

Various Treatment Modalities in Oral Sub-Mucous Fibrosis: A Review

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Introduction

Oral submucous fibrosis (OSF) is a chronic inflammatory disease of the oral soft tissues with progressive juxta-epithelial fibrosis resulting in increasing difficulty in chewing, swallowing, speaking and mouth opening, often associated with burning sensation inside oral cavity that is aggravated on exposure to spicy food. It is a common condition in India, related to the habit of chewing betel nut (Areca catechu). It is considered to be associated with genetic predisposition, infectious and viral agents, carcinogens, nutritional and immunologic factors. The visible blanching of the oral mucosa with a marble-like appearance in patients of OSF is attributed to inflammation, followed by hypovascularity and fibrosis that may be associated with small vesicles and mucosal erosions.¹ Moreover; betel nut chewing is a major risk factor for the development of malignancies of the gastrointestinal tract. Concomitant to tobacco chewing, smoking and consumption of alcohol, it increases the risk of oropharyngeal malignancies.² 7% to 13% lesions of OSF can transform into oral cancer, especially squamous-cell carcinoma.³

Although the treatment of OSF is difficult, different treatment modalities had been advocated to reduce the morbidity in the patients. They are broadly categorized into: (a) medical and (b) surgical treatment modalities facilitated by oral stents and physiotherapy.

Indeed, medical treatment is usually preferred in early stage of the disease, whereas the surgical methods are primarily palliative options for advanced stages of OSF, aimed at improvement of trismus.



Histopathological classifications of oral submucous fibrosis, Very early (stage I) Early (stage II) Moderately advanced (stage III) Advanced (stage IV) A finely fibrillar collagen, dispersed with marked edema The juxta-epithelial area shows early hyalinization The collagen is moderately hyalinized The collagen is completely hyalinized The fibroblastic response is strong Plump young fibroblasts are present in moderate numbers The fibroblastic response is less marked, the cells present being mostly adult fibrocytes The hyalinized areas are devoid of fibroblasts The blood vessels are sometimes normal, but more often they are dilated and congested The blood vessels are dilated and congested Blood vessels are normal or constricted Blood vessels are completely obliterated or narrowed Inflammatory cells, mainly polymorphonuclear leukocytes with an occasional eosinophil, are present Inflammatory cells are mostly mononuclear lymphocytes, eosinophils, and an occasional plasma cell Inflammatory exudates consist of lymphocytes and plasma cells, although an occasional eosinophil is seen Inflammatory cells are lymphocytes and plasma cell.



Differential Diagnosis

- Oral manifestations of scleroderma
- Oral manifestations of Plummer Vinson syndrome (Iron deficiency Anemia)

Medical Treatment Modalities

According to Aziz, in 1997 treatment includes the following⁴.

Steroids: In patients with moderate OSF, sub mucosal intralesional injections given. Topical application of steroids may help, prevent further damage. The recommended dose is 75 to 100 mg twice a week for 4 to 6 weeks.

Placental Extracts: Sur in 2003 reported that the rationale for using placental extract (PE) in patients with OSF derives from its proposed anti-inflammatory effect³ prevents the mucosal damage. Anil in 1993 reported that Sub mucosal administration of aqueous extract of healthy human PE (Placentrex) has shown marked improvement of the condition. recommended dose of placental

extract is 2ml twice weekly for 4 to 6 weeks.



Hyaluronidase: The use of topical hyaluronidase shows significant improvement than steroids alone. The recommended dose is 1500 i.u twice weekly for 4 to 6 weeks. According to Karkar in 1985 the combination of steroids and topical hyaluronidase showed better long-term results than either used alone⁴.



IFN-Gamma: It plays a role in the treatment of patients with OSF because of its immunoregulatory effect. IFN-gamma is a known antifibrotic cytokine. Haque in 2001 reported that administration of intralesional injection of IFN-gamma showed marked improvement of symptoms. IFN-gamma, through its effect of altering collagen synthesis, appears to be a key factor to the treatment of patients with OSF, and intralesional injections of the cytokine may have a significant therapeutic effect on OSF.



Vasodilators: Pentoxifylline (Trental) is a methylxanthine derivative having vasodilating properties, which concomitantly increased mucosal vascularity. It was found in a study, to be an effective adjunct therapy in the routine management of OSF, with demonstrated relief of the symptoms¹⁴.



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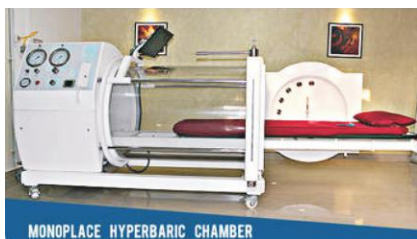
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Hyperbaric Oxygen Therapy: The effect of hyperbaric oxygen therapy in the management of OSF had been studied and its role in cellular-regulation, management of various cytokines and transcription factors for angiogenesis with resultant antiinflammatory potential at cellular and molecular levels was established¹⁵.



Surgical Treatment Modalities: Surgical treatments are mainly advocated as palliative procedures in advanced stages of OSF, to improve the extent of mouth-opening.

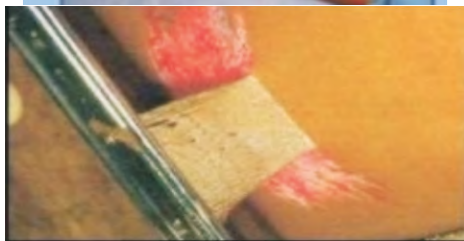
Surgical Management:

Surgical treatment is indicated in patients with severe conditions.

These includes Simple excision of the fibrous bands: Excision can result in contracture of the tissue and exacerbation of the condition. Split-thickness skin grafting following bilateral temporalis myotomy or coronoidectomy: Trismus associated with OSF may be due to changes in the temporalis tendon secondary to OSF; therefore, skin grafts may relieve¹³.



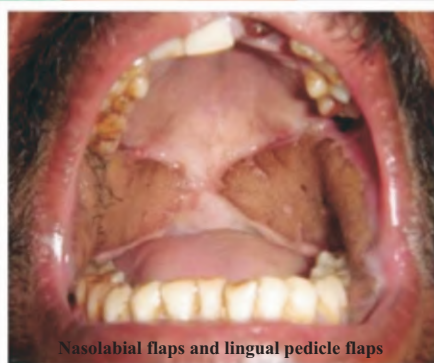
Radical Forearm Flap



Split skin graft



Tongue Flap



Nasolabial flaps and lingual pedicle flaps



Buccal pad of fat

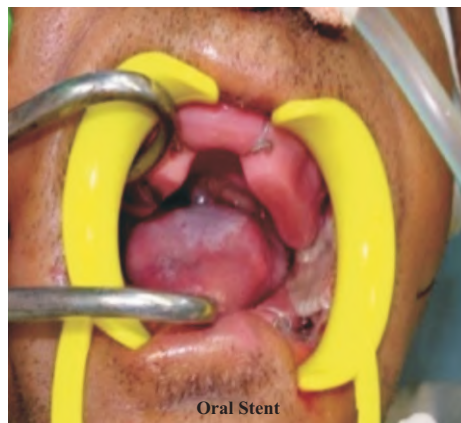


Collagen membrane

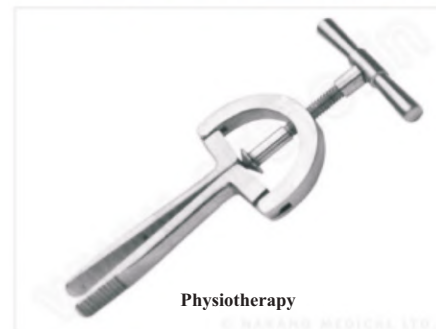
Coronoidotomy and Masticatory Muscle Myotomy: Surgical procedures such as, submucous fibrotic tissue release in combination with masticatory muscle myotomy and coronoidotomy had demonstrated the efficacy in treating trismus resulting from advanced cases of OSMF¹⁶. Reconstructive surgeries, such as platysma myocutaneous flap and palatal flap based on the greater palatine artery in combination with masticatory muscle myotomy and coronoidotomy had been revealed by studies, to be promising in relieving trismus in OSMF.^{17,18}

Laser Sugery: KTP-532 laser assisted release of fibrous bands in OSF was reported to be less time-consuming and more economical than surgical flaps due to a shortened hospital stay, which result in a better patient compliance in addition to significant relief of symptoms¹⁹.

Oral Stent : As reported, the use of an oral stent, adjunct to surgical procedures was considered especially when the surgical techniques were prone to relapse. The stent had to be used till the jaws had been stretched to allow the tissue to heal at the new, increased opening position of mouth²⁰.



Oral Stent



Physiotherapy

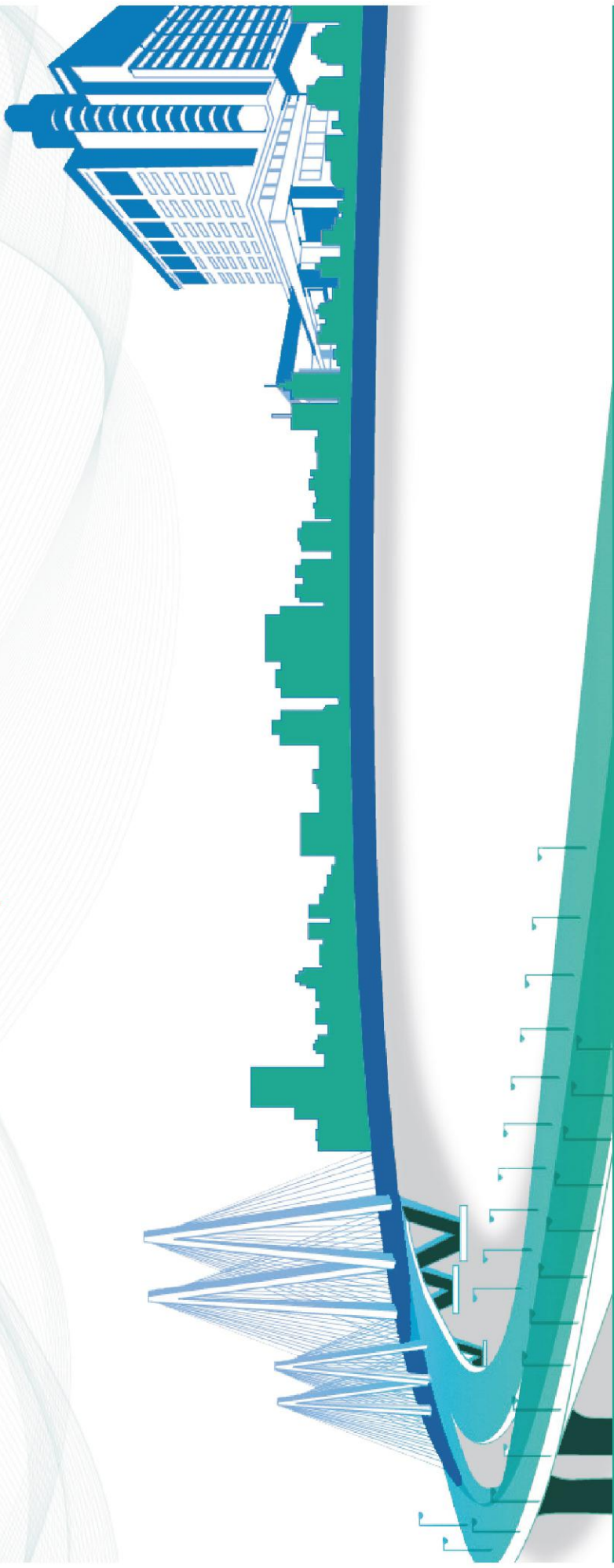


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Physiotherapy: The treatment advanced OSF primarily aims at achieving improved oral opening, which was reported to be outcomes of surgical treatment followed by physiotherapy. Simple jaw stretching exercises could modify tissue remodelling in OSF to increase oral opening²¹.

Conclusion

The magnitude of morbidity and premalignant potential in OSF could be addressed by combination strategies, which include the stoppage of causative ill habits, appropriate medical and surgical treatment modalities along with physiotherapy, selected according to the severity of the symptoms and stage of functional impairment.

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