

A Conservative Approach for Prosthodontic Management of Temporomandibular Joint Disc Displacement Without Reduction

Pooja S. Poonia^{1*} Ina B. Patel² Ravindra Chavda³ Shachi P. Patel⁴

¹PG Student, Department of Prosthodontics, AMC Dental College and Hospital, Ahmedabad, Gujarat, India.

²Professor and Head, Department of Prosthodontics, AMC Dental College and Hospital, Ahmedabad, Gujarat, India.

³Reader, Department of Prosthodontics, AMC Dental College and Hospital, Ahmedabad, Gujarat, India.

⁴PG Student, Department of Prosthodontics, AMC Dental College and Hospital, Ahmedabad, Gujarat, India.

ABSTRACT

Background: Stomatognathic system is an anatomic system where in jaw, teeth, tongue, musculature and TMJ function in complete synchronisation. Disharmony in relation to any of the involved components leads to severe disimpairment of function. Temporomandibular disorders are complex and have multifactorial etiology. Occlusal interferences and malocclusion are one them and can often go undiagnosed. Thus, Diagnostic mounting on semi adjustable articulator helps in finding out etiologic factors and establishing effective treatment plan. This case report highlights the importance of diagnostic mounting to find out etiology and use of stabilization appliance for conservative management of patients having disc displacement without reduction.

Keywords: Stabilization Appliance, Temporomandibular joint Disc Displacement without reduction, occlusal interferences, Diagnostic Mounting.

INTRODUCTION

Temporomandibular disorder (TMD) is any disorder that affects or is affected by deformity, disease, misalignment, or dysfunction of temporomandibular articulation. Disc displacement without reduction is a clinical condition in which the disc is dislocated anteromedially and does not return to its normal position with condylar movement [1]. It has incidence rate of 2- 8%. It belongs to category 3 of TMD Classification i.e., Irreversible intracapsular disorders, but because of adaptive changes, can function comfortably if occluso- muscle harmony is re-established. Chronic cases are treated by supportive and stabilization appliance therapy or by surgical treatments. Occlusal interferences being one of the major causes, often go undiagnosed intraorally. Diagnostic mounting on semi adjustable articulator can be helpful as these contacts becomes evident when the mounted casts are occluded from CR to MIP, thus helps in thorough occlusal examination and subsequent treatment.

CASE REPORT

A 41 Year old female reported to the department of prosthodontics with the chief complaint of pain in left ear region on chewing, opening mouth and reduced mouth opening since 6 months. She had no significant medical and family history. Pain was dull and intermittent in left TMJ which had started before 6 months, along with clicking in the same joint. Before one month pain aggravated on jaw movements and chewing with further reduced mouth opening. On extraoral cranial nerve examination [2], there was a pain with clench test. Muscle examination was done according to Moody et al [3] (Table 1). TMJ examination revealed slight deviation of the mandible to the left while opening. On palpation, left TMJ was tender. There was pain during Right lateral and protrusive movement. Clicking was present in both TMJ's. The load test revealed pain on the initial gentle loading. Pre-treatment interincisal mouth opening was 22.32

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*Correspondence Dr. Pooja S. Pooni.

Department of Prosthodontics, AMC Dental College and Hospital, Ahmedabad, Gujarat, India.

Email: poojapoonia012@gmail.com

mm [Figure 1]. Intraoral examination revealed edentulism i.r.t 37, root canal treated 36, supraeruption i.r.t 27 and Malocclusion i.r.t 32 (lingually placed). Occlusion was Angle's Class 2 malocclusion.

Table 1: Muscle examination according to Moody et al^[3]

	Left side		Right side	
	1 st week	6 th week	1 st week	6 th week
Lateral pterygoid	2	0	1	0
Medial pterygoid	2	0	1	0
Temporalis	1	0	0	0
Massete	1	0	1	0
Sternocleidomastoid	0	0	0	0
Posterior neck muscles	0	0	0	0

Investigations carried out ruled out any systemic disease affecting TMJ. OPG [Figure 2] and Lateral TM Joint view [Figure 3] showed absence of condylar pathology. 38 was found impacted in OPG. MRI [Figure 4] showed anterior disc displacement without reduction at left TMJ and minimal anterior disc displacement with reduction at right TMJ.

Treatment planning included Patient education and motivation, Diagnostic mounting (on semi adjustable articulator) for evaluation of occlusal discrepancies, Stabilization appliance therapy, Arthrocentesis of left TMJ (if required). After patient becomes asymptomatic: Extraction of 18, 28, and 32, Intentional RCT of 27 and FCC of 36 was advised to patient.

Procedure:

A). Evaluation of occlusal discrepancy:

Maxillary and mandibular diagnostic impressions were made with irreversible hydrocolloid Impression material (Coltene Coltoprint) and poured with Type 3 dental stone (kalstone). Orientation jaw relation was recorded [Figure 5]. Centric relation was recorded by Dawson's Bimanual palpation and Posterior bite record was made with polyvinyl siloxane bite registration material (Dental Avenue Avue bite) [Figure 6]. Mounting was done on semi-adjustable articulator (Hanau Wide vue) [Figure 7] and interferences

were visualized from centric relation to MIP. Interferences were marked using articulating paper (Bausch) of 40 and 12 microns thickness [Figure 8 and 9] and were noted and later verified intraorally. Selective grinding was done on casts. Completed mock selective grinding and Final occlusion thereafter can be seen in [Figure 10 and 11] and [Figure 12] respectively. Dawson stated that reversible therapy must always precede any irreversible occlusal adjustment.



Fig 1: Preoperative mouth opening of patient.



Fig 2: OPG.



Fig 3: TMJ Lateral View.



Fig 4: MRI.



Fig 5: Orientation Jaw Relation.



Fig 6: Recording centric relation.



Fig 7: Diagnostic mounting.

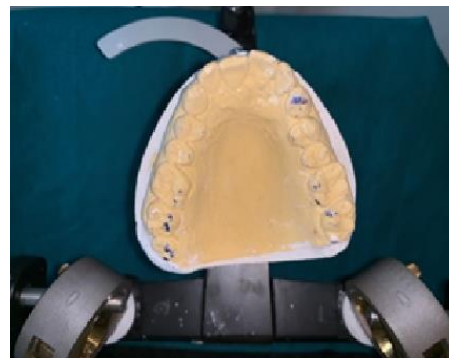
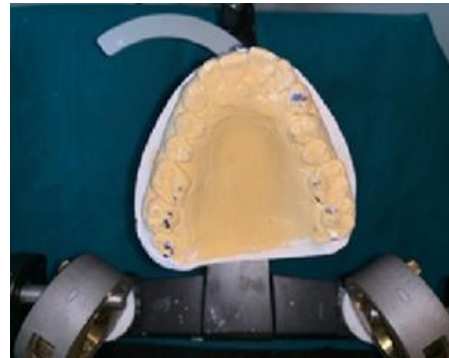


Fig 8 & 9: Occlusal marking of Interferences on maxillary and mandibular cast.



Fig 10 & 11: Completed mock selective grinding.



Fig 12: Final occlusion after mock selective grinding.



Fig 13: Vacuum pressed sheets.



Fig 14: Autopolymerising acrylic resin was applied to anterior region.



Fig 15: Marked centric stops on appliance.



Fig 16: Finished stabilization appliance extra orally.



Fig 17 & 18: Intra oral view of occlusion of right and left side.



Fig 19: Mouth opening at 6 weeks follow up.

B). Stabilization Appliance Fabrication:

1. A 2 mm thermoplastic resin sheet was vacuum pressed on maxillary cast and trimmed [Figure 13]. Autopolymerising clear acrylic resin was applied on thermoplastic resin template in anterior region and patient was guided to close on it in centric relation maintaining posterior disclusion of 1- 1.5 mm [Figure 14].
2. Now clear acrylic resin was added in the posterior region and patient was asked to close on anterior centric indentations to obtain indentations of posterior teeth of lower arch. Indentations of Incisal edges and buccal cusp tips of lower teeth were marked with pencil and remaining excess was trimmed. Only marked centric stops made final contact with the opposite arch [Figure 15].
3. The appliance was inserted in patient's mouth and was checked for centric and eccentric path. Finished stabilization appliance with verified centric contacts can be seen in [Figure 16, 17 and 18]

4. After insertion patient was advised to wear the appliance for 6 weeks, except for eating and brushing, till TMJ's become stable.

Interincisal Mouth opening at 6 week follow up was 28.2 mm [figure19]

DISCUSSION

Farrar and McCarty^[4] observed that up to 70% of persons with TMJ disorders suffer from displacement of the articular disc. Dawson^[5] stated that role of occlusion in diagnosis and treatment of specific types of masticatory system disorders is important. When proper occlusal treatment is warranted, treatment is close to 100% effectiveness, and it is predictable. Greene^[6] stated that Splint therapy can be used as a temporary measure, with the therapeutic goals being relaxation of muscles, reduction of oral habits, altering joint loading and general relief of symptoms. Linde et al.^[7] proved that flat occlusal splint therapy is better than TENS and pain reduction was 50% more in the splint group. Stiesch^[8] stated that treatment with stabilization appliance and pivot splint was acceptably successful and it produces significant improvement in mouth opening and VAS scale. Marc S. et al^[9] performed a RCT and concluded that centric splints seem to be more effective than distraction splints. Benson^[10] stated that surgical treatments are indicated for patients who have TMJ pain and dysfunction refractory to nonsurgical treatment modalities.

CONCLUSION

The effective management of TMJ DDwoR can be done through conservative approach including counselling, occlusal splint therapy and Physiotherapy. It should be considered as a first line therapy which requires patient compliance. In case of severe acute or chronic pain resulting from serious disorders, inflammation or degeneration, further invasive procedures can be considered.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Okeson JP. Management of Temporomandibular Disorders and Occlusion. 7th ed. Missouri: Elsevier Publishing; 2013.
2. Dawson P. Functional Occlusion. 3rd ed. St. Louis, Missouri: Elsevier Publishing; 2007.
3. Moody PM, Calhoun TC, Okeson JP, Kemper JT. Stress-pain relationship in MPD syndrome patients and non-MPD syndrome patients. J Prosthet Dent 1981;45:84-8.
4. McCarty WL, Farrar WB. Surgery for internal derangements of the temporomandibular joint. J Prosthet Dent 1979;42:191-196.
5. Dawson PE. Evidence based versus experience based views on TMD. Am J Orthod Dentofacial Orthop 2005;128:150-152
6. Greene CS. Managing TMD patients: Initial therapy is the key. J Am Dent Assoc 1992;123:43-45.
7. Linde C, Isacson G, Jonsson BG. Outcome of 6-week treatment with transcutaneous electric nerve stimulation compared with splint on symptomatic temporomandibular joint disk displacement without reduction. Acta Odontol Scand 1995;53:92-8.
8. Stiesch scholz M, Kempert J, Wolter S, Tschernitschek H, Rossbach A. Comparative prospective study on splint therapy of anterior disc displacement without reduction. J Oral Rehabil 2005;32:474-479.
9. Schmitter M, Zahran M, Duc JM, Henschel V, Rammelsberg P. Conservative Therapy in Patients with Anterior Disc Displacement Without Reduction Using 2 Common Splints: A Randomized Clinical Trial. J Oral Maxillofac Surg 2005;63:1295-1303.
10. Benson BJ, Keith DA. Patient response to surgical and nonsurgical treatment for internal derangement of the temporomandibular joint. J Oral Maxillofac Surg 1985;43:770.