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Oral Submucous Fibrosis: Review of Literature.

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ABSTRACT

Oral sub-mucous fibrosis is a chronic ,slowly progressive debilating disease which leads to fibrosis of the oral cavity and pharynx which in turn causes trismus .The disease is distributed mainly in the Indian subcontinent where the habit of pan chewing is dominant along with use of spices in Indian food. Numerous treatment modalities are present with variable treatment outcome. At present day though numerous advanced medicines are being used for the management of oral sub-mucous fibrosis, surgical intervention is the only choice at later stages of the disease. Here a review of the disease is elaborated in this article.

Keywords: Review, oral sub-mucous fibrosis, medical management, surgical management.

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INTRODUCTION

Oral submucous fibrosis is an insidious, chronic, disabling disease that affects the entire oral cavity, sometimes the pharynx, and rarely the larynx. It is characterized by blanching and stiffness of the oral mucosa, which causes progressive limitation of mouth opening and intolerance to hot and spicy food[1] Schwartz [2] in 1952 first described this condition and it was Joshi[3] from Bombay in 1953 who first coined the term Oral Submucous Fibrosis. It is mainly found in Indian sub-continent, where the habit of pan chewing is very high.

Etiology

The etiology of OSMF is unknown. Most of the studies done indicates that not only local irritating factors contribute to OSMF, but systemic involvement such as vitB12 ′ iron deficiency, zinc deficiency, anaemia contribute equally. The local irritant being chillies, chewable tobacco, areca nut used along with paan. The correlated fact that pans chewing habit is more common in India where the disease occurrence rate is much higher. In the areca nut copper content is high which attributes to increased collegen synthesis and decreased collagen degradation [4]. As a result of increased collagen synthesis the fibrous bands are formed. Hypersensitivity reaction from the local agents like pan, gutkha, chillies, betel nuts and pepper may often result in a juxta-epithelial inflammation that leads to increased fibroblastic activity resulting in formation of collagen fibres in lamina propria.

Clinical features and diagnostic criteria

The criteria for the diagnosis of OSMF as described by Bailoor DN [5] is:

Grade 1 (Mild OSMF): Mild blanching, No restriction in mouth opening, Central incisor tip to tip of the same side, Normally in Males 5.03 cm. Females 4.5 cm, No restriction in tongue protrusion, mesio-incisal angle of upper central incisor to the tip of the tongue when maximally extended with mouth wide open.

Grade 2 (Moderate OSMF): Moderate to severe blanching, Mouth opening reduced by 33%, tongue protrusion reduced by 33%, flexibility also demonstrably decreased, burning sensation even in absence of stimuli, Palpable bands felt, Lymphadenopathy either unilateral or bilateral.

Grade 3 (Severe OSMF): Burning sensation very severe, patient unable to do day to day work, more than 66% reduction in the mouth opening, cheek flexibility and tongue protrusion, in many the tongue may appear fixed, Ulcerative lesions may appear in cheek, thick palpable bands felt, lymphadenopathy is bilaterally evident.

Kiran kumar et al categorised three clinical stages of OSMF on the basis of mouth opening as follows :[6]

Stage 1- Mouth opening greater than 45mm
Stage 2- Mouth opening between 20-44mm
Stage 3- Mouth opening less than 20mm

The earliest sign of OSMF which is found clinically is the constant burning sensation in the buccal mucosa while eating spicy foods. Clinically OSMF is divided into the following stages: stomatitis, fibrosis and sequelae[7]. Regions of erythema in the buccal mucosa with vesicles are found during the stage of stomatitis which is followed by rupture of the vesicles. These ruptured ulcers heal with fibrosis. Fibrosis of the buccal mucosa leads to trismus[8].

Treatment modalities

Treatment modalities vary as medical or surgical, and this depends on the clinical grading of the disease. Early and moderate OSMF responds well to medical treatment whereas severe ones require surgical intervention. Active physiotherapy and refraining from the habit is must.

Medical treatment [9]

The treatment protocol depends on the grading of the disease. Drugs are delivered via oral , parental and local drug delivery route.

Grade I

Antioxidants & Multivitamins 1 tab once daily 10 weeks Orally
Iron Supplements 1 tab once daily 10 weeks Orally
Ointment Triamcinolone Acetonide 0.10% 4 weeks Topically

Grade II

Antioxidants & Multivitamins (Tablets A to Z) 1 tab once daily 10 weeks Orally
Iron Supplements 1 tab once daily 10 weeks Orally
Ointment Triamcinolone Acetonide 0.10% 8 weeks Topically
Inj.Hyaluronidase (Hynidase) 1500 IV Biweekly for 10 weeks Intra lesionally in combination Inj.Dexamethasone 2 ml Biweekly for 10 weeks Local Anaesthetic
1 ml 2% without adrenaline Biweekly for 10 weeks.

Grade III

Antioxidants & Multivitamins 1 tab once daily 10 weeks Orally
Iron Supplements 1 tab once daily 10 weeks Orally
Inj. Placentrex 2 ml Weekly once for 4 weeks Intra lesionally
Topical Ointment Triamcinolone Acetonide 0.10% for 4 weeks
Inj.Hyaluronidase (Hynidase) 1500 IV Biweekly for 10 weeks

Grade IV

Antioxidants & Multivitamins1 tab once daily 10 weeks Orally
Iron Supplements 1 tab once daily 10 weeks Orally
Inj. Placentrex 2 ml weekly once for 4 weeks Intra lesionally
Ointment Triamcinolone Acetonide 0.10% 4 weeks Topically

Local injection of corticosteroids and placental extracts have been tried in addition to hyaluronidase, collagenase and similar substance that breakdown intercellular substances and reduces collagen formation. Intralesional injection of hyaluronidase mixed with hydrocortisone resulted in better results [10]. Intralesional injections of IFN-gamma which is also known as antifibrotic cytokine is another key factor to the treatment of OSMF. IFN-gamma can alter collagen synthesis [11]. Local and systemic application of glucocoticoids and placental extracts are commonly used which prevents mucosal damage because of its anti inflammatory effects [12]. Advanced treatment options include administration of Pentoxifylline [13] and nutritional supplements like lycopene [14] which have satisfactory effects on treating moderate to severe stages of OSMF.

Surgical management

At present day so many surgical methods are used for the correction of OSMF and each surgical method have its own advantage and disadvantage. The author here has highlighted the discussion about the available methods.

Surgical release of the fibrotic band

In moderate OSMF just surgical release of the bands can cure the patients. With the advent of laser in surgical field, such as KTP-532 lasers hemostasis need not to be dealt with [15]. The advantage of allowing spontaneous epithelisation of the mucosa are that the affected areas are easily visible for inspection and

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hence malignant changes can be identified at the earliest. ErCr:YSGG laser fibrotomy, performed under local anesthesia is also found to be useful in managing oral submucous fibrosis [16].

Figure 1: Excision of the surgical bands

Surgical release and reconstruction using buccal fat pad graft

Neder[17] described the use of BFP as a free graft to cover intraoral defects.Buccal fat pad also known as bichat's pad is used in the reconstruction of the defects following surgical excision of the fibrotic bands of OSMF. The fibrotic bands after intraoral palpation gives the idea about the extension of the incision. Usually the excision is carried from the pterygomandibular raphe upto corner of mouth anteriorly.The bands are to be ressected and forceful opening of the mouth is done with help of fergussion mouth gag to facilate mouth opening.The buccal pad of fat is approached through the same incison pulled down and stabilised over the wound with sutures . The coronoid processes were approached from the wounds created and resected if a 35-mm mouth opening could not be achieved[18].The advantages of using buccal pad of fat are no need of a second surgical site ,good vascular supply of the graft , and resistance to infection. The amount of graft is not always sufficient to cover the surgical site.

Figure 2: The buccal pad of fat

Figure 3: Buccal pad of fat stabilised

The use of naso-labial flap as a reconstructive material

The nasolabial flap plays a versatile role when large areas are to be covered after surgical excision [19]. All the palpable fibrotic bands are to be excised, following which temporal myotomy and coronoidectomy

is done. Nasolabial flap is elevated from the nasolabial fold to the inferior border of mandible. The size of the flap depends upon the size of the defect .Then the flap is transposed into the oral cavity through a transbuccal tunnel. The flap is then secured over the surgical site and stabilised with interrupted sutures.The extraoral wound closure is done .The main advantage of using a nasolabial flap is the good amount of tissue present to cover the surgical site, while extraoral scar is the disadvantage.

The use of Tongue flap as a reconstructive material

The tongue flap can be elevated either from anteriolateral or posteriolateral aspect of tongue. A myocutenous flap is elevated and used to cover the defect. The bilateral tongue flap causes difficulty in swallowing, speech and sometimes even positive aspiration . The stability of a tongue flap and dehiscence are the common postoperative complications of uncontrolled tongue movements. Apart from this the reported involvement of the tongue is 38%, which precludes its use for reconstruction [20].

The use of split skin graft

Following palpation of the fibrous band intraorally, fibrotomy was carried out .The lateral area of thigh is prepared with betadine solution and spilt skin graft is harvested with the help of Humby's knife .The graft is then placed into the area of the surgical defect and then stabilised with suture. A mouth opening of 30-40mm was considered to be adequate. If the mouth opening was less not sufficient bilateral coronoidectomy is to be done. The need for a secondary surgical site and need for shaving are the major disadvantage of this procedure.

Figure 6: Coronoidectomy being done

Figure 7: The coronoid process

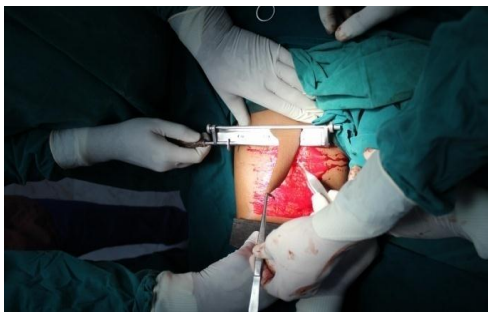

Figure 4: Split thickness skin graft

Figure 5: Graft stabilised with sutures

Physiotherapy

OSMF is an under-recognised disorder among physiotherapist .Postoperative physiotherapy must be adviced to the patient to maintain the mouth-opening and prevent relapse. In a study done by Vijaykumar M and Priya D, Ultrasound therapy with the intensity from 0.7 – 1.5 W/Cm2 over the skin of the buccal region of the affected sides with finger and thumb kneading, consecutively for 6 days/week for 2 weeks, showed a mean mouth-opening of 6.26mm[21].

Recent advances in treatment of OSMF

Though so many treatment modalities are available at present day scenario for the management of OSMF ,but none seems to have promising results. Continious efforts and research are being employed to find a definitive and reliable treatment for OSMF.

Stem cells

Fibrosis leads to decrease in the diameter of the blood vessel lumen ,leading to the decrease in the capillary blood supply. The stem cell have the potential of inducing neo-angiogenesis thereby causing reversal of the pathogenic process. In a study done by Sankaranarayanan S and co-workers ,mononuclear cells prepared from iliac crest bone marrow showed a increase in mouth opening of 4mm and histological features are also improved [22]. Further research is going on in the field of stem cellsand seems to be promising.

DISCUSSION

Over the years a lot of treatment modalities have been developed for the management of OSMF. Though the choice of treatment depends upon the grading of the disease. The stage 1 and stage 2 disease can be managed by medical therapy ,where the stage 3 and stage 4 disease requires surgical approach. Surgical management should provide adequately a mouth opening of 35-40mm.Biopsy of the lesion must be done before surgery for histopathological diagnosis. In some case surgical release of the fibrotic bands gives an adequate mouth-opening.If adequate mouth opening is not achieved then bilateral coronoidectomy and temporal muscle myotomy should be done additionaly. Post-operative physiotherapy should be followed by the patient. Tobacco cessation counselling of the patients helps them refraining from the habit. The patient should be reviewed frequently to assess the mouth-opening , recurrence of any fibrotic bands and to check for malignant transformation.

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