

Case Report

Role of Collagen membrane in the treatment of advanced stage of Oral submucous fibrosis: A case report

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Abstract: Oral submucous fibrosis has a high rate of morbidity because it causes a progressive inability to open the mouth, resulting in difficulty in eating and consequent nutritional deficiencies. Oral submucous fibrosis also has a significant mortality rate because it is a premalignant condition and malignant transformation has been noticed. Here, we report the role of collagen membrane in surgical management of OSMF Grade-IV.

Keywords: Granulation tissue formation, Growth factors, Fibrosis

INTRODUCTION:

Oral submucous fibrosis (OSMF) is a chronic disorder of the oral cavity characterized by inflammation, progressive fibrosis of the lamina propria and deeper connective tissues. As the disease progresses, the oral mucosa becomes stiff due to the formation of fibrotic bands in the cheek, ultimately leading to reduced mouth opening. OSMF is considered as a precancerous condition with a high risk of malignant transformation. Most treatment modalities in OSMF have centered on relief of the burning sensation and release of the fibrotic bands to improve mouth opening.

The early form of the disease can be treated by medicinal means, however, advanced stages need surgical excision of the fibrotic tissue bands. The healing of wound is a sequence of cellular and biochemical activities, which aim towards restoring tissue integrity and functional capacity after injury [1]. Oral and maxillofacial surgical procedures often produce open wounds. A dressing material should cover these wounds to prevent microbial infection, foreign material contamination, wound contracture, and improve healing. So, the tissue defect created due to the excision of fibrotic bands needs to be repaired by various graft materials including bovine collagen membrane, split thickness skin grafting, tongue flaps,

buccal fat pad graft and temporalis muscle flap graft. Khanna and Andrade in 1995 developed a group classification system for the surgical management of trismus [2].

- Group I: earliest stage without mouth opening limitations with an interincisal distance of greater than 35 mm.
- Group II: patients with an interincisal distance of 26-35 mm.
- Group III: moderately advanced cases with an interincisal distance of 15-26 mm. Fibrotic bands are visible at the soft palate, and pterygomandibular raphe and anterior pillars of fauces are present.
- Group IVA: severe trismus with an interincisal distance of less than 15 mm and extensive fibrosis of all the oral mucosa.
- Group IVB: advanced disease with premalignant and malignant changes throughout the mucosa. Here, we present the surgical management of trismus following Grade-IV stage of OSMF with collagen membrane by Scalpal.

CASE REPORT:

A 28-year old female patient came to the department of oral & maxillofacial surgery, career P.G. institute of dental sciences & hospital, Lucknow, Uttar Pradesh, India with chief complaint of reduced

mouth opening. On palpation, bilaterally fibrotic bands was found and mouth opening was about 13mm[**Figure-1**]. OPG showed normal architecture level of bone and teeth [**Figure-2**]. On the basis of clinical & radiological examination, diagnosis of OSMF Grade-IV was made. Thus, to prevent the progression of disease, bilaterral fibrotomy procedure was planned and patient was informed about the procedure.

The operation was performed under general anesthesia with nasal intubation. After opening the mouth, the buccal mucosa was incised transversely from just behind the commissure of the oral cavity to extend posteriorly at the level to 1 cm below the orifice of Stensen's duct depending upon the location of the fibrotic bands. All the bands were released by blunt dissection starting from the pterygomandibular raphe to

the corner of the mouth, bilaterally [**Figure-3**]. Confirmation by palpation was done to ensure that all the bands are dissected thoroughly. Collagen membrane is sutured to close the surgically created wounds after fibrotic band excision.[**Figure-4**]

Patients were placed on Ryle's tube feeding for 7 days. After the oral mucosa healed, the patients were given oral feedings. Patients were taught mouth opening exercises using ice cream sticks and were instructed to carry out this exercise at least 5 times a day. Patients were followed up at intervals of 2 months, 6 months and 1 year. The interincisal distance was measured during follow up. The mouth opening after first postoperative day was 13.0 mm & after 6-month was 27.0 mm.[**Figure-5, 6**]. No recurrence of the lesions was found after one year of follow up.



Fig-1: Pre operative mouth opening



Fig-2: Pre operative OPG



Fig-3: Intraoperative view : Fibrotomy done

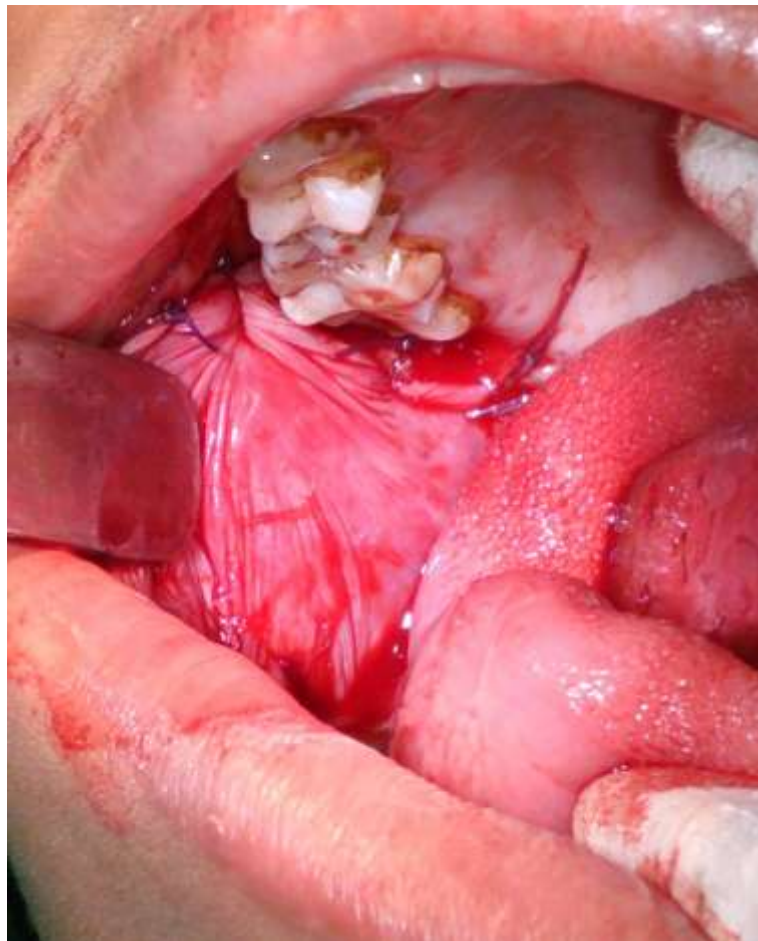


Fig-4: Collagen membrane placed

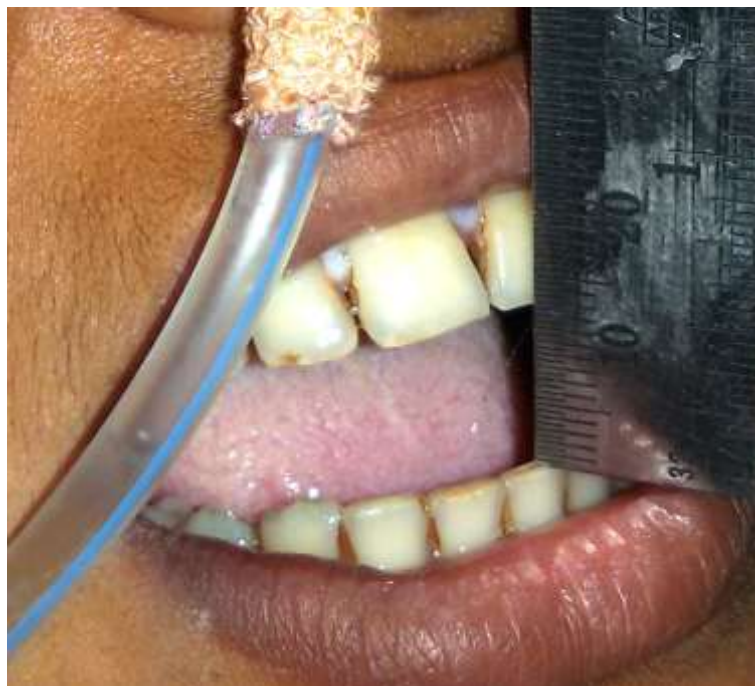


Fig-5: Mouth opening at the time of operation:13.0 mm



Fig-6: Post operative mouth opening after 6-month :27.0 mm

DISCUSSION:

Surgical treatment of OSMF have mentioned the sectioning of fibrous bands bilaterally, although various authors have proposed different graft/dressing materials for wound coverage, here we used collagen sheet as a wound dressing material to cover the surgical defect.

The advantages of collagen sheet as a wound dressing material in OSMF surgery include the easy availability of collagen sheet, convenience of application, good tolerance of oral tissue, possibility of second surgery to obtain graft and there are no problems associated with donor site healing [3].

The raw wounds of the oral cavity heals by granulation and epithelialization because of the oral environment is always moist with contamination from saliva and food and also compounded by constant movements of tongue and cheek [4]. So, the risk of infection in the oral cavity is also quite high, which may result in scarring and contraction.

An ideal soft tissue dressing should promote haemostasis, reduce pain, prevent infection, promote granulation tissue formation, rapid re-epithelialization, reduces contracture and avoids the donor site morbidity [5]. Collagen can be used as an alternative graft materials to cover the intraoral surgical defects.. Unique features of collagen membranes include guiding

function, chemotactic property, haemostatic property and can resist masticatory forces for sufficient time and allows granulation tissue to form [6]. Collagen membranes encourage wound healing through early deposition and organization of granulation tissue. It facilitates migration of fibroblasts in to the wound bed, encourages the metabolic activity of granulation tissue [7,8]. Collagen when used to cover the raw area provides the coverage for sensitive nerve endings thereby diminishing degree of pain. As collagen is a natural substrate of extracellular matrix, is chemotactic to various cell types such as endothelial cells, fibroblasts there by leading to reduced inflammatory process which contributes to reduced pain and burning sensation [7,9]. Mannai *et al.*, which stated that collagen produces rapid haemostasis and strengthens the clot.

In our study collagen membrane showed accelerated healing process through the formation of a gelatinized coagulum containing abundant amount of fibrinogen and fibronectin which contains high concentrations of chemo attractants, growth factors which help in deposition and organization of freshly formed fibres[10-12].However ,more longitudinal study and tissue biopsy with detailed histopathological study at frequent intervals is required to establish the fact that initial adherence and uneventful healing is possible by the use of collagen membrane for intraoral wounds .

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