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Case Series

Evaluating healing pattern after fibrotomy and myotomy followed by grafting with buccal fat pad and collagen in oral submucous fibrosis patients: a case series

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ABSTRACT

This study was conducted to assess the healing pattern of buccal fat pad and collagen as intraoral graft post fibrotomy and masticator myotomy in oral submucous fibrosis patients. The study was conducted on 20 patients with reduced mouth opening due to oral submucous fibrosis (Khanna and Andrade classification grade 3 and 4 a), randomly divided into 2 groups. In one group, buccal fat pad was harvested and in other group only wet bovine collagen sheet was applied as surgical dressing in the intra-oral wound after fibrotomy and masticator myotomy. Healing pattern of both as graft material were compared based on clinical findings. Healing occurs following epithelialization of the buccal fat pad which gradually takes the color of the buccal mucosa. Xenogenic collagen offers better coverage of the surgical wound but degenerates itself in the course of healing. The covered wound epithelializes without scar tissue formation and patients experience less symptoms during healing phase.

Keywords: Submucous fibrosis, Masseter myotomy, Buccal fat pad, Fibrotomy

INTRODUCTION

An oral fibrosing disease was discovered in 5 Indian women in Kenya and was termed as artopathicaidiopathica mucosae oris by Schwardt in 1962 that was subsequently coined as oral submucous fibrosis by Joshi in 1953.[1,2] It is a chronic disease of debilitating nature most commonly affecting buccal mucosa but in severe cases pharynx is also involved.[3] The disease leads to juxta-epithelial inflammation and subsequent fibrosis of deeper tissues (lamina propria and connective tissue).

Patients initially complaints of burning sensation while eating spicy food. In advanced cases there may be inability to open mouth and total loss of elasticity of oral mucosa leading to ulceration and infection that gradually turns to pre-cancerous changes in the oral cavity.[4] The pathogenesis of the disease is considered to be multifactorial and many factors trigger the inflammatory reaction including arecanut chewing, ingestion of chillies, genetic and immunologic processes, nutritional deficiencies and other factors.[5]

Cessation of the habit if the disease is diagnosed at early stage is considered to be sufficient along with medicines comprising of multi-vitamins, B-complex, patient counselling and dietary modification enhancing intake of proteins, vitamin D, E and B-complex and micro-

nutrients. Non-surgical intervention includes intra-lesional injections of dexamethasone+hyaluronidase followed by aggressive physiotherapy and regular monitoring of mouth opening. First line of treatment includes alfa-lipoic acid and lycopene (anti-proliferative, anti-inflammatory and antioxidant). Antioxidants restrict damage caused by reactive free radicals to cells and cellular components leading to regression of disease process.[6]

Surgical management are release of fibrosis by excision of fibrous bands and release of trismus. Bilateral intraoral fibrotomy and masseter myotomy is done in buccal mucosa and fibrous tissue is excised completely. In cases with severe trismus, bilateral coronoidectomy and temporalis myotomy can be done to relieve the trismus and enhance the mouth opening.[7]

The buccal fat pad being an autogenous graft with local availability in the oral cavity acts as a suitable graft to cover the intra-oral wound covering material with better vascular supply, resilient structure and quick and uneventful healing when harvested and placed properly.[8] The accelerated wound healing property of the buccal fat pad can be attributed to its rich vascular anastomoses through the small branches of facial, internal maxillary and superficial temporal artery and veins.[9] The clinical application of buccal fat pad is strongly grounded on the results of studies on its anatomy and clinical significance by Stuzin et al and Tideman et al.[9,10]

Resorbable collagen wound dressing have been used in oral wounds and closure of grafted areas or extraction sites because they stabilize blood clots, protect surgical sites and accelerate the healing process. Collagen based membranes have been widely used in periodontal dressing and implant therapy as barriers that prevent the migration of epithelial cells and enhance migration and attachment of fibroblasts through its space-making ability.[11,12]

CASE SERIES

The study was conducted in the department of oral and maxillofacial surgery, Sardar Patel post graduate institute of dental and medical sciences, Lucknow after approval from institutional ethical committee. 20 patients reported with oral submucous fibrosis (Khanna and Andrade classification grade 3 and 4 a), randomly divided into 2 groups. After obtaining written consent in patients regional language, patients were operated and were kept under observation for particular time period in O. P. Chaudhary hospital and research centre, Lucknow by the same authors. Fibrotomy, Masseter and temporalis myotomy and coronoidectomy was done along with prophylactic extraction of all third molars in all the patients (Figure 1). In one group, buccal fat pad was harvested and in other group, only wet bovine collagen sheet was applied as surgical dressing in the intra-oral wound. Healing pattern of both as dressing material was compared. Follow up was done on day 1 and 3, week 1, 2, 4, 6, month 3 and 6 and 1 year postoperatively. Parameters of assessment were bleeding from the surgical site, infection of surgical site, complete epithelialization of surgical site and wound dehiscence. The statistical analysis was done using SPSS (statistical package for social sciences) version 15.0 statistical analysis software.

Figure 1: Fibrotomy, Masseter and temporalis myotomy and coronoidectomy with harvested buccal fat pad.

Surgical site bleeding was not observed in any of the patients of both the groups at any time of the follow up (p=0).

Wound dehiscence was observed only at week 1 and 2 of follow up. Partial wound dehiscence was observed in patients of group II at week 1 (p=0.531) and 2 (p=0.606) of follow up which was not statistically significant when compared with group II. At week 4, complete healing of intra-oral wounds were observed in both groups (Figure 2).

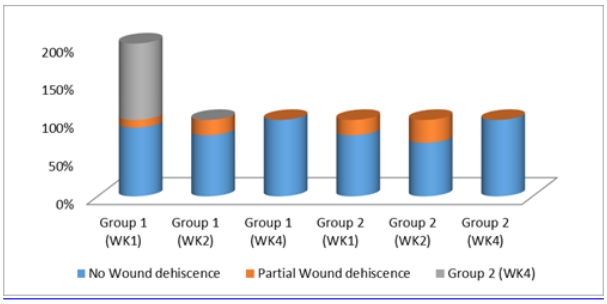

Figure 2: Wound dehiscence.

Incidence of infection was observed at week 1 and 2 only and severity of infection was mild which did not required any secondary surgical intervention. At week 1, though proportion of patients having mild degree of infection was higher in group II (20%) as compared to group I (10%) but this difference was not statistically significant (p=0.542). At week 2 the infection in group II was high (30%) compared to group I (10%) but the difference was

again statistically insignificant. At week 4, none of the patients had infection in either group (Figure 3).

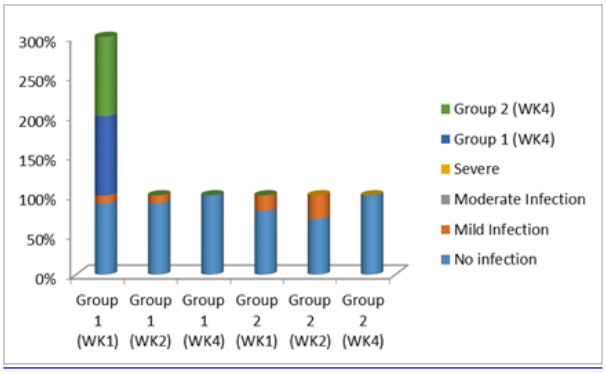

Figure 3: Infection.

Complete healing of intraoral wounds were observed by the end of 4 weeks on both the groups inspite of other consequences of healing (p=0). No significant difference was observed in both the groups considering the time of complete epithelialization.

DISCUSSION

Various authors have proposed different grafts/dressing materials for intra-oral wound coverage after fibrotomy and masticator myotomy in surgical management of oral submucous fibrosis. Different flaps and grafts had been used in the coverage of intraoral wounds and a vast literature is available providing valuable data regarding the methods of application.[13] Being relatively convenient and carry less postoperative morbidity, buccal fat pad and collagen are compared in this study for their healing pattern and events following their application as intraoral grafts in surgical management of oral submucous fibrosis (OSMF) had been evaluated by the authors.

BFP transplantation has been known since 1892 when Neder first described it.[14] The first report of use of buccal pad of fat as a pedicled graft for defect upto 4 cm diameter covering it with a free split thickness skin graft was made in 1977. The uncovered pedicled graft provided a bed of tissue for subsequent epithelialization thereby obviating the need of split thickness skin cover.[15] The authors recommended uncovered buccal fat pad graft.

Collagen being a highly versatile material, extensively used in medical dental and pharmacological fields as it was capable of being prepared into crossed linked compacted solids or into lattice like gels and resorbable forms of collagen can be used to dress oral wounds, for closure of grafts and extraction sites and to promote healing. Platino MG et al concluded in their study that collagen based membrane can be used in maxillofacial surgery as barriers to prevent epithelial migration and allow cells with regenerative capacity to repopulate the defect area as the membrane creates a favourable environment for intra-oral tissue regeneration.[16]

Surgical site bleeding was not observed in any of the patients for 48 hours postoperatively. This can be attributed to the fact that the surgical technique followed was appropriate that did not led to any immediate postoperative complications. The intraoral dressing and packing was done properly and patients were kept on Ryles tube feeding so that the intra-oral wound was not disturbed in the initial clot stabilizing phase.

Incidence of infection was present at 1st and 2nd week and severity of infection was mild. Patients in group II had high incidence of infection that group I but the difference was not statistically significant at week 1 (p=0.542) and at week 2 (p=0.276). at week 4, none of the patient had infection in either group. The buccal fat pad being resilient led to proper flushing of the debris and since the epithelialization of the buccal fat pad is an indigenous process, the graft surface is smooth enough to prevent infection. On the other hand, the collagen membrane being fragile and a foreign material degenerates in the course of healing hence forming an irregular wound surface while the epithelialization of the mucosa occurs. Also the flushing effect was minimal in the wound covered with and this led to accumulation of debris.

Wound dehiscence was observed only at 1st and 2nd week of follow up. At week 1 and 2, partial wound dehiscence was observed in higher proportion in patients of group-II when compared with group I but the difference was not statistically significant. None of the patients of either group had complete wound dehiscence. This can be attributed to the fact that collagen has high tendency to accumulate debris and has least flushing property due to more fragility when compared with buccal fat pad. This led to secondary infection and subsequent wound dehiscence occurred. Patients were advised to maintain oral hygiene and no further complications occurred. Same findings regarding collagen application was reported by Rehman et al, Shivpriya et al, Kamnath and Sowjanya et al.[17-20]

On evaluating the epithelialization of wound by gross clinical examination, it was found that by week 4, both the groups had wound covered with granulation tissue and complete epithelialization was observed by the end of 4th week. This attributed to the fact that better surgical technique, good patient care and regular follow up can lead to uneventful healing of collagen membrane as well inspite of its totally different course of healing when compared with buccal pad of fat (Chao et al).[21]

CONCLUSION

In this study the authors conclude that better surgical technique and good patient care can offer uneventful healing of buccal fat pad as well as collagen when used

as intra-oral dressing material following fibrotomy in oral submucous fibrosis patients. The complications that were noted in the healing phase of collagen membrane were of mild nature and did not required secondary surgical intervention and however the incidence was not statistically significant. The time taken for epithelialization was incomparable in both the groups and complete healing was observed by the end of 4 weeks. However more studies with large sample size are required to further support the following study.

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