

Soft Occlusal Splint Therapy In A Patient With Temporomandibular Joint Clicking And Generalised Attrition: A Case Report

Dr. Ankita Agarwal¹, Dr Varun Kumar², Dr Abhilasha Rajput³, Dr Jyotsna Seth⁴

¹Postgraduate Student, Department of Prosthodontics and Crown & Bridge, Seema Dental College and Hospital

²Professor & Head of Department, Department of Prosthodontics and Crown & Bridge, Seema Dental College and Hospital

³Postgraduate Student, Department of Prosthodontics and Crown & Bridge, Seema Dental College and Hospital

⁴Professor, Department of Prosthodontics and Crown & Bridge, Seema Dental College and Hospital

Abstract

Background

Temporomandibular Joint Disorder can be associated with significant morbidity, leading to severe pain and functional limitation. Symptomatic cases presenting with painful clicking or locking should be treated as early as possible using conservative approaches such as manual manipulation, anti-inflammatory medications, and oral appliances.

Purpose

The purpose of this case report was to evaluate the effectiveness of stabilisation splint therapy in the non-surgical management of disc displacement with reduction associated with sleep bruxism and to document radiographic changes following treatment.

Case Presentation

A 36-year-old female presented with a chief complaint of clicking sounds in both temporomandibular joints during mouth opening. Clinical examination revealed normal mouth opening without pain or limitation. Generalised attrition and prominent wear facets were observed on all mandibular teeth, suggesting parafunctional activity. Based on the clinical findings, a diagnosis of disc displacement with reduction associated with sleep bruxism was established. Pre-treatment digital radiographic evaluation demonstrated anterior disc displacement with reduction in both the right and left temporomandibular joints. The patient was treated with a stabilisation splint for four months. Her symptoms gradually subsided.

Conclusion

This case report supports the use of occlusal splint therapy as an effective initial non-surgical treatment modality for TMJ Dysfunction of the temporomandibular joint. Clinical symptom resolution and radiographic improvement suggest that stabilization splints can play a valuable role in the conservative management of disc displacement with reduction.

Keywords: Temporomandibular joint, Non-reducing TMJ Dysfunction, Stabilization splint, occlusal splint.

Introduction

Temporomandibular Joint (TMJ) dysfunction symptoms can result in severe pain and functional difficulties, as well as significant morbidity.¹ The majority of disc displacement symptoms go away on their own, but painful clicking or locking needs to be addressed right once with conservative treatments such manual manipulation, anti-inflammatory drugs, and dental appliances.² This case study describes the effective use of a stabilization splint to treat non-reducing TMJ disc displacement. The patient complained of jaw locking episodes and TMJ clicking. Wear facets on the mandibular teeth's occlusal surfaces supported the diagnosis of sleep bruxism.

Case Report

A 36-year-old female patient presented to the department with a chief complaint of pain (VAS 8) in the preauricular region with severe discomfort during mouth opening, which had been ongoing for several months. She had been experiencing pain and clicking sounds in her right temporomandibular joint (TMJ) for the previous seven months. She also mentioned instances of jaw locking that went away on their own. The patient stated that they had previously experienced psychological distress and parafunctional behaviours.

On physical examination, wear facets and widespread attrition were seen on the occlusal surfaces of mandibular teeth, although there was no visible extraoral oedema² or facial asymmetry (Fig 1). The masseter, temporalis, and TMJ muscles on both sides were palpably painful. A maximum mouth opening of 28 mm was pain-free. Lateral mandibular excursions were unpleasant, and passive mouth opening revealed a "hard end" sensation. A tentative diagnosis of TMJ dysfunction with myalgia was obtained based on

the patient's medical history and clinical assessment. The patient was recommended conservative treatment, which included taking anti-inflammatory and muscle relaxant drugs to reduce the acute pain symptoms. The maximum mouth openness was raised to 35 mm via manual jaw manipulation. A week later, the patient was back with less discomfort (VAS 5), but their jaw function had only slightly improved.

The right and left temporomandibular joints were then digitally radiographed in both open and closed mouth positions (Fig 2). It was decided to create a mandibular stability splint for the patient after a thorough radiographic evaluation and dental prophylaxis. Bilateral mandibular manipulation was used to establish the centric relation. In order to provide consistent contact between the functional cusp tips and the incisal borders of the maxillary arch, the mandibular stabilizing splint was built with an occlusal relief. For disclusion during eccentric motions, Canine-protected occlusion was provided. For a maximum of four to six months, or until the pain, jaw clicking, and/or locking symptoms subsided, the patient was told to wear the device only at night. After the appliance's occlusal adjustments, the patient's initial minor symptom aggravation subsided in a matter of days. With every appointment after that, the patient continuously reported notable improvement. The patient was instructed to stop using appliances after four months of treatment. The patient did not exhibit any symptoms during the one-year follow-up period.

Figure 1. Preoperative Orthopantomogram (OPG).



There was no discernible osseous pathology affecting the temporomandibular joints in the pre-treatment panoramic radiograph, which showed widespread attrition and flattening of the occlusal surfaces.

Figure 2. Digital Temporomandibular Joint Radiographs in Closed- and Open-Mouth Positions.



Both closed-mouth and open-mouth digital transcranial radiographs of the right and left temporomandibular joints were acquired. Increased bone density was observed in the posterior region of the joint area, indicating adaptive osseous alterations, while the right temporomandibular joint (TMJ) showed comparatively limited condylar translation. The condylar mobility and radiographic appearance of the left TMJ were normal.

Figure 3. Primary Impressions of Maxillary and Mandibular Arches.



Diagnostic impressions were made using irreversible hydrocolloid impression material for the fabrication of study casts and the construction of the occlusal splint.

Figure 4. Fabrication of the Soft Occlusal Splint.



Vacuum-formed mandibular soft occlusal splint fabricated on the diagnostic cast using a thermoplastic sheet.

Figure 5. Delivered Soft Occlusal Splint.



Completed mandibular soft occlusal splint after trimming, polishing, and occlusal adjustment to achieve uniform contact with the maxillary dentition.

Discussion

Anterior disc displacement is the most common cause of temporomandibular joint (TMJ) dysfunction. A closed lock, also known as anterior disc displacement without reduction, is characterized in acute cases by a history of a prolonged TMJ click that suddenly stops, followed by a sudden restriction in mandibular opening, pain over the joint, limited lateral excursions to the contralateral side, and deflection of the mandible to the affected side.³

Although magnetic resonance imaging (MRI) is regarded the imaging modality of choice for the diagnosis of TMJ dysfunction, the patient belonged to a lower socio-economic background and could only afford a digital radiograph.⁴ MR imaging makes it easy to locate the disc, which is essential for diagnosing TMJ dysfunction.⁵ The prevalence of TMJ pain in MRI-proven TMJ dysfunction has been reported as high as 82%.⁶

The most popular non-surgical treatment for TMJ dysfunction is occlusal splints, which are effective in treating about 90% of instances of temporomandibular disorders (TMD). Stabilization splints are a more conservative treatment that does not cause a

commensurate change in occlusion, whereas anterior repositioning splints are more commonly employed in the treatment of anterior disc displacement of the TMJ.⁷

In order to assess the efficacy of stabilization splints in patients with temporomandibular disorders linked to disc displacement with reduction, Ekberg et al. carried out a randomized controlled experiment.⁸ The authors confirmed the therapeutic usefulness of stabilizing appliances in treating joint noises and dysfunction by observing a substantial decrease in TMJ clicking, a reduction in pain intensity, and an improvement in mandibular function in the splint-treated group as compared to the control group.⁹

In patients with TMJ dysfunction, Tecco et al. examined how stabilizing splint therapy affected mandibular biomechanics and TMJ symptoms.¹⁰ The study showed improved mandibular movement patterns, increased neuromuscular coordination, and a significant decrease in joint sounds, including clicking, after six months of treatment, indicating that splint therapy encourages functional adaptation of the temporomandibular joint.¹¹ Conti et al. found that occlusal splint therapy significantly improved mandibular mobility, joint noises, and pain in individuals with disc displacement with reduction. The authors concluded that, even in cases where full anatomical relocation of the disc is not accomplished, stabilisation splints are a very successful conservative therapy option that may prevent clicking.¹²

Patients with TMJ disc displacement with reduction treated with occlusal splints and other conservative techniques had their treatment outcomes compared by Lundh et al. Their findings supported the use of splint therapy as a first-line treatment option for TMJ dysfunction by showing that patients treated with stability splints had improved jaw opening and a significant decrease in reciprocal clicking.¹³

In patients with anterior disc displacement with reduction, Yuasa and Kurita assessed the long-term effects of stabilisation splints. According to their findings, most patients saw a reduction in pain, the restoration of normal mandibular movements, and either total eradication or a significant reduction of joint clicking. These improvements persisted during follow-up periods.¹⁴ They emphasised that biomechanical adaptation, not actual disc displacement, was the main means of achieving symptomatic pain relief.¹⁵

These findings align closely with the present case, wherein the patient exhibited complete resolution of TMJ clicking and substantial functional improvements following stabilisation splint therapy. Consistent with previous studies, symptomatic recovery was achieved despite the persistence of anterior disc displacement as observed, supporting the idea that joint adaptation and neuromuscular stabilization are more important for clinical success than moving the disc back to its original anatomical position.

Conclusion

This case report shows radiographic evidence of a successful treatment outcome for TMJ dysfunction using a stabilizing splint, even though occlusal splints may not produce adequate results in all cases of TMJ dysfunction. A decrease in the non-reducible TMJ disc coincided with the patient's clinical recovery. Many splint designs with similar efficacy can be found in the literature currently under publication. The particular diagnosis of TMDs should be the basis for choosing the best splint therapy. In properly chosen patients, oral splints can effectively treat intracapsular and myogenous disorders. In clinical practice, the authors have shown that the flat plane stabilization splint is simple to make, well-tolerated by patients, successfully reduces acute TMJ discomfort and dysfunction symptoms, and is permissive in nature with no irreversible occlusal changes with short-term wear, and may aid in the reduction of a non-reducing disc.

References

1. Burket LW, Greenberg MS, Glick M, Ship JA. Burket's oral medicine, 12th Edition. PMPH-USA; 2008.
2. Tomas X, Pomes J, Berenguer J, Quinto L, Nicolau C, Mercader JM, Castro V. MR Imaging of Temporomandibular Joint Dysfunction: A Pictorial Review 1. Radiographics. 2006;26(3):765-81.
3. Tasaki MM, Westesson PL, Isberg AM, Ren YF, Tallents RH. Classification and prevalence of temporomandibular joint disk displacement in patients and symptom-free volunteers. American Journal of Orthodontics and Dentofacial Orthopedics. 1996;109(3):249-62.
4. Whyte AM, McNamara D, Rosenberg I, Whyte AW. Magnetic resonance imaging in the evaluation of temporomandibular joint disc displacement—a review of 144 cases. International journal of oral and maxillofacial surgery. 2006;35(8):696-703.
5. Sikri A, Sikri J. Conservative Management of Generalized Dental Attrition Using a Soft Night Guard: A Case Report. Oral Sphere J. Dent. Health Sci. 2026;2(3):181-186. doi: 10.63150/osjdhs.2026.26
6. Riley P, Glenney AM, Worthington HV, Jacobsen E, Robertson C, Durham J, et al. Oral splints for temporomandibular disorder or bruxism: a systematic review. Br Dent J. 2020;228(3):191-197. doi:10.1038/s41415-020-1250-2.
7. Gupta G, Kumari A, Sawhney H, Kashwani R. Instant Aesthetic Rehabilitation with Natural Tooth Pontic Using Ribbond Fiber Splint in Periodontally Compromised Patient-A Case Report. Clinical Dentistry (0974-3979). 2024 Dec 1;18(12):32.
8. de Leeuw R, Klasser GD, editors. Orofacial Pain. 6th ed. Chicago: Quintessence Publishing; 2018.

9. Manfredini D, Ahlberg J, Wetselaar P, Svensson P, Lobbezoo F. The bruxism construct: from cut-off points to a continuum spectrum. *J Oral Rehabil.* 2020;47(7):775-778.
10. Denardin ACS, Nascimento LP, Valesan LF, Cas CDD, Pauletto P, Garanhani RR, et al. Disocclusion guides in occlusal splints on temporomandibular disorders and sleep bruxism: a systematic review. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2023;135(1):51-64. doi:10.1016/j.oooo.2022.07.009.
11. Ainoosah S, Farghal AE, Alzemei MS, Saini RS, Gurumurthy V, Quadri SA, et al. Comparative analysis of different types of occlusal splints for the management of sleep bruxism: a systematic review. *BMC Oral Health.* 2024;24:29. doi:10.1186/s12903-023-03782-6.
12. Lobbezoo F, Ahlberg J, Raphael KG, Wetselaar P, Glaros AG, Kato T, et al. International consensus on the assessment of bruxism: report of a work in progress. *J Oral Rehabil.* 2018;45(11):837-844.
13. Klasser GD, Greene CS. Oral appliances in the management of temporomandibular disorders. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2009;107(2):212-223.
14. Ohrbach R, Dworkin SF. The evolution of TMD diagnosis: past, present, future. *J Dent Res.* 2016;95(10):1093-1101.
15. 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. *Journal of oral and maxillofacial surgery.* 2005;63(9):1295-303