

Various Treatment Modalities for Oral Submucous Fibrosis: A Review

Dr. Shubham Bhele¹, Dr. Sheeraz Badal², Dr. Gopal Nagargoje³, Dr. Aarti Patil⁴, Dr. Rushikesh Yadav⁵, Dr. Yash Mandlecha⁶

¹Maharashtra Institute of Dental Sciences and Research, Latur

²Maharashtra Institute of Dental Sciences and Research, Latur

³Maharashtra Institute of Dental Sciences and Research, Latur

⁴Maharashtra Institute of Dental Sciences and Research, Latur

⁵Maharashtra Institute of Dental Sciences and Research, Latur

Abstract:

Oral Submucous Fibrosis (OSMF) is a chronic and precancerous condition that affects the oral mucosa, oropharynx, and occasionally the larynx. It is a progressive condition that is poorly understood and has limited treatment options. Conventional treatments for OSMF mainly focus on providing symptomatic relief. This article reviews the literature on alternative medicine therapies, such as physiotherapy, Ayurveda, and homeopathy, for treating OSMF. These alternative modalities offer a natural and cost-effective treatment option. Incorporating these therapies into lifestyle modifications may contribute to the cure of the disease. However, further research, including relevant randomized control trials, is necessary to increase awareness and encourage patients to consider these non-invasive therapeutic options as a primary treatment approach.

Keywords- OSMF, Allied, Treatment, Alternative.

Corresponding Author: Dr. Shubham Bhele, Maharashtra Institute of Dental Sciences and Research, Latur

INTRODUCTION

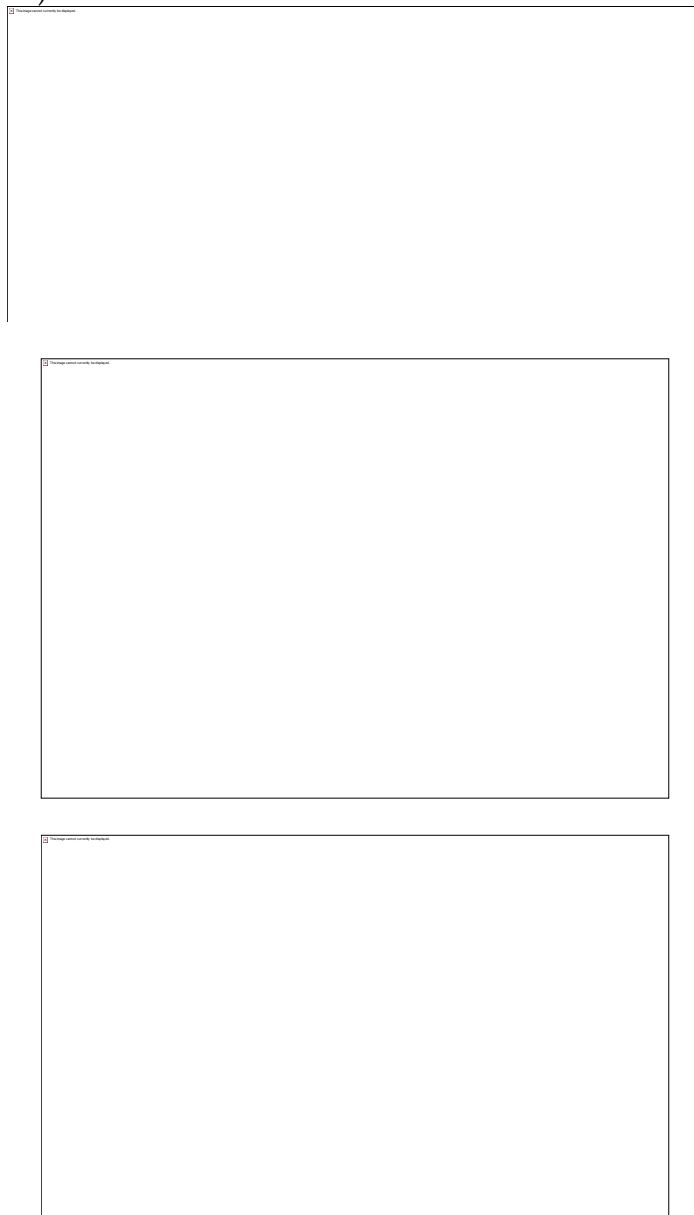
Oral submucous fibrosis (OSMF) is a pre-malignant chronic condition that have effect on oral region and pharyngeal region. It is characterized by juxtaepithelial inflammatory reaction & by fibrous and elastic changes of the lamina propria, leading to tightness of the oral mucosa, difficulty in mouth opening, and difficulty in eating (1). It is a progressive condition and is poorly understood and treated. Areca nut chewing is a primary cause of OSMF, along with other factors such as poor nutrition, spicy food intake, inheritance, autoimmune, and collagen fibres disease (2). This disorder which is most common in India, is an indicator of oral cancer with a prevalence of about 0.4% in village areas, after that Bangladesh, Sri

Lanka, Pakistan, Taiwan, and China. In India, OSMF is prevalent in Bihar, Maharashtra, Gujarat, and Madhya Pradesh(3). Management options for OSMF include steroids, hyaluronidase, placenta extract, IFN, microwave diathermy, and non-conservative interventions like excision of fibrotic tissues and grafting(4). Together with these treatment modalities, scientific research indicates that additional allied therapies such as Ayurvedic preparations, Homeopathy, and Physiotherapy provides a relatively safer, more economical, and effective complementary approach along with current conventional treatment, which can be particularly advantageous in India. The publication briefly examines causes of the serious disease, along with a results of previous studies conducted in different

allied medical fields as potential treatments for OSMF.

DISCUSSION

The development of Oral submucous fibrosis is considered to have a multivariate etiopathogenesis, with the condition being known as a collagen metabolic disorder. Chewing betel quid is recognized as the most significant risk factor. The flowchart below illustrates the pathogenesis of OSMF following the consumption of arecanut [5]. (Figure 1 and 2a, 2b).



Long-term relief can be achieved by directing treatment modalities towards controlling the reactions that take place during the pathogenesis of the disorder, instead of just addressing the symptoms. Numerous allied medicine therapies are currently aimed at intervening in this cascade of events. The current choices for treatment only provide short-term symptom alleviation. Consequently, studies are being carried out to look into complementary medicines for treating OSMF or as a useful adjuvant for symptom relief.

MEDICINAL TREATMENT

The management of OSMF embraces a holistic perspective for allied medicine. Scientific literature has identified various allied medicine therapies that have shown positive results in addressing OSMF.

Ayurveda

Turmeric

Turmeric, also referred to as *Curcuma longa* Linn, converted to a bright yellowish powder is characterized by slightly bitter but sweet taste profile(6). This spice is celebrated for its wide range of therapeutic benefits, which contains properties that prevent inflammation(7), and oxidation(8), enhances blood flow(9), in addition potentially prevents genetic mutations(10).

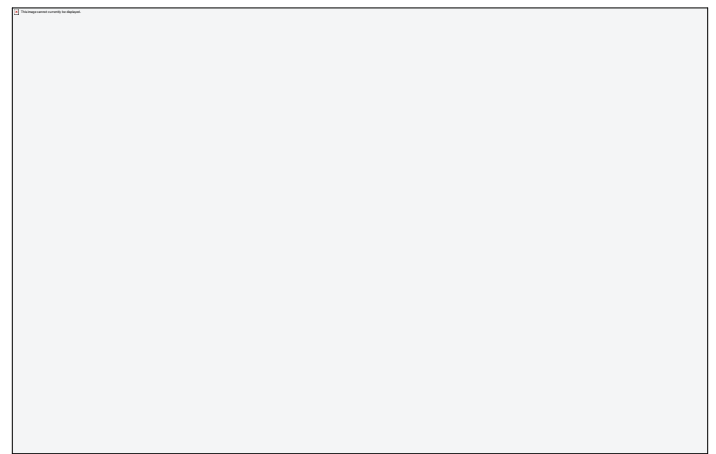


Figure 3: Flowchart explains the action of turmeric in decreasing histamine levels to decrease information and decrease in collagen production.

Curcumin, specifically, prevents inflammation and agents that hinders the progression of certain diseases by interfering with specific cellular processes. It's remarkable

anti-inflammatory characteristic makes it potent mediator that suppresses cell conversion, multiplication, and metastasis. By inhibiting Tumour necrosis factor-made Nuclear factor-kappa- light-chain enhancer of activated B cells stimulation and Nuclear factor-kappa- light-chain enhancer of activated B cells -reliant reporter gene expression [11], curcumin effectively targets the site of action for treating OSMF, as depicted in Figure 3.

In vitro research of Hastak et al. reveals the combination of turmeric oil and turmeric oleoresin offers a synergistic effect, effectively safeguarding against DNA damage. This discovery highlights the promising role of curcumin in the management of OSMF.

Holy Basil

In Ayurvedic literature, it is advised for improving immunity and metabolic functions, while also helping to decrease inflammation by inhibiting enzymes that cause inflammation (13). A research demonstrated that, combination using turmeric & holy basil is highly effective in treating OSMF, leading to early relief from burning and improved mouth opening, especially in severe cases (14).

Gwar Patha

Gwar Patha is recognized for its soothing properties due to the presence of a non-filamentous glycoprotein consisting of various amino acids referred to as 'wound healing hormones'(15). Its leaf contains polysaccharides that offer prevention of inflammation, immunity modulation, prevent oxidation, and wound-healing benefits. Moreover, Gwar Patha is known for prevention of bacterial, viral, fungal infections & its antiseptic, hypoglycemic properties, along with its ability to enhance the immune system (16,17). By promoting blood flow, Gwar Patha aids in wound healing by increasing oxygen supply. Its soothing and cooling effects help alleviate pain and burning sensations in individuals with OSMF (18).



Alam S. et al. looked at effectiveness of Gwar Patha ointment as an alternative for OSMF and found groups that received Gwar Patha significantly improved in most OSMF symptoms[15]. In some research, Group A received pure Gwar Patha gel while Group B received pure Gwar Patha juice, both experiencing a notable reduction in burning sensation. Group A showed a rapid reduction, whereas Group B had a more gradual improvement [19]. Different research reported that Gwar Patha not only minimize burning sensation but also improved cheek flexibility [20]. It is essential to monitor the use of Gwar Patha carefully, especially during pregnancy, as it may lead to uterus contractions and GIT disturbance. Furthermore, mouth intake of Gwar Patha may cause pain in abdomen and reduce potassium in the body [21,22].

Oxitard

Various clinical trials have assessed the efficacy of Oxitard, a natural antioxidant, as a supportive therapy for OSMF. A research led by Patil S., et al. revealed potential improvements in opening of mouth, movements of tongue, burning sensation, pain related to the lesion, deglutition challenges, and speech among patients with OSMF who were treated with oxitard capsules [23].

Spirulina

With its abundance of proteins, carotenoids, and other micronutrients, Spirulina serves as an exceptional nutritional source. Furthermore, its potent antioxidant capabilities, stemming from its high concentration of B-carotene and superoxide dismutase, make it a better treatment (24).

Physiotherapy

OSMF presents with early signs characterized by the whitening of the mouth & formation of fibrous bands in specific areas like the cheek mucosa, hard & soft palate, laryngeal region, lips, and tongue. The primary manifestation of OSMF is the difficulty in opening the mouth. To address the reduction in tissue elasticity, many studies have investigated it as an additional management modality.

Kneading: Method for enhancing the springiness of fibrous tissues and facilitate the mobilization of scar tissues. Soft tissue manipulation is a key component for improving tissue stretchability (25).

Muscular Activity: To avoid other restrictions in oral functions and avoid relapse, muscle stretching activities can be beneficial. Methods like utilizing a mouth blocks,

acrylic surgical stent, mouth bloating, warm rinse with water, inserting a ice cream stick between the teeth, and gradually adding a new ice cream sticks every 5 - 10 days can be employed (26).

Utilization of Heat: Using heat, whether it be through hot gargles, or specific deep heating techniques like small wave or micro wave diathermy, is a technique employed to address trismus resulting from OSMF (26).

Ultrasound Equipment (Electroson) and Cryotherapy

Vijayakumar M. et al. conducted a study aimed at enhancing oral opening and tongue movements in OSMF cases. Different activities were implemented for research part. All patients received treatment using the same ultrasound equipment, followed by finger & thumb kneading within the buccal region of the oral region. This technique involved gently stretching the fibrous bands within tolerable pain limits. Cryotherapy was administered before and after the treatment for a duration of 5-7 minutes to minimize pain sensation. The researchers also performed kind stretch on the buccal region using their fingers. To improve jaw depression, temporomandibular joint mobilization was conducted through Antero-inferior glides, while lateral glides were employed to enhance mandible deviation along with joint distraction. The research yielded positive results, with average enhancement in oral opening & significant enhancement in tongue movements (27).

Undoubtedly, the implementation of physiotherapy involvements in the early grades of OSMF leads to great enhancement in the individual's health, while ensuring a complete absence of side effects. Consequently, these interventions can be adopted as management practise for OSMF patients, serving as a non-aggressive alternative to non-conservative interventions.

Homeopathy

Recent scientific literature highlights a shift towards homeopathy as a preferred choice over allopathy for managing medical conditions. Homeopathy is valued for its holistic approach to health, focusing on overall well-being rather than just treating specific diseases. While it cannot replace traditional dentistry, homeopathy can be used in conjunction with conventional dental treatments (28). Research supports the use of homeopathic science in dental practise, particularly for conditions like trismus. Homeopathic remedies such as Calcarea phosphorica and Cuprum metallicum are effective in addressing trismus and other dental issues with minimal side effects and

positive treatment outcomes. Homeopathy has become an important complementary therapy in cases where conventional drugs have not yielded satisfactory results. More investigation is required to fully appreciate the benefits of homeopathic treatment for conditions like OSMF (29).

CONCLUSION

The treatment options discussed in this context provide a natural and affordable approach to treatment. Their healing properties, originating from natural sources, can be effectively harnessed. OSMF is a premalignant condition with a complex set of causes, and no single standard treatment has been definitively successful. While existing research supports positive outcomes of complementary therapies in managing OSMF, there is a need for more evidence to establish them as a definitive treatment option. Therefore, it is crucial to conduct appropriate randomized controlled trials to raise awareness and promote their use as chief non-aggressive therapeutic approach.

REFERENCES

1. Pindborg JJ and Sirsat SM. "Oral submucous fibrosis". *Oral Surgery, Oral Medicine, Oral Pathology* 22.6 (1966): 764-779.
2. Ahmad MS., et al. "Epidemiological and etiological study of oral submucous fibrosis among gutkha chewers of Patna, Bihar, India". *Journal of the Indian Society of Pedodontics and Preventive Dentistry* 24.2 (2006): 84-89.
3. Hazarey VK., et al. "Oral submucous fibrosis: Study of 1000 cases from central India". *Journal of Oral Pathology and Medicine* 36.1 (2007): 12-17.
4. Vijaylaxmi Madalli., et al. "Oral Submucous Fibrosis- An Overview". *International Journal of Dental Research and Development (IJDRD)* 4.2 (2014): 1-16.
5. Anila Koneru., et al. "A systematic review of various treatment modalities for oral submucous fibrosis". *Journal of Advanced Clinical and Research Insights* 2 (2014): 64-72.

6. Chaturvedi TP. "Uses of turmeric in dentistry: An update". *Indian Journal of Dental Research* 20.1 (2009): 107-109.
7. Ramirez-Bosca A., et al. "Antioxidant curcuma extracts decreases the blood lipid peroxide levels of human subjects". *Age* 20.3 (1995): 165-168.
8. Ammon HP., et al. "Mechanism of anti-inflammatory actions of curcumin and boswellic acids". *Journal of Ethnopharmacology* 38.2-3 (1993): 113-119.
9. Srivastava R., et al. "Effect of curcumin on platelet aggregation and vascular prostacyclin synthesis". *Arzneimittelforschung* 36.4 (1986): 715-717
10. Menon LG., et al. "Anti-metastatic activity of curcumin and catechin". *Cancer Letters* 141.1-2 (1999): 159-165.
11. Aggarwal BB., et al. "Identification of novel anti-inflammatory agents from ayurvedic medicine for prevention of chronic diseases: "Reverse pharmacology" and "bedside to bench" approach". *Current Drug Targets* 12.11 (2011): 1595-1653.
12. Hastak K., et al. "Effect of turmeric oil and turmeric oleoresin on cytogenic damage in patients suffering from oral submucous fibrosis". *Cancer Letters* 116.2 (1997): 265-269.
13. Prakash P and Gupta N. "Therapeutic uses of *Ocimum sanctum* linn (Holy basil) with a note on eugenol and its pharmacological actions: A short review". *Indian Journal of Physiology and Pharmacology* 49.2 (2005): 125-131.
14. Adit Srivastava., et al. "Clinical evaluation of the role of holy basil and turmeric in the management of oral submucous fibrosis: A pilot, prospective observational study". *Journal of Ayurveda and Integrative Medicine* 6.1 (2015): 45-49.
15. Sarwar Alam., et al. "Efficacy of Gwar Patha gel as an adjuvant treatment of oral submucous fibrosis". *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology* 116.6 (2013): 717-724.
16. Sujatha G., et al. "Gwar Patha in dentistry". *Journal of Clinical and Diagnostic Research* 8.10 (2014): ZI01-ZI02.
17. Nair GR., et al. "Clinical effectiveness of Gwar Patha in the management of oral mucosal diseases - a systematic review". *Journal of Clinical and Diagnostic Research* 10.8 (2016): ZE01-ZE07.
18. Singh N., et al. "Effectiveness of Gwar Patha and antioxidant along with physiotherapy in the management of oral submucous fibrosis". *Journal of Contemporary Dental Practice* 17.1 (2016): 78-84.
19. Ardra Anuradha., et al. "Evaluation of efficacy of Gwar Patha in the treatment of oral submucous fibrosis - a clinical study". *Journal of Oral Pathology and Medicine* 46.1 (2016): 50-55.
20. Sudarshan R., et al. "Gwar Patha in the treatment for oral submucous fibrosis - a preliminary study". *Journal of Oral Pathology and Medicine* 41.10 (2012): 755-761.
21. Mangaiyarkarasi SP., et al. "Benefits of Gwar Patha in dentistry". *Journal of Pharmacy and Bioallied Science* 7.1 (2015): S255-S259.
22. Davis RH., et al. "Isolation of a stimulatory system in an aloe extract". *Journal of the American Podiatric Medical Association* 81.9 (1991): 473-478.
23. Patil S., et al. "Efficacy of oxiard capsules in the treatment of oral submucous fibrosis". *Journal of Cancer Research and Therapeutics* 11.2 (2015): 291-294.
24. Mulk BS., et al. "Spirulina and pentoxifylline - a novel approach for treatment of oral submucous fibrosis". *Journal of Clinical and Diagnostic Research* 7.12 (2013): 3048-3050.
25. Carla-Krystin Andrade. "Outcome Based massage". Lippincott Williams and Wilkins, Philadelphia, 3rd edition (2008): 224.
26. Vijayavel T and Ponni V. "Management for oral submucous fibrosis - A comprehensive review". *Indian Journal of Multidisciplinary Dentistry* 4.1 (2014): 869-874
27. Vijayakumar M and Priya D. "Physiotherapy for improving mouth opening and tongue protrusion in patients with Oral Submucous Fibrosis (OSMF) - Case Series". *International Journal of Pharmaceutical Science and Health Care* 2.3 (2013): 50-58.

28. Priyanka Chopra and Puneet Chopra. "Homeopathy in Dentistry -An overview". International Journal of Contemporary Dentistry 2.2 (2011): 105-109.
29. Renu Tanwar., et al. "Homeopathy In Dentistry- A New Avenue Visited". Indian Journal of Public Health Research and Development 5.1 (2014)