis were observed. Intra oral examination reveals Class I Canine relation on right side & Class II Canine relation on left side with anterior deep bite (FIG 1), mandibular 1st molars were missing bilaterally, normal periodontal status and no other abnormality detected. Extra oral findings were normal. Patient has no significant medical and dental history and no history of trauma.

Patient was advised to take CBCT of both TMJ for evaluation of joint anatomy, condyle position and possible TMD. Patient was referred to department of orthodontics for opinion on definitive treatment for correction of malocclusion.



Fig 1: Intra Oral Image showing Anterior deep bite

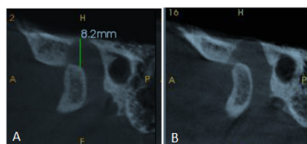


Fig 2:

A: CBCT image shows mild flattening of antero-superior border of Left condyle

B: CBCT image shows mild flattening of antero-superior border of Right condyle

CBCT reports show that mild flattening of antero-superior border of both condyles with anterior disk displacement of left TMJ (FIG 2 A & B). Based on CBCT report and clinical findings it was diagnosed as class I disk displacement disorder with reduction DDR (DWORKIN and LERESCHE 1992).

An occlusal stabilization hard splint was constructed in semi adjustable articulator with patient face bow records and centric bite registration records. The splint was given with canine guided disocclusion and only functional cusp contact in occlusion.

Splint fabrication: maxillary stabilization hard splint was fabricated with heat cure clear acrylic resin. Split casts were prepared for upper and lower casts for laboratory remounting procedure. Orientation of maxilla to the base of the skull and TMJ was done with face bow and it was transferred to semi adjustable articulator { HANAU WIDE VUE } (FIG 3) and maxillary cast was articulated. Patient was advised to practice to close the jaw in centric relation. A cotton roll was placed between the anterior teeth and patient asked to bite for 5 mins to deprogramme the muscles associated with TMJ movements. Immediately after removing the cotton rolls a centric bite registration was done with aluwax heated in water bath at 130°F. The patient was guided to bite in centric relation by bi-manual manipulation of the mandible; with this bite lower cast was articulated. Modeling wax was used to design the splint with only functional cusps in contact, canine regions of the splint was built with extra thickness and all eccentric contacts are eliminated so that canine guided disocclusion was attained. The wax design of the splint was planned to be in 5mm thickness so that the vertical dimension was raised tentatively up to 5mm. Processing was done in conventional manner, the casts with the splint were laboratory remounted and selective grinding of the splint was done in centric, right lateral, left lateral and protrusive positions in the articulator. First centric contacts were established with only maxillary palatal cusps touching the central fossa of the mandibular posterior teeth, then right lateral movement was given in the articulator and checked for any contacts buccally and lingually in both working and non working sides and grinded accordingly until canine guided disocclusion was attained. The same was done in left lateral and protrusive movements and confirmed with articulating paper so that in all eccentric movements when lower canine glides on palatal surfaces of upper canine all the remaining teeth were in disocclusion. After finishing and polishing it was checked in patient's mouth and chair side selective grinding was done with the help of articulating paper. A articulating paper was placed anteriorly and posteriorly on mandibular

teeth bilaterally and advised the patient to bite in centric relation and to give right lateral, left lateral and protrusive movements and checked for maxillary functional cusp contacts in centric relation and canine guided disocclusion of all teeth in all eccentric movements (FIG 4). Patient advised for CBCT of both joints with splint in occlusion to evaluate condyle position. Patient was advised to wear the splint maximum time in a day and during sleep at night. Patient was put on a regular follow up for four months, and patient was reported to the department with significant improvement in each visit.



Fig 3: Face Bow transfer



Fig 4: Splint showing functional cusp contacts

DISCUSSION:

Malocclusion was one of the contributing factor for TMJ disorders.^{5,6} In this case anterior deep bite was diagnosed as etiologic factor for anterior disk displacement with mild degeneration of condyle. In contrast the radiologic findings of condyle degeneration has led to the suggestion that the degenerative process may be predisposing factor for disk displacement.⁶

Occlusal splints are the most commonly used non invasive treatment for TMJ disorders, through which 90% of all TMD cases will get improved.⁴ A stabilization splint was a more conservative therapy that does not result in corresponding change in the occlusion. Clinical success has been reported in the treatment of TMJ symptomatology by conservative therapy with stabilization splints.⁷ when occlusal stabilization splint in place the condyles are in their most musculo skeletally stable position.³

In this case an occlusal stabilization splint was given to the maxillary arch with only functional cusp contacts in occlusion and canine guided disocclusion. The vertical dimension at occlusion was tentatively rose which was considered as optimal for this patient. Increase in vertical dimension helps to relieve TMJ stress or muscle fatigue due to overclosure of mandible.¹ Face bow transfer was done to establish proper orientation of the maxilla in relation to the base of the skull. Centric bite registration was done by By-manual manipulation of mandible, before taking centric bite a muscle de-programming was done with cotton roll placed between anterior teeth to relax the muscles and helps the patient to bite in guided centric relation. Selective grinding was done so that only functional cusps will contact and all excursive contacts were eliminated.

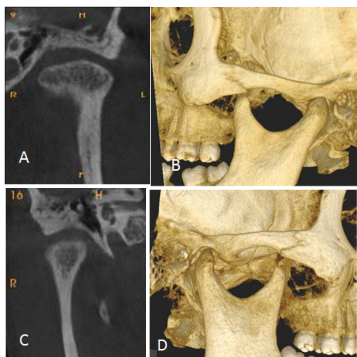


Fig 5: A & B): CBCT image of Left condyle with splint in maximum intercuspation. Head of the condyle positioned center of glenoid fossa. C & D): CBCT image of Right condyle with splint in maximum intercuspation. Head of the condyle positioned center of glenoid fossa.

CBCT images with splint in occlusion shows that condyle head was positioned in center of glenoid fossa in both left and right TMJ (FIG 5). After regular follow up for four months, the patient showed good improvement in TMJ symptomatology.

CONCLUSION:

Occlusal stabilization splints successfully relieve symptoms of TMJ pain and discomfort, with no irreversible occlusal changes with short term wear and may assist in the improvement of disk displacement disorders. This case report provides clinical improvement of TMD symptoms with CBCT evidence.

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