Oral submucous Fibrosis: An oral physician approach

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Abstract:
Oral submucous fibrosis is a chronic, insidious, disabling condition of the oral mucosa that has high prevalence rate in India and South East Asia. It is a crippling disease of mouth with high malignant potential and therefore a cause of major concern for oral health care professionals. A wide range of treatment consisting of drug management, surgical therapy, and physiotherapy have been attempted till date; with varying degrees of benefit, but none of them have proved to be a complete cure for this disease. This field remains open for clinical trials and research. This paper aims to provide an overview on various management modalities especially conservative approach available for oral submucous fibrosis.

Key words: Oral submucous fibrosis, Treatment, Conservative approach.

Introduction:

Oral submucous fibrosis is a chronic, insidious disease affecting the oral cavity and sometimes pharynx. Although occasionally preceded and/or associated with vesicle formation, it is always associated with juxtaepithelial inflammatory reaction followed by fibro elastic changes in lamina propria with epithelial atrophy leading to stiffness of oral cavity leading to trismus and inability to eat¹. Although many factors have been elicited and worked upon, no concrete etiology/pathophysiology has been elicited and thus no effective treatment is available for this progressively disabling condition with high malignant potential and high prevalence in India and South East Asia. Management of OSMF thus postulates major challenge for oral physicians. Current article discusses the various treatment modalities available.

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Treatment:
The main concern in the condition is the management of trismus and burning sensation of the oral mucosa. A large number of treatment modalities have been tried by both non-surgical and surgical approach.

Discontinuation of Habit & Counseling:
The preventive measures should be in the form of discontinuation of habit, which can be encouraged through education & advocacy. Affected patients should be explained about the disease and its possible malignant potential. Thorough counseling should be given for de-addiction.

Supportive Care:
Vitamins, iron and mineral-rich diet should be advised to patients with OSMF. Intake of red tomatoes, fresh fruits and green leafy vegetables should be included in the regular diet. Intake of green tea should be included in the diet chart. Various studies have implicated deficiency of iron both as a cause and effect in etiopathogenesis of OSMF. Thus, routine hemoglobin levels followed by iron supplements should be included in treatment plan[2].

Medical Management:
Medical treatment is symptomatic and aimed at improving movements. Treatment includes the following (Aziz, 1997). Steroids[3]. Glucocorticoids inhibit the proliferation of fibroblasts and thus cause a reduction in the number of collagen fibres. They also act to release cellular proteases in the connective tissue extracellular compartment which in turn activate the collagenses and zymogens that ingest insoluble collagen, stimulating the rate of collagen breakdown. They also act by inhibiting the inflammatory response.

Hyaluronidase[4]:
The combination of steroids and hyaluronidase shows better long-term results than either agent used alone (Kakar, 1985). It reduces burning sensation & trismus. It acts by breaking down hyaluronic acid, lowers the viscosity of intracellular substances and decreases collagen formation.

Placental Extracts[5]:
Placentrix is an aqueous extract of human placenta that contains nucleotides, enzymes, vitamins, amino acids and steroids. It acts by “biogenic stimulation”. Its use is based on the method of “tissue therapy” introduced by Filatov in 1933 and later in 1953. His theory states, “animal and vegetable tissues, when severed from the parent body and exposed to conditions unfavorable but not mortal to their existence, undergo biological readjustment leading to development of substances in state of their survival to ensure their vitality. Such tissues or their extracts, implanted or injected into the body after resistance to pathogenic factors, stimulate the metabolic or regenerative processes, thereby favoring recovery. It has no contraindications and the results obtained are found to be lasting.”

Chymotrypsin:
Chymotrypsin, an endopeptidase, hydrolyses ester and peptide bonds, thus acting as a proteolytic and anti-inflammatory agent.

Interferon-Gamma[6]:
This plays a role in the treatment of patients with OSMF because of its immuno-regulatory effect. IFN-gamma is a known anti-fibrotic cytokine. Patients treated with an intra-lesional injection of IFN-gamma experienced improvement of symptoms. IFN-gamma, through its effect of altering collagen synthesis, appears to be a key factor to the treatment of patients with OSMF, and intra-lesional injections of the cytokine may have a significant therapeutic effect on OSMF (Haque, 2001).

Immune Milk[7]:

Immune milk is a kind of skim milk produced from cows immunised with multiple human intestinal bacteria. It has good anti-inflammatory effect and contains moderate amounts of Vit. A, C, B1, B2, B6, B12, nicotinic acid pantothenic acid, folic acid, iron, copper and zinc. Though chemically it is identical to commercial milk but it contains 20-30% higher concentration of IgG type I antibody.

Previous studies have shown that the local and systemic upregulation of fibrogenic cytokines and down regulation of ant fibrotic cytokine are central to the pathogenesis of oral submucous fibrosis. The immune milk contains an anti-inflammatory component that may suppress the inflammatory reaction and modulate cytokine production. Symptomatic relief in patients may be partially attributed to the micronutrients contained in the immune milk powder.

**Turmeric**[^8]:

Administration of turmeric powder offers protection against benzopyrene induced increase in micronuclei in circulating lymphocytes and it is an excellent scavenger of free radical in vitro. Turmeric oil & turmeric oleoresin both act synergistically in vivo to offer protection against DNA damage.

**Other Therapies:**

Injection of Gold, Vitamin A & Collagenase, and Vasodilator injection can be used in the management of OSMF. Chemotherapeutic agents like topical application of Bleomycin can also be used in sever cases.

**Oral Physiotherapy:**

Muscle stretching exercises for the mouth may be helpful to prevent further limitation of mouth movements. This includes forceful mouth opening with the help of sticks, ballooning of mouth, hot water gargling. This is thought to put pressure on fibrous bands. Forceful mouth opening have been tried with mouth gag & acrylic surgical screw.

**Combined Therapy:**

With peripheral vasodilators (nylidrin hydrochloride), vitamin D, E & B complex, placental extract, local & systemic corticosteroids & physiotherapy claim a high success rate in oral submucous fibrosis management.

**Diathermy:**

Microwave diathermy (Low current is used 20 watts × 2450 cycles) is useful in some early or moderately advanced stages. It acts by physiofibrinolysis of bands. Microwave diathermy seems superior to short wave, because selective heating of juxta epithelial connective tissue is possible, thereby limiting the area treated.

**Ultrasound**[^9,10]:

Ultrasound is defined as a form of acoustic vibration with frequencies so high that it can’t be perceived by human ear. Thus frequencies less than 17000 Hz are usually sound and those above are defined as ultrasound. Ultrasound used for therapeutic purpose has a frequency of about 0.8-1 MHz and an intensity of 0.5-3 w/cm². Ultrasound selectively raises the temperature in some well circumscribed areas.

Though skin of cheek, subcutaneous fat, muscle, connective tissue and buccal mucosa all have different acoustic impedances, the difference is not vast and hence less amount of energy is reflected at the interfaces between any two tissues and maximum energy reaches the lamina propria of the buccal mucosa. Ultrasound thus proves to be an efficient deep heating modality. Most of the heat generated by ultrasound in the buccal tissue is due to volume heating rather than structural heating. Volume heating occurs due to absorption of ultrasound by tissue proteins and its conversion to heat. Structural heating occurs at interfaces between two tissues of different acoustic impedance.

**Surgical Treatment:**
Surgical treatment is indicated in patients with severe trismus and/or biopsy results revealing dysplastic or neoplastic changes. Surgical modalities that have been used include simple excision of the fibrous bands, with major limitation being contracture of the tissue and exacerbation of the condition. Split-thickness skin grafting following bilateral temporalis myotomy or coronoidectomy. Trismus associated with OSMF may be due to changes in the temporalis tendon secondary to OSMF; therefore, skin grafts may relieve symptoms. Nasolabial flaps and lingual pedicle flaps. Surgery to create flaps is performed only in patients with OSMF in whom the tongue is not involved.

LASER - CO2 laser surgery offers advantage in alleviating the functional restriction.

Cryosurgery:

It is the method of local destruction of tissue by freezing it in situ. Extreme cold is produced by liquid nitrogen or argon gas to destroy abnormal tissue. Liquid sprays are better suited for mucosal lesion. Liquid nitrogen or argon gas is circulated through a hollow instrument called a cryoprobe, which is placed in contact at the affected region. The operator uses ultrasound or MRI to guide the cryoprobe and monitor the freezing of the cells, thus limiting damage to nearby healthy tissue. The frozen tissue thaws and is either naturally absorbed by the body, or it dissolves and forms a scab.

Conclusion and summary:

OSMF is a crippling disease of oral cavity, having multifactorial etiology with arecanut chewing the most elicited one. Oral submucous fibrosis is one of the most poorly understood and unsatisfactorily treated oral diseases. All available treatments give the patient only symptomatic relief which is short lived. This is mainly due to the fact that the etiology of the disease is not fully understood and the disease is progressive in nature.

The treatment of patients with OSMF 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 OSMF present with moderate-to-severe disease which is irreversible. A combined therapy with holistic approach can help our patient care though it still is the field requiring extensive research.

References:


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