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Augmentation of Attached Gingiva with a Variant of Freegingival Autograft-A Case Report

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Abstract

Objective: Periodontal plastic surgery is the branch of periodontology that is focused mainly on the correction or elimination of mucogingival problems associated with lack of attached gingiva, a shallow vestibule and aberrant frenum. This *case report* aims to investigate the clinical effectiveness of *free gingival graft* (accordion technique) in the treatment of Miller's class III gingival recession.

Methods:A 33-year-old female who has been referred to the Department of Periodontology, Chennai. On examination, the patient was systemically healthy and had no history of abnormal habits. Chief complaint of the patient was receding gums in the lower anterior teeth region. On periodontal examination and radiographic evaluation, the patient presented with a Miller's class III gingival recession in the lower incisors region. After performing initial scaling and root planning, Free gingival autogenous graft was harvested from the palate and the graft was expanded by giving alternate incisions in opposite sides of the graft. This expanded graft was stabilized on the recipient bed and sutured. Patient was followed up after 3 months and 6 months respectively.

Results: Increase in width of the attached gingiva from 2.5mm (mean of 31, 32, 41, 42) to around 5 mm was achieved.

Conclusion: The achieved increase of attached gingiva and the vestibule depth led to improvement of the effectiveness of the oral hygiene and to better control of the gingival inflammation.

Key words: attached gingival tissues, free gingival graft, accordian technique

INTRODUCTION

Mucogingival surgery is defined as “periodontal surgical procedures designed to correct defects in the morphology, position, or enhance the dental gingival junction, since defects in the morphology of the gingival and alveolar mucosa can accelerate the course of periodontal disease, or interfere with the successful outcome of periodontal treatment”[1]. The most frequent mucogingival problems are lack of attached gingiva because of gingival recessions and lack of adequate vestibular depth. Decreased amount of attached gingiva and vestibular depth may make it difficult for plaque control to be performed and predispose such an area to gingival inflammation. Further, aberrant frenulum or muscle attachment also causes gingival recession by making plaque control and maintenance of oral hygiene difficult. Gingival recession is characterized by “migration of free gingival margin apical to cemento enamel junction”. There are various factors which cause gingival recession apart from periodontal disease. They are faulty tooth brushing techniques, malaligned teeth, high muscle or frenal attachment, and iatrogenic factors. Several management techniques for gingival recession exist : free grafts grafts [FGGs], sub epithelial connective tissue graft, pedicle grafts (lateral and coronal), etc. FGGs were initially introduced by Bjorn, in 1963. The term FGG was first suggested by Nabers. Since then, they have been used not only to cover denuded root surfaces; but also to increase the width and thickness of attached gingiva. FGG effectively widens the keratinized zone, but this method has disadvantages like producing two wounded sites and tissue limitation in donor site. In order to overcome the limitations other techniques like Accordian and strip techniques have been introduced.

The purpose of this study is to describe the accordion technique of free gingival autograft where gingival augmentation is required for a wider recipient bed. This *case report* aims to evaluate the clinical effectiveness of *free gingival graft* (accordion technique) in treating Miller’s class III gingival recession

CASE PRESENTATION

The present case report is about a 33-year-old female who has been referred to the Department of Periodontology, SRM Dental College, after performing initial scaling and root planning. On examination, the patient was systemically healthy and had no history of any abnormal habits. Chief complaint of the patient was receding gums in the lower anterior teeth region. On periodontal examination and radiographic evaluation, the patient presented with a Miller's class III gingival recession in the lower incisors region. (Fig 1.)

Fig 1.

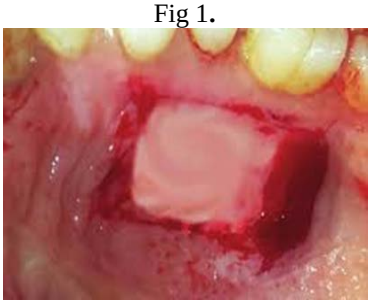

Fig 2.

PRE SURGICAL PREPARATION

Following patient education and oral hygiene instructions, scaling and root planning was performed. The patient was recalled after 4 weeks to assess oral hygiene maintenance and reduction in gingival inflammation with respect to 31,32,41,42. Alginate impressions were made to fabricate an acrylic stent to protect the donor site on the hard palate from which graft will be harvested.

SURGICAL PROCEDURE

Following all aseptic precautions and under adequate local anaesthesia preparation of the recipient bed is done by de-epithelialization and the vestibuloplasty to deepen the vestibule using #15c blade. A tin foil was placed on the recipient site and a template was prepared. Greater palatine nerve block given on the palate and the tin foil template was then placed over the palatal area and an incision was made all round the template to a depth of 1.5mm. Non toothed tissue holder was used to lift the graft's edge and the graft was separated along the outline (Fig 2). The under surface of the graft was trimmed to remove the overhanging tissues. The harvested graft was placed onto gauze soaked in normal saline solution. The graft was adapted to the recipient site and then removed and expansion of the graft was done by giving alternate incisions on opposite sides of the graft. (Fig 3 and fig 4).

Fig 3.

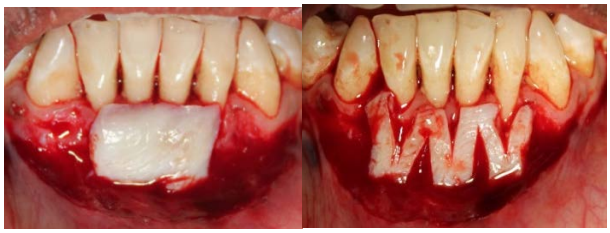

Fig 4.

The expanded graft was compressed and held in position for few minutes on the recipient site and immobilized with 4-0 vicryl sutures. The suturing technique of modified Oschenbein and circumferential and periosteal sutures was followed to hold the graft in place. (Fig 5). The donor site was covered with the tent and the recipient site was covered with periodontal pack.

Fig 5

The patient was put on analgesics and antibiotics for 5 days and chlorhexidine mouthwash 0.2% for 2 weeks. Post-operative instructions were given. The patient was monitored with recall appointments for 3 months, and 6 months with good clinical results. (Fig 6 and Fig 7)

Fig 6. (Post op after 3 months)

Fig 7. (Post-op after 6 months)

DISCUSSION

Several plastic periodontal surgical techniques have been introduced in literature aiming to correct gingival recessions. The choice of technique and long term predictability of the procedure depend upon various factors such as aetiology of recession, presence of attached gingiva, tissue width, single or multiple gingival recessions. Free gingival grafts are used to create a widened zone of attached gingiva. They were initially described by Bjorn in 1963 and have been extensively investigated since that time. The donor site (palate) is left with an open wound that heals by secondary intention. The following variant techniques attempts to minimize the donor site wound by removing the donor tissue in a different configuration and altering the shape to maximize coverage over the recipient site[3,4]. The various techniques are (1) the accordion technique, (2) strip technique, and (3) combination epithelial-connective tissue strip technique. All are modifications of the free gingival grafts. The accordion technique, described by Rateitschak et al attains expansion of the graft by alternate incisions in opposite sides of the graft[3]. This technique increases the donor graft tissue by changing the configuration of the tissue[5]. Despite the fact that the Mesh graft (accordion) technique leave areas without any grafts coverage between the grafts, thus the uncovered areas are finally covered with keratinized epithelium regardless to their alveolar mucosa type. This allows the complete coverage of the recipient area with the gingival grafts and diminishes the risk of insufficient width and thickness of the gained attached gingival tissues[3].

The graft is initially maintained by a diffusion of fluid from the host bed, adjacent gingiva, and alveolar mucosa.[6-10] The fluid is a transudate from the host vessels and provides nutrition and hydration essential for the initial survival of the transplanted tissues. During the first day, the connective tissue becomes oedematous and disorganized and undergoes degeneration and lysis of some of its elements[3]. As healing progresses, the oedema is resolved, and degenerated connective tissue is replaced by new granulation tissue. Revascularization of the graft starts by the second or third day. Capillaries from the recipient bed proliferate into the graft to form a network of new capillaries and anastomose with pre-existing vessels. Many of the graft vessels degenerate and are replaced by new ones, and some of these participate in the new circulation. The central section of the surface is the last to vascularize, and it gets completed by the tenth day. The epithelium undergoes degeneration and sloughing, with complete necrosis occurring in some areas. It is replaced by new epithelium from the borders of the recipient site. A thin layer of new epithelium is present by the fourth day, with rete pegs developing by the seventh day[3].

This aforementioned technique is less invasive to the palatal area causing minimum post-operative discomfort to the patient. The success of this case report is attributed to the precise indication of the accordian technique of FGG to increase the width of attached gingiva in Millers class III gingival recession.

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