

# Oral Submucous Fibrosis Aetiology, Pathogenesis and Management

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**Abstract:** *Oral submucous fibrosis (OSMF) is a collagen disorder commonly seen in the Indian subcontinent, it is a complex precancerous condition. It was initially found mainly in India but it is now often seen in the Asian populations belonging to United Kingdom, USA, and other developed countries, and is therefore a serious concern for global health, causative agent of osmf is considered to be areca-nut and it is now recognised as a group one carcinogen. We review and discuss all components of aetiology pathogenesis and various managements available for OSMF.*

**Keywords:** OSMF, premalignant lesion, areca-nut

## 1. Introduction

Oral submucous fibrosis (OSMF) is a collagen disorder commonly seen in the Indian subcontinent, it is a complex precancerous condition. It was initially found mainly in India but it is now often seen in the Asian populations belonging to United Kingdom, USA, and other developed countries, and is therefore a serious concern for global health, causative agent of osmf is considered to be areca-nut and it is now recognised as a group one carcinogen. We review and discuss all components of aetiology pathogenesis and various managements available for OSMF.

OSMF has a high rate of morbidity because it causes a progressive limitation in mouth opening, resulting in nutritional deficiencies. OSMF also has a high mortality rate because it can transform into oral cancer, particularly squamous cell carcinoma, at a rate of 7.6%. And hence it is important to have a proper understanding on this topic to aid in early diagnosis and prompt management to avoid complications associated with the condition.(1,2)

### a) Aetiology:

The causative agent in OSMF is considered to be areca nut chewing which may be accompanied by tobacco chewing. It is evident that areca nut which is a key ingredient in betel quid is generally placed in the buccal vestibule over a period of time. This releases arecoline, one of the components of Areca nut. Arecoline is the primary psychoactive ingredient which is similar to nicotine.(3,4)

### b) Pathogenesis

Areca-nut has been considered as the cause of osmf over the past 2 decades. It is understood that fibrosis and hyalinization of subepithelial tissues is the reason for most of its clinical features.(5)

Quid has been defined as a substance or mixture of substances placed in the mouth or chewed and remaining in contact with the mucosa usually containing one or both of the two basic ingredients tobacco and/or areca nut in raw or any manufactured or processed form. The major areca nut alkaloids are arecoline, arecadine, arecolidine, guayacoline

and guanine. The important flavonoid components in areca nut are tannins and catechins. (6)

The betel quid is placed in the buccal vestibule for about 15 minutes to an hour and repeated 5 to 6 times a day which leads to constant contact between the mixture and oral mucosa. The alkaloids from the quid are absorbed into the mucosa and undergo metabolism. Microtrauma produced by the friction of coarse fibers of areca nut also facilitates diffusion of the alkaloids into the subepithelial connective tissue resulting in juxtaepithelial inflammation.(7)

## 2. Management of OSMF

Management of OSMF can be conservative or extensive depending upon the clinical staging of OSMF. Initially it can be treated conservatively cessation of the habit, which is generally chewing of areca nut or tobacco, in case of clinical fibrous banding that is not extensive submucosal injections of steroids and hyaluronidase along with topical application of vitamin A can be used for its management. In advanced cases surgical management may be required to scrape off the fibrotic bands which may limit the mouth opening to a great extent making eating difficult which in turn leads to nutritional deficiencies leading to a compromised livelihood.(8)

### 2.1 Medical management of OSMF

The treatment of patients with oral submucous fibrosis depends on the degree of clinical involvement. If the disease is detected at a very early stage, cessation of the habit is sufficient. Most patients with oral submucous fibrosis present with moderate-to-severe disease. Moderate-to-severe oral submucous fibrosis is irreversible. Medical treatment is symptomatic and predominantly aimed at improving mouth movements. Treatment strategies are described below. The role of these treatments is still evolving. The US Food and Drug Administration has not yet approved these drugs for the treatment of oral submucous fibrosis.(9,10,11)

#### a) Steroid

In patients with moderate oral submucous fibrosis, weekly submucosal intralesional injections or topical application of steroids may help prevent further damage.(12,13)

### b) Placental extract

The rationale for using placental extract in patients with oral submucous fibrosis derives from its proposed anti-inflammatory effect] hence, preventing or inhibiting mucosal damage. Cessation of areca nut chewing and submucosal administration of aqueous extract of healthy human placental extract (Placentrex) has shown marked improvement of the condition. (14,15)

### c) Hyaluronidase

The use of topical hyaluronidase has been shown to improve symptoms more quickly than steroids alone. Hyaluronidase can also be added to intralesional steroid preparations. The combination of steroids and topical hyaluronidase shows better long-term results than either agent used alone. (16, 17, 18)

Surgical management of OSMF includes:

Simple excision of fibrous band:

Excision can result in contracture of the tissue and exacerbation of the condition and hence is generally followed up by grafting.

Split thickness skin grafting followed by bilateral temporal myotomy or coronoidectomy (19)

Trismus associated with OSMF may be due to changes in the temporalis tendon secondary to OSMF therefore, skin grafts may relieve. Nasolabial flap and lingual pedicle flap:

Surgery performed only in patients with OSMF in which there is no involvement of tongue. (20,21,22)

## 3. Conclusion

Since oral submucous fibrosis is rapidly increasing day by day in the past two decades it is highly important to pay closer details on the condition to have better understanding of its cause, prognosis and its clinical feature for better and early diagnosis and various treatment available for its management at various stages to provide adequate treatment to avoid further complications of the condition as it has a high risk of turning into a malignant condition at later stages if left untreated. Further research on the management of OSMF is required to have a better standard of living for people suffering from advanced stages of OSMF.

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