



## ORAL SUBMUCOUS FIBROSIS –A REVIEW

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**ABSTRACT**

Oral sub mucous fibrosis is a potentially premalignant disorder which has multiple etiological factors among which habit of using tobacco especially chewing betel quid and arecanut is the important risk factor. The aim of this article is to emphasize on the etiopathogenesis and various recent treatment modalities that are available.

**KEYWORDS :** Oral sub mucous fibrosis, potentially malignant, tobacco, arecanut, habit.

**INTRODUCTION:**

Oral sub mucous fibrosis(OSMF), is a potentially malignant disorder, the incidence of which varies with region and the causative factors are habit of using betel nut, alcohol, dietary factors and culture<sup>1,2,3</sup>. When compared globally India has the greatest number of OSF patients<sup>4,5</sup>. According to the statistics provided by the World Health Organization (WHO), there are >5 million OSF patients globally<sup>6,7</sup>. In India, women are more affected than men and the age of the patients mostly affected ranges from 20–40 years. Studies have shown that chewing betel nut is one of the most significant risk factor for OSF<sup>8</sup>. Some studies have confirmed that drinking alcohol and chewing betel nut have an additive effect on OSF induction<sup>9,10</sup>.

**Etiopathogenesis:**

There are multiple etiologies for OSF which includes areca nut chewing, autoimmunity, vitamin B, C, and iron deficiencies, consumption of spicy foods and genetic mutations<sup>11,12,13,14,15</sup>. Betel nut chewing increases the incidence of OSF and many studies have shown this as an important risk factor<sup>8,16</sup>. The clinical features of this potentially malignant disorder depends on the stage of the disease. The majority of patients present with an intolerance to spicy food, trismus and limitation in tongue movement. Fibrosis of the oral cavity, pharynx leading to upper part of the oesophagus is the important clinical feature and significant histopathological hallmark of the disease. Arecoline in arecanut is the main etiological factor. In South Asia the rapid increase of the disease is said to be caused by the arecanut which is prepared commercially.<sup>17</sup>

Pathogenesis of OSF- arecoline is said to cause proliferation of fibroblasts which in turn increases formation of collagen. Connective Tissue Growth Factor (CTGF) in human tissues is said to increase the progression of fibrosis. Reports from other studies show the influence of arecoline helps in deposition of extra cellular matrix (ECM) by increasing the production of TIMP-1. This effect is increased when fibroblasts are brought together with keratinocytes, Hence the interaction of oral keratinocytes with fibroblasts play an important role in the pathogenesis of OSF<sup>18</sup>. Differentiation of myofibroblasts from fibroblasts is said to be caused by this interaction.<sup>19</sup>. Another study suggests that alkaloids in areca nut induce buccal mucosal fibroblast contraction.<sup>20</sup> Arecoline is said to have cytotoxic effects on endothelial cells at concentrations of 0.4 and 0.8 mM. Considering these findings it is suggested that the endothelial damage leading to

impairment of vascular function contributes to the pathogenesis of OSF<sup>21</sup>. These findings show the less vascularity that is observed with the progression of the disease. Further, that may explain the atrophy of the epithelium and hypoxic environment which may predispose them to carcinogenesis.

**Treatment**

Cessation of the habit is advised for the patient and nutritional supplements are given at early stages. At moderate stages, physiotherapy, adjuvant therapy, and intralesional injections are provided. At advanced stages, surgical interventions is done.

**Cessation Of The Habit**

Helping the patients to quit the habit of using smokeless tobacco, betel quid, areca nut and consuming hot and spicy food, alcohol, and smoking through education and patient motivation. All affected patients should be educated and warned about the possible malignant transformation of using tobacco products.

**Medical Therapy- Antioxidants-**

Carotenoids (lycopene) induce stimulation of immune system or direct action in tumor cells. Studies have shown that it exerts a similar inhibition on the abnormal fibroblasts in OSMF<sup>22</sup>.

**Other Supplements**

Patients with OSMF should be advised to take vitamins, iron and minerals. Iron deficiency is said to cause and progress OSMF. Hence, monitoring hemoglobin level along with iron supplements should be given to the patients<sup>20</sup>. Vitamin B deficiency leads to inflammation of oral mucosa. Patients are advised to take vitamin B complex supplements<sup>23</sup>.

**Adjuvant Therapy- Natural products-Curcumin**

Curcumin possess anti-inflammatory, antioxidant properties suppressing connective tissue growth reducing the fibrogenic action. It reduces burning sensation<sup>24</sup>.

**Physiotherapy**

Stretching exercises for the muscles of the oral cavity to reduce further restriction of opening the mouth.

### Intralesional Injections

**Steroid therapy** -Steroids stimulates breakdown of collagen and also act by reducing inflammatory response. Steroid ointment and intra lesional dexamethasone injection are generally used.

**Placental extracts**-Placentex is an aqueous extract of human placenta . It acts by biogenic stimulation. When injected into the body stimulates the metabolic or regenerative processes.

**Chymotrypsin** - Acts as anti inflammatory agent.<sup>25</sup>

**Hyaluronidase** -Reduces collagen formation , long term results achieved when used with steroids<sup>26</sup>

**Pentoxifylline** – It alleviates symptoms in OSMF patients by improving microcirculation and decreased platelet aggregation<sup>27</sup>.

**Interferon-gamma** -It has immuno-regulatory effect. Patients treated with an intra lesional injection of IFN-gamma experienced improvement of symptoms<sup>28</sup>.

**Immune milk** -Symptomatic relief is achieved in OSMF patients due to micronutrients which is said due to anti inflammatory process stimulating the production of cytokines<sup>29</sup>.

### Diathermy-Microwave diathermy

Microwave diathermy acts by physio-fibrinolysis of fibrous bands through selective heating of juxta-epithelial connective tissue.

**Ultrasound**- Ultrasound has a role in deep heating modality. It's selectivity raises the temperature in accumulated areas.

**Lasers**- CO<sub>2</sub> laser techniques involve multiple small incisions which provide surgical relief of restricted oral aperture because the laser beam seals all the blood vessels, thus allowing the surgeon a perfect visibility and accuracy in fibrous band excision<sup>30</sup>.

### Surgical Therapy

#### Cryosurgery and Surgical intervention

Freezing abnormal tissue at the site using liq surgical intervention is done which includes simple excision of fibrotic bands with reconstruction using buccal fat pad.<sup>31</sup>

### CONCLUSION

OSMF is a premalignant condition for which the etiopathogenesis and treatment modalities available in the recent times have been updated in this article to improve the life expectancy of the patients.

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