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CASE REPORT

Management of disc displacement with reduction with intermittent locking, myofascial pain, and TMD-Related headache

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ABSTRACT

Temporomandibular disorders (TMD) refer to a group of problems involving the temporomandibular joint (TMJ) and the masticatory muscles. The most common intra-articular diagnosis is disc displacement with reduction; however, cases with intermittent locking are relatively rare and can be characterized by fluctuating symptoms. This case report describes the conservative management of disc displacement with reduction with intermittent locking accompanied by myofascial pain with referral and headache attributed to TMD in a 23-year-old male patient. The patient came in with a one year history of left TMJ clicking, recurrent locking episodes, jaw pain, and sharp temporal headache. A clinical examination showed corrected deviation while opening the mouth, limited pain-free mouth opening, joint sounds, myofascial pain with referral, and headache reproduction when the muscles were palpated. The final diagnosis was disc displacement with reduction with intermittent locking complicated with myofascial pain with referral and headache attributed to TMD. Management was a combination of mandibular stabilization splint therapy, muscle conditioning exercises, and physical self regulation. Subsequent visits showed improvement in muscle pain, headaches, joint sounds and locking episodes. Conservative management with stabilization splint therapy supported by behavioral and muscle conditioning interventions can lead to successful symptom relief and functional improvement. (IJP 2025;7(1):32-36)

Introduction

The temporomandibular joint (TMJ) is an essential component of the stomatognathic system, and the disorders affecting it along with masticatory muscles are generally considered as temporomandibular disorders (TMD). The most common symptoms of TMD are joint noises, restricted mandibular movement, and orofacial pain.[1,2]

The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) offer an evidence-based, dual-axis diagnostic system that enables standardized clinical assessment and identification of both physical and psychosocial factors of TMD. Accurate diagnosis using DC/TMD is essential for establishing an appropriate and effective treatment plan.[3]

Within the DC/TMD framework, disc displacement with reduction is the most frequently encountered intra-articular diagnosis; however, cases accompanied by intermittent locking are relatively rare and and the patients may report variable symptoms such as episodic limitation of mouth opening.[4] Disc displacement with reduction with intermittent locking and headache attributed to TMD are infrequently reported disorders, especially when the diagnoses are combined with myofascial pain with referral such as in the present case.[1,3]

Management of disc displacement with reduction with intermittent locking is primarily conservative and might include the use of a stabilization appliance therapy along with adjunctive methods such as muscle conditioning and physical self regulation. A comprehensive and individualized treatment strategy is especially important in patients presenting with co-existing myofascial pain and headache attributed to TMD.[5,6]

This case report describes the conservative management of disc displacement with reduction with intermittent locking accompanied by myofascial pain with referral and headache attributed to TMD in a 23-year-old male patient.

Case Report

A 23-year-old male came to the Prosthodontics Clinic of Oral and Dental Hospital (RSGM) Unpad with a complaint of clicking noises from the left temporomandibular joint for one year when opening and closing the mouth. During the last week before the consultation, the patient experienced left jaw pain, especially when opening the mouth, which was aggravated by mainly chewing on the right side due to an ulcer in the left side of the mouth. In addition, he was experiencing recurrent sharp stabbing pain in the left temporal region which was consistent with the headache. The patient reported previous episodes of jaw locking with inability to open the mouth, first occurring one year earlier and most recently one month prior to examination.

The patient admitted to habitual cheek and tooth biting

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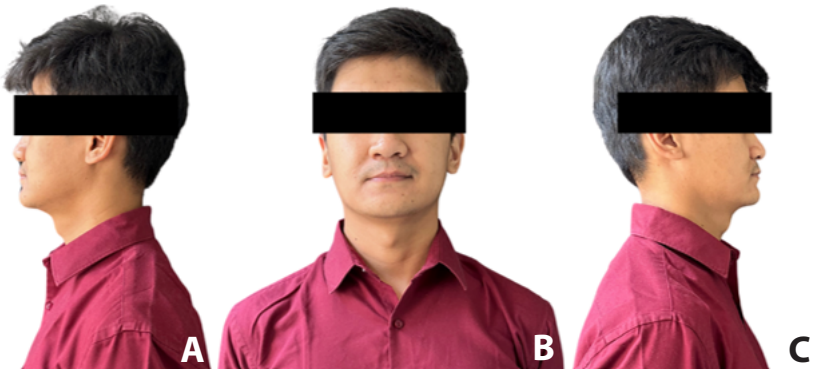

Figure 1. Extraoral profile of the patient: A. Left lateral view, B. Frontal view, C. Right lateral view.

Figure 2. Intraoral findings of the patient: A. Left lateral view, B. Frontal view, C. Right lateral view, D. Maxillary occlusal view, E. Mandibular occlusal view.

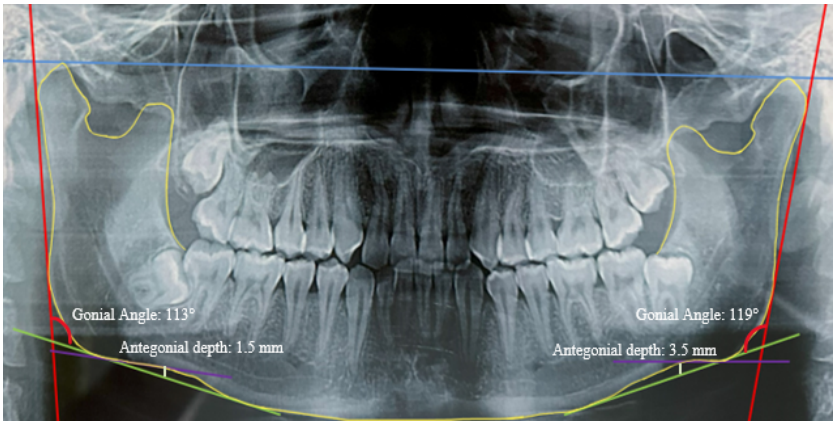

Figure 3. Panoramic radiograph of the patient

Figure 4. Insertion of mandibular stabilization splint

during rest but denied sleep bruxism. Other factors which might have contributed were unilateral sleeping posture, prolonged forward head posture during computer work, and recently started weightlifting exercises.

On the extraoral examination, there was mild facial asymmetry with a flat profile and postural imbalance characterized by right shoulder elevation figure 1A - figure 1C. Intraoral examination figure 2A - figure 2E showed anterior open bite, a crossbite involving tooth 12, dental rotations, palatally and buccally positioned posterior teeth, and wear facets on the mandibular anterior teeth. Bony exostoses were present in both the maxilla and mandible.

Panoramic radiography demonstrated asymmetry of the mandibular condyles, with the right condyle positioned more superiorly and posteriorly than the left, while both condyles remained within the glenoid fossae figure 3.

DC/TMD Axis I examination revealed pain in the left temporalis and masseter muscles, corrected deviation during mouth opening, limited pain-free opening (30 mm), joint sounds in the left TMJ during opening and closing, and a history of intermittent closed locking. Palpation elicited myofascial pain with referral from the left lateral pterygoid muscle to the left masseter, as well as headache reproduction upon palpation of the left temporalis muscle. DC/TMD Axis II assessment indicated severe pain distribution on pain drawing, with low pain-related disability (Graded Chronic Pain Scale Grade I).

Based on the DC/TMD diagnostic algorithm, the final diagnosis was disc displacement with reduction with intermittent locking accompanied by myofascial pain with referral and headache attributed to temporomandibular disorder.

At the initial visit, the patient underwent comprehensive subjective and objective examinations based on the DC/TMD protocol, supported by panoramic radiographic evaluation. Maxillary and mandibular impressions were taken using stock trays and alginate to obtain diagnostic study models. The patient was educated on eliminating parafunctional habits that could trigger or exacerbate symptoms. Physical self-regulation (PSR) was introduced, including bilateral chewing, correction of sleeping position, posture improvement, and muscle relaxation techniques. In addition, the patient was instructed to perform muscle conditioning in the form of jaw exercises.

At the second visit, a wax pattern was fabricated for a maxillary stabilization splint. Centric relation was recorded with the condyles positioned in an anterosuperior position and a posterior disocclusion of approximately 1.5–2.0 mm, corresponding to the intended splint thickness. The patient was thoroughly instructed on the bite registration procedure and allowed to practice prior to recording. The wax rim was

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adapted to cover the occlusal surfaces, incisal edges, and palatal areas of the maxillary teeth.

At the third visit, the mandibular stabilization splint was inserted figure 4. Occlusal adjustment was performed using articulating paper to ensure even and balanced contacts across the splint surface. The patient was instructed to wear the splint continuously, except during meals and cleaning, and to clean the appliance twice daily. A follow-up visit was scheduled 14 days after insertion.

At the first follow-up visit (14 days after splint insertion), joint clicking was still present in both the left and right TMJs. The patient reported that locking had occurred two days before the appointment. On the other hand, muscle pain had gone down from baseline to this visit. The patient added that he had experienced fewer temporal headaches. Although physical self regulation (PSR) was attempted, it was not done regularly because of the residual discomfort. The occlusal surface of the splint was adjusted, and PSR instruction as well as habit elimination were carried out.

At the second follow-up visit, two weeks later, the patient reported complete resolution of muscle pain. Joint sounds were still present bilaterally, but the intensity had decreased compared to previous visits. The patient had been performing PSR regularly; initially, a sensation of warmth was felt in the left jaw, which subsequently subsided and became comfortable. During this visit, the patient disclosed that he had asked family members about his habits at night and was told that they had witnessed sleep bruxism. The splint was further occlusally adjusted.

At the third follow-up visit, the patient reported no muscle or joint pain and no recurrence of headache. The right TMJ no longer produced joint sounds, while a clicking sound was still detectable in the left TMJ. Occlusal adjustment was performed.

At the fourth follow-up visit, the patient remained free of muscle and joint pain, with no recurrence of headache or locking episodes. The right TMJ continued to be asymptomatic without joint sounds, while the left TMJ produced only a faint residual clicking sound. Occlusal adjustment was again performed.

At the fifth follow-up visit, the patient reported sustained absence of muscle and joint pain, headache, and locking episodes. There were no joint sounds from either TMJ, except for a barely audible click of the left TMJ upon maximal mouth opening. The occlusal adjustment was done, and the patient was advised to start reducing the use of the splint by wearing it every other day in the first week and then stopping it altogether in the second week. The patient was given an appointment for a one month follow up. During the one month follow up, the patient had no complaints and was clinically considered to be resolved.

Discussion

The patient in this case was a 23-year-old young adult male diagnosed with disc displacement with reduction with intermittent locking accompanied by myofascial pain with referral and headache attributed to temporomandibular disorder (TMD). This finding is consistent with previous literature reporting a global TMD prevalence of approximately 34%, with the highest incidence occurring in individuals aged 18–50 years.[7]

The patient reported joint sounds and a previous episode of closed lock, during which he was unable to open his mouth. Disc displacement with reduction is the most frequently encountered TMD diagnosis, however, cases involving intermittent locking are relatively uncommon.[4] In a case series on disc displacement with reduction with intermittent locking, three out of five patients were younger than 30 years,[6] supporting the age profile observed in the present case. Clinical examination revealed myofascial pain upon palpation of the temporalis, masseter, and lateral pterygoid muscles. The patient experienced referred pain in the left masseter area when the left lateral pterygoid muscle was palpated. Myofascial pain is a common TMD diagnosis, affecting approximately 30%–85% of patients with musculoskeletal pain, and is most frequently observed in individuals aged 27–50 years.[8,9]

The patient also complained of sharp, stabbing pain localized to the left temporal region. Among headache disorders associated with TMD, primary headaches such as migraine and tension-type headache are the most commonly reported comorbidities; particularly in their chronic forms. Patients afflicted with TMD have double the chance of developing chronic daily headache patterns, with scenarios including or excluding migrainous features. A linear relationship between TMD symptom severity and migraine intensity has been proposed.10 Furthermore, headaches influenced by or secondary to TMD are recognized as headache attributed to TMD according to the DC/TMD classification.[3]

TMD can be influenced by various factors such as psychological stress and anxiety, postural alterations, excessive occlusal loading, and occlusal interference. Although the patient denied nocturnal bruxism, intraoral examination revealed wear facets on the mandibular anterior teeth and exostoses on both jaws, which are considered clinical signs suggestive of bruxism.[10] This finding is further supported by the gonial angle assessment, which showed a right gonial angle of 113° and a left gonial angle of 119°, both below the normal range of 120–135°. A reduced gonial angle has also been reported as one of the morphological indicators associated with bruxism.11 Bruxism is an involuntary oral parafunctional habit where clenching (centric bruxism) and/or grinding (eccentric bruxism) actions are carried

out unconsciously. This habit can happen during sleep (sleep bruxism) or at the time when the individual is awake (awake bruxism).[10]

Bruxism and clenching habits may have contributed to the etiology of TMD in this case. Kalaykova et al.[12] reported that daytime clenching may be a risk factor for the development of disc displacement with reduction with intermittent locking. Similarly, Lee et al.[13] provided evidence suggesting that sleep bruxism may contribute to the progression of this condition. Additionally, Kalaykova et al.[12] suggested that increased masticatory forces may play a role in the occurrence of intermittent locking.

Management in this case consisted of mandibular stabilization splint therapy, muscle conditioning, and physical self-regulation. Both surgical and non-surgical approaches have been proposed for the management of disc displacement with reduction with intermittent locking; however, occlusal splints remain the most commonly used non-surgical modality. Two main types of occlusal splints are typically employed in patients with functional jaw limitations: stabilization splints and repositioning splints. In patients with bruxism, occlusal splints may also function as night guards.[1,14]

Several treatment strategies for disc displacement with reduction with intermittent locking have been described. According to Yamaguchi et al.[15] one of the simplest and most cost-effective approaches involves instructing patients to guide disc reduction by following the path of least resistance, particularly during lateral mandibular movements. Patients with parafunctional habits should be encouraged to discontinue these behaviors. Although bruxism may complicate the condition, patients with disc displacement with reduction with intermittent locking who exhibit bruxism may benefit from occlusal splint therapy.[6,15]

Occlusal splints are also beneficial in the management of myofascial pain and headache attributed to TMD. One of the most widely proposed mechanisms of action of occlusal splints is the modulation of masticatory muscle activity. A study demonstrated a statistically significant reduction in electromyographic activity of the masticatory muscles after six months of occlusal splint use,16 a finding consistent with those reported by other investigators.[17,18]

In addition to occlusal splint therapy, management of myofascial pain and headache attributed to TMD may be supported by muscle conditioning and physical self-regulation. Counseling and cognitive behavioral therapy particularly help in conservative treatment approaches as psychological factors have a great impact on many cases of TMD. Among other therapies, cognitive behavioral therapy can help patients to quit parafunctional habits like bruxism. Physical exercises are crucial for maintaining muscle function and preventing hyperfunction. Patients are advised to perform jaw exercises three times daily, including standard jaw exercises and resistance movement exercises.[6,19]

Emotional stress management was also recommended in this case, as stress was suspected to exacerbate the patient's condition. The patient was instructed in physical self-regulation techniques aimed at promoting relaxation, such as diaphragmatic breathing, brief relaxation pauses, and improving sleep hygiene by adopting earlier sleep times. Previous case reports have demonstrated significant improvement in TMD symptoms and a reduction in migraine frequency following similar interventions. Other treatment options may include pharmacological therapy (anti-inflammatory drugs, muscle relaxants, and antidepressants), physical therapy, hypnotherapy as a form of behavioral or cognitive behavioral therapy, and additional supportive modalities.[6,19]

Conclusion

Disc displacement with reduction with intermittent locking is an intra-articular temporomandibular disorder characterized by episodic limitation of mandibular movement and is frequently accompanied by myofascial pain. Active myofascial trigger points may contribute to referred pain and tension-type headaches attributed to temporomandibular disorders. Definitive management aims to reduce both intracapsular pain and masticatory muscle pain. It is recommended to use a stabilization appliance whenever possible as it not only helps in relieving symptoms but also prevents the occurrence of adverse long-term occlusal effects. Adjunctive therapies such as muscle conditioning and physical self regulation contribute significantly to the success of the treatment and the comfort of the patient.

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