

Case Study

Impact of Emotional Stress and Physiotherapy Treatment on Prognosis of Temporomandibular Joint Disc Displacement with Reduction - A Case Report

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A B S T R A C T

Many conservative treatment approaches are used for patients with temporomandibular joint disorders (TMD). Nonetheless, only a few studies have been published about physiotherapy treatment for patients with temporomandibular joint disc anterior displacement with reduction. A few studies have emphasised the relationship between increasing emotional stress and the occurrence of TMD. This report aimed to study the impact of integrated physiotherapy treatment (ultrasound therapy, soft tissue mobilisation, manual therapy and exercise therapy) approach for patients with temporomandibular joint disc displacement with reduction. The initial hypothesis of this study was that integrated physiotherapy treatment will reduce the patient's symptoms and improve the quality of life. The outcome measures of our report showed that integrated physiotherapy treatment reduced the patient's symptoms for a short period of time (3 weeks) post-treatment but was not effective in the long term. Even-though, the patient had followed all the self-management strategies, the patient was not able to cope with increasing emotional stress from day-to-day life which resulted in aggravation of the clinical condition. Our report concludes that the psychological aspect of the clinical condition must be included during the evaluation and treatment of patients with TMD for better treatment prognosis.

Keywords: TMD, Disc Displacement with Reduction, Integrated Physiotherapy Treatment, Emotional Stress, Treatment Prognosis

Introduction

Temporomandibular joint disc displacement with reduction is a type of temporomandibular joint internal derangement in which the articular disc is displaced anterior to the condylar head or may be displaced medially or laterally (with or without intermittent locking). This internal derangement can be identified by using imaging techniques or during clinical evaluation. This clinical condition presents with pain or dysfunction; joint clicking may or may not be accompanied. Individuals with reduced disc displacement experience joint noise at two intervals: during mandibular depression and mandibular elevation. The amount of anterior disc displacement is relatively limited when the click occurs early in opening and late in closing. The more severe the disc dislocation is, the later the click occurs in the opening phase.¹ Wilkes has divided the severity of internal derangement into five stages based on pain, mouth opening, disc location, and temporomandibular joint anatomy. The classification ranges from painful clicking of the joint (stage 1) to severe pain of the joint with severe degenerative bony changes, and it has been used to help guide treatment options in the management of arthrogenous temporomandibular joint disorders (TMD).² TMD is a significant public health problem, affecting 5%-12% of the population with pain, playing an important role in influencing people's quality of life and presenting a psychological effect on their day-to-day activities.³ Several clinical studies have shown that chronic medical conditions have a strong negative impact on the patient's quality of life.⁴

Currently, several treatment options are available to manage TMD. Conservative treatment approaches including pain management and rehabilitation, constitute the first-line recommended treatment for people with TMD because they are less likely to cause harm.^{2,5} The most widely used conservative treatment options include drug routines, occlusal splint therapy, physiotherapy, psychological support etc.^{6,7} Physiotherapy is commonly used in treating patients with TMD to alleviate pain and to facilitate complete recovery.⁸ It has been shown to be effective in the treatment of TMD, particularly when the patient's temporomandibular joint (TMJ) pain is presented with headache symptoms.²

Ultrasound therapy (UST) has been used widely to alleviate TMD-related pain and inflammation.⁹ It is a valuable tool in the rehabilitation of many different injuries, stimulating soft tissue repair and relieving pain.¹⁰ A recent study supports that UST has shown a significant reduction in pain and disability, and improved functional capacity and quality of life in patients with temporomandibular joint disc displacement with reduction in both long term and short term.¹¹

Manual therapeutic approaches focus on regaining the

arthrokinematics of the temporomandibular joint and cervical spine. These techniques are used to reduce pain and improve joint ROM and the quality of joint movement.⁸ Recent studies stated that manual therapy techniques are more effective when combined with therapeutic exercise in the treatment of TMD.¹²

Soft tissue mobilisation has been used commonly to induce muscular relaxation thereby reducing pain and improving soft tissue extensibility. Evidence shows that soft tissue mobilisation has a positive healing effect in patients with TMD.^{13,14}

Case Report

A 30-year-old female patient presented to the Chettinad Dental College Hospital with pain over the right TMJ, restricted mouth opening, jaw deviation towards the contralateral side during the opening of mouth, difficulty in chewing food, headache, and weight loss. The patient reported having these symptoms for approximately the past 4 years or more. It was the patient's first dental visit. Initially, subjective assessment was done by the dentist and the patient was advised to do MRI. With the help of MRI reports, the patient was diagnosed with right TMJ disc anterior displacement with reduction. The patient was then referred to the physiotherapy department for conservative treatment. She was informed about the case report and she signed the consent form. All her rights were preserved.

During the physiotherapy treatment period, the patient was not on any other alternative treatment for TMJ disc anterior displacement with reduction. The patient was treated with UST, soft tissue release and TMJ mobilisation therapy for 5 days.

During the initial assessment (day 1), the patient presented with severe pain over the jaw. With reference to the numerical pain rating scale, the patient scored 9 points. Extra-oral palpation revealed tenderness over the right TMJ, muscular spasm over the upper trapezius, sternocleidomastoid, scalene, and cervical para-spinal muscles. Visual estimation revealed that active cervical ROM was restricted and painful. Passive flexibility testing of the cervical muscles showed there was tightness in the right upper trapezius, scalene muscles, and hyoid muscles. Active mouth opening was measured at 27 mm. At the end range of active mouth opening, a slight deviation of the jaw to the right side was noted. Visual observational postural analysis revealed a forward head posture. TMD disability questionnaire during the initial assessment revealed that the patient had a mild disability.

The patient was treated with UST to reduce pain (mode - continuous, frequency - 3 MHz, and duration - 5 minutes). Soft tissue release technique was administered to facial muscles (pterygoids, masseter, temporalis), sternocleidomastoid,

scalene, upper trapezius, and suprahyoid muscles. Passive TMJ mobilisation was done to improve pain-free mouth opening. At home, the patient was advised to use a hot pack for 15-20 minutes for pain management. The patient was advised not to eat any hard food items, burgers etc. During the 5th session of the treatment, an exercise routine was prescribed to the patient as shown in Table 1.

The patient was evaluated again at the end of the 5th session of treatment. The numerical pain rating scale was employed to record the pain intensity. Active mouth opening was used as an outcome measurement for TMJ range of motion. During the assessment, active mouth opening was measured at 38 mm and the pain score was measured at 5 points.

The patient was advised to follow the exercise routine at home for 6 weeks and to use hot water fomentation for pain management. The patient was advised to attend a follow-up review at a 2 weeks interval. During the follow-up assessment (day 21), the patient was examined for any aggravation of symptoms. The clinical examination revealed no fresh complaints and showed a reduction in pain (NPRS score - 3). Active mouth opening was measured at 55 mm and passive mouth opening was measured at 60 mm without pain or discomfort. The patient was advised to continue the same exercises (Table 1) and was asked to attend a follow-up review at a 1-week interval.

Stress was measured by using the perceived stress scale (PSS) during the assessment. Data collected from PSS revealed the patient had higher perceived stress.

At the first evaluation, on day 5 of treatment, and at the follow-up appointment spaced by two weeks, TMD disability questionnaires were completed (day 21). The Steiger Wald/Maher TMD disability questionnaire data didn't show significant improvement during the initial assessment and during the assessment at the end of the 5th session. However, marked improvements were recorded at a follow-up session after 2 weeks.

At the follow-up review after 1 week (day 28), the patient presented with aggravation of symptoms (NPRS score - 6); active mouth opening was measured at 40 mm (Figures 1 and 2). Clinical assessment revealed that the patient was subjected to increased emotional stress due to personal reasons during this period. The patient's flare-up was treated with the same protocol (Table 1), and self-management coping strategies were advised to deal with the stress. The

patient was instructed to continue exercises regularly for 6 weeks and was advised to report to the physiotherapy department in case of any symptom aggravation.

Table 1.A Brief Description of the Physical Therapy Treatment Regimen at Each Appointment

Session	Intervention
Day 1-4	<ol style="list-style-type: none"> 1. UST (mode - continuous, frequency - 3 MHz, duration - 5 minutes) 2. TMJ mobilisation grade 1-2 3. Soft tissue mobilisation (duration - 15 to 20 minutes) to upper trapezius, levator scapulae, anterior scalene muscles, masseter, temporalis, pterygoid and supra hyoid muscles 4. Patient education: soft diet, postural awareness, relaxation techniques
Day 5	<ol style="list-style-type: none"> 1. UST, TMJ mobilisation and soft tissue continued as above 2. Home exercise programme: Goldfish exercise Mandibular isometrics Cervical spine mobility exercise (active range of motion exercise) Self-stretching exercises to upper trapezius, levator scapulae, and posterior occipital muscles Chin tuck-in exercise Prone scapulothoracic exercises
Day 21	<ol style="list-style-type: none"> 1. Continued the same exercise as above 2. Postural re-education

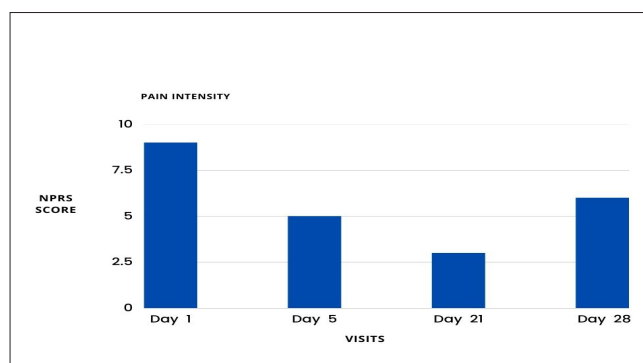


Figure 1. Pain Intensity Recorded using Numerical Pain Rating Scale at Each Appointment

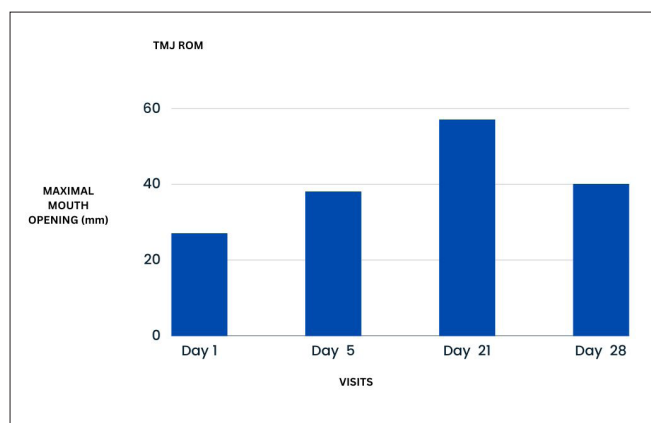


Figure 2. Measurement of Maximal Mouth Opening at Each Appointment

Discussion

TMJ is unique in its structure and function. The TMJ complex is particularly prone to issues because of the amplitude and frequency of mandibular movement, daily resistance experienced during mastication, physical stress imposed by prolonged sitting and standing postures, and the chronic adaptation of muscles around the TMJ complex. Several symptoms of primary cervical spine impairment are comparable to those of TMJ dysfunction. Hence, when patients present with TMJ problems, the cervical spine and upper quarter (containing all components of the upper trunk from the scapulae superiorly) should be properly inspected. Only 20% to 30% of those with intrinsic TMJ dysfunction experience symptoms in their joints. These signs can get worse or can go away on their own.¹⁵

The results of this case report revealed that the patient was improving clinically after the commencement of the physiotherapeutic approach and maintained active mouth opening for 3 weeks, but the patient's symptoms recurred after 3 weeks. The assessment revealed that the patient had increased emotional stress due to personal reasons during the 4th-week post-treatment. In light of this, it's probable that the patient's recurrence of symptoms was caused by emotional stress. Evidence supports that anxiety is linked to TMJ disorder development. A study showed that 50-75% of TMJ disorder patients experienced stressful life events prior to the onset of their symptoms.¹⁶ These events act as precipitating factors in the onset of the symptoms. The patient reported that her symptoms aggravated after the stressful event. Even though the patient was following all the self-management techniques, the patient's symptoms were exacerbated by a single episode of stressful events. Studies agree that increasing emotional stress and TMJ disorder affect each other in a vicious cycle.¹⁶ For such kinds of patients, unless the aggravating factors are eliminated, the success rate of the treatment will be low. While treating TMD patients, assessment and treatment approaches must

include the emotional health of the patients for a higher rate of success in terms of prognosis.

Conclusion

According to the findings of this case study, integrated physiotherapy treatment is effective in the short term for treating a patient's anterior TMJ disc displacement. The patient's mental state had an impact on the treatment prognosis in this instance. This shows that the psychological aspect of the clinical condition must be considered while treating patients with chronic TMJ disorders for better results. However, a single case report evidence is not sufficient to make changes in the clinical practice. The findings of this study need to be confirmed in additional clinical studies with larger sample sizes.

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Conflicts of Interest: None

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