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CASE STUDY

Comprehensive therapies for severe facial pain related to temporomandibular disorder in a patient with mental instability

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ABSTRACT

The etiology of temporomandibular disorders (TMDs) is multifactorial and often associated with biopsychosocial factors. Stress, anxiety, and depression contribute to the psychological conditions that may accompany TMD. This case study aims to describe the treatment of severe facial pain associated with TMD in a patient experiencing mental instability. A 28-year-old female presented to a dental hospital with severe pain in the right facial region. The patient had previously worn a stabilizing occlusal splint six months prior, but had since lost it, resulting in the recurrence of pain. The pain originated in the right temporomandibular joint and radiated to the ear, eye, and temporal region. The pain was exacerbated by mouth opening, chewing hard food, and emotional stress. Clinical examination revealed missing lower first molars and an anterior crossbite. The patient reported frequent clenching episodes during periods of anxiety and depression. A panoramic radiograph showed both condyles to be normal in shape and size. A transcranial X-ray revealed the right condyle positioned within the glenoid fossa, while the left condyle was located anterior and inferior to the articular eminence. Treatment included a comprehensive approach: pharmacologic therapy, elimination of parafunctional habits, self-management strategies, a stabilizing splint, partial dentures, psychiatric intervention, and orthodontic treatment. The masticatory muscles showed significant relaxation following treatment, resulting in pain reduction. Orthodontic correction of the malocclusion and increased vertical dimension of occlusion led to improved quality of life and the resolution of TMJ symptoms.

Keywords: comprehensive therapy; facial pain; mental health; psychological well-being; temporomandibular disorder

INTRODUCTION

Temporomandibular joint disorders (TMDs) comprise a range of musculoskeletal conditions affecting the masticatory muscles, the temporomandibular joint (TMJ), and related structures.[1] The prevalence of TMJ pain in the adult population is estimated at 5–15%, with women disproportionately affected. The gender gap in persistent orofacial pain tends to widen over time.[2,3]

TMD symptoms range from mild discomfort to severe pain and functional impairment. Common clinical features include joint and muscle pain, headache, migraine, otologic symptoms, joint noise, restricted mouth opening, facial pain, and even cervical spine disorders.[4,5]

Typical signs of TMD include TMJ pain, joint sounds during movement, reduced mandibular range of motion, myofascial pain, and functional limitations such as deviation during jaw opening.[6,7,8] Two primary manifestations, pain and dysfunction, are consistently reported.[5] The etiology of TMD remains incompletely understood but is considered multifactorial, involving occlusal disharmony, psychological factors, pain sensitivity, and genetic predispositions.[1,5]

The TMJ is increasingly recognized as a point of intersection between physical and psychological health. Mental instability is significantly associated with TMD. Chronic TMJ pain and dysfunction may impair daily functioning, social engagement, and psychological well-being, often contributing to frustration and hopelessness.[9]

Patients with TMDs report higher levels of anxiety compared to those without. Emotional stress can manifest as orofacial pain or TMD symptoms. The presence of psychological

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distress in TMD patients may be closely related to the persistence of pain.[10] Stress, anxiety, and depression are high-risk contributors to pain and dysfunction, ultimately diminishing quality of life.[11] This case study elaborates on the management of severe facial pain in a patient with TMD and concurrent mental instability.

METHODS

A 28-year-old female patient presented to the emergency department of a dental hospital with complaints of excruciating pain in the right facial region. The pain initially originated in the right temporomandibular joint (TMJ) area and radiated to the right ear, eye, and temporal region. Although the patient had been experiencing intermittent pain for the past year, the intensity peaked the previous night. She was prescribed Eperisone HCl 50 mg and Etoricoxib 60 mg, which provided temporary relief; however, the pain soon recurred. Due to the persistent nature of the pain, the patient was referred to the Department of Prosthodontics for further evaluation. Informed consent was obtained from the patient for publication of this case report, and all identifying information has been anonymized to protect patient confidentiality.

The patient reported a year-long history of pain in the right TMJ and a sensation of fatigue in the left TMJ area. The pain was exacerbated by mouth opening, chewing hard foods, and emotional stress. She frequently clenched her teeth during episodes of anxiety and depression, which were triggered by ongoing family and financial difficulties, factors that further compromised her psychological well-being. A diagnosis of TMJ disorder had been made six months prior, and she had been treated with a stabilizing occlusal splint by a prosthodontist. While the symptoms had gradually improved, the splint was lost two weeks prior to the current consultation, leading to a recurrence of pain.

Assessment followed the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) Axis I, which includes screening for pain-related TMD, physical examination, and clinical history. Palpation of the masseter and temporalis muscles reproduced the pain. Specifically, 1 kg of pressure on the right masseter muscle elicited pain that radiated to the ear, eye, and temporal region. Soreness was also noted upon palpation with 0.5 kg and 1 kg of pressure over the right lateral pole and around the condylar area. No crepitus was detected, though a clicking sound was present in the left TMJ.

Clinical examination revealed a limitation in mouth opening. The pain-free opening was 20 mm (Figure 1a), the maximum unassisted opening was 40 mm (Figure 1b), and the maximum assisted opening was 42 mm (Figure 1c). A deviation to the right was noted during mouth opening. Right and left lateral mandibular movements measured 8 mm and 9 mm, respectively, while protrusive movement was 8 mm. The act of opening the mouth provoked radiating pain. The patient rated her pain severity as 9 out of 10 on the Visual Analog Scale (VAS, 0–10).

Intraoral examination and panoramic radiography showed that the patient had no

(A) (B) (C)

Figure 1. Pre-treatment mouth opening measurements; (A) Pain-free opening; (B) Maximum unassisted opening; (C) Maximum assisted opening

dental caries or prosthodontic restorations. Teeth 18, 28, 38, and 48 were in the process of erupting, while teeth 36 and 46 were missing. The patient presented with an anterior crossbite characterized by a -1.5 mm overjet, a 2 mm overbite, and a 1.5 mm midline shift to the right (Figure 2).

Panoramic radiographic imaging revealed that both condyles were ovoid in shape and of normal size (Figure 3). A transcranial X-ray, taken during mouth opening, showed the right condyle positioned within the glenoid fossa, while the left condyle was located anterior and inferior to the articular eminence (Figure 4).

The Axis II examination includes instruments for assessing jaw function, oral behavioral factors, psychosocial functioning, and a pain drawing (Figure 5). Based on the Axis II diagnostic criteria, the patient scored 11 on the Patient Health Questionnaire-4 (PHQ-4), indicating severe psychological distress. The Patient Health Questionnaire-9 (PHQ-9) score was 17, suggesting moderately severe depression. The Generalized Anxiety Disorder-7 (GAD-7) score was 16, indicating severe anxiety, and the Patient Health Questionnaire-15 (PHQ-15) score was 13, reflecting high somatic symptom severity.

The patient presented with multifactorial etiologic factors contributing to her condition, encompassing both Axis I (biophysical) and Axis II (psychosocial) dimensions. These factors fall under the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) categories of susceptibility and perpetuation. Furthermore, due to the wide variety of occlusal splint designs, it remains unclear which specific type is most effective for treating individual TMD conditions as defined by the DC/TMD.

TMD diagnosis is primarily based on a combination of clinical signs and symptoms. The

Figure 2. Intraoral photograph

Figure 3. Panoramic radiograph

Figure 4. Transcranial lateral radiograph

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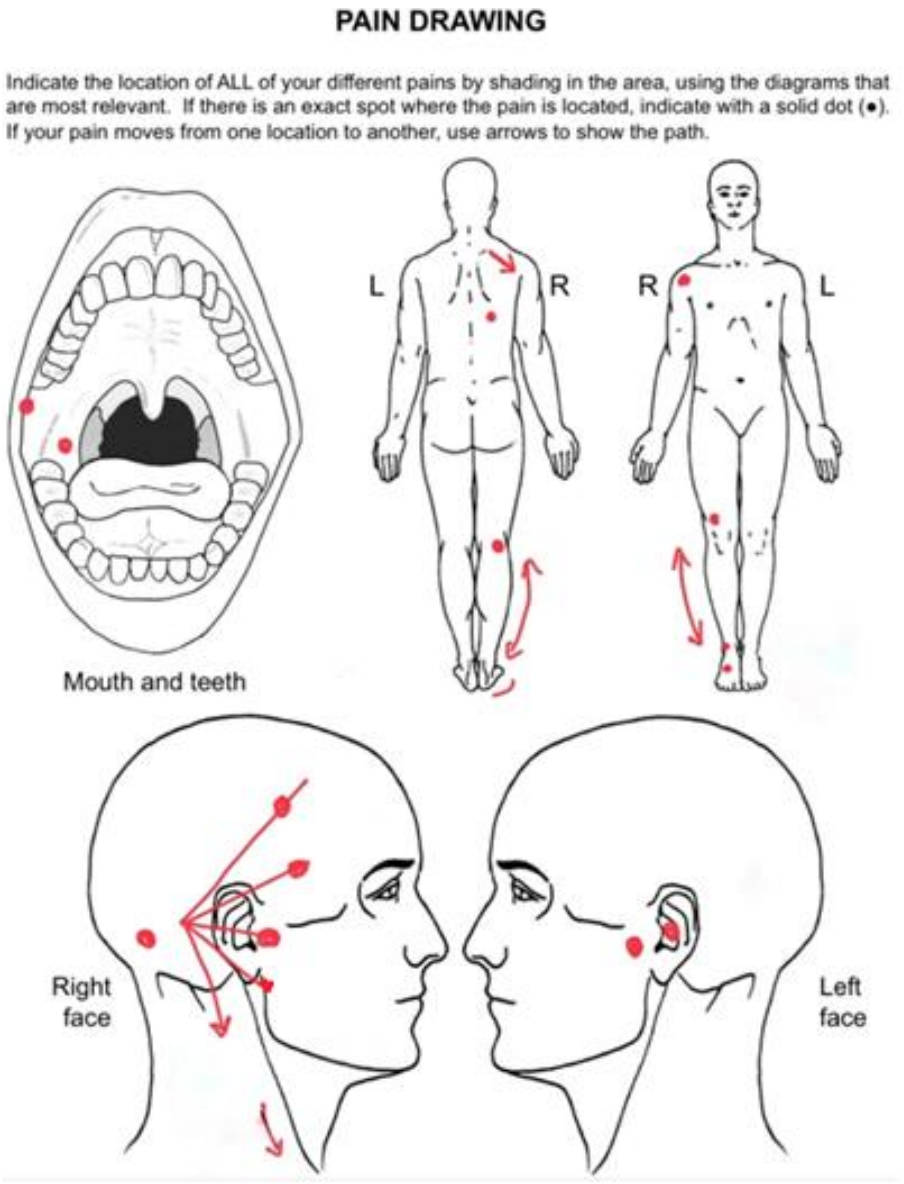

Figure 5. Pain drawing from D/C TMD

Figure 6. Partial denture for the mandible

validated diagnostic framework for TMD is the DC/TMD. According to the DC/TMD decision tree, the patient was diagnosed with disc displacement without reduction on the right side (dextra) with limited opening, myofascial pain with referral, and disc displacement with reduction on the left side (sinistra). This diagnosis can be confirmed with magnetic resonance imaging (MRI).

The patient received comprehensive therapy, which included pharmacologic treatment, patient education and cognitive awareness training, emotional stress management, supportive

(A) (B) (C)

Figure 7. Occlusal splint; (A) Right lateral view; (B) Frontal view; (c) Left lateral view

(A) (B) (C)

Figure 8. Post-treatment opening measurements after 3 months; (A) Pain-free opening; (B) Maximum unassisted opening; (C) Maximum assisted opening

(A) (B)

Figure 9. Patients's occlusion after 6 months; (A) Pre-orthodontic treatment (B) Post-orthodontic treatment

therapy, restricted jaw use, the insertion of a partial denture (Figure 6), the use of a stabilizing occlusal appliance (Figure 7), and psychiatric intervention. The patient was instructed to limit jaw movements to within pain-free ranges and to perform self-administered exercises. These included passive muscle stretching, encouraging the patient to practice opening the mouth along a straight path while looking in a mirror, and assisted stretching, in which the patient applied gentle finger pressure to the elevator muscles to gradually increase mouth opening. The patient was advised to continue taking previously prescribed medications along with vitamin B complexes and to attend regular appointments with a psychiatrist for psychological management.

After one week of combined therapy, including medication, exercises, and partial denture use, the patient reported significant relaxation of the masticatory muscles and a marked reduction in pain. The psychiatrist prescribed sertraline and lorazepam to manage anxiety and depression. The patient reported feeling significantly calmer and more capable of managing stress. The clinician encouraged continued psychiatric counseling and adherence to prescribed medication. At this

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stage, the persistence of pain is likely influenced by the interaction of biopsychosocial factors alongside the original etiological cause. Long-term psychological intervention is expected to provide continued benefit in managing the condition.

A methyl methacrylate occlusal splint was fabricated in the therapeutic centric relation position with a 2 mm increase in the vertical dimension of occlusion (Figure 7). Retention was achieved by covering the labial and buccal surfaces of the maxillary teeth using a ball metal clasp. During delivery, occlusal adjustments were made to ensure uniform contact with the opposing dentition. The patient was instructed to wear the splint throughout the day, except while eating.

Follow-up appointments were conducted after two weeks and subsequently at the first, second, and third months of consistent splint use. After one month, the patient reported reduced pain. By the third-month follow-up, the symptoms had significantly subsided. The pain-free maximum mouth opening was 25 mm (Figure 8A), unassisted opening was 40 mm (Figure 8B), and assisted opening reached 45 mm (Figure 8C). Occasional mild pain was reported only during wide mouth opening (VAS = 1). Palpation of the lateral condylar pole was no longer painful. Clinical examination showed a slight, uncorrected deviation during opening, but overall pain was reduced, and the patient was advised to continue with periodic monitoring. The next phase of treatment involved orthodontic therapy to correct the occlusion.

As the pain gradually subsided, the patient proceeded with fixed orthodontic treatment (Figure 9). After six months, the patient reported a significant improvement in quality of life and was no longer experiencing TMJ pain.

DISCUSSION

Psychosocial distress has been closely associated with TMDs.[11] High levels of anxiety negatively impact patients' quality of life and general health, and are known to increase the incidence and severity of orofacial pain. Psychological factors such as somatization, anxiety, depression, psychological distress, and pain catastrophizing are recognized predictors of TMD-related pain.[9,12]

These psychological influences contribute significantly to the onset, exacerbation, and persistence of TMDs. Among them, stress, anxiety, depression, and other manifestations of mental instability have received considerable attention for their role in the development and progression of TMD symptoms.[7,13] Therefore, it is essential to assess the psychosocial profiles of patients presenting with TMD.

In this case, the patient's mental instability, exacerbated by economic and family stressors, played a significant role in symptom manifestation. The patient frequently clenched her teeth during periods of anxiety and depression. Such parafunctional activity, especially habitual clenching, increases the likelihood of developing TMD-related pain. There exists a bidirectional relationship between mental health and TMD: psychological distress can both trigger and sustain temporomandibular dysfunction. Parafunctional muscle activities such as clenching, grinding, or holding the teeth together (outside of normal functional contact during eating) may decrease the vertical dimension of occlusion (VDO), contributing to the development of TMDs.[14]

Additionally, temporomandibular joint morphology has been linked to malocclusion, occlusal discrepancies, and excessive oral function. Malocclusions of the anterior teeth affect anterior guidance and may influence TMJ structure. For instance, an anterior crossbite may contribute to TMD due to a reduction in eminence height. However, the relationship can also be inverse, with TMJ morphological changes leading to occlusal alterations. In some cases, occlusal imperfections are the consequence, rather than the cause, of variations in TMJ anatomy.[5]

Myofascial pain is a regional myogenous pain condition characterized by firm, hypersensitive bands of muscle tissue known as trigger points. These localized areas within muscle and their tendinous attachments are often painful upon palpation. Various factors may trigger myofascial pain, including trauma, hypovitaminosis, poor

physical conditioning, fatigue, infection, deep somatic pain input, and emotional stress. Although palpation of trigger points induces pain, local muscle sensitivity is not usually the patient's primary complaint. Rather, symptoms associated with the central excitatory effects of trigger points typically manifest as referred and spreading pain.[5] In this case, the patient exhibited myofascial trigger point pain in the masseter muscle, with referred pain extending to the ear, eye, and temple regions. According to DC/TMD definitions of myogenous pain (Type I), common findings include pain in the temple, around or in front of the ear, jaw, disc displacements, bony changes, and joint involvement.[15]

Disc displacement without reduction occurs when the ligament becomes elongated and the elasticity of the superior retrodiscal lamina is compromised, making recapture of the disc difficult. As a result, the condyle's forward translation pushes the disc anteriorly, preventing reduction.[5] A diagnosis of disc displacement without reduction with limited opening is made when the patient presents with a sudden, persistent, and markedly limited mouth opening (less than 40 mm). Patients are often aware of a structural blockage in the TMJ, frequently with a history of clicking.[10]

Disc displacement with reduction occurs when elongation of the inferior retrodiscal lamina and discal collateral ligaments allows the superior lateral pterygoid muscle to position the disc anteriorly. If this anterior traction is constant, thinning of the disc's posterior band may allow it to shift even further forward. Consequently, the condyle rests on the more posterior portion of the disc, producing an abnormal translational movement during mouth opening, commonly associated with clicking sounds in the TMJ.[5]

Current evidence suggests that management of TMD should focus on reducing joint and muscle load, correcting occlusal factors, alleviating pain, and restoring function and quality of life.[16] A multimodal approach is recommended for managing myogenous pain, incorporating counseling, patient education, pharmacotherapy, behavioral therapy, occlusal splint therapy, physiotherapy or exercise, psychiatric intervention, and, when indicated, orthodontic treatment. Surgical interventions are rarely required.[17,18]

Occlusal splints are a non-invasive treatment modality that help preserve biomechanical balance between physiological loading and stress relaxation.[19] Both occlusal splint and exercise therapies are effective in reducing pain and improving mandibular movement.[20] Reduced vertical dimension of occlusion (VDO) can be corrected by increasing the interocclusal distance through splint therapy.[14] Occlusal splint therapy remains the most widely used treatment modality for TMD.[21]

A mismatch between physiological loading and generated stress is a biomechanical factor underlying harmful habits such as bruxism and clenching. Occlusal splints help restore equilibrium by modulating neuromuscular activity and reducing strain on the TMJ ligaments and associated joints.[19] Splints are particularly beneficial in reducing muscle hyperactivity, alleviating tension, and preventing deleterious effects of parafunctional behaviors. The primary goal of occlusal splint therapy is to protect the TMJ disc from dysfunctional mechanical stresses that may lead to perforation or permanent displacement.[17]

Decreased vertical dimension of occlusion (VDO) can be effectively addressed through orthodontic intervention. A reduction in VDO may predispose patients to temporomandibular disorders (TMD). Adult nongrowing Class III patients present particular therapeutic challenges due to the limited range of available treatment options. The decision between orthodontic camouflage and orthognathic surgery remains a clinical dilemma.[22] Orthognathic surgery is the gold standard for treating skeletal Class III malocclusions in nongrowing patients. However, this option is often declined due to financial limitations or concerns about surgical invasiveness. For Class III patients who reject orthognathic surgery, alternative management options include orthodontic camouflage, extractions, multibracket appliances combined with Class III elastics, multiloop edgewise archwire therapy, and skeletal

anchorage for mandibular distalization.[23,24] In this case, camouflage therapy was applied by rotating the mandible clockwise using Class III elastics to achieve a normal overjet and overbite. This approach significantly improved the vertical dimension, resulting in a more balanced profile, albeit with a relatively prominent chin and pronounced lower lip.

It is also essential for clinicians to maintain an integrated biopsychosocial collaboration with psychiatric professionals. Such interdisciplinary cooperation enables access to a broad spectrum of treatment modalities, including rehabilitative exercises, cognitive-behavioral therapy, physical therapy, and pharmacologic management. Psychological treatment for pain not only aims to reduce anxiety and depression but also plays a pivotal role in a broader management strategy that includes alleviation of pain and disability as core treatment outcomes.[25]

While routine psychological evaluation may not be necessary for acute pain, it becomes indispensable in chronic pain cases. Evaluating psychological factors can be challenging, which is why patients with chronic pain are best managed using a multidisciplinary approach, involving collaboration with psychologists or psychiatrists.[5] Psychological interventions often focus on enhancing self-management to reduce pain and its associated disability, mitigate distress, and promote adaptive coping strategies. Long-term follow-up is essential to ensure sustained clinical progress and effective outcomes.[25]

CONCLUSION

A multidisciplinary approach incorporating psychological support is essential for the effective management of chronic temporomandibular pain. Further research is warranted to explore the integration of psychological and physical therapies to optimize long-term outcomes for TMD patients. The limitations of this case report include its basis on a single patient's experience, the absence of a control group, and the challenge of isolating the specific effects of each treatment modality.

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CONFLICT OF INTEREST

The authors declare no competing interests.

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