Effectiveness of Osteopathic Therapy in the Treatment of Oral Submucous Fibrosis

Abstract
Oral submucous fibrosis (OSMF) is a chronic progressive debilitating disease of oral cavity leading to the stiffness of oral mucosa, burning and trismus resulting in marked rigidity, and an inability to open the mouth. As the medical treatment of OSMF is yet not standardized, the purpose of the present case study was to explore the effectiveness of osteopathic manipulative treatment (OMT) in patients with OSMF. A 30-year-old male presented with a complaint of reduced mouth opening with burning sensation while eating spicy food for 4 years. The patient had undergone pharmacological treatment for the same in the past, got relief in the burning sensation, but did not get any significant improvement in mouth opening. Radiological features were noncontributory. The patient was treated with OMT techniques for twice a week for 4 weeks followed by the home exercise program. The patient showed a significant increase in mouth opening from approximately 10 mm to 22 mm of mouth opening at the end of the treatment sessions.

Keywords: Manipulation, manual therapy, oral submucous fibrosis, osteopathy

Introduction
Oral submucous fibrosis (OSMF) is an insidious chronic, progressive potentially malignant disorder of the oral cavity. The hallmark of the disease is submucosal fibrosis that affects most parts of the oral cavity, progressive trismus due to rigid lips, cheeks, pharynx, and upper third of the esophagus leading to dysphagia and burning sensation in oral cavity.[2] The etiological factors are considered to be multifactorial including areca nut, capsacin in chillies, micronutrient deficiencies, and autoimmune basis with specific human leukocyte antigen; however, association of OSMF with the chewing of areca nut has been noted significantly.[2]

At present, there is no standardized medical treatment designed to alleviate OSMF. However, the cessation of areca nut, lime, spicy and hot food, smoking, alcohol, and the use of steroids in various forms have been recommended.[3] The use of these pharmacological interventions usually gives relief in the burning sensation notably and in trismus averagely. The surgical treatment for fibrosis includes release of fibrous buccal bands; coronoidectomy and coverage of surgical defects with extended nasolabial flaps have been done; however, the postsurgical relapses are common.[4] The conservative treatment in the form of oral physiotherapy has been reported in literature showing its benefits in patients with OSMF.[5]

The underpinning of osteopathy is the convoluted relationship between the body framework and its function, along with the self-healing capacity of the body from within.[6] This concept has been used in the treatment of various ailments such as muscle inactivity and spinal therapies. However, its utilization in other areas of muscular diseases such as treating fibrous diseases has been unexplored. To the author’s knowledge, there is no literature available that shows the efficacy of osteopathic manipulative treatment in patients with OSMF so far, and the present case study was done to explore the efficacy of this therapy to treat progressive trismus due to OSMF and prevent the relapse.

Case Report
The author reports a case of 30-year-old male referred to the physiotherapy outpatient department with the chief complaint of difficulty in mouth opening and an inability to eat spicy food for 4 years. He had a positive history of areca nut chewing and smoking tobacco for 10 years. The patient

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used to chew commercially available areca nut packets with a frequency of 5–6 packets per day and smoke 10 cigarettes in a day. The patient quit the habit completely 1 year ago. The patient had been previously treated with medications for 6 months and was significantly relieved of burning sensation but did not get any significant improvement in mouth opening. The patient gave a history of undergoing treatment with topical application and systemic medication, the nature of the medication is unknown to the patient, for 6 months intermittently. No dietary changes were advised to the patient, but progressively, the intake of solid food was reduced due to increased difficulty in mouth opening, and the patient reported with an ability to have only semi-solid food.

An oral physician with specialty in such cases was consulted, and on inspection, reduced mouth opening with the initial inter-incisal distance of approximately 10 mm was recorded. Blenching of bilateral buccal mucosa and soft palate was present. Uvula was normal. Tongue protrusion was mildly restricted. On palpation, thick fibrous bands were present bilaterally in the buccal mucosa near the mandibular trigone area. Panoramic radiological view [Figure 1] was done to rule out bony abnormality in the maxilla and mandible; however, it revealed generalized horizontal bone loss in the lower arch and impacted 28, 38, and 48. Clinically, the restricted mouth opening was due to the fibrous bands present in the buccal mucosa which may or may not be superimposed by inflammatory changes due to vertical impaction of 48. Based on the features, a clinical grading of severe OSMF (Grade 3) was given.[9]

Through the global diagnosis of osteopathic findings, it was found that there was restricted mobility at the sacrum, base of the occiput, thoracic outlet, and in the anterior neck region. On palpation, tenderness was present at the gastroesophageal (GE) junction and sphincter of Oddi (SO), supraclavicular region, and also at the temporalis and masseter muscles.[9]

All the treatment options were explained to the patient, and a written consent of the patient was obtained to treat the patient only with physiotherapy techniques to improve the mouth opening. The osteopathic manipulative treatment techniques were chosen for their effectiveness in addressing muscular dysfunction. The techniques chosen were as follows: all major diaphragms’ release, sacral release, occipito-atlantal release, dural tube rocking, GE junction and SO release, pleurovertebral ligament release, intra-oral techniques such as balancing and distraction of vomer, maxillae suture separation, suprathyroid fascia release, and pterygoid release. In addition, the temporal fascia release, counterstrain to the masseter muscle, was given to reduce the hypertonicity of the muscles.[8]

The patient was treated with osteopathic manipulative treatment techniques for twice a week for half an hour each session. After 2 weeks of treatment, a temporo-mandibular joint distraction and compression technique were also added which increased the treatment time to 35 min. After 4th week, the home exercise program with the help of wooden spatulas was monitored regularly with feedback from the patient till 3 months.

The patient was assessed after 2 weeks initially, and then at 4 weeks and at 3 months and it was found that inter-incisal distance of 10 mm has improved to 22 mm after 3 months [Figure 2].

**Discussion**

The purpose of the present case study was to explore the efficacy of osteopathic manipulative treatment (OMT) in OSMF-induced disabilities in patients.

The prevalence of OSMF is 2.01%, and malignant transformation rate of 2.3%–7.6% has been reported in literature.[2] To treat this debilitating disease, various treatment modalities have been tried following the complete stoppage of the habit of areca nut chewing. Intraleisional injections and systemic glucocorticoids or placentals extracts in addition to hyaluronidase, dexamethasone, collagenase, interferon-λ, and antifibrotic cytokines are most commonly used in the medical treatment options in conjunction with micronutrients, high proteins, calories, and vitamins in supplements or diet.[9]

Other nonpharmacological measures such as forcing the mouth open and surgically excising the fibrotic bands have resulted in mixed results, and in majority of cases, more fibrosis and disability follow the surgical intervention. Submucosal resection of fibrotic bands and replacement with a partial thickness skin or mucosal graft has been attempted.[9]
The osteopathic philosophy states that the structure and function within the human body are interrelated. The osteopathy approach provokes the body’s internal mechanisms to heal itself by the use of human hands.[6] The osteopathic treatment centers on the nervous system, the circulatory system, the spine, the viscera, and the thoracic and pelvic diaphragms. Few studies have reported the utilization of the osteopathic manipulative treatment in the management of temporo-mandibular dysfunctions.[10] However, there is no literature published on the role of this therapy in cases of OSMF. This case was treated solely with the osteopathic manipulative treatment for improving the mouth opening of the patient and to prevent the relapse. The temporal, sacral, cranial, and sphenoidal dysfunctions are addressed to normalize the primary respiratory mechanism which in turn reduces the dural tension, somatic dysfunction, and torsional stresses. By means of the stomatognathic system, the hyoid is attached to the mandible and cranial base as reported in literature.[8] The hyoid release was carried out in the present case report to decompress the cranial base and also to improve the mandible motion. The patient reported with significant improvement subjectively and objectively.

This treatment modality is the tentative first step in integrating this therapy in the mainstay of the treatments of patients with OSMF. Further, with higher number of patients, more advanced feedback system, and longer follow-up, which were lacunae in the present case study, this therapy can and should be made available to the sufferers of the debilitating disease, OSMF, which has a high potential among precancerous diseases to turn malignant.

**Conclusion**

The osteopathic manipulative treatment is a successful treatment therapy for improving mouth opening in the present case of OSMF; however, long-term follow-up and a large sample size are required to make it an integrated treatment measure in OSMF cases.

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**Conflicts of interest**

There are no conflicts of interest.

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