



## A Review of Treatment Modalities in Oral Submucous Fibrosis

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### ABSTRACT

A systematic review of published data on oral submucous fibrosis is presented with special reference to its treatment modalities. Typically different medical and surgical modalities are considered that contribute to symptomatic relief and palliative functional improvement to the patients. Eventually, the magnitude of the illness as a pre-malignant disease in a considerable size of patients signifies the need for promising treatment options.

**Keywords:** Treatment modalities, Oral submucous Fibrosis.

### 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.<sup>1</sup> 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.<sup>2</sup> From 7% to 13% lesions of OSF can transform into oral cancer, especially squamous-cell carcinoma.<sup>3</sup>

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.

#### Medical treatment modalities

When administered at an early stage, drug therapy had been promising to control the clinical signs and symptoms of OSF, owing to its effect on controlling progressive fibrosis.<sup>4</sup>

#### Steroids

Several glucocorticoids were used in the treatment of OSF, such as short-acting drugs (hydrocortisone), intermediate- acting drugs (triamcinolone) and long-acting drugs (betamethasone and dexamethasone), with symptomatic improvement due to their anti-inflammatory action.<sup>5</sup>

#### Enzymes

Intralesional injections of collagenase had resulted in significant improvement in mouth-opening as well as striking reduction of hypersensitivity to spices, sour, cold, and heat. The collagenase treatment was revealed to be approximately fivefold more effective than triamcinolone diacetate.<sup>6</sup> Hyaluronidase, due to its role of breaking down hyaluronic acid (the ground substance in connective tissue) and lowering the viscosity of intercellular cement substance, is considered to reduce trismus and fibrosis.<sup>7</sup> Injection of hyaluronidase with dexamethasone had been shown in a study, to be a cost effective method of managing OSF.<sup>8</sup>

#### Micronutrients

As per a study, plasma beta carotene and vitamin E levels were found to be decreased in OSF cases compared to healthy controls.<sup>9</sup> The effects of supplementation with micronutrients such as, retinol, vitamins E, D and B-complex; minerals and anti-oxidants were encouraging in the treatment of OSF, which also had synergistic actions when administered in combinations.<sup>10</sup>

Curcumin, an active ingredient in turmeric, which is extensively used as a medicinal plant, have been considered to enhance the neoangiogenic and antifibrotic potential of the patients of OSF, with significant improvement.<sup>11</sup> Lycopene, which is a micronutrient with anti-oxidant and immune-enhancement properties, had shown to inhibit the inflammatory response and fibrogenesis in OSF.<sup>12</sup>



Topical application of *Aloe Vera*, which is a natural plant extract, with anti-inflammatory, immunomodulatory and antioxidant properties that promoted wound healing, was proved to be easily available, safe to use, cost effective, non-invasive and effective treatment modality for OSF.<sup>13</sup>

### 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 symptoms.<sup>14</sup>

### 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 anti-inflammatory potential at cellular and molecular levels was established.<sup>15</sup>

### Surgical treatment modalities

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

### 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 OSF.<sup>16</sup> 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 OSF.<sup>17,18</sup>

### 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 symptoms.<sup>19</sup>

### 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 mouth.<sup>20</sup>

### 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 remodeling in OSF to increase oral opening.<sup>21</sup>

### 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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