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Massage Therapy and Dry Needling Improve Mouth Opening and Relieve Pain in Oromandibular Dystonia

Abstract – Oromandibular dystonia (OMD) is a debilitating condition that causes constant pain due to trismus and the inability to open the mouth. This case report describes the use of massage therapy and dry needling in a patient who had exhausted all medical treatments over the past five years. A 64-year-old Malay woman had suffered from OMD for five years, experiencing trismus and pain, which caused difficulty with speech and a dependence on a liquid diet. Her initial pain score was 9/10. After undergoing massage therapy and dry needling, her condition improved remarkably. She is now pain-free, able to open her mouth, speak normally, and eat solid food. This case study highlights the effectiveness of these two methods in improving chronic oromandibular dystonia

Keywords – *Dry needling, massage therapy, oromandibular dystonia*

1 INTRODUCTION

Dystonia affecting the oral cavity is referred to as oromandibular dystonia (OMD). The term OMD denotes a type of lower cranial dystonia that involves the muscles of the lower face, including the jaw, tongue, and pharynx [1]. In this condition, the muscles contract involuntarily, often severely, leading to rhythmic and atypical spastic movements. OMD is a rare neurological disorder, with an incidence reported at up to 3.3 cases per million [2]. It can also be categorized based on its etiology. Primary dystonia is often idiopathic (of unknown cause) or inherited (genetic), while secondary dystonia may result from trauma, surgical incidents, brain diseases, or medications [2]. Primary dystonia is the most common etiology of OMD, accounting for more than 60% of cases [1].

Oromandibular dystonia (OMD) often affects females between the ages of 40 and 70 and is frequently triggered by activities such as stress, mastication, talking, and chewing. The condition significantly impacts various oral and functional activities, including impaired mastication, speech difficulties, dysphagia, and abnormal pulling or twisting of the mandible (either forward or laterally). It can also lead to temporomandibular disorders, such as open lock [2].

The treatment of oromandibular dystonia (OMD) typically involves a multi-approach strategy, which can present challenges for patients. The first-line treatment is often botulinum toxin (Botox) injections, to which the majority of cases respond well. Other treatments, such as anticonvulsant drugs, muscle relaxants, and neuroleptic agents, may also be used [1].

This case report explores the potential of massage therapy and dry needling as treatments for oromandibular dystonia (OMD), an approach not commonly utilized in clinical practice. The report presents a case in which these modalities, often underused in OMD treatment, showed promising results in reducing pain and improving jaw mobility. These findings suggest that massage therapy and dry needling may provide a valuable

complementary strategy to current medical treatments for OMD.

2 CASE REPORT

2.1 History and Physical Examination

A 64-year-old Malay woman, a former teacher from Penaga, Pulau Pinang, was referred to us by the physiotherapy department at Pusat Perubatan USM, Pulau Pinang, in mid-2023 after the treatment she received for OMD failed to alleviate her constant mouth trismus and pain, which had persisted for the past five years. The patient has consented to the treatment and future follow-up.

She had previously been attending regular follow-up appointments at a hospital in Penang and received treatments, including Botox injections in both of her cheeks, but with limited improvement. The medications she was taking included clonazepam and baclofen.

Due to difficulty opening her mouth, she relied solely on a liquid diet and had lost approximately 20 kg since the onset of her condition. The constant muscle spasms around her mouth also caused her front teeth to protrude. These spasms were almost always accompanied by severe pain. Her initial pain score was 9/10, and her weight had dropped to just 35 kg.

She was previously healthy, with no medical history of illness, trauma, or surgery. An MRI of the brain was performed in August 2019, which showed no abnormalities.

On examination, she appeared quiet and somewhat restless. Her blood pressure was 118/74 mmHg, with a pulse rate of 76/min. Upon examining her face, there was no muscle weakness or facial drooping, but noticeable muscle wasting was observed in both temporal regions. She was only able to open her mouth slightly, just enough for a spoon handle to pass through.

There was constant salivation, requiring her to frequently wipe it with a tissue. Her front teeth were protruded. There were no muscle twitches, excessive eyelid blinking, or watery eyes. Strokes over the face did not trigger any pain.

There was tenderness in the maxillary region, just beneath the maxillary bone, in the area of the masseter muscles on both sides, upon deep palpation.

2.2 Treatment

Massage therapy was prescribed after the patient was assessed. From sessions one through six, she received exclusive facial massage, along with treatment of adjacent areas such as the neck and upper back, by a female Malay massage practitioner (approximately once a week). Dry needling was introduced in the seventh session. From the seventh through the twelfth sessions, dry needling was always performed before the massage.

The massage was performed using deep pressure on several areas of the upper back, neck, and facial muscles. The primary focus of the massage was on both sides of the upper back and neck, targeting the trapezius and sternocleidomastoid muscles, as well as the facial area, particularly the temporalis muscle, maxillary and mandibular regions (such as the masseter muscle), and the submandibular region. Massage was also frequently applied to the temporomandibular joint bilaterally.

For dry needling, the treatment was performed at three locations: the temporalis muscle, the temporomandibular joint, and the masseter muscles on both sides, using acupuncture needles (Figure 1).

2.3 Post Treatment

When the patient visited the clinic on June 12, 2024, after the 12th session of treatment, she was no longer dependent on any prescribed medications. Her pain had completely subsided, and her mouth opening had improved, allowing her to open her mouth approximately 1.8 cm (Figure 2). At this time, her pain score was 0/10. She was able to consume soft and occasionally hard foods, such as meat, and had gained about 8 kg since the start of treatment.

3 DISCUSSIONS

The patient's history, examination, and dental discharge notes from the government hospital support a diagnosis of primary oromandibular dystonia. While many reported cases of oromandibular dystonia in the literature are associated with a history of trauma, post-surgical interventions, dental extractions, neurological diseases such as Parkinson's disease, or medications prior to the onset of dystonia [2], in our case, the patient did not have any history of trauma or inherited neurological conditions that could suggest a trigger for the onset of OMD. The pathogenesis of the majority of OMD cases remains unknown.

Upon the patient’s initial visit, massage therapy was initiated, leading to muscle relaxation and significant pain reduction. Starting with the seventh session, dry needling was added to the treatment plan, targeting the muscles of

mastication and the temporomandibular joint (TMJ), which further improved her condition. By the twelfth session, the patient reported being pain-free, with a significant improvement in mouth opening. Clinically, this was evidenced by reduced salivation and the ability to consume both soft foods and small amounts of harder foods. As a result, the improvement in oral function contributed to a weight gain of approximately 8 kilograms.

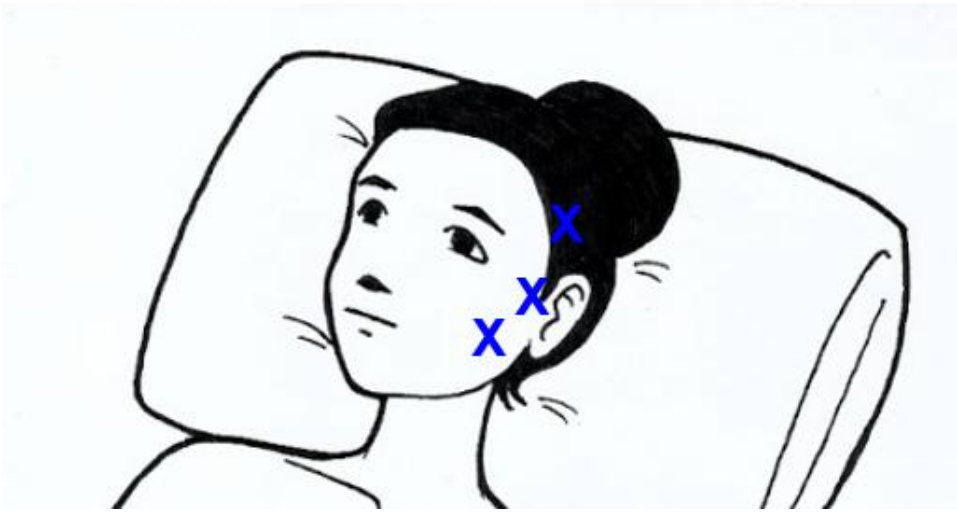

Figure 1. Needle insertion points (labelled X) at the temporal region, the temporomandibular joint, and the masseter muscle

Figure 2. A clinical photograph taken post-treatment after the 12th session shows the patient's ability to open her mouth to a distance of approximately 1.8 cm (the vertical distance between the upper and lower teeth)

The inability to resolve her problem through current medical interventions over the past 5 years highlights the complexity and challenges in managing OMD. Although Botox injections have been shown to improve OMD in the majority of cases, their use in this patient did not lead to any improvement. This underscores the need for alternative treatment strategies to effectively manage her symptoms.

Massage therapy and dry needling are not commonly prescribed as first-line treatments or as complementary therapies in the management of OMD. These techniques are often utilized by physical therapists, such as physiotherapists or chiropractors, with varying results. Currently, there is no convincing clinical data supporting the effectiveness of massage therapy and dry needling in treating OMD. Both treatments are typically considered only when medical

interventions have had limited or no effect on the patient.

The combination of massage therapy and dry needling in this case yielded a very positive outcome, possibly through multiple pain-relieving pathways. Massage produces a pain-relieving effect by activating the pain gate mechanism, stimulating cutaneous mechanoreceptors, which then transmit information through large nerve fibers to the spinal cord. This stimulation blocks pain stimuli entering the same segment of the spinal cord along the smaller, slower-conducting nerve fibers [3].

In addition to its pain-reducing effects, massage also helps relax the muscles by reducing knots and elongating muscle fibers. Furthermore, massage can increase blood flow to the dystonic muscles, which encourages the removal of inflammatory mediators [3]. Whereas, dry needling is a western form of acupuncture that uses acupuncture needles to induce changes at myofascial trigger points (MTP). MTP is an area of hyper-irritability, micro-cramp afflicting a tiny patch of muscle tissue which can lead to poor blood flow and may trigger pain [4]. We believe that MTPs may also play a role in OMD, as the use of needling helped further resolve the muscle dystonia in this patient. By inserting a needle into these points, the muscles can relax, reducing tension and tone. Furthermore, needling the affected muscles helps increase blood flow and normalize muscle tone [4], which can restore the function of the TMJ and the muscles of mastication.

Although the exact mechanism of how these two treatment modalities exert their therapeutic effects is not fully understood, they have been successfully used to treat pain of unknown neurological causes that is refractory to medical treatments [5].

4 CONCLUSION

Massage therapy combined with dry needling may offer a valuable complementary treatment option for patients with primary jaw-closing oromandibular dystonia (OMD), providing a non-pharmaceutical and non-surgical alternative. Integrating this approach with other modern medical treatments could further accelerate recovery. Further research is needed to better understand the synergistic mechanisms of these modalities and develop optimized treatment strategies.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interests regarding the publication of this manuscript.

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