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Case Report

Guardian of the Temporomandibular Joint: The Occlusal Splints

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ABSTRACT

Temporomandibular joint (TMJ) disorders encompass a broad spectrum of functional and structural conditions that affect the masticatory system. Bruxism—a parafunctional habit characterized by repetitive grinding or clenching of teeth—is recognized as a significant contributing factor to TMJ pain and dysfunction. Its etiology is often multifactorial, with strong links to psychological stress, sleep disturbances, and occlusal factors.The management of TMJ pain in bruxism patients should be individualized and holistic, integrating both mechanical intervention through occlusal splints and psychological support. Early diagnosis and a multidisciplinary treatment approach are essential for effective symptom control and prevention of long-term complications. The case report has been prepared showing effective management of TMJ pain using occlusal splint.

KEYWORDS: Temporomandibular joints, Craniomandibular disorders, Occlusal splint, Bruxism, Muscles, Parafunctional, Deprogrammer, Irreversible hydrocolloid material

INTRODUCTION

The temporomandibular joint (TMJ) connects the jawbone to the skull and is essential for speaking and chewing. Temporomandibular disorders (TMD), also known as craniomandibular disorders (CMD), involve pain or dysfunction in the TMJ and surrounding muscles. Common signs arejaw pain or tenderness, joint sounds (clicking or popping),limited or uneven jaw movement, functional difficulty in jaw use. TMD includes a range of conditions such as TMJ dysfunction syndrome, myofascial pain dysfunction, and facial arthromyalgia. It is most prevalent in individuals aged 20–40. About 33% of people experience at least one symptom, while 3.6%–7% require treatment due to severity. Thecauses and risk factors TMD are multifactorial in origin and may involve muscle strain or spasm, Joint inflammation, parafunctional habits (e.g., bruxism, clenching), stress and anxiety, intra-articular disc abnormalities. Abnormal dental occlusion is not consistently linked to TMD symptoms.The treatment typically begins with conservative, non-invasive methods, as most cases are temporary and self-

limiting.Common therapies includeocclusal splints (night guards or oral appliances) to reduce muscle tension and protect against bruxism, behavioral modifications and stress management, permanent occlusal adjustment when necessary occlusal splints are widely used in dental practice to manage TMD and minimize associated muscle activity and joint strain.
This case report is about occlusal splint its design, application in the diagnosis and management of temporomandibular disorders (TMD).

CASE REPORT

A 36-year-old female patient reported to the Department of Prosthodontics, Crown and Bridge, Pacific Dental College and Research Centre, Udaipur, with the chief complaint of pain in the temporomandibular joint (TMJ) region since month.

Clinical Examination:

On extraoral Examination no remarkable findings such as facial asymmetry, swelling, or deviation during mandibular movement were observed.
On intraoral Examination mild occlusal wear facets were noted on the posterior and anterior teeth of both arches, indicating possible parafunctional activity.
Detailed History: On further questioning, the patient revealed a history of involuntary grinding of teeth (bruxism), particularly during sleep. She also admitted to experiencing high levels of psychological stress due to personal and professional reasons.
Based on the clinical and historical findings, the patient was diagnosed with TMJ discomfort due to stress-induced bruxism.
Treatment objectives alleviate TMJ pain and discomfort, interrupt and reduce the bruxism habit, protect the dentition from further wear, improve patient's psychological and emotional well-being
Treatment Plan: A comprehensive two-phase treatment plan was formulated:
Phase I – Stress Management: counselling sessions were conducted to educate the patient about: The impact of stress on oral health, the relationship between bruxism and TMJ disorders, she was advised on sleep hygiene practices, such as: maintaining a consistent sleep schedule, avoiding the use of electronic devices before bedtime, reducing caffeine intake, especially in the evening. The patient was encouraged to practice relaxation techniques such as: yoga, meditation, breathing exercises. After a week follow-up: at her second visit, the patient reported a noticeable decrease in stress levels and a slight reduction in TMJ discomfort.
Phase II – Occlusal Splint Therapy: in diagnostic procedure preliminary maxillary and mandibular impressions were taken using irreversible hydrocolloid. Diagnostic casts were poured using Type III dental stone for accurate anatomical replication. A deprogrammer was fabricated using green stick compound and inserted anteriorly in the patient's mouth. The patient was asked to protrude the mandible into the most comfortable, natural position and bite gently.
Once the material set, the deprogrammer was removed, rinsed with filtered water, and reinserted for rechecking. A jet bite registration was performed while the patient was maintaining a slightly open mouth position [Figure 1]. Based on the bite registration, the casts were mounted on a semi-adjustable articulator. The occlusal splint was designed with: a labial bow extending from maxillary canine to canine for anterior retention-clasps on both maxillary premolars for additional stability. A special tray was fabricated over the maxillary cast using cold cure acrylic resin. After polymerization, the tray was trimmed and polished [Figure 2]. A U-shaped wax block was moulded and placed on the mandibular arch to simulate vertical dimension and record functional occlusion [Figure 3]. A try-in was conducted at the third appointment to assess fit and occlusion. Final processing dewaxing and deflasking [Figure 4] was done using transparent heat-cure acrylic resin. The appliance was polished, finished, and checked for any pressure points or occlusal discrepancies [Figure 5 and 6].

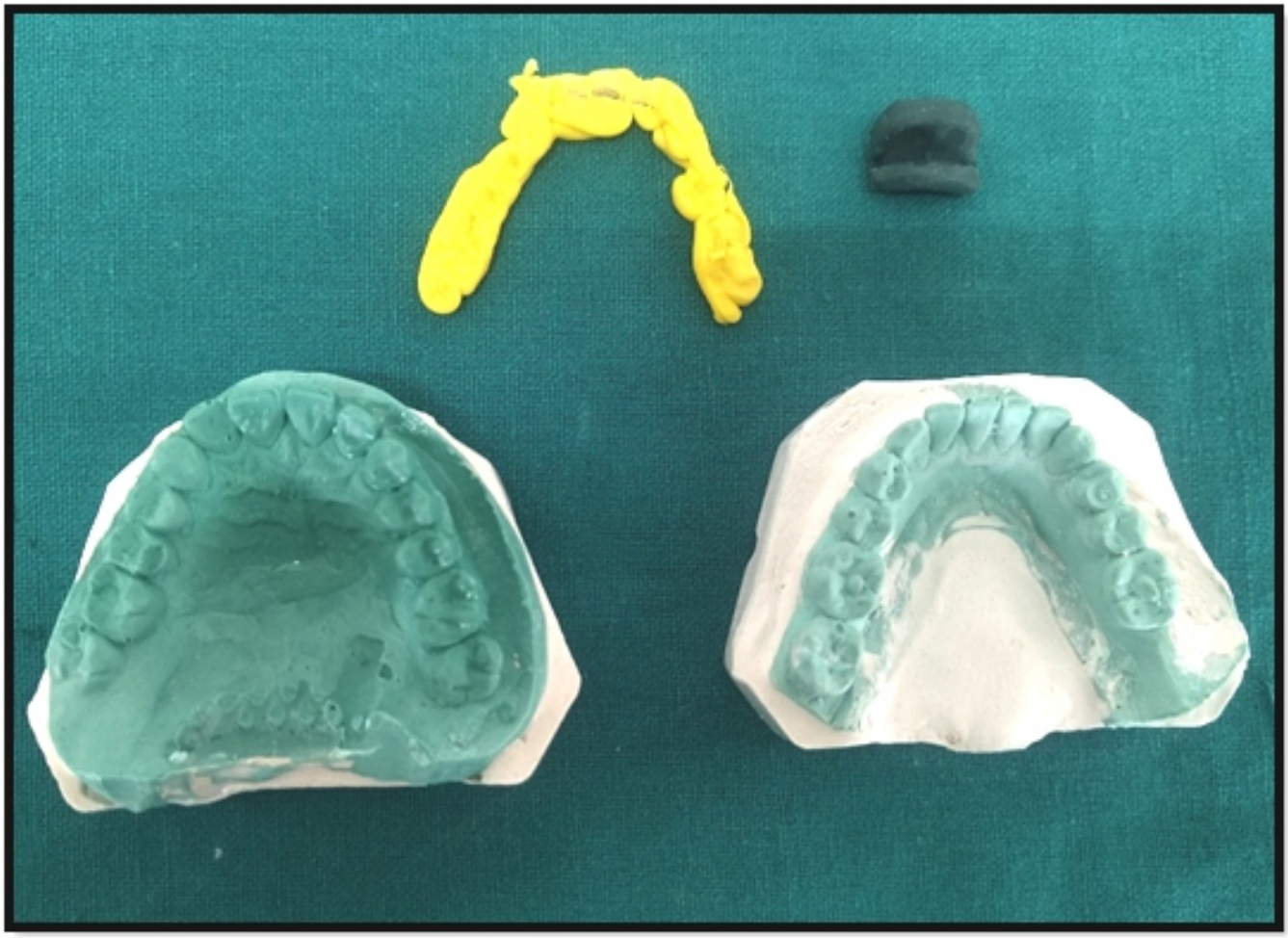

Figure 1: Recorded Jet Bite with Deprogrammer

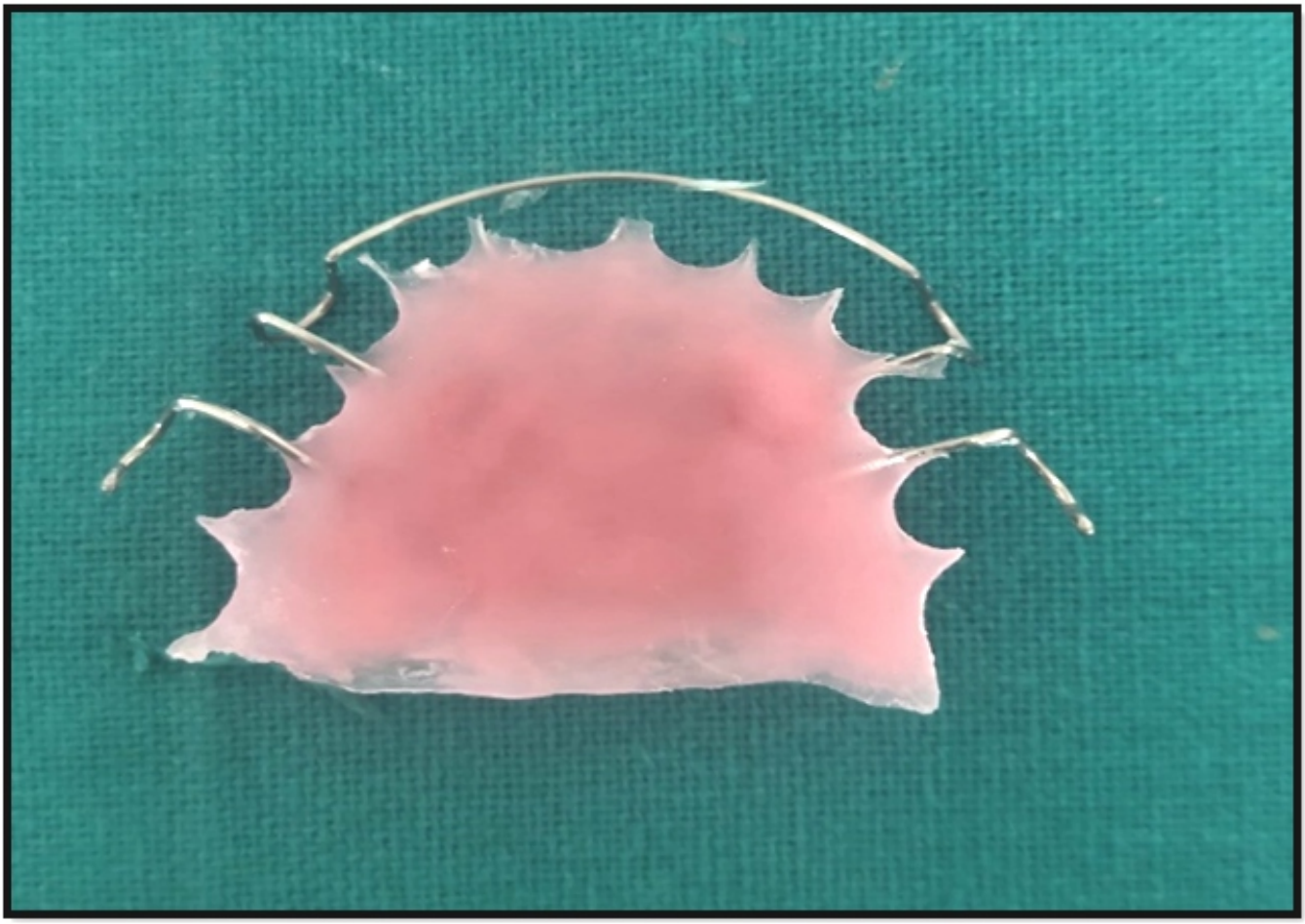

Figure 2 : Acrylic Resin with Labial Bow and C-clasp

Figure 3:Wax Bite

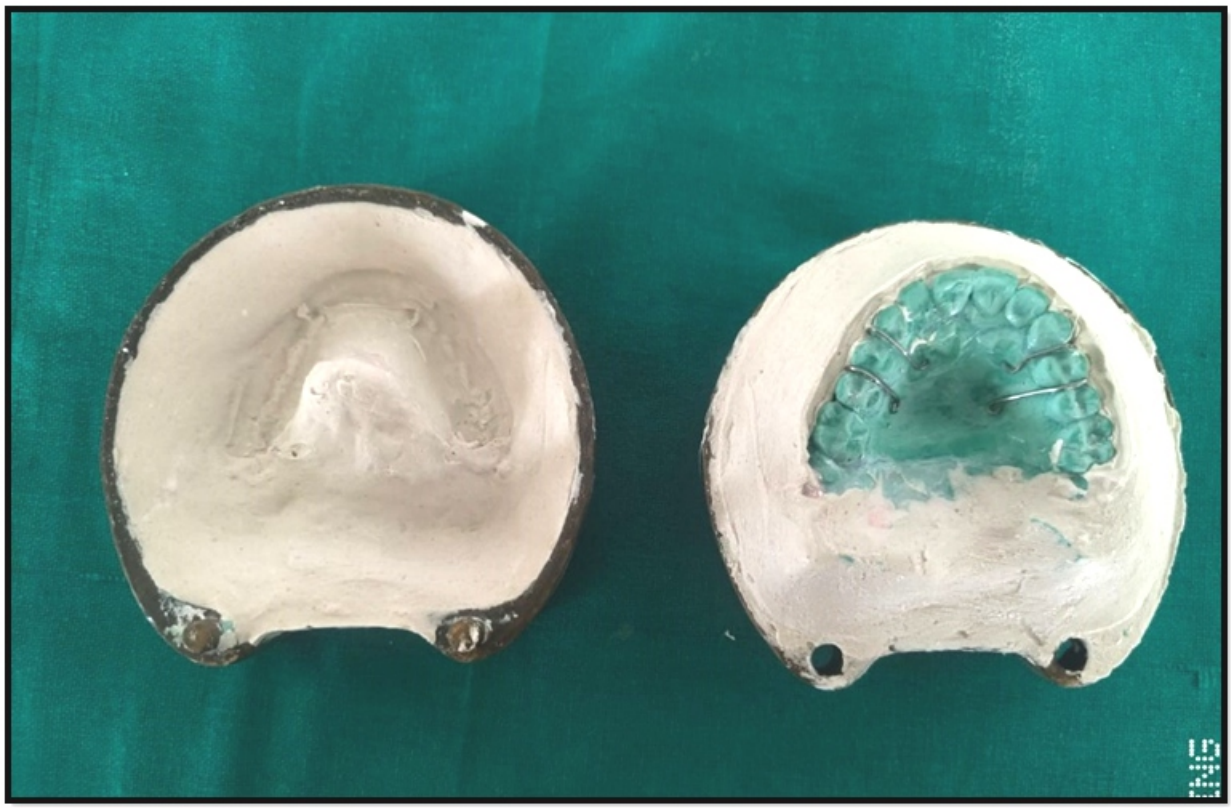

Figure 4: Deflasking

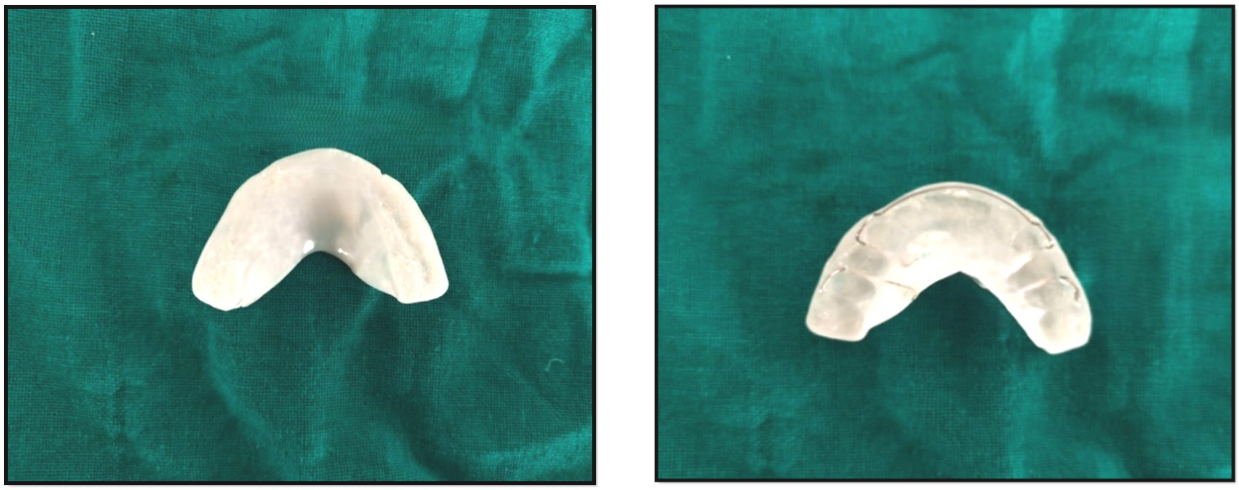

Figure 5 & 6: Polished Occlusal Splint

At the fourth appointment, the final occlusal splint was inserted in the patient's mouth.The patient was instructed on: Proper insertion and removal, cleaning protocol (using mild soap and lukewarm water), wearing schedule (primarily during sleep)

A 14-day follow-up appointment was scheduled. On the 2-week recall visit, the patient reported significant pain relief, improved sleep quality, and reduced clenching/grinding behaviour. She also expressed satisfaction with the comfort and effectiveness of the occlusal splint.

CONCLUSION

This case highlights the importance of a multidisciplinary and holistic approach in managing TMJ disorders. Stress-induced bruxism was effectively controlled by addressing both the psychological components through stress management and the physiological effects via occlusal splint therapy. Early intervention and patient compliance played a crucial role in the successful outcome of this case.

CONFLICT OF INTEREST: None

FINANCIAL SUPPORT: None

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